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Intervention Using a Leaflet to Promote a Morning-Typed Life in 2- to 6-Year-Old Japanese Children and Their Parents

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Abstract

We created a new educational material focused on three benefits of a morning-typed lifestyle and actual strategies for promoting this lifestyle. The material is a leaflet entitled, "Three benefits from going to bed early, getting up early and having breakfast. Message to mothers and fathers of young children!" In the present study, we attempted to evaluate the educational efficacy of a month-long intervention using this leaflet on 2- to 6-year-old Japanese children. About 1200 children and their parents were asked to participate in a month-long intervention from mid-June, 2011. Just before and three months after the intervention period, an anonymous integrated questionnaire was administered to participants. Responses were received from 61% of pairs (children: 363 girls and 375 boys; parents: 689 mothers and 56 fathers). Children tended to be more morning-typed after the intervention than before the intervention ($p=0.07$), but there was no significant difference in the Diurnal Type Scale (DTS) scores of their parents. The body mass index (BMI) of the children was significantly lower three months after the intervention period than just before the intervention ($p=0.04$). In the children, implementation scores were significantly correlated with their post-intervention DTS scores ($p=0.001$), but not with post-intervention BMI. The intervention program particularly increased morning-typed lifestyles in children through the limitation of TV and video games.

Keywords: intervention, leaflet, morning-typed lifestyle, diurnal type scale, body mass index, young Japanese children, 2-6 years old, video games and TV watching

1. Introduction

1.1 Current Sleep Health Problems in Young Children

Several sleep health-related problems have been reported around the world in preschool-aged children. In a cohort study in Melbourne, Australia, sleep problems in young infants could not predict the long-term outcomes at six years of age (Price et al., 2012). A worldwide questionnaire study on preschool children from Asian countries (China, Hong Kong, India, Japan, Korea Malaysia, Philippines, Singapore and Thailand) and Caucasian countries (Australia, New Zealand, Canada, the United Kingdom and the United States) showed that

young children from Asian countries had later bedtimes, shorter night sleep hours and a higher frequency of perceiving sleep problems than children from Caucasian countries (Mindell et al., 2013). Poorer sleep in five-year-olds in the UK was related to anxiety/depression and aggression (Sheridan et al., 2013).

A questionnaire study on 39,813 Japanese children aged 4.5 years old as part of a nationwide cross-sectional survey in Japan showed 13.7% of children to have a total of less than 10 hours of sleep a day (Ikeda et al., 2012). In that survey, a high odds ratios for shorter duration of sleep was associated with living in a less populous area, long hours spent watching TV, longer maternal working hours and attending preschool. An epidemiological study using a 1-week actigraph to measure activity in Japanese five-year-olds showed that culture-related extracurricular lessons were associated with a later bedtime in girls. On the other hand, participation in a sports group and having a fixed bathing time were related to earlier wakeup time in the morning. Sports groups were also related to higher sleep efficiency (Iwata et al., 2011). In a cross-sectional questionnaire study administered to a cohort of 1,656 kindergarten children in Jintan City, Jingsu, China, 39.4%, 31.6%, 28.0%, 24.7%, 23.4%, and 29.6% of the children had difficulty initiating sleep, nightmares, sleep talking, sleeping less, sleep resistance and fatigue, respectively (Liu et al., 2012). Moreover, fatigue in children was associated with a lower IQ. A review of the literature from the past few years suggests that children are getting less sleep and becoming more evening-typed. Shorter sleep resulting from an evening-typed lifestyle is associated with the 24-hour commercialization of society (Harada et al., 2012, 2013), and may reduce the mental health of children (Harada et al., 2007; Nakade et al., 2009, 2012; Akimitsu et al., 2013).

1.2 Children's Sleep and Maternal Health

A questionnaire study on 9- to 15-month-old and 48- to 55-month-old children and their mothers living in Israel suggested that the mothers' thoughts and feelings on their own childhood help form their sleep-related concerns and practices concerning their children (Aviezera & Scherc, 2013). A questionnaire study on more than 1600 mother-infant pairs (prenatal cohort study at 6 months, 1 year and 2 years) living in eastern Massachusetts, USA showed that maternal depression during pregnancy, early introduction of solid foods, infant TV viewing, and attendance in child care may be risk factors for shorter infant sleep duration (Nevarez et al., 2010). Based on a questionnaire study on 156 primary caregiver-child pairs in the United States, bedtime resistance and daytime sleepiness in children have salient associations with parenting stress that is related to daytime behavioral problems in children with insomnia (Byars et al., 2011). In a literature review, Lee (2013) pointed out that the mothers of children with developmental disabilities (the number of which is now increasing worldwide) experienced high levels of stress as well as poor sleep and poor well-being. The physical and mental health of young children may be very closely linked.

1.3 Relationship between Sleep Habits and Obesity in Young Children

Objective data obtained with tri-axial accelerometers from low-income African American eight-years-olds demonstrated that obesity in this age group is associated with characteristics of inactivity and short sleep, while children with higher reading activity were moderate-vigorous (Harrington, 2013). A questionnaire study and partially longitudinal follow-up were administered to 380 low-income preschool children in the Mid-west of the U.S. (Miller, 2014). Longer nocturnal sleep and a smaller sleep phase difference of less than 45 minutes between weekdays and weekends were associated with a lower risk of future increases in BMI. A questionnaire study on 1,300 Chinese children aged 3 to 4 years from 10 kindergarten classes in Shanghai gave odds ratio for childhood obesity of 4.76 for children with less than 9 hours of sleep and 3.42 for those with 9.0-9.4 hours of sleep in comparison with those with more than 11 hours of sleep (Jiang et al., 2009).

Short sleep duration in children was associated with short sleep duration in mothers, high education carrier of mothers and co-sleeping of children with their mothers. In one study, obese preschool-aged children in the U.S. participated in a weight management program, and pre- and post-treatment assessments of body mass, caloric intake and sleep were performed (Clifford et al., 2012). Longer post-treatment nocturnal sleep was associated with lower post-treatment BMI and lower caloric intake.

1.4 Sleep Education Programs for Young Children throughout the World

In general, sleep education is very limited worldwide, even in medical schools. To assess the prevalence of sleep education (fundamental knowledge and knowledge of sleep disorders) in medical school education, a questionnaire survey was administered to 409 medical schools in 12 countries (Austria, India, Indonesia, Japan, Malaysia, New Zealand, Singapore, South Korea, Thailand, the U.S., Canada and Vietnam) (Mindell et al., 2011). The average time spent on sleep education was just under 2.5 hours, with 27% of the schools responding with "0" hours. Australia, USA and Canada provided more than 3 hours of education on sleep. Pediatric sleep topics were covered in a mere 17 minutes compared to over 2 hours on adult sleep-related topics.

In Malaysia, there are two common perspectives regarding sleep health education, and both result in a poor understanding of sleep among science teachers and students. A systematic sleep health education system is needed for the Muslim population in Malaysia (Tumiran et al., 2010). An online, self-paced, sleep medicine learning module as an educational tool improved the overall sleep knowledge of students at Johns Hopkins Medical School compared to control students who learned a sham module (Salas et al., 2013). In a review paper, Cassoff et al. (2013) showed that school-based sleep promotion programs are not often successful because the enhanced sleep knowledge learned in the programs does not lead to sustained changes in sleep behavior. To resolve this problem, they proposed using individually tailored approaches to promote sleep health.

The effects of intervention classes (psychology classes) to promote sleep health were evaluated in eleventh grade students at three co-educational secondary schools in Adelaide, Australia (Cain et al., 2011). Students in the intervention classes ($n=51$) attended four 50-minute-long sleep education classes held once a week. The classes were modified from those developed by Moseley and Gradisar (2009) and included a motivational interviewing framework. The intervention group increased their knowledge on sleep compared to the control group ($n=53$). Students' motivation to regulate their own waked up times improved during the intervention. The intervention group also had increased motivation to lengthen the duration of their sleep time (Cain et al., 2011). Sateia et al. (2005) developed an education program that included a broad range of topics in sleep physiology and medicine and measured the effectiveness of intervention using this new program on first year medical school students in the U.S. Evaluation showed that the effectiveness of the intervention using the new program was significant. Recently, Ribeiro and Stickgold (2014) discussed the potential sleep applications in the school setting and "sleep and learning" that can be taught in schools, based on the past decade of findings on rapid eye movement (REM) sleep as a key process for memory consolidation and re-construction.

Few sleep education programs have focused on circadian typology, and especially on a morning-typed lifestyle. We therefore created a new educational material focused on the three benefits of a morning-typed lifestyle and actual strategies for promoting such a lifestyle. The material is a leaflet entitled, "Three benefits from going to bed early, getting up early and having breakfast. Message to mothers and fathers of young children!" In the present study, we attempted to evaluate the educational efficacy of a month-long intervention using this leaflet on 2- to 6-year-old Japanese children.

2. Participants and Methods

2.1 Intervention Study

A month-long intervention program starting in mid-June, 2011 was administered to about 1200 young children and their parents (Figure 1) (Appendix). Before (late May 2011) and three months after (mid-October 2011) the intervention month, an anonymous integrated questionnaire was administered to the 1200 pairs. After the first administration of the questionnaire was done before the intervention, an envelope including a letter for parents and the leaflet was distributed to every parent through each of 10 nursery school. The letter has the message of the purpose of the study and recommendation of "following the habits shown by the leaflet for one month". An envelope including the questionnaire was again distributed to every parents through each of 10 nursery schools, three months after the intervention month. Responses were received from 61% of the pairs (children: 363 girls and 375 boys; parents: 689 mothers and 56 fathers). Parents answered the pre- and post-intervention questionnaires by themselves and on behalf of their children.

2.2 An Integrated Questionnaire

2.2.1 The Diurnal Type Scale

A version for children (Harada et al., 2007) of the Diurnal Type Scale (DTS) (Torsvall & Åkerstedt, 1980) was used to measure diurnal preference. The DST consisted of seven questions: three pertaining to sleep onset, three to sleep offset, and one to peak time of activity. Each question allows choice from four answers. The score of DTS was the sum of the seven answers. Scores ranged from 7 to 28, with lower scores indicating evening-type and higher scores indicating morning-type.

2.2.2 Body Mass Index

Body mass index (BMI: kg/m^2) was compensated for young age using a numerical formula developed by the World Health Organization (WHO, 2007).

2.2.3 Implementation Score

During the month-long intervention, participants were asked to follow five rules in the leaflet (Table 1). They were given five questions with six possible responses each, and the sum of the scores from those five questions was the implementation score, ranging from 5 to 30 points.

2.3 Ethical Treatment

The study protocol complied with the guidelines of the journal *Chronobiology International* for research on human participants (Portaluppi et al., 2010). Before starting the study, each of the parents was given a written explanation that detailed the concepts and purposes of the study and stated that their answers would be used only for academic purposes. After the above explanation, all parents agreed completely with the proposal. The study was also permitted by the nurses' committees of the ten nursery schools and one kindergarten that conducted an ethical inspection of the content of the leaflet and the integrated questionnaire.

2.4 Statistical Analysis

Pre-intervention and post-intervention questionnaire answers were statistically analyzed with χ^2 -tests, Mann-Whitney U-tests, Kruskal-Wallis tests and one-way analysis of variance (ANOVA) with SPSS 12.0 statistical software. DTS scores were expressed as means and standard deviations (Mean \pm SD).

Table 1. Details of the month-long intervention from mid-June 2011

| |
|--|
| 1. In your response to the question, "How do you shift to 'Go to bed, early! Get up early! and Do not forget breakfast!'" in the leaflet, how many days did your child follow implementation 1-A: "Let's expose ourselves to sunlight just after wakening early in the morning" during the 30-day-long intervention period? (1) 0-5, (2) 6-10, (3) 11-15, (4) 16-20, (5) 21-25, (6) 26-30 |
| 2. In your response to the question, "How do you shift to 'Go to bed, early! Get up early! and Do not forget breakfast!'" in the leaflet, how many days did your child follow implementation 1-B: "Let's expose ourselves to sunlight after breakfast!" during the 30-day-long intervention period? (2) 0-5, (2) 6-10, (3) 11-15, (4) 16-20, (5) 21-25, (6) 26-30 |
| 3. In your response to the question, "How do you shift to 'Go to bed, early! Get up early! and Do not forget breakfast!'" in the leaflet, how many days did your child follow implementation 1-C: "Let's use INCANDESCENT LIGHTS after sunset." during the 30-day-long intervention period? (3) 0-5, (2) 6-10, (3) 11-15, (4) 16-20, (5) 21-25, (6) 26-30 |
| 4. In your response to the question, "How do you shift to 'Go to bed, early! Get up early! and Do not forget breakfast!'" in the leaflet, how many days did your child follow implementation 2: "Have some PROTEIN SOURCES in your breakfast!" during the 30-day-long intervention period? (4) 0-5, (2) 6-10, (3) 11-15, (4) 16-20, (5) 21-25, (6) 26-30 |
| 5. In your response to the question, "How do you shift to 'Go to bed, early! Get up early! and Do not forget breakfast!'" in the leaflet, how many days did your child follow implementation 3: "Let's limit TV and video games at night to one hour! Please set a "NO-TV and NO-VIDEO-GAME day" every week." during the 30-day-long intervention period? (5) 0-5, (2) 6-10, (3) 11-15, (4) 16-20, (5) 21-25, (6) 26-30 |

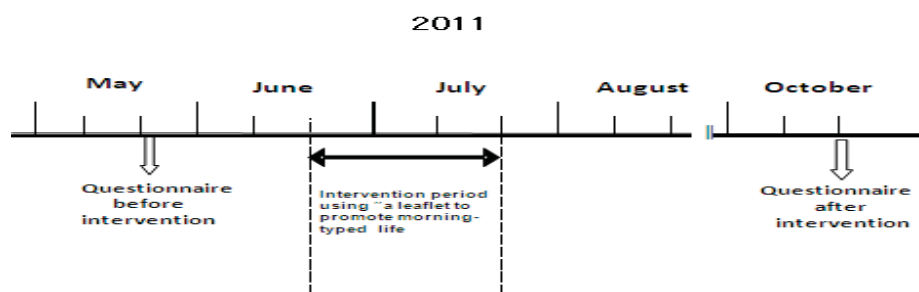


Figure 1. A schematic presentation of the intervention schedule Participants completed anonymous questionnaire before and after the intervention

3. Results

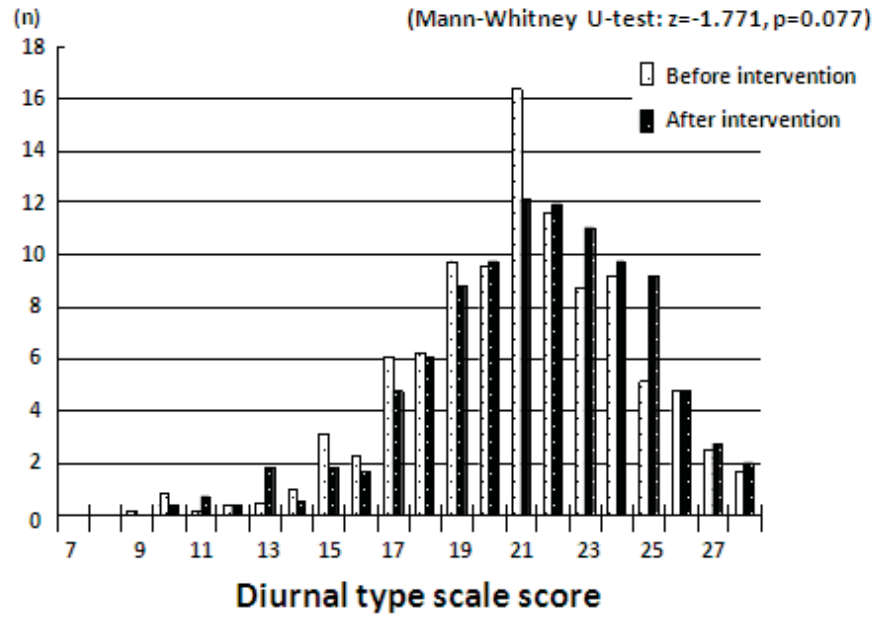


Figure 2. Distribution of diurnal type scale scores of 2- to 6-year-old Japanese children before and after the month-long intervention

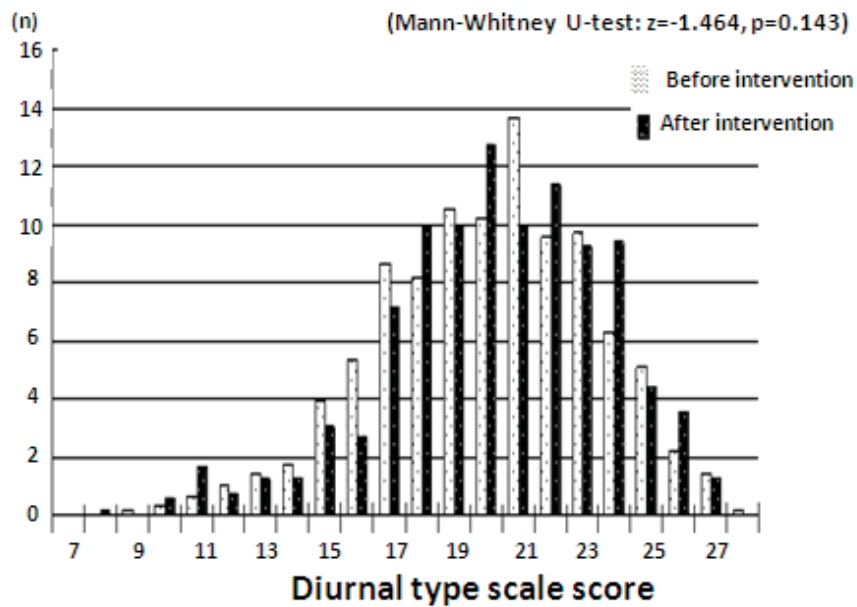


Figure 3. Distribution of diurnal type scale scores in parents before and after the intervention

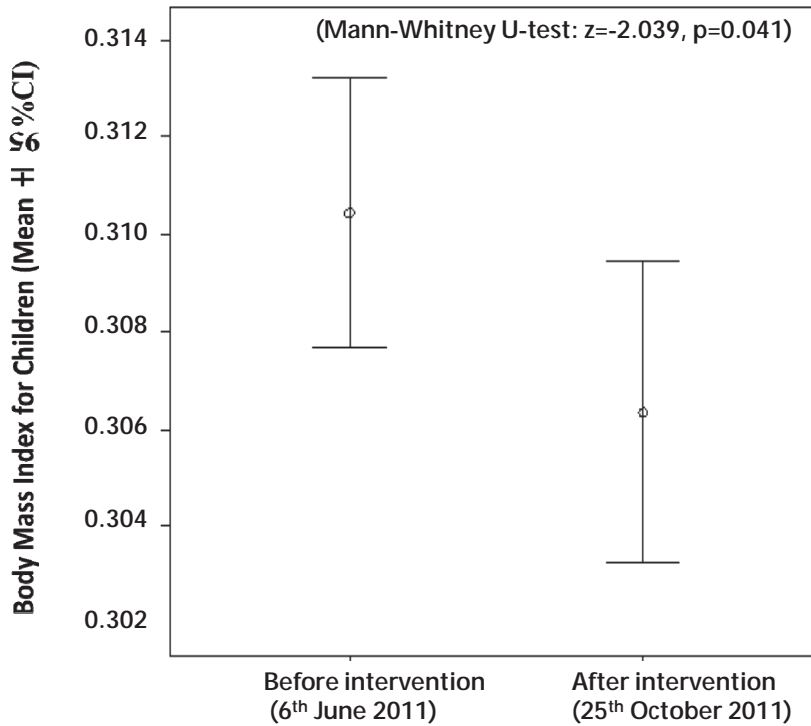


Figure 4. Body mass indexes of 2- to 6-year-old Japanese children before and after the intervention

3.1 DTS Scores and BMI before and after the Intervention

Children tended to be more morning-typed after the intervention in October 2011 than before the intervention in June ($z = -1.77, p > 0.05$) (Figure 2), but there was no significant difference in the DTS scores of their parents ($z = -1.464, p > 0.05$) (Figure 3). Children’s BMIs were significantly lower three months after the intervention period than just before the intervention (Mann-Whitney U-test, $z = -2.04, p < 0.05$) (Figure4).

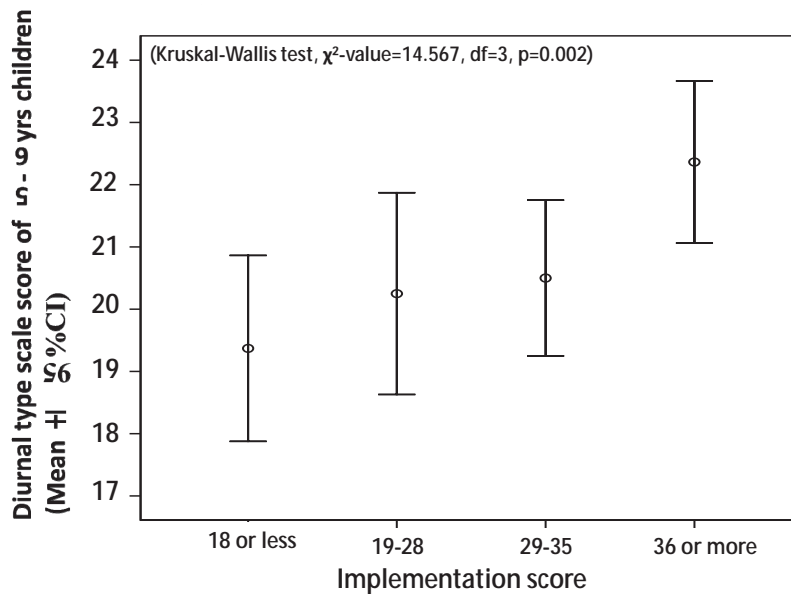


Figure 5. Relationship between the implementation scores for the leaflet promoting a morning-typed lifestyle and the diurnal type scores of the children 3 months after the intervention

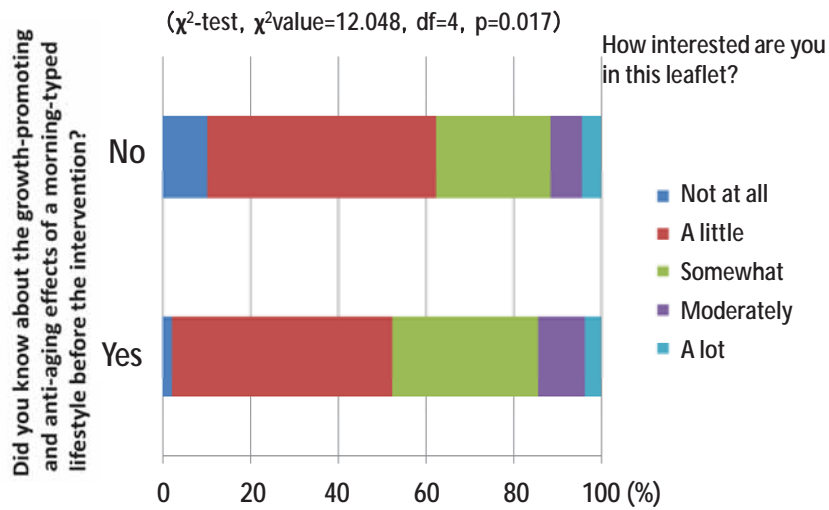


Figure 6. Relationship between prior knowledge of the leaflet information on the growth-promoting and anti-aging effects of a morning-typed lifestyle and the extent of interest in the leaflet as a whole

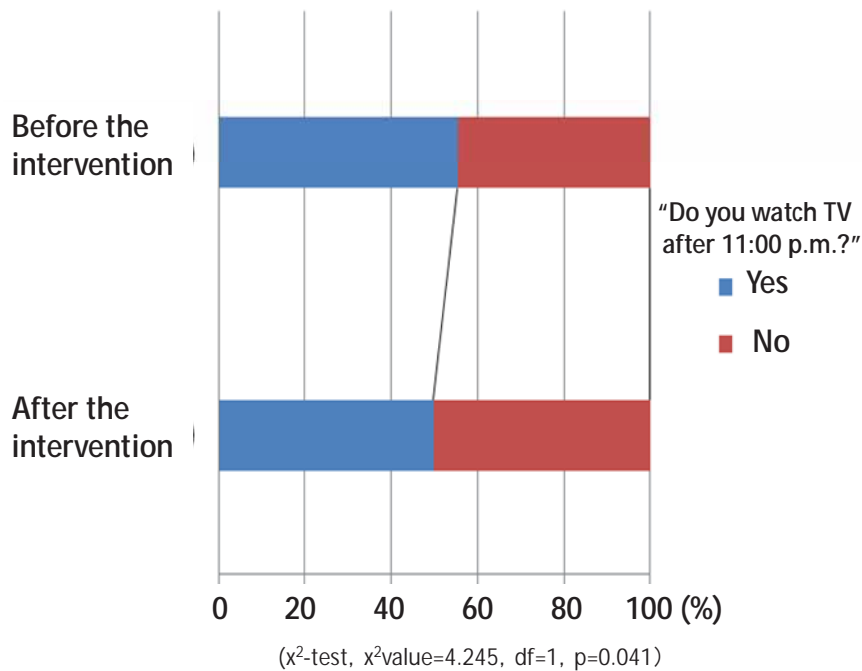


Figure 7. The ratio of parents who watched late-night TV after 11:00 p.m. before and after the intervention

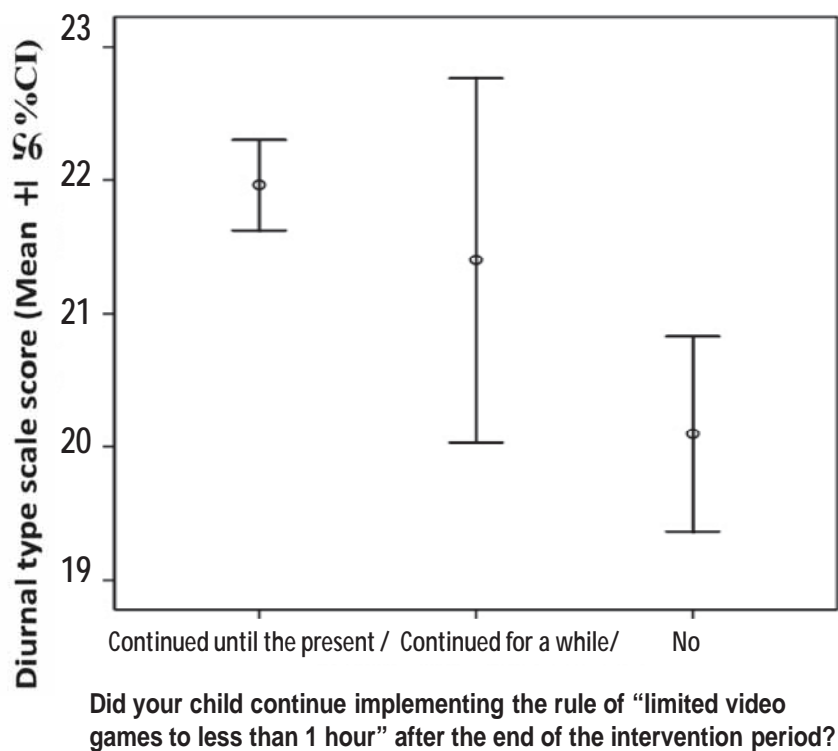
3.2 Intervention and Parents' Habits and Interest

Implementation scores and DTS scores were positively correlated in parents (Kruskal-Wallis test, χ^2 -value = 14.567, $df = 3$, $p < 0.01$) (Figure 5). The ratio of parents who already knew the benefits of a morning-typed lifestyle before the intervention were 68 % for “higher grades in academic courses in school”, 43% for “reduction of obesity”, and 77 % for “promotion of growth and anti-aging effects”. Parents who already knew the third benefit were more interested in the leaflet than those who did not (χ^2 -test, χ^2 value = 12.048, $df = 4$, $p < 0.05$) (Figure 6). The ratio of parents who watched late-night TV after 11:00 p.m. was higher before the intervention period than after the intervention period (χ^2 -test, χ^2 value = 4.245, $df = 1$, $p < 0.05$) (Figure 7).

3.3 Implementation and Circadian Typology and BMI of Young Children

Children who continued implementing the rule of “limited video games to less than 1 hour” for three months after the intervention period had significantly higher DTS scores than those who did not (One-way ANOVA: $df = 2$, $F = 12.90$, $p < 0.001$) (Figure 8). Those who continued implementing the rule of “limited TV to less than 1 hour” (One-way ANOVA: $df = 2$, $F = 17.678$, $p < 0.001$) (Figure 9), “one no-video-game day per week” ($df = 2$, $F = 7.737$, $p < 0.001$) and “one no-TV day per week” ($df = 2$, $F = 18.569$, $p < 0.001$) (Figure 10) for three months after the intervention period had higher DTS scores than those who did not.

In the children, implementation scores were significantly correlated with their post-intervention DTS scores (Pearson's correlation test, $r = 0.267$, $p = 0.001$), but not with post-intervention BMI ($r = 0.094$, $p = 0.254$).



(ANOVA: $df=2$, $F=12.90$, $p<0.001$)

Figure 8. Relationship between children continuing the rule of “limited video games to less than 1 hour” after the intervention and their diurnal type scale scores

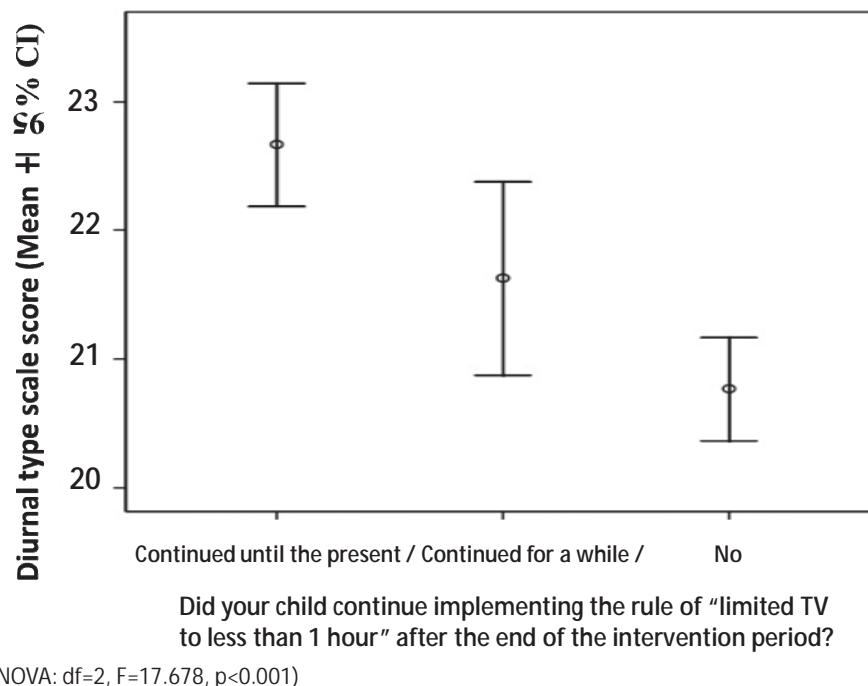


Figure 9. Relationship between whether children have continued the rule of “limited TV to less than 1 hour” after the intervention and their diurnal type scale scores

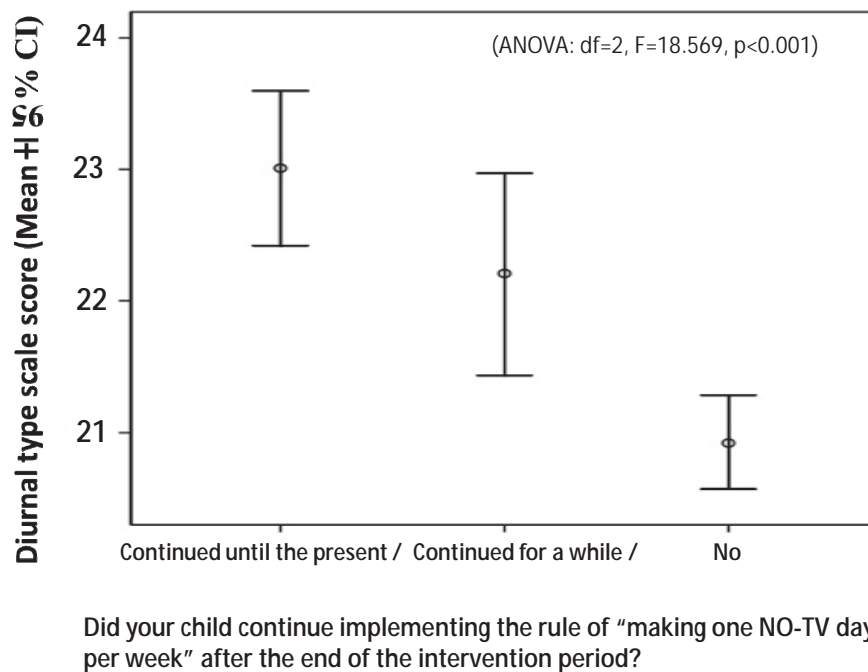


Figure 10. Relationship between whether children have continued the rule of “making one NO-TV day per week” after the intervention and their diurnal type scale scores

3.4 Implementation and Knowledge of the Three Benefits of a Morning-Typed Lifestyle

The number of benefits of a morning-typed lifestyle that were known by parents before the intervention was positively correlated with the implementation scores of both the parents (One-way ANOVA: df = 3, F = 6.486, p < 0.001) and the children (ANOVA: df = 3, F = 4.705, p = 0.003) (Figure. 11, 12).

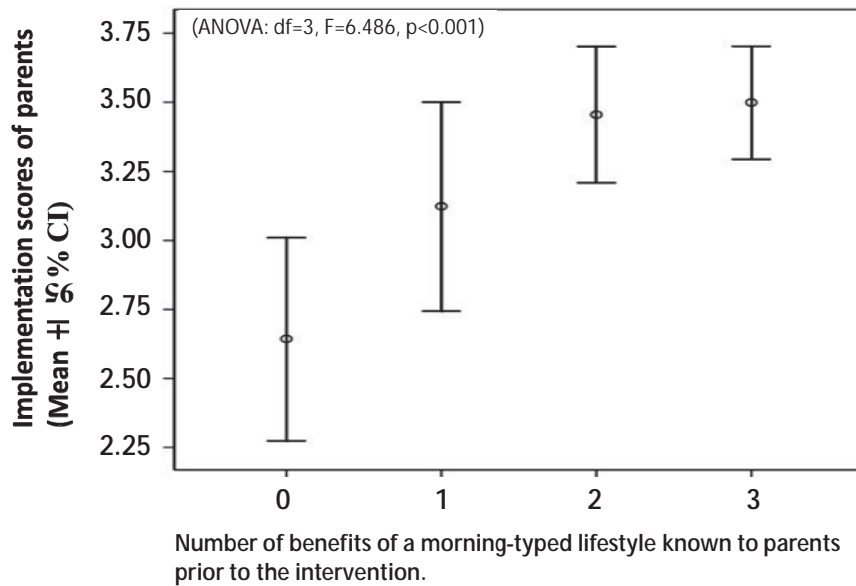


Figure 11. Relationship between implementation scores of parents and their prior knowledge of the three benefits of a morning-typed lifestyle before the intervention

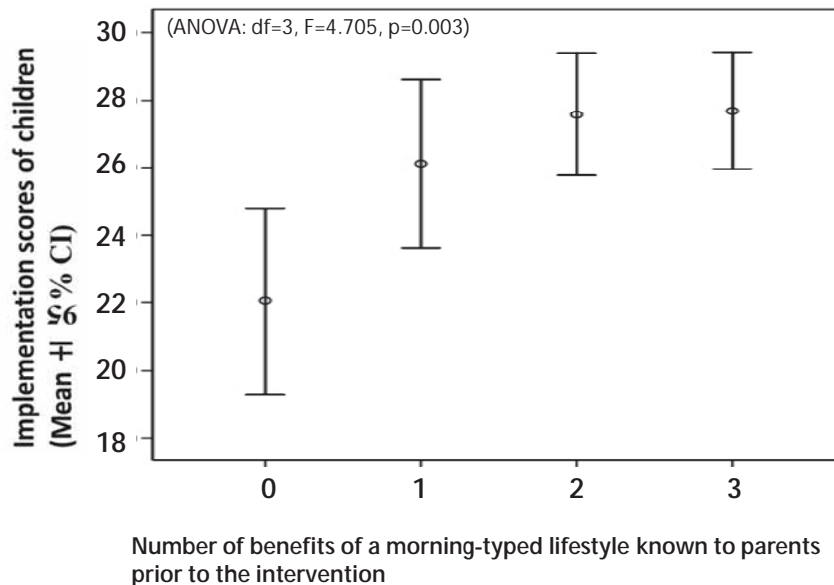


Figure 12. Relationship between implementation scores of the children and their parents' prior knowledge of the three benefits of a morning-typed lifestyle before the intervention

4. Discussion

4.1 Promoting a Morning-Typed Lifestyle and Reducing BMI in Young Children with a Leaflet Intervention

Both the children and their parents were more morning-typed after the intervention than before the intervention, even though there is a shorter photoperiod in October when the post-intervention questionnaire was administered, meaning that the sun rises later and there is less sunlight early in the morning. The lack of morning light can

force a delay in the circadian phase (Murray & Nicholas, 2003). The change to morning-type therefore appears to be due to not seasonal variation, but the intervention.

4.2 Circadian Typology and Obesity in Young Children

Several studies have shown that longer sleep is associated with a lower risk of obesity (for example, Jiang et al., 2009; Clifford et al., 2012). However, few studies have examined the relationship between circadian typology and obesity. Harada et al. (2014) recently reported that obese mothers of 2- to 6-year-olds were significantly more evening-typed than other mothers. Moreover, a positive correlation was seen between the BMI of the children and that of their mothers. In this report, BMI decreased after the intervention in comparison with pre-intervention BMI.

What is the mechanism of evening-type-driven obesity? An evening-typed lifestyle accompanied by a shorter duration of sleep at night may induce obesity in young children. As a hypothetical mechanism, a delayed circadian phase may reduce their activity level and reduce calorie expenditure. A mutant mouse created by reduction of BMAL1 gene expression that encodes proteins regulating circadian rhythms was reported to show about a 30% reduction in muscle force and 40% reduction in mitochondrial volume (Andrews et al., 2010). The human circadian phase may also be related to BMAL1 expression and consequently linked to mitochondrial volume and muscle force. Further studies are needed to examine such a relationship. Another possible mechanism is that calories consumed later in the circadian phase by evening-typed children may be used to increase the amount of fatty tissue under the skin and around the guts, liver, heart and other organs (Garaulet & Gómez-Abellán, 2014).

4.3 Efficacy of Sleep Education Focusing on Circadian Typology

There have been many case studies on sleep education programs and their educational efficacy throughout the world (e.g., Blunden et al., 2012). However, few studies have been conducted on the efficacy of sleep education with a focus on “circadian typology”. In Japan, an extremely evening-typed society, partially due to 24-hour commercialization, sleep education including the recommendation of a morning-typed lifestyle is very important. The reason for this is that an extremely evening-typed lifestyle has a higher risk of promoting poor mental health due to lower serotonin synthesis in daytime, lost coupling of the two biological clocks (two clocks hypothesis of main and slave clocks: Honma & Honma, 1988), and less consolidation of negative memories due to the loss of REM sleep. A late bedtime accompanied with an evening-typed lifestyle can depress the growth hormone level at night, as sufficient secretion of this hormone must occur during the slow wave phase of non-REM sleep (Obal & Kruegerb, 2004). Results of this intervention study shows that only one month intervention would be powerful for making small children be shifted to morning-typed ones and preventing obesity of them.

Higher academic knowledge of parents may be positively related to their interest in the leaflet based on the results of this study. Higher interest based on a higher level of education may lead to the active implementation of the recommendations in the leaflet. The implementation of limited TV and video games by their children may promote their morning-typology.

The ratio of parents who already knew the benefits of a morning-typed lifestyle before the intervention was significantly higher for the mothers of children attending a kindergarten who got higher grades of education in university than that for the mothers of children attending the nursery schools. This result of statistical analysis would be important because the reading level for the leaflet would be high (many multi-syllable words etc.). In the United States, “Nearly 9 out of 10 adults have difficulty using the everyday health information that is routinely available in our healthcare facilities, retail outlets, media and communities” (Kutner et al., 2006). Special issue of the leaflet for the mothers who got only compulsory education in elementary and junior high schools may be needed for them and should be prepared in the near future.

4.4 Limitations of This Study

The intervention period was relatively short in this study. A longer intervention period of three or six months may be more effective for promoting a morning-typed lifestyle in children. Moreover, direct interventions, for example having “*Natto*” (fermented soy beans) or cow’s milk, using a lighting apparatus that emits low color temperature light (incandescent lamps as opposed to fluorescent lamps or LEDs that emit blue light), may be particularly useful for determining the efficacy of the leaflet.

The reduction in BMI might be associated with the amount of food eaten at breakfast and/or the addition of some amount of foods at breakfast into the child’s morning routine. The analysis of these factors would be remained for the future study. Although this study was concerning 2-6 year old Japanese children, the leaflet contained information concerning “The relationship between the shift to evening-type in female junior high school students

and heavy use of mobile phones” and this information did not seem pertinent to the 2-6 year old child, although mothers can understand this information for the future education for their own daughters.

Finally, this study was based on anonymous questionnaires. Partially-anonymous questionnaires (random numbering by the kindergarten and nursery school staff and no information given to the analyzing researcher on the identification of individuals) could be a powerful method for one-by-one, precise analysis of the efficacy of the intervention.

4.5 Future Study

The leaflet used for the promotion of sleep and mental health of children was the basic version. We have already constructed other applied versions for “women” and “people” which experienced the severe disasters like as “Great Hanshin-Awaji Earthquake in 1995” and “Great East Japan Earthquake in 2011”. In the case of women, morning-typed life can lead to healthy menstrual cycle with less symptoms of premenstrual syndrome and less extent of menstrual pain (Takeuchi et al., 2005). Post-traumatic stressed syndrome (PTSD) shown by the people who experienced severe disaster was easy to be remained in “evening-typed people” even after 17 years after the Great Hanshin-Awaji Earthquake (Kuroda et al., 2013). In near future, the efficacy of these two applied leaflet to promote the health of women and people who experienced such disasters can be tested with intervention studies.

In conclusion, the intervention program using the leaflet which promotes “morning-typed life” particularly increased morning-typed lifestyles in small children through the limitation of TV and video games. The educational efficacy of the one month intervention using the leaflet seems to be significant for the small children via the change in consciousness and behavior of their parents, especially mothers.

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Appendix

English version of the entire leaflet that was used for the month-long intervention in young Japanese children and their parents

Three benefits from going to bed early, getting up early and having breakfast.

Message to mothers and fathers of young children!

The three benefits:

1. Higher grades at school and evaluations at work.

2. Reduce or prevent obesity.

3. Retain your youth and aid your child's growth.

[Indeed!! But...WHY??!!]

A quick lesson in REM and non-REM sleep

During a night of sleep, we have two kinds of sleep that are completely different. Non-REM sleep can be defined as your brain's sleep, while REM sleep is your body's sleep. In non-REM sleep, the electric activity of 14 billion neurons in the cerebrum takes a break. In REM sleep, the cerebrum is dreaming. In other words, it works actively. According to a study, dreaming lets our brain fix new memories formed in the past day and consolidate whole memories into a general order. Electronic input from sensory neurons to the brain and output activities from the brain to the muscles via motor neurons stop during REM sleep. Non-REM sleep appears first, followed by REM sleep in the sleep cycle that starts about every 90 to 120 minutes. Non-REM sleep in the first sleep cycle is very deep with high amplitude, low frequency brain waves, but in the last two sleep cycles, REM sleep continues quite long, for 40 to 60 minutes.

1. Three reasons why your child gets better grades at school

1) New memories formed at school in the past day can be fixed to the appropriate part of the brain if you have lots of REM sleep!

If you have lots of REM sleep, new memories formed at school in the past day can be fixed in the brain. (This role of REM sleep has been proven by research). As whole memories can be reconsolidated in order, correct and appropriate judgment may become possible in some work scenarios.

Fewer careless mistakes are made at school and work, because the body input and output systems take a break during REM sleep. Much of REM sleep is lost when bedtime is delayed, because most of REM appears during the last one or two sleep cycles. REM sleep readily appears at a fixed time period of 4:00-7:00 a.m., and after a long sleep. This means that a morning-typed lifestyle is the only way to get enough REM sleep.

2) Good phase coupling of the two biological clocks creates better mental health and higher motivation to study at school and work at a job.

There are two separate internal clocks in your body. If you live in a clock-less room, the two internal clocks (one is the main clock that drives your autonomic nervous system that controls systems like your core body temperature cycle, and the other clock drives your sleep-wake cycle) are synchronized. However, in 30% of people, the two clocks desynchronize to separate periods of a little more than 24 hours and 35-50 hours, respectively. This de-synchronization occurs within 1-2 months in everyone. The de-synchronization of the two clocks can destroy your mental health. We usually set (entrain) our internal clock on external time cues (several 24 hours cycles), like light, temperature or social activities at fixed times. According to our epidemiological studies over the last 15 years, morning-typed people have good entrainment, resulting in good coupling of the clocks and good mental health. However, entrainment works poorly in evening-typed people, resulting in poorer coupling of the clocks, and poorer mental health (characterized by irritation, anxiety, depression and other symptoms) than morning-typed people. A morning-typed lifestyle that includes going to bed early, getting up early and having breakfast is good for mental health and should be prepared before daily study at school.

3) Concentration on studying and work activities improves because of increased synthesis and secretion of serotonin in the brain.

Investigations on children in Kochi city and students at F.C-Kochi University have shown that exposure to sunlight after eating natto (fermented soybeans) and bananas at breakfast allows tryptophan contained in the natto to metabolize to serotonin in the brain with the help of sun exposure and vitamin B6 contained in the bananas. The higher concentration of serotonin in the brain improves concentration during study and work. The serotonin turns into melatonin at night that helps induce sleep at night. The melatonin orders our brain to go to bed early.

2. Why obesity can be reduced or prevented by a morning-typed lifestyle?

Our recent studies have shown that a 1 to 2 hour phase advance in the sleep-wake cycle increases the amplitude of activity rhythms and the total daily amount of activity by 1.5 times. The resulting increase in metabolism helps prevent obesity.

3. Why a morning-typed lifestyle is good for the growth of children and cosmetic issues in mothers?

The reason is growth hormone. This hormone promotes growth in children and restores body parts such as skin and small vessels in adults that were damaged during the day. The timing of synthesis of growth hormone and its secretion to the circulating system is fixed to 8:00-9:00 p.m. in children and 11:00 p.m. in adults via the circadian clock. The slow brain wave stage in non-REM sleep is needed for full secretion of growth hormones. A late bed-time therefore reduces the amount of growth hormone secreted in children and their mothers. Sufficient growth of children is inhibited and wrinkles and spots on skin may increase in mothers.

The recommended bedtime for young children is 7:00-8:00 p.m. and for mothers is 10:30 p.m.!

Habits recommended in daily life to change your diurnal rhythms to morning-type!

1. LIGHT has a stronger influence than medicine.

Step1. Let's expose ourselves to sunlight or a fluorescent (or blue or white LED) light just after waking early in the morning!

In the summer, the sun rises early, so hang THIN curtains. In the winter, the sun rises later, so turn on ALL OF THE FLUORESCENT LIGHTS in your home.

REASON (backed by evidence): This helps advance the phase of the internal clock. The clock phase has a period of slightly longer than 24 hours and easily becomes delayed in comparison with the environmental 24-hour cycle.

Step2. Let's expose ourselves to sunlight after breakfast!

REASON (backed by evidence) Doing so gives you a large amount of serotonin, a neuroamine that promotes concentration during learning and work that is synthesized and secreted in the brain. The serotonin peak may become an inner cue that can maintain a fixed circadian clock phase that is not delayed.

Step3. Let's use INCANDESCENT LIGHTS after sunset.

REASON (backed by evidence): Melatonin, the sleep induction hormone, enters the blood at night to help you get to sleep soon. Blue light that is contained in fluorescent lights stops the melatonin discharge.

Recommendation for lighting

1. Daytime lighting: Lighting similar to the SUN: a fluorescent light or blue or white LED light.
2. Nighttime lighting: Lighting similar to the MOON: an incandescent light, a fireplace, a candle or a sunken hearth.

2. Breakfast CONTENT is important!

Have some PROTEIN SOURCES in your breakfast! Especially NATTO (fermented soybeans) is the best recommendation. It's an amazing food, because the coefficient of digestibility is 98%. That means that even when you have only a little bit of natto, the tryptophan it contains that is a precursor for serotonin is absorbed. Boiled eggs are a good alternative for children who don't like natto. Try preparing it the night before. Of course ham, bacon, dried fish and cooked fish are also effective. Add one more dish to your usual breakfast as a source of protein, because protein-rich foods also have vitaminB6 that promotes serotonin synthesis. It is excellent to also have some vegetables and fruits!!

3. Let's limit TV and video games at night to one hour! Please set a NO-TV day and a NO-VIDEO-GAME day every week.

The proportion of elementary and junior high school students who have game consoles is increasing in Japan. For kindergarten children and first and second grade students in elementary school, playing video games after sunset for more than one hour or everyday is bad for sleep and mental health (based on scientific evidence). Let's make a NO-VIDEO-GAME day!

Melatonin is suppressed by watching TV at night, which can delay the phase of the circadian clock in children (based on scientific evidence).

Reduce TV time in the evening and at night!! Let's make a NO-TV-DAY!

Column

An evening-typed lifestyle is the greatest enemy for women trying to maintain their health!Have pleasant days with a morning-typed life style!!

1. The relationship between the shift to evening-type in female junior high school students and heavy use of mobile phones.

Results of research by a research team under Prof. Harada showed that female junior high school students in Japan are shifting to evening-type, and that one of the reasons is heavy use of mobile phones at night.

When girls become evening-typed, their menstrual cycle, a fundamental physiological system for reproduction, becomes irregular, with irregular menstruation timing, severe menstrual pain and severe symptoms of premenstrual syndrome (PMS: mental and physical symptoms such as headaches and irritation). Junior high school is the critical period for girls for constructing their reproductive system including their menstrual cycle. If girls cannot maintain a morning-typed lifestyle, this physiological construction becomes damaged and they cannot achieve a strong and healthy menstrual cycle. Junior high school students who have received sleep guidance tend to be morning-typed.

Please give your child sleep guidance as a preparation for the future.

These facts apply completely to junior high school students.

2. Women can gain particularly great benefits from a morning-type lifestyle.

A morning-type lifestyle makes the menstrual cycle able and strong with regular cycles. This means that within can gain great benefits from a morning-type lifestyle.

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Becoming a Graduate Professional Psychologist: In What Ways are Professional Competences Perceived

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Abstract

Based on the evaluations of graduate professional psychologists, this study set out to explore perceptions of university training in the development of key competencies and skills required by psychologists. The participants (n=353) were a representative sample of young Finnish psychologists with professional experience of between one and six years. They were asked to rate seventeen different skills according to importance and the extent to which undergraduate training helped develop those skills. They were also asked to evaluate how their undergraduate training had fostered their skills and the work-related contexts that best nurtured their professional skills. The results show that psychology was seen as a profession requiring social interaction skills, whereas university training was seen to stress knowledge, theory and research. Respondents saw practical courses, a practicum, post-graduate education, actual work and reflecting with colleagues and with oneself as the most influential means of professional development; they saw statistical methods as being unnecessary at work. Only half of the participants could name a theory upon which their work was based. Still, graduate psychologists gave a rather positive evaluation of the correlation of their psychology training programme with the requirements of their profession.

Keywords: university training, psychologist, professional competence

1. Introduction

Psychology is an established profession built on a shared international and scientific basis. University psychology training aims to equip students with a solid basis for working both as practitioners in different specialisation fields and as researchers. Traditionally, there have been dilemmas between theoretically and methodologically oriented academic aspirations and the importance of developing practical skills as a requirement for the profession (Wand, 1993). While it is assumed that science-based psychology training—the so-called scientist-practitioner model—also delivers practical skills, only a couple of studies have explored whether this is actually the case. Every psychologist needs to possess key professional skills before he or she can begin independent work. But how well do psychology training institutions, where most teachers are researchers, recognise which professional skills are currently most pertinent to the practice of psychology? This study posed this question to Finnish master's level licentiates in psychology. Based on the evaluations of the graduate professional psychologists, the study set out to explore perceptions of university training in the development of key competencies and skills required by psychologists. Psychologists were also asked which aspects of their training and work had best promoted the development of their professional skills, and whether or not their work was based on a particular theory.

The European higher education curricula are currently being redesigned from the perspective of competence and skills. As a result, every educational institution in the European Union is obliged to have a clear, updated understanding of the most critical skills needed for the profession. This is vital for curriculum development, because changes in the labour market have a direct impact on the development of study programmes (Wand, 1993). Even universities are expected to meet the needs of the real working world more conclusively, rather than providing general academic education per se. Educational outcomes, such as the competency level of graduates, will more often become the target of future university assessments (Rodolfa et al., 2005). Naturally, for the majority of students, the main interest is the assumed level of employability that the degree will give (Brennan, 2010). Competent students are beneficial to the public (which they will serve), as well as to themselves, because

they will better understand their learning goals and will be able to take more accountability for their own training (Hatcher et al., 2013).

The span of psychological practice is expanding, which further stresses the importance of work-relevant skills acquisitions (Elman & Forrest, 2007; Kaslow, 2004). Stark-Wroblewski et al. (2006, p. 276) observed, however, that undergraduate psychology students have limited information regarding the varieties of professional careers in psychology that exist, besides traditional areas such as clinical and counselling psychology. An introductory course on professional issues therefore has proved to be most valuable for psychology students' career planning (Roscoe & Strapp, 2009). Naturally, having practical experience working as a psychologist is the most important source of information for career plans. Carless and Prodan (2003) found that students who had broad practicum training experience had much greater clarity in terms of their vocational preferences compared to those with no such practicum training. Billett (2008) argued that students expect that their professional training will consist of authentic work experiences instead of strictly theoretical training. Students also need to be adept at learning when they are at work, since the development of dispositional, procedural and conceptual capacities are required in order to achieve a good level of work performance (Billett, 2008). Students may have an unrealistic fantasy of their potential as future professionals, which will become more realistic as they witness the realities of work at an early stage (Bruss & Kopala, 1993).

Professional university graduate programmes seek to create a close relationship between theory and practice. This can be implemented in two ways: by integrating them directly, or by creating a linear relation by first teaching the theory, which then will be followed by practical implementations. It is typical in all Finnish psychology master's programmes that theories and research methods are taught first during bachelor's degree studies; the practice-orientated studies are not taught until the master's phase. Psychology students must also understand the ethical and social challenges of their field, as well as their responsibilities to clients and to society (Karseth & Solbrenke, 2006, p. 152). Bruss and Kopala (1993) emphasised that in addition to adding knowledge, the development of a professional identity is a necessary aspect of training, and it requires a study environment based on closeness and trust.

Psychology is taught at six universities in Finland, and is among the most popular fields of study; employment prospects are also very good for graduates. There are general national guidelines for both the curriculum and examinations, but the teaching content varies locally. The Finnish psychology curriculum is a 5.5-year generalist master's programme with a five-month practicum that prepares licentiate psychologists to work in several specialty areas with little additional training. Graduate psychologists can apply for complementary training programmes in specialty areas, such as therapy or neuropsychology. The idea behind the curriculum is that psychologists are taught generic skills that can then be applied in any domain. Students gain practical experience only in one specialty area of psychology during their five-month-long practicum. A graduate student is expected to be able to work independently after graduating, and the national licensing authority, Valvira, grants psychologists' licenses. In these respects, Finnish psychology training is rather similar to its German counterpart (Hodapp & Langfeldt, 2006).

Despite this, there are hardly any studies on the relevance of the psychology curriculum from the viewpoint of psychologists working in real-world situations, although some studies on student curriculum preferences have been conducted. For example, Finney et al. (1989, p. 175) asked psychology students to evaluate the role of the psychology curriculum in developing their skills. The students stressed the development of written, oral and critical evaluation skills the most; they mentioned test-taking skills and managerial and organisational skills as the next three most important skills. The students felt that hands-on experience should be increased in the psychology curriculum and, interestingly, that coverage of theoretical issues should be decreased. Students felt that psychology studies had been valuable for their daily life issues, such as enhancing their social relationships at home and at work.

1.1 Specific Skills Needed in an Expert Profession

In seeking to identify the set of skills needed for a profession, it is important to remember the fundamental nature of all professional work. The actual work of the psychologist is that of an archetypal expert profession, in the sense that daily practice involves analysing and resolving tasks and problems that lack any stable or assured solutions since they are, by nature, intangible and ill-defined. Consequently, when meeting a new client, the first task of a psychologist is to try to specify and verbalise the core of the client's psychological problem, after which further acts can be planned. A psychologist cannot yet work on following guidelines from a scientifically tested manual that would offer solutions for solving psychological problems. This is because human behaviour is guided by complex biopsychosocial mechanisms, of which the science of psychology has as yet a rather limited

understanding (Bandura, 2001). Orton and Weick (1990) conceived the notion of “causal indeterminacy” to refer to uncertain means-ends relations that are a central feature of the work of expert professionals in several disciplines, such as teaching, consulting and psychology. To our knowledge, there are no unambiguous, scientifically confirmed interventions that can secure the expected result of resolving a client’s psychological problem. Thus, the outcomes of all interventions are determined only after they have been tested in practice. In addition, various resolutions (i.e. therapy forms) can lead to the same effect (healing), resting on the client’s distinctive life condition and, in particular, the quality of rapport with the psychologist. As an alternative to a small number of effective therapies, there are, to date, 166 different psychotherapies from which to select. Many new therapies, including therapies based on art, dance, music and adventure, are being developed all the time. Professional psychologists are thus forced to solve their clients’ problems by testing certain interventions that they are familiar with, including the use of creativity and imagination. This aptitude can be called “flexpertise”. Furthermore, the puzzles that clients bring to the table are distinctive and complex, which means that psychologists must adapt to endlessly changing situations (Alvesson, 1993).

A review of these issues suggests that it is plausible that there are no consistent and rigorous approaches for assessing the multifaceted competences and skills needed in an expert profession. For this reason, it is only possible to estimate a few easily measurable skills and areas of knowledge (Kaslow, 2004, p. 779). The use of one’s “tacit knowledge”, intuition and personal experience are, to a substantial degree, important in the profession (Bruss & Kopala, 1993), yet they cannot be fully identified or verbalised, let alone quantified or instructed. Svensson (1990) interviewed psychologists and asked them how and when they used psychology theories in their actual daily work. He observed that they had clear difficulties in providing explicit illustrations. It is also worth noting that psychology, like all behavioural sciences, has been sub-divided into many sub-fields, because there are several theoretical and methodological schools of thought specialising in their particular research agendas (Wand, 1993). A psychologist working in the field therefore must choose from the different theories and approaches to guide his or her work (Karseth & Solbrekke, 2006, p. 156). This is a major challenge, and only a few psychologists lean on a specific theory. Moreover, half of the graduate students surveyed by Perl and Kahn (1983, p. 143) stated that their preferred theoretical method was eclectic, borrowing from several theories. Pelling (2007, p. 219) confirmed this finding after studying counselling psychology in Australia. A similar trend was also evident in our study sample.

While scientific theories and formal knowledge only offer a small part of the professional knowledge that psychologists need to help solve their clients’ problems, they offer a solid basis for professional development during one’s career. Still, uniqueness, volatility, complication and ambiguity are always present in actual work practice. Although the immediate connection between work practice and scientific knowledge is open to criticism, science-based academic education provides power and prestige to a profession, and every profession has a desire to sustain its independence, reputation and jurisdiction (Wand, 1993). For this reason, both professionals and academic faculty members want to sustain academic values, and they need research institutions for their professional education (Karseth & Solbrekke, 2006, p. 163).

In the most favourable cases, the skills required in a profession like psychology evolve from the outset of one’s career, which makes efforts to outline professional skills even more intricate. The majority of professional psychologists obtain new qualifications after graduation; in countries such as Finland this is even expected, since formal psychology education provides no specialisation. Informal work-based learning promotes intentional or unintentional scholarship. Intentional learning endeavours, such as acquiring a new therapy technique, are more straightforward to investigate, illustrate and distinguish from one another. Unintentional learning, on the other hand, can happen under several conditions, such as during an exchange of ideas on problematic cases between co-workers, or from receiving feedback from co-workers (Berg & Chyung, 2008). Skills can degrade over time if psychologists do not keep up with the newest developments in their field, and regularly work to update their knowledge in response to these developments. Professional skills are specific to certain areas of specialisation, such as neuropsychology; highly developed expertise thus can only be achieved in a limited area of knowledge (Barnett et al., 2007).

It is noteworthy to include the ongoing discussion on the origin of skills. The question is whether professional skills can be taught to everyone, or if they are innate and can be further nurtured during the training phase to reach an expert level. On the basis of the above discussion, it is interesting to delve into the development of professional skills as described by graduate psychologists themselves.

1.2 Definitions of Psychology Skills

Several different endeavours around the world have aimed to coherently outline the skills required by the psychology profession. The American Psychological Association (APA) Competencies Conference constructed the first consistent competence description for psychology by 130 attending psychologists (Kaslow et al., 2004). At this conference, it was determined that the following areas relating to values, mindsets and knowledge were central to professional psychologists working in health and human services. These are: (a) research methods and scientific bases of psychology; (b) ethical, legal and public policy issues; (c) professional development issues; (d) psychological assessment; (e) intervention; (f) individual and cultural diversity; (g) consultation and interdisciplinary relationships and (h) supervision.

Rodolfa et al. (2005) further developed this categorisation with an exploratory cube model consisting of the following components: functional and foundational competencies added to the stage of professional maturity, and ranging from the undergraduate level to the doctoral stage. “Foundational competencies” refer to what psychologists do in reality. They are labelled: (a) scientific knowledge/methods, (b) reflective practice/self-assessment, (c) relationships, (d) individual/cultural diversity, (e) ethical/legal standards/policy and (f) interdisciplinary systems. These aptitudes are learnt during graduate studies. “Functional competency” portrays the spheres of a psychologist’s professional functioning. These competences are composed of: (a) research/evaluation, (b) intervention, (c) supervision/teaching, (d) assessment/diagnosis/case conceptualisation, (e) consultation and (f) management/administration. Further, Rodolfa et al. (2005) offered a comprehensive characterisation of each competency domain.

The Finnish Psychological Association has proposed the key elements of the work of a psychologist as follows: intervention, training, publishing, psychological assessment, work development and administration (Näätänen et al., 2008). EuroPsy is a European standard of professional training and psychology education. A EuroPsy certificate is granted to a candidate who can master these competences: definition of the objective, communication, psychological assessment, development, intervention, self-assessment and activities that promote competence growth (<http://www.efpa.eu>). The representatives of the Australian educational psychology institutions, together with members of the Australian Psychological Society (APS), grouped the competences under the following headings: professional, legal and ethical approach; measuring and solving problems; discipline knowledge; influence and change research; framing, professional and community relationship; and service implementation and communication (Garton, 2006). In Canada, qualified psychologists are required to be equipped in the following psychology competency areas: (a) research, (b) intervention and consultation, (c) assessment and evaluation, (d) ethics and standards and (e) interpersonal relations (Rodolfa et al., 2005).

Putting together these categorisations, the most generic skills are consultation, psychological assessment, intervention, professional growth, scientific fundamentals of psychology, legal and ethical issues and interdisciplinary interactions. These classifications are, however, limited, since they are relative hypothetical portrayals of skills that are obviously arduous to make operational for appraisal purposes. Our study set out to build a simple instrument to evaluate basic skills that are learnt in (and demanded from) professional psychology work practice. We chose the self-assessment technique to assess these skills (Kaslow, 2004). First, we explored numerous surveys validated by our universities in their alumni feedback research for appraising general academic skills taught at university. Second, we meticulously chose the key skills that are most relevant in professional psychology when assessed against the major psychology competency descriptions. Following this, the selected statements were sent for examination to every psychology department in Finland, as well as to ten senior professional psychologists; very few (and minor) changes were suggested.

This study concentrates on the following research problems, as perceived by graduate psychologists:

(1) How does the university training of psychologists respond to the skills needed at work?

1) In which areas is university education seen to provide good work-related skills?

2) In which areas is education seen to fail to provide sufficient skills for psychology work?

(2) How do psychologists perceive the role of theoretical training, work, continuing education and reflection in enhancing their professional skills? Is their work based on a particular theory?

(3) Which undergraduate courses and aspects of training are seen to promote best the development of your professional skills?

1.3 Participants

In the autumn of 2008, an e-mail was sent to every Finnish psychologist who graduated between 2002 and 2007, totalling 1,193 people. The e-mail asked the recipients to fill in a questionnaire via a given web address. A reminder was posted after two weeks. The response rate was 30 percent (N=353). A great majority of the participants were female (91 percent), which is in accordance with the general gender distribution of psychologists. The mean age of the participants was 33 years (SD=4.7); 88 percent were under 36 years of age. The number of respondents who graduated in each of the six years varied between 46 and 74. The vast majority of participants (90 percent) worked in the public sector, and nine out of ten had obtained their positions within three months of graduation.

1.4 Questionnaire

The questionnaire instructions read, “How important are the following knowledge areas and skills to your current job? Also assess how well your university training developed these skills”. The participants were presented with seventeen skill-related statements (see Figure 1) and were asked to evaluate them twice—first, in terms of how important they were to the profession, and second, the extent to which their undergraduate training helped develop them. A five-point Likert-type scale was used, which consisted of the following options: (1) “very poorly”, (2) “poorly”, (3) “satisfactorily”, (4) “very well” and (5) “excellently”.

In addition, the psychologists were asked to respond to five statements relating to the meaning and importance of university training, actual work experience, further education, self-reflection and reflection with colleagues on their own professional skills development. To ensure full coverage of the survey, an additional three open questions were presented: (i) whether their work was based on a particular theory, and if so, to name it; (ii) which undergraduate courses and aspects of their work had been most beneficial for their professional skills development; and (iii) they were further asked about the occasions during their career during which they had learnt the best new skills, although this data was not analysed here. Only one respondent was unable to identify any specific, professionally beneficial undergraduate course. These items therefore produced rich data.

2. Data Analysis

The quantitative ratings and written statements were analysed separately. The analyses were conducted using IBM Statistical Package for the Social Sciences (SPSS) statistics 21. Differences between the psychologists’ conceptions of how university training developed certain skills and the precise meaning of these skills at work were analysed with the Wilcoxon matched pairs signed-ranks test. The relation between university training and work-related learning was analysed using non-parametric (Spearman’s rho) correlations. The connection between theoretical work orientation and work experience was analysed with the χ^2 test, in which the effect size was measured with Cramer’s V test. Due to the low number of male psychologists and the large variety of specialisation areas, the comparisons were only performed against the above-mentioned variables.

The written statements were analysed following Braun and Clarke’s (2006) six phases of conducting thematic analyses. First, the themes were inductively discovered and elaborated with a “bottom-up” or grounded theory analytic process by systematically grouping together statements based on their similar semantic meanings. This was continued until distinctive, coherent and consistent themes were identified. We then went back to the raw data and grouped all responses into these themes. Themes are patterned responses or meanings which both minimally organise and best describe the dataset in its richness. This allows theoretical interpretations of its various aspects by relying both on their content and their frequency of occurrence (Braun & Clarke, 2006, pp. 79-82). The analysis sought to understand the multiple meanings that psychologists gave to their study experiences and professional development in a transparent and credible way.

3. Results

3.1 Correlation of University Training with Professional Needs

Figure 1 demonstrates the striking differences between the skills needed at work and those learnt in university. Statistical difference comparisons indicated that for all skills except information acquiring skills, the difference was statistically significant (Wilcoxon matched pairs signed-ranks test $p < .05$). University training was seen mostly to have promoted scientific skills, such as research, information acquisition and the understanding of theories in psychology. Knowledge about assessment methods and their scientific basis, as well as analytical and systematic thinking skills, were seen as having been well developed during the graduate training. These skills were also evaluated as having been valuable in the psychology work context. Respondents found that managerial skills had not been taught, nor were they needed by psychologists.

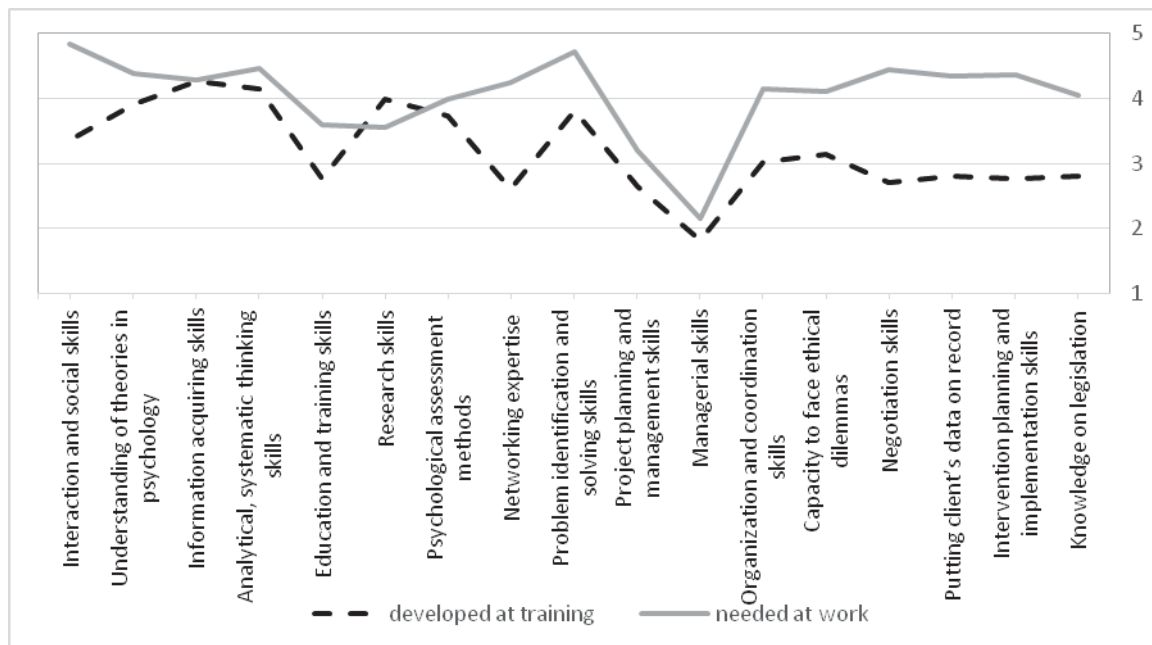


Figure 1. Psychologists' mean ratings of skills learnt at university vs. those needed at work

On the subject of other skills, several striking differences emerged, in particular, in the area of social skills. According to psychologists, their work was most of all about social interaction with clients, where negotiation, problem identification and solving, intervention planning and implementation skills and networking expertise were most needed. Knowledge about legislation, how to put clients' data on record and education and training skills were also seen as being very valuable in the work practice of psychologists. Organisation and coordination skills, along with the capacity to act when faced with ethical dilemmas, were also required at work. In all of these key skills, university training was seen as failing to react appropriately to the changing needs of the profession; therefore, the respondents deemed the correlation of the curriculum with real-world work tasks to be very low.

3.2 Important Learning Contexts for Professional Skills

We now review the learning contexts for professional skills. Table 1 indicates that practical work tasks and the work context were evaluated as being the most effective for professional skills growth. The importance of colleagues is striking, since reflection and dialogue with them were seen as vital for learning professional skills. Self-reflection and in-service training were the next two most influential means of skills development. The role of graduate training was seen as moderately positive but was less important when compared with other measured work-based learning context variables (Wilcoxon match pairs signed-ranks test $p < 0.001$). These variables correlated slightly negatively, emphasising their divergence.

Table 1. The means and inter-correlations of the statements on professional development

| Statement of professional skills | M (SD) | Non-parametric/Spearman's rho /Correlations | | | |
|--|------------|---|-----|------|------|
| | | 1. | 2. | 3. | 4. |
| 1. Master's degree provided good professional skills | 3.43 (.95) | | | | |
| 2. Postgraduate and in-service training have been useful | 4.42 (.78) | .07 | | | |
| 3. Only practical work has developed my professional skills | 4.68 (.56) | -.21* | .07 | | |
| 4. Reflection with colleagues has developed my professional skills | 4.69 (.52) | .02 | .07 | .14* | |
| 5. Self-reflection has developed my professional skills | 4.46 (.58) | -.02 | .10 | .14* | .29* |

Note. * $p < .01$ (two-tailed)

3.3 The Role of Psychological Theories at Work

We now examine the responses to the open-ended questions. First, the role of theory was elucidated by asking the respondents whether their work was based on a particular theory or theories, and if so to identify theories on which they drew during the course of their work. Responses were placed into two groups according to work experience. The results are shown in Table 2. As in previous research, half of the respondents could name a theory they followed in their work, and those who did mentioned eclectic uses of theories or referred mostly to cognitive theory. No consistent trend emerged in terms of the frequency of theory use. There were differences only within groups with one, four and six years of work experience ($\chi^2 [5] = 13.538, p = .02, V = .196$).

Table 2. Responses to the question of whether work was based on any specific theory in accordance with actual work experience

| Work experience in years | No theories mentioned n (%) | Theory or theories mentioned n (%) | Total |
|--------------------------|-----------------------------|------------------------------------|------------|
| 1 | 38 (61%)** | 24 (39%)** | 62 |
| 2 | 27 (48%) | 29 (52%) | 56 |
| 3 | 32 (43%) | 42 (57%) | 74 |
| 4 | 22 (34%)** | 43 (66%)** | 65 |
| 5 | 20 (44%) | 26 (56%) | 46 |
| 6 | 30 (60%)** | 20 (40%)** | 50 |
| Total | 169 (48%) | 184 (52%) | 353 |

Note. ** $p < .05$ difference between “No theories mentioned” and “Theory mentioned” groups

3.4 The Most Influential Undergraduate Courses for Learning Professional Expertise

The following thematic analysis is based on respondents’ written comments on their undergraduate learning experiences. Most comments included content on numerous themes; thus, they were rigorously classified under each corresponding theme, for a total of 844 classified items.

Table 3. Responses to the question on the most influential undergraduate courses for learning professional expertise

| Theme | Content Areas | Frequencies |
|------------------------------------|--|-------------|
| Professional practices | Professional and clinical practice, professional competence education and advanced professional courses | 20% (n=170) |
| Psychological assessment | Psychological tests, research methods in psychology, psychological assessment and writing statement, as well as courses on interview skills | 18% (n=150) |
| Psychology theories | Theoretical courses on developmental, neuro- and clinical psychology and other theories of psychology | 16% (n=132) |
| Learning practical work | Studies on the necessary skills relating to the practical work of the psychologist, the application of theoretical knowledge and skills relating to interacting with clients | 13% (n=107) |
| Practicum | Preparatory studies and orientation training for the practicum, pre-practicum, practicum | 8% (n=72) |
| Therapeutic skills | Learning a general or specific therapy like cognitive psychotherapy and obtaining basic therapeutic skills | 7.0% (n=59) |
| Interaction and counselling skills | Interpersonal, guidance and counselling skills; group dynamics; encountering a patient, client or family; presentation skills; communication training and negotiation skills | 5% (n=39) |

| | | |
|-------------------------------------|---|-----------|
| Criticism and improvement proposals | Critical comments on teaching and development proposals | 5% (n=44) |
| Research method skills | Scientific research methodology and master's thesis | 3% (n=30) |
| Minors and elective studies | Mentions of minors and elective studies | 3% (n=28) |
| Ethics and law | Ethics and law | 2% (n=13) |

Most respondents emphasised studies that directly enhanced their professional capability but with slightly different names. Respondents referred to professional practice courses, professional work courses, clinical courses, clinical professional practice studies and vocational studies. Real or imaginary patients were encountered in the best courses, and practical skills, such as the ability to work with clients, were learnt efficiently. The second theme, psychological assessment courses, entailed skills on the usage and effectiveness of tests (62), assessment methods (31), interview skills (30) and writing statements (27) by practicing them with the help of a teacher with hands-on experience. Courses that gave a theoretical basis to work were mentioned 95 times. The most frequently mentioned (and only specified) courses were clinical psychology (32), neuropsychology (19) and developmental psychology (17); otherwise, the respondents spoke of basic or theoretical courses on a general level. Several courses were mentioned only once. Learning practical work referred to learning experiences that familiarised one with concrete work content, applying theoretical knowledge to practice, acquiring the skills and working methods of working life (37) and helping and interacting with clients (29). Teaching methods, such as case studies and demonstrations (24) and using discussion and tutorials (17), were most beneficial in this respect.

On the subject of therapy skills, there were general comments about therapy aptitudes (34) but more specific remarks about psychotherapy (25), including cognitive and family-related therapy, which respondents saw as intervention tools. Respondents did not clarify why these skills were perceived to be important. Relating to the theme of interaction and counselling, there were mentions of interpersonal negotiation skills (17), group work dynamics (11), patients' family relations (4), counselling (4) and presentation skills (3). Criticism and improvement proposals were aimed mainly at one issue area—there was a strong need to add more practical training to the curriculum (29) as well as adding a second practicum (6). The remainder of the comments (9) were mentions about teaching, such as increasing interaction. Surprisingly, there were only a few viewpoints on research methods, the second main target of the curriculum. In this context, the master's thesis (12) and research method skills (18) were mentioned as being valuable learning experiences. Minors and elective studies were mentioned (28) because they provided a counterweight to the psychology perspective and because they were practical. Ten respondents mentioned courses relating to either professional ethics or legislation.

When asked for specifics, the practicum appeared to be a major phase both during studies and during respondents' careers, as the respondents (144) found that they had most efficiently learnt professional work skills during the practicum. They learnt a significant amount during the practicum, and after receiving timely guidance and feedback, they had the experience of actual psychology work and the opportunity to apply theory to practice.

4. Conclusion and Discussion

This article contributes to the methodological and conceptual development of measuring professional skills among psychologists. Empirical research has been either minimal or completely lacking in this area. As there are no developed, standardised methods, this exploratory study and its preliminary results are an important step in contributing to the empirical research in this area.

Our results showed that the graduate programme was thought to be somewhat successful only in relation to certain skills: in particular, theoretical and research know-how. This has also been demonstrated in data by Peluso et al. (2010). Psychology students and teachers clearly differ in their expectations of courses. Teachers emphasise the intellectual nature of a course, whereas students place more importance on the practical aspects of the course's content. Roberts (1981) has stressed that psychology students seem to enter college with a positive expectation of practical knowledge. In this study, these items were also cited as being the most useful.

In addition, theoretical education was only seen as being useful when it was applicable in practice. Karseth and Solbrenke (2006, p. 156) observed that Norwegian psychology students felt that their studies were a kind of dualistic education, with these dyads representing two different forms of logic. Theory represents formal, science-based qualifications, whereas practice represents the practical wisdom of the psychology profession.

Although, according to Karseth and Solbrekke (2006), the Norwegian students preferred practice to theory and actually saw them as two separate worlds, they appreciated their scholarly training—as did their Finnish colleagues in the current study. The students in the present study, however, remained very ambivalent, and questioned whether the theories they had learnt were applicable in practice. The functioning of the scientist-practitioner curriculum model is therefore laden with tension and is ambivalent.

When asked about theories they applied in their work, half of the participants could name one, a result which is consistent with previous research (Pelling, 2007, p. 219; Perl & Kahn, 1983). This finding is understandable in light of the concept of “loose-coupling” (Orton & Weick, 1990) and the specific ontological nature of psychology as a fragmented human science (Bandura, 2001) in which the scientific laws found in the natural sciences are lacking. Gelso (2006) has reminded us that scientific theories should conceivably maintain the role of indirect relevance to professional work. Theoretical understanding provides a strong foundation for the success of rapid learning during the practicum, and at work thereafter. Statistical methods are highly valued by academics, but only six psychologists (mostly researchers) saw them as being useful to their profession. This verdict is rather shocking and ought not to be disregarded or defensively overlooked.

When it comes to the core skills of the psychology profession—social interaction and communication skills—the study found that university training is seen to develop these skills far less than is required by real-world workplaces. As a result, there is a huge gap between professionally important skills and skills generated through university teaching. Whether or not teaching these professionally important skills is practicable is another matter. We can pose several questions: what is the role of basic training in the development of these abilities, and what abilities are expected to evolve with work experience (e.g., with in-service training) (Scheeres et al., 2010)? It is questionable whether it is even possible or reasonable to teach social skills, and whether a high level of social skills should be a major criteria for student recruitment in the first place. Graduate psychologists, however, most strongly indicated the role of the practicum in providing authentic work experience with clients, and where dialogue with colleagues and self-reflection best enhanced their professional development.

According to our findings, the workplace was seen as the most influential learning context for the development of psychologists’ professional skills. Undergraduate training can therefore be interpreted as a foundation for learning these skills in practice. Based on the tacit knowledge of university trainers, there is the hypothesis that after five years of working as professional psychologists, “graduates will be practicing from their experience more than from any training that we provided” Doll (2007, p. 514). At work, however, the individual’s viewpoint is not sufficient, since learning is collective (Marsick, 2009). Our results give strength to the view that workplace learning should be made visible and should be considered to be valuable as undergraduate training. Workplace learning actions should thus be targeted, designed and instructed, and learning should be assessed and shared (Billet, 2002). The data from this study suggests that during the practicum and upon starting a new job, the arranged supervision is valued (and even highly celebrated) and is seen as an abundant learning phase. Learning later becomes more informal and more serendipitous, and it happens in the process of solving complicated client cases and in similar situations. We were unable to assess how many of the respondents were open to continuous learning at work; further study is therefore needed to improve awareness of possibilities and prerequisites of work-related learning. This would support the continuing professional development of psychologists in the workplace, and would help with the curriculum development of university degree programmes.

Learning in a work context was appraised as being important in the early years of one’s career, although this was far from straightforward. In our previous analysis (Kuittinen et al., 2013), we noted that recent psychology graduates also appraised their mastery of professional skills at a high level, which is both arguable and surprising. In that study we contended that perhaps these graduates did not yet know that in the future, their skill mastery level would be even higher than the perceived peak they were experiencing at the time (Baron et al., 1984). Kruger and Dunning (1999) maintained that the novices lacked the metacognitive skills necessary for truthful self-assessment; they therefore experienced hindrances as they received feedback and learnt about the good work of others, even when others observed them. The enhancement of metacognitive skills and self-assessment should therefore be included in undergraduate training programmes, since they are learnable aptitudes (Eva, Cunningham, Reiter, Keane, & Norman, 2004). A learning portfolio offers students good tools for this, since it forces students to reflect on their learning and who they are as people and as future professionals (Larkin, Pines, & Bechtel, 2002).

The psychologists surveyed evaluated the significance of university education in a positive way, although they felt that it did not cultivate all the key skills they needed. The status of having a university degree may have supported their positive attitude. They evidently accepted the fact that professional “flexpertise” can only be

learned at work, where client cases are both multifaceted and ill-defined. Their engagement in work-based learning was very strong, since they had internalised that learning, and professional developmental needs were a fundamental aspect of work (Billett, 2001). More than ever before, there is a growing need for governments, employers and workers themselves to update their skills throughout working life. The aim of this kind of informal, work-based learning may be to resist redundancy, make effective work transitions as occupational requirements change, contribute to continuity and development in the workplace and contribute to the economic prosperity of communities (Billett, 2008).

Based on these findings, university training is about building a bridge between theory and practice. This bridge remained unfinished for half of the participants, since they could not make any linkages between their work and the available theories. The underlying principle behind valuable learning experiences was the practical application of theoretical knowledge. Developing teaching methods that simulate authentic situations encountered at work could thus offer solutions to combining theories with the skills needed in the profession (Billet & Choy, 2012, p. 269). According to Hays and Vincent (2004), problem-based learning is also an effective method in psychology, since it promotes several skills, such as critical thinking, oral presentation ability and knowledge acquisition. Theory and practice can be further integrated by using several practice over a five-month period instead of one practicum. For example, the bachelor's programme could combine visits to specialised areas in the field with small-scale learning or ancillary tasks. This would create a valuable opportunity for highly valued experiential learning in a real-world work context at the very beginning of one's career.

This study has several limitations. First, presumably, only active and motivated psychologists responded, which might have distorted the findings in a positive direction. Second, all the typical limitations of a survey apply to this research, too. Third, the lack of any validated instruments forced us to build a new questionnaire. Although it was carefully tailored to our target group, it needs further testing. Nevertheless, the high scores on most of the skills studied clearly indicate that the selected items were very relevant for the psychology profession as well as in the curriculum content. The use of open-ended questions enhanced ecological validity (i.e. they approximated the real world), thus allowing respondents to express their authentic and main undergraduate and work learning experiences. Naturally, this is not a catch-all method, nor is it assumed as such. An open-ended question was used to solicit information about the use of specific theories at work in order to allow more detailed responses. When presented with a list of theories, anyone can choose something. This does not rule out the implicit use of psychological theories, which would be an intriguing topic for further research. This would be similar to the practicum, which was seen as playing a vital role in learning (Chandler & Williamson, 2013). The results in this study are based on cross-sectional data on young Finnish psychologists, and longitudinal studies are needed for the further development of professional skills in several specialty areas later in one's career. Fundamentally, this requires the development of sensitive methods for assessing the learning of professional skills that are prerequisites for intangible and ill-defined tasks. In our data, problem identification was assessed as the most crucial skill in the profession. Replicating the methods from other fields (such as medicine) thus overlooks the ontological difference between these disciplines, as the target of medicine is to cure physical, tangible diseases and injuries with standard interventions that often save human lives.

It would also be noteworthy to study the obstacles or impediments in the work of psychologists that have an impact on workplace learning. The manner in which individuals reason, absorb and learn can be conceptualised through the use of the term "bounded agency" (Billet & Choy, 2012, p. 270). Accordingly, individuals operate in a zone between their capabilities and their exercise of agency. Agency is, in turn, constrained by boundaries, the violation of which leads to sanctions. This places more experienced co-workers in a position whereby they are able to facilitate or inhibit learning processes.

Training institutions could employ this kind of method when seeking the opinions of alumni professionals who can credibly evaluate their undergraduate learning from a professional perspective. According to these results, undergraduate training in Finland provides a firm basis for learning professional skills in a concrete psychology work context. A study on Canadian students produced similar findings (Peluso et al., 2010), and it is a comforting message to participating scientific institutions.

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Effectiveness of Family, Child and Family-Child Based Intervention on ADHD Symptoms in Iranian Students with ADHD

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Abstract

The aim of the present study was to investigate and compare effectiveness of family, child, and family-child based intervention on the rate of ADHD symptoms in third grade students. The population for this study was all of students with ADHD diagnoses in the city of Isfahan, Iran. Multi-stage random sampling method was used to select subjects (60 children were included in this study). Children were randomly assigned into 4 groups, including 3 experimental and 1 control groups (each group consisted of 15 students). The children had been diagnosed by clinicians as having ADHD. In order to verify this diagnosis, Conner's parental rating scale was used at baseline to confirm that children had ADHD as well. The results indicated a significant difference between the 4 groups (In post-test). Results showed that family-child based intervention is the most effective method to decrease students' ADHD symptoms.

Keywords: attention deficit/hyperactivity disorder, effectiveness, family based intervention, child based intervention, family-child based intervention

1. Introduction

Attention deficit/hyperactivity disorder (ADHD) is a sustainable patterns of lack of attention, hyperactivity and impulsive behaviors which are more severe and prevalent than other children with similar developmental level. In order to diagnose ADHD, there are some symptoms which should be appearing before the age of seven; although most of the cases are diagnosed years after its appearance (Kaplan & Sadock, 2000). Recently, the requirement of proven impairment before the age of 7 has been challenged and modifications to better address the issue in the upcoming Diagnostic and Statistical Manual of Mental Disorders (5th ed., DSM-V; American Psychiatric Association, 2000) criteria have been suggested (Bell, 2011). ADHD is one of the most common childhood neuro-developmental disorders, affecting 3 to 7 percent of school-aged children, with diagnosis more common in boys (5th ed., DSM-V; American Psychiatric Association, 2000; Polanczyk, De Lima, Horta, Biederman, & Rohde, 2007).

The basic symptom domains of ADHD, as defined by the diagnostic classification systems, are hyperactivity, impulsivity, and inattention. Empirically, ADHD is not limited to the basic symptoms but can be associated with cognitive deficits (Frazier, Demaree, & Youngstrom, 2004; Hervey, Epstein, & Curry, 2004) and functional impairment in various life domains (e.g., Biederman et al., 1998, 2006). For example, ADHD is related to academic underachievement (Biederman et al., 2008; Roy-Byrne et al., 1997), and individuals with ADHD often have a history of school problems that cannot be explained by learning disabilities (Seidman, Biederman, Weber, Hatch, & Faraone, 1998).

Every culture has children with ADHD (Barkley, Cook, & Jr. Diamond, 2002). Ross (1987) found that classrooms in Thailand have comparatively fewer students with ADHD because children are expected and trained to behave and talk quietly in public in Thailand (Moon, 2011). Likewise, East Asian countries have lower rates of ADHD diagnosis, mainly due to their cultural background, Confucianism. East Asian societies highly value education, harmony with others, and loyalty to the country, parents, and elders. The cultural environment of East Asian countries contributes to having fewer students with ADHD and different concerns in the classroom setting when compared to US classrooms (Moon, 2011). In addition, there are some evidences suggesting that cultural factors may modulate the clinical manifestation of disruptive behavior disorders and ADHD (Livingston,

1999; Reid, 1995). According to Batchelder (2003), social and cultural factors are keys to understanding trends in ADHD diagnosis and methylphenidate treatment (Moon, 2011).

Primary therapies emphasize on medication and behavior therapy (Chronis, Jones, & Raggi, 2006). However, cognitive, behavioral-cognitive and neuro-cognitive interventions are being continued to be as other options for therapy (Barkley, 2006). In another category, these therapeutic approaches can be in the form of peers, classmates, school based, family based and child based interventions. Generally, helping these children who suffer from ADHD requires a comprehensive therapeutic method which is called a multi-pattern therapy which includes parents and child training, behavior management, usage of stimulant drugs, scheduling and suitable institutional supports (Behboudi, 2007).

Since behaviors of children with ADHD often damage parent-child relationship and increase stress among parents (Johnston & Mash, 2001), a part of therapy would be the direct working with parents in order to modify their child rearing style in order to increase positive consequences for their children (Pelham, Wheeler, & Chronis, 1998). Parent training is more common than other family interventions. Barkley (2001) points out parental need for behavior management in treatment of children with ADHD. According to Meta-analysis study carried out by Fabiano, Pelham, Coles and Gnary (2009), 174 studies were analyzed. Results indicated that behavior therapy is extensively effective in dealing with ADHD. Macford and Barlow (2004) did a qualitative study in which the effects of parents training were examined. The participants, who all were mothers, have reported an increase in their feeling of sufficiency, the decrease in psychic tension and increase in child obedience. Results from one study done by Hooshvar, Behnia, Khooshabi, Mirzaei and Rahgozar (2009) also suggested that parents' group training, concomitant with medication and occupational therapy programs, can play an outstanding role in decreasing harassing behavior problems, anxiety problems and hyperactivity. Hajebi, Hakim Shooshtari and Khajoddin (2005) found that teaching behavioral management to parents leads to the decrement of ADHD symptoms in their children.

In a Meta-analysis done by Farmer, Compton, Burns and Robertson (2002) the efficacy of family based intervention was investigated. The result showed that family based intervention decreased ADHD symptoms. Kazdin (2001) showed that family based and child based interventions has a good impact on decreasing ADHD symptoms.

With regard to the results of these studies, the aim of this study is to compare the efficacy of family based, child based and family-child based interventions on the rate of ADHD symptoms in third grade students' ADHD symptoms. Although, this research is repeated research but, it has been done in Iranian society, city of Isfahan (with more than two millions population). This research is done for the first time in Iran (city of Isfahan).

2. Method

The statistical population of this study included all 3rd grade elementary male students with ADHD in Isfahan city, Iran. Their age was 9 years old.

Samples: The sample of this study included 60 3rd grade elementary male Iranian students with ADHD. Multistage random cluster sampling method was used. In order to select subjects, of 6 educational areas of Isfahan city, in Iran, 2 areas were randomly selected. Then of these 2 areas 13 schools were randomly selected. Finally of these 13 schools, 60 male students with ADHD were randomly selected. These students were randomly assigned into 4 groups (3 experimental groups and 1 control group, each group included 15 students).

The following criteria were considered for samples in order to enter the research:

- (1) No intellectual disability exist
- (2) Having no specific and clear disorder except ADHD
- (3) Parents' written consent for their children's participation

2.1 Research Method

The research method was experimental, with pre-test and post-test design. The authors first obtained permission for this study through bureau of education in city of Isfahan in Iran. After schools were randomly selected, from teachers were asked to identify students with ADHD symptoms according to the guidelines of DSM-IV-TR. To be assured about students who were identified by teachers as have ADHD, Conner's parental questionnaire (2001) was distributed among parents of these students (80 students).

In this way, 60 of them were identified having ADHD through this instrument. Then, 60 students with ADHD were assigned into 4 groups (each group with 15 students—3 experimental and 1 control groups). These 3 experimental groups included family based, child based and family-child based. Family based intervention

according to Barkley program (Carr, 1999) and child based intervention including attention training, memory training, mind-body integration training and eye movement training (Moor & Fallah, 2001) were administered on the experimental groups. Family-child based program was a combination of through trainings for other two groups as well. Indeed in this program family and child training was at the same time.

For experimental groups, 30 training sessions (10 sessions of child based intervention, 10 sessions of family based and 10 sessions of family-child based) were used (each session continued for 60 minutes). At the end of training sessions, Conner's parental questionnaire was again administered on experimental and control groups as posttest.

2.2 Instruments

In this research, Conner's rating scale was employed on parents in order to rate their children's ADHD symptoms. This scale was designed by Keith Conner (2001) and consists of 27 items. The scale is designed to measure the intensity of ADHD symptoms. Conner's scale is one of the most well-known instruments for assessing of ADHD which is used in various researches.

Family based intervention, child based intervention, and family-child based intervention was used as independent variables.

3. Results

The results of ANCOVA analysis regarding the effect of child based, family based and family-child based interventions on the rate of ADHD symptoms have been presented in Table 2. In this analysis, the effect of pre-test was controlled. Descriptive data is presented in Table 1 as well.

Table 1. Mean and standard deviation scores of pre and post ADHD symptoms in experimental and control groups posttest

| Group | mean | SD | mean | SD |
|--------------------|-------|------|-------|------|
| Child based | 44.80 | 3.23 | 39.86 | 2.77 |
| family based | 45.20 | 4.19 | 36.40 | 3.06 |
| Family-child based | 43.06 | 3.88 | 35.06 | 4.14 |
| Control | 45.40 | 2.64 | 46.46 | 4.29 |

As Table 1 show, post test scores for ADHD symptoms have been decreased in experimental groups as well as control group.

Table 2. The results of ANCOVA with respect to differences of four groups

| Sources | df | Mean Square | F | Sig | Eta ² | Observed Power |
|---------|----|-------------|-------|------|------------------|----------------|
| Pretest | 1 | 48.02 | 3.82 | .5 | .06 | .48 |
| Group | 3 | 353.68 | 28.19 | .001 | .60 | 1 |
| Error | 55 | 12.54 | - | - | - | - |

Results of Table 2 displays that there is a significant difference between child based, family based and family-child based interventions and control group in relation to ADHD symptoms ($P \leq 0.000$). The amount of training effect is 60% and the observed power shows that the volume of sample was adequate.

Table 3. Tukey test, comparison of mean scores of ADHD symptoms in experimental and control groups

| Group I | Group J | Mean Difference (I-J) | Sig |
|-------------|---------------------|-----------------------|------|
| Child based | family based | 3.46 | 0.05 |
| | family- child based | 4.80 | 0.01 |

| | | | |
|---------------------|---------------------|--------|------|
| | Control | -6.60 | 0.01 |
| Family based | Child based | -3.64 | 0.05 |
| | family- child based | 1.33 | 0.74 |
| Family- child based | Control | -10.06 | 0,01 |
| | Child based | -4.80 | 0.01 |
| | family based | -1.33 | 0.74 |
| Control | Control | -11.40 | 0.01 |
| | Child based | 6.60 | 0.01 |
| | family based | 10.06 | 0.01 |
| | family- child based | 11.40 | 0.01 |

Results of Table 3 displays that there is a significant difference between family based, child based and family-child based interventions and control groups. Moreover, the results showed that among intervention methods, the most effective are the family based and family-child based intervention.

4. Discussion

The results of the study indicated that there is a significant difference between family based, child based and family-child based interventions among experimental groups and these experimental groups with control group as well. In other words, these interventions in randomly assigned experimental groups as compared to control group decreased ADHD symptoms. The findings are consistent with studies of Macford and Barlow (2004), Mac-Mahon and Forhand (2003), Hooshvar et al. (2009), Hajebi et al. (2004), Farmer et al. (2002), Kazdin (2001), and Froelich et al. (2002). Moreover, the results of Tukey test showed that the most effective method was family-child based intervention. To explain the results of the present study it could be stated that the parents as the closest ones to the children play an important role in training and learning of children. Parents' training can decrease stress and tension of parents which leads to improvement of proper parent child relationship. This in turn leads to parents' understanding of their children's needs. Regarding the effectiveness of family-child based intervention, it seems clear that this type of intervention is significantly effective for parents who are still not ready to accept their children's problems. Since children are impressed by environment, especially by parents, therefore, parent training is an appropriate opportunity for parents to intervene their children's behavioral problems.

In summary, family-child based intervention, on one hand helps the child control, his behavior and on the other hand helps parents comprehend how to behave with their child. Therefore, both of these elements help improve child's ADHD symptoms. It is suggested that in future research, this comparison be done in other students with different grade levels.

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Fear and Phobia: A Critical Review and the Rational-Choice Theory of Neurosis

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Abstract

This article reviews the empirical status of theories of fear and phobia. Psychoanalysis received little support, as findings tend to refute its basic assumption that phobia results from repressed material. Although conditioning has its weaknesses, it appears to be the strongest explanation of simple phobia. Findings raise question as to whether interoceptive conditioning can account for the development of panic disorder and agoraphobia, as these disorders develop in the absence of environmental conditioning events. A significant body of research supports Clark's claim that catastrophic misinterpretation of bodily sensations are involved in both the development and treatment of panic disorder and agoraphobia. However, the causal relationship between the two remains unclear. Likewise, while biological factors certainly increase the vulnerability to developing fear and phobia, findings have not yet confirmed that these behaviors are controlled by biological mechanisms. A new theory, the Rational-Choice Theory of Neurosis (Rofé, 2010; Y. Rofé & Rofé, 2013), which preserves the psychoanalytic claim that bizarre phobias need to be explained within a theory that accounts for neuroses by one set of theoretical concepts, was used to resolve the theoretical confusion in this field.

Keywords: agoraphobia, biological models, cognitive models, conditioning, panic disorder, psychoanalysis, Rational-Choice Theory of Neurosis, simple phobia

1. Introduction

Two major theories that had a significant impact on the scientific investigation of fear and phobia, psychoanalysis and behaviorism, were initiated by Freud (1909) and Watson, and Rayner (1920). The case studies illustrating each of these rival theoretical approaches, Little Hans and Little Albert, respectively, have become symbols of each theory in the field of fear and phobia. Although both theories continue to dominate the field, a major theoretical change was made in the Pavlovian concept of conditioning to address various fundamental difficulties encountered by behaviorism. The revised form of the theory includes Seligman's (1971) preparedness theory, Jacobs and Nadel's (1985) stress induced recovery of fear and phobia, and neo-conditioning theories (Barlow, 2004; Bouton, Mineka, & Barlow, 2001; Forsyth & Eifert, 1996; Wolpe & Rowan, 1988). Meanwhile, cognitive models of conditioning (Bandura, 1971; Brewer, 1974; Davey, 1989a; Mackintosh, 1983), Clark's (1986) misinterpretation theory, as well as biological approaches such as the nonassociative account (Menzies & Clarke, 1995a; Poulton & Menzies, 2002a), and Klein's (1993) suffocation alarm theory, were proposed as alternative theoretical explanations for fear and phobia.

Thus, while in the beginning of the last century the dispute regarding the cause of fear and phobia was limited to psychoanalysis and behaviorism, today this field of research is characterized by considerable theoretical confusion. In fact, investigators are still puzzled over the exact processes by which these behaviors develop. This article presents a comprehensive review of the main existing theories of fear and phobia, and examines the extent to which they advance our understanding of the underlying causes of these debilitating behaviors. This review will explore whether these theories are capable of integrating the pertinent, yet seemingly incompatible, findings from the rival schools of thought into their own theoretical framework. In the discussion section, it will be indicated that despite serious weaknesses, conditioning theory appears to be the strongest explanation of simple phobia. The Rational-Choice Theory of Neurosis (Rofé, 2010; Y. Rofé & Rofé, 2013), was suggested as the best explanation of bizarre phobia (e.g., chocolate phobia or panic disorder).

1.1 Psychoanalysis

In psychoanalysis, phobias are conceptualized either as a defense against a repressed, anxiety-provoking impulse, as in the case of Little Hans whose horse phobia was attributed to the Oedipal conflict (Freud, 1909), or as the expression of a repressed, anxiety-provoking event, such as childhood trauma with water (Bagby, 1922) or trains (Leonard, 1927). Essentially, phobias do not differ from other types of symptom formations, as “the only thing all phobias have in common is the defensive use of avoidance. They share nothing else, either dynamically or genetically, which distinguishes them from any other class of symptoms” (Compton, 1992, p. 425). For example, both agoraphobia and panic disorder are attributed to early-repressed anxieties relating to separation experiences (De Poderoso, Julian, & Linetzky, 2005; DelMonte, 1996; Frances & Dunn, 1975; Gassner, 2004; Rhead, 1969; Vandereycken, 1983). Even specific phobias, which usually pose merely a minimal disruption to the individual’s daily functioning, such as spider, snake, and dog phobias are accounted for in psychoanalytic terms (Abraham, 1927; Compton, 1992; Moss, 1960; Newman & Stoller, 1969; Tyson, 1978). For example, Spurling (1971) noted, “most investigators seem to agree that the spider is a representative of the dangerous (orally devouring and anally castrating) mother and that the main problem of these patients seems to center around their sexual identification and bisexuality” (p. 493). Similarly, Lewis (1981) indicated with regard to the relatively high prevalence of phobias of snakes, spiders and heights that these phobias might be metaphors of “forbidden emotional states” (p. 84).

However, there is little evidence to validate the psychoanalytic theory of phobias. First, psychoanalysis relies on case studies of poor scientific quality to support its theoretical position. For example, in criticizing Freud’s (1909) case of Little Hans, which is still used today to illustrate the psychoanalytic theories of phobias (Blum, 2007; Wakefield, 2007), Wolpe and Rachman (1960) demonstrated that it does not meet even minimal scientific requirements. They noted that Freud saw Little Hans only once, and that Little Hans’s father, who was Freud’s student, and as such was strongly biased, supplied the material upon which Freud built his theory. Similarly, Bagby (1922) reported two case studies of phobias, but it is unclear whether he actually saw the patients (Rofé, 1989, pp. 140-141). Case studies remain the major tool of investigation when attempting to demonstrate the repressed etiology of phobia (Gassner, 2004; Wolitzky & Eagle, 1999). However, this method is not sufficient to substantiate psychoanalytic hypotheses, because case studies are given to subjective interpretation (McNally, 2003; McNally, Clancy, & Barrett, 2004; Piper, 1999). Furthermore, Grünbaum (1986) showed, in his thorough critique of Freud’s work, that “clinical data tend in any case to be artifacts of the analyst’s self-fulfilling expectations, thus losing much of their evidential value” (p. 217).

Second, when more controlled research efforts were employed to examine whether phobia emerges from childhood trauma, as assumed by psychoanalysis, findings were inconsistent. For example, while some investigators found that separation anxiety is significantly related to the development of panic disorder and agoraphobia (Bandelow et al., 2002; Laraia, Stuart, Frye, Lydiard, & Ballenger, 1994; Silove et al., 1995), others could not find confirmation for this hypothesis (Aschenbrand et al., 2003; Doerfler, Toscano, & Connor, 2008; Peter, Brückner, Hand, & Rufer, 2005; Thyer, Himle, & Fischer, 1988; Thyer, Nesse, Curtis, & Cameron, 1986). Moreover, the memory of separation anxiety in these studies was examined by self-report scales, which indicate that subjects were, in fact, aware of these events (Bandelow et al., 2001; Zitrin & Ross, 1988). However, according to psychoanalytic theory, it is the subject’s unawareness of the specific childhood trauma, which is said to cause the development of fear and phobia (De Poderoso et al., 2005). Thus, even if separation anxiety was truly linked to agoraphobia and panic disorder, the psychoanalytic theory would not be confirmed.

Third, there has been heated controversy in recent years regarding the very existence of repression, the “cornerstone on which the whole structure of psychoanalysis rests” (Freud, 1914, p. 16). While some investigators reported that people forget their traumatic experiences, as claimed by the psychoanalytical theory (Anderson & Green, 2001; Brown, Schefflin, & Whitfield, 1999; Cheit, 1998; Chu, Frey, Ganzel, & Matthews, 1999; Erdelyi, 2006), most studies obtained contradictory evidence, i.e. trauma enhances memory (e.g., see review by McNally, 2003; McNally et al., 2004; Piper, Lillevik, & Kritzer, 2008; Piper, Pope, & Borowiecki, 2000). They also demonstrated that the studies cited in support of psychoanalytic theory suffer from serious methodological flaws. In an attempt to resolve this controversy, Rofé (2008) claimed that psychoanalysis portrays repression as a multidimensional concept, which, aside from claiming that people forget traumas, assumes (1) the existence of the unconscious, which stores the repressed memories and controls their manifestation in the form of neurotic symptoms; (2) that repression has a pathogenic impact on daily activities; (3) that neurotic symptoms are the direct result of the repressed memories; and (4) that recovery is obtained through the lifting of repression. In reviewing relevant literature, none of these components received empirical

validation, which led Rofé to conclude that there is little scientific justification for maintaining the psychoanalytic concept of repression.

These findings question not only the psychoanalytic hypothesis linking fear and phobia to repressed material, but also the validity of the entire psychoanalytic theory of psychopathology. However, the abandonment of Freud's theory may leave a theoretical vacuum, as some unusual phobias may become incomprehensible in its absence. For example, it is difficult to see how rival theories can account for the spontaneous onset of unusual phobias of chocolate and vegetables (Rachman & Seligman, 1976), AIDS (Glass, 1993), rat germ contamination (Brandt & Mackenzie, 1987), insect phobia (Jacobs & Nadel, 1985) and hydrophobia (Bagby, 1922). In all these cases, patients are unaware of the underlying causes of their radical behavioral change, and there is no observable variable that could account for this behavioral shift. This claim can also be applied to frightening, obsessive thoughts, such as when someone develops extremely hostile thoughts towards loved ones with no ability to account for the underlying causes (Fenichel, 1946; see also case studies by Horowitz, 2004, pp. 169-186; McAndrew, 1989). Thus, we need either to revise the psychoanalytic theory so that it may account for these behaviors, modify other theories so that they may address this issue, or consider an alternative approach that would be able to integrate these exceptional cases.

In conclusion, research which directly examined the psychoanalytic hypothesis that fear and phobia are the consequence of repressed childhood trauma has provided little support for this claim. Moreover, the increasing number of studies questioning the very existence of repression, which constitutes the foundation of the psychoanalytic theory of pathological behavior, including fear and phobia, further challenges this theory. Nevertheless, the abandonment of Freud's theory leaves a theoretical vacuum, which is seemingly accountable by psychoanalysis alone. Therefore, as long as an alternative explanation is not given for those cases of unusual phobia, the understanding of fear and phobia will remain incomplete.

1.2 Behaviorism

1.2.1 Pavlovian Paradigm

According to the Pavlovian conditioning theory, any conditioned stimulus (CS) should lead to the development of fear when it is accompanied by an unconditioned stimulus (UCS) that naturally provokes anxiety. Watson and Rayner (1920) maintained that the conditioning model accounts for the development of fears and phobias, and later behaviorists generalized this concept to explain the development of neuroses (Eysenck & Rachman, 1965; Wolpe, 1952, 1958; Wolpe & Plaud, 1997).

The Pavlovian paradigm of fear was largely based on animal studies, which support this theory consistently (Hulse, Egeth, & Deese, 1980; Rachman, 1977, 1990b). This theory also received significant support among humans, as fear often develops in accordance with conditioning principles (Di Nardo et al., 1988; Field, 2006; Kuch, Swinson, & Kirby, 1985; Lauth, 1971; Yule, Udwin, & Murdoch, 1990). However, this theory has encountered several fundamental difficulties. One problem is that people often fail to develop conditioned fear when exposed to anxiety-provoking situations. For example, aversive experiences with dogs (Di Nardo, Guzy, & Bak, 1988) or intense combat trauma (Rachman, 1990a; Saigh, 1984a, 1984b, 1985) do not usually cause conditioned fear. Similarly, in a laboratory analogue of electrical aversion therapy, Hallam and Rachman (1976) found that no conditioned fear developed in response to the aversive event. Likewise, Marks and Gelder (1967) reported that most of their patients were indifferent to conditioned stimuli employed in electrical aversion therapy (for similar results, see also Bancroft, 1969; Hallam, Rachman, & Falkowski, 1972).

Another fundamental difficulty concerns cases in which phobias develop in the absence of observable learning experiences. For example, very young children display spontaneous fear and phobia, such as snake, spider, and height phobias, upon first contact with these stimuli (see review by Poulton & Menzies, 2002a). Similarly, agoraphobia and panic disorder (Jacobs & Nadel, 1985; Mathews, Gelder, & Johnston, 1981), and other types of severely disruptive phobias (e.g., of trains, insects and chocolate; Jacobs & Nadel, 1985; Leonard, 1927; Rachman & Seligman, 1976) usually develop in the *absence* of observed environmentally noxious events which could justify these abrupt behavioral changes. Another issue lies in the difficulties of the conditioning model to account for the unequal distribution of different types of fear and phobia (Rachman, 1977, 1990a, 1990b). For example, snake phobia is far more prevalent than dental or injection phobia, despite the higher frequency of negative experiences with the latter (Agras, Sylvester, & Oliveau, 1969; Rachman, 1990a, 1990b).

It is also unclear why children display greater specific phobias and fear (e.g., fear of animals, darkness, and water; see Flatt & King, 2008; King, Eleonora, & Ollendick, 1998; Marks, 1987a; McNally & Steketee, 1985), but show the opposite pattern with regard to agoraphobia and panic disorder (e.g., see DSM-IV-TR, American Psychiatric Association, 2000; Goodwin et al., 2005; Rosenbaum, Pollock, Otto, & Pollack, 1995; Wittchen &

Essau, 1993). Given the fact that previous non-aversive experiences inhibit conditioned fear (Davey, 1989a, 1989b; Field, 2006; Mineka & Cook, 1986; Mineka & Zinbarg, 2006; Rachman, 1990a, pp. 181-182), one would expect, from the perspective of conditioning theory, that children, who have had less extensive fearless experiences with harmless stimuli than adults (e.g., public places), would be more vulnerable to develop clinical phobias. Another puzzling issue concerns the high prevalence of fear and phobia among mentally retarded children (Gullone, 1996; Gullone, Cummins, & King, 1996; Muris, Merckelbach, De Jongh, & Ollendick, 2002; Ramirez & Kratochwill, 1997) and less educated people (Arnarson, Gudmundsdottir, & Boyle, 1998).

It may also be important to note that some investigators found that the majority of phobic subjects attributed their fears to conditioning events when using self-report questionnaires (Merckelbach, Arntz, & De Jongh, 1991; Merckelbach, De Ruiter, Van den Hout, & Hoekstra, 1989; Öst & Hugdahl, 1981, 1983, 1985). However, when a different type of self-report scale was employed, this effect was obtained only for a minority of subjects (see review by Poulton & Menzies, 2002a). Moreover, test-retest after a period of one year showed the retrospective report of fear onset to be quite unstable, and hence, unreliable (Taylor, Deane, & Podd, 1999).

In summation, studies consistently demonstrate that fear among animals develops in accordance with conditioning theory, and some studies show that some of human fears and phobias develop in accordance with this theory. However, this theory suffers from fundamental problems, which indicate that, in its present form, it is unable to account for the human development of fear and phobia. Thus, while the conditioning paradigm is obviously important, this theory must be substantially revised in order to address these issues.

1.2.2 Preparedness Theory

Seligman (1971) proposed a revised form of the classical conditioning theory, termed preparedness theory, which suggests that species are biologically programmed to be more easily conditioned to stimuli that endangered their existence throughout evolution, such as spiders and snakes. Consistent with preparedness theory, superior conditioning and resistance to extinction were demonstrated for fear-relevant stimuli (e.g., pictures of snakes or spiders), as compared to fear-irrelevant stimuli (e.g., pictures of flowers or geometric shapes; see reviews by McNally, 1987; Mineka & Öhman, 2002a; Öhman & Mineka, 2001). While some studies have failed to replicate these findings, this might have been the result of inappropriate conditioning methodology (see review by Öhman & Mineka, 2001).

Some studies also examined differences in arousal levels elicited by phylogenic fear-relevant stimuli (e.g., slides of snakes and spiders) and ontogenetic fear-relevant stimuli (e.g., slides of handguns or electric outlets). Here too, there is some inconsistency among investigators. While some studies found no differences between the two types of stimuli (Davey, 1995; Davey & Craigie, 1997; Davey & Dixon, 1996; Honeybourne, Matchett, & Davey, 1993; Lovibond, Siddle, & Bond, 1993), others reported that both arousal and conditioning are more intense to phylogenic fear-relevant stimuli than to ontogenetic fear-relevant stimuli (Mühlberger, Wiedemann, Herrmann, & Pauli, 2006; Öhman & Mineka, 2001). Findings also show that fear-relevant stimuli capture subjects' attention and are perceived more rapidly than fear-irrelevant stimuli (Öhman, Flykt, & Esteves, 2001; Waters & Lipp, 2008). Additionally, subjects were more distracted by fear-relevant animals (e.g., spider) than non-fear-relevant animals (e.g., horse; Waters & Lipp, 2008).

Preparedness theory has certainly received significant empirical support, and made an important contribution in addressing the shortcomings of the classical conditioning theory to account for the unequal distribution of fear and phobia. However, it is doubtful whether findings support Seligman's evolutionary concept of fear and phobia. From an evolutionary perspective, some stimuli have endangered our species' existence (e.g., various predatory animals and poisonous plants) at least as much as snakes and spiders, but have not resulted in phobias (Davey, 2002; Delprato, 1980). An alternative explanation would suggest that snake and spiders stimulate arousal due to their specific characteristics and features, in terms of shape and movement, rather than by their dangerous evolutionary characteristics. This is consistent with findings indicating, "Ugly, slimy, speedy or sudden-moving animals are experienced as less approachable and more fear-provoking than animals without these qualities" (Bennet-Levy & Marteau, 1984, p. 40). Evidence also suggests that the disgusting nature of some animals may be an important causal factor in fear acquisition, independent of their potential danger (Davey, 1992a, 1993, 1994; Davey, Forster, & Mayhew, 1993; Jain & Davey, 1992; Matchett & Davey, 1991; Ware, Jain, Burgess, & Davey, 1994). For example, spiders can be classified not only as "fear-evoking animals" (e.g., rats and snakes), but also as "disgust-evoking animals", such as caterpillars, maggots, and slugs (Davey, 1992a). A cross-cultural study of fear of animals also showed that the emotion of disgust becomes attached to different animals in different cultures, suggesting that disgust of certain animals could be, at least in part, the consequence of socialization (Davey et al., 1998).

Regardless of the theoretical explanation of preparedness, it seems that this concept can only promote our understanding of simple, but not clinical, phobia. Although some investigators reported that specific fears (e.g., fear of loud noises, fear of bees and wasps) made up the majority of fears among clinical subjects (De Silva, 1988; De Silva, Rachman, & Seligman, 1977; Zafiropoulon & McPherson, 1986), others could not replicate these findings (Merckelbach, Van den Hout, Hoekstra, & Van Oppen, 1988). Further, it is difficult to accept Öhman, Dimberg and Öst's (1985) proposal that agoraphobia can be seen as a prepared phobia of open spaces, which increase the vulnerability to predators. Such a suggestion does not explain why both panic disorder and agoraphobia are more prevalent among adults, whereas they are very rare among children (DSM-IV-TR, American Psychiatric Association, 2000; Goodwin et al., 2005; Rosenbaum et al., 1995; Wittchen & Essau, 1993). In this regard, McNally (1987) noted, "the task confronting fear theorists is not to explain the rapid acquisition of phobias. Rather, the task is to explain the wide variability in the rate of fear acquisition and to account for age-related vulnerability to acquiring certain fears" (p. 296).

In conclusion, studies support the idea that certain phobias particularly snake and spider phobias, are more easily conditioned than others are, which accounts for the unequal distribution of fears and phobias. However, the interpretation of these findings is controversial, since apart from possible evolutionary significance, snakes and spiders differ from irrelevant stimuli both in terms of their perceptual characteristics and in terms of their cultural acceptability. Either one of these components could be responsible for the more rapid conditioning of these stimuli. Moreover, Seligman's theoretical approach has little clinical utility, as it cannot account for the development of clinical fears and phobias, such as agoraphobia and panic disorders.

1.2.3 Interoceptive Conditioning

As stated, panic disorder and agoraphobia usually develop in the absence of an observable noxious event (UCS; Jacobs & Nadel, 1985). In an attempt to address this issue, neo-conditioning investigators claim that the intense bodily sensations (e.g., hyperventilation) experienced during the first panic attack are the UCS of interoceptive conditioning, and thus accounts for the development of these disorders (Barlow, 2004; Bouton et al., 2001; Carter & Barlow, 1995; Forsyth & Eifert, 1996, 1998; Mineka & Oehlberg, 2008; Mineka & Zinbarg, 2006; Öst & Hugdahl, 1981, 1983, 1985; Wolpe & Rowan, 1988). As noted by Wolpe and Rowan (1988), "just as electrically elicited anxiety becomes conditioned to contiguous stimuli to produce experimental neurosis...so may panic anxiety become conditioned to contiguous stimuli to produce panic disorder" (p. 446). The initial attack is attributed to a false alarm resulting from stress in interaction with biological/genetic, personality/temperamental or experiential factors (Barlow, 2004; Bouton et al., 2001; Mineka & Oehlberg, 2008).

In accordance with this new conception, studies have successfully produced conditioning effects in which the UCS was prolonged exposure to CO₂-enriched air, while the CS was either a fear-relevant stimulus (e.g., fear-relevant images; Forsyth, Eifert, & Thompson, 1996; Forsyth & Eifert, 1998; Stegen et al., 1999) or a brief exposure to CO₂-enriched air (Acheson, Forsyth, Prenoveau, & Bouton, 2007). In accordance with the claim that panic disorder patients are more vulnerable to conditioning due to genetic, temperamental, or experiential vulnerability (Bouton et al., 2001), experimental evidence shows that panic patients demonstrate greater resistance to extinction in comparison with a non-clinical sample (Michael et al., 2007).

However, there is an enormous gap between panic disorder in everyday life and panic-like effects in the laboratory. Unlike laboratory studies, where the conditioned response is easily extinguished and has little psychological effect (Harrington, Schmidt, & Telch, 1996; Prenoveau, Forsyth, Kelly, & Barrios, 2006; Perna, Cocchi, Politi, & Bellodi, 1997), panic disorder severely disrupts the individual's daily functioning and is highly resistant to extinction (Eifert, 1992; Jacobs & Nadel, 1985; Seligman, 1988). While one may argue that panic disorder is not easily eliminated because the UCS (prolonged, intense bodily sensations) reinforces the CS (brief bodily sensations) of each new attack, neo-conditioning investigators have yet to prove such a claim.

The interoceptive conditioning theory attributes the first panic attack to stressful events (Barlow, 2004; Bouton et al., 2001). However, since the first panic attack does not eliminate the stressor, it is unclear why stress by itself is not sufficient to account for the subsequent panic attacks. Why is the conditioning concept necessary?

The neo-conditioning theorists also attribute all forms of phobia to conditioning, and view agoraphobia as the by-product of panic disorder (Barlow, 2004; Bouton et al., 2001; Mineka & Zinbarg, 2006). However, Wittchen et al. (2008) found that in a substantial number of cases, agoraphobia is "a clinically significant disorder that exists independently of panic attacks and panic disorders" (p. 153; see also Fava, Rafanelli, Tossani, & Grandi, 2008; Goodwin et al., 2005; Hayward & Wilson, 2007). In fact, agoraphobia may serve as a predictor of the

development panic disorder (Bienvenu et al., 2006). It is difficult to see how these findings can be integrated within the interoceptive conditioning theory.

An additional problem is that, inconsistent with conditioning theory, “hyperventilation does not invariably lead to a panic attack in PD [panic disorder] patients (as a UCS should)...” (Sanderson & Beck, 1989, p. 581). For example, only 23% of panic patients responded with panic attacks following laboratory induction of hyperventilation (Gorman et al., 1988a). Similarly, in examining hyperventilation among panic disorder patients in a natural setting, Hibbert and Pilsbury (1989) noted that their findings do not support the hypothesis that hyperventilation causes panic attacks or contributes to their severity. Hyperventilation may be better understood as a consequence of panic (p. 805). Other researchers reported additional inconsistent findings (Gorman et al., 1994; Nardi et al., 2004; De Ruiter, Garssen, Rijken, & Kraaimat, 1992).

Additionally, assuming that panic disorder is the consequence of conditioning, as claimed by interoceptive theory, it is difficult to see how such a theory can integrate the large body of findings indicating that misinterpretation of bodily sensations constitute a critical factor in the development of panic disorder (Austin & Richards, 2001; Clark, 1986, 1988), especially given the fact that changing patients’ beliefs regarding these sensations through cognitive therapy yields positive results even without exposure (Arntz, 2002; Clark, 1999; Salkovskis, Clark, & Hackmann, 1991).

In conclusion, neo-conditioning theorists significantly revised the Pavlovian paradigm in their attempt to resolve the difficulties they encountered in accounting for the development of panic disorder and agoraphobia. The most significant change is the suggestion that bodily sensations can serve as a UCS. However, while the interoceptive conditioning account resolves the problem of the lack of environmental observable trauma in the etiology of these disorders, it has also encountered fundamental problems, which challenge its validity.

1.2.4 Stress-Induced Recovery of Fear and Phobia

Jacobs and Nadel (1985) suggested a theory, which integrates findings from conditioning, psychoanalytic and biological studies to account for the onset of fear and phobia in adulthood without any discernable conditioning event. Attention is drawn to the facts that these fears develop in the absence of UCS, that subjects are unaware of the conditioning event and that stress precedes the development of these deviant behaviors. Jacobs and Nadel (1985) claim that conditioning must have occurred during infancy, and that unawareness is due to infantile amnesia resulting from the immaturity of the hippocampus. Based on animal research, they also suggest that stress produces hormonal changes, which cause the reinstatement of the conditioned fear established at the infancy stage. Once developed, “conditioned fear might never be eliminated using traditional extinction or counter-conditioning procedures” (p. 525).

Jacobs and Nadel employed this theoretical approach to account for the development of panic disorder and agoraphobia. While their attempt to integrate different models may be the right method to gain a genuine understanding of fear and phobia, it is doubtful whether their specific integrative theory is an appropriate answer for this issue. First, the existence of repression has been seriously challenged, if not altogether refuted (see reviews by Piper et al., 2008; Rofé, 2008). Moreover as stated above, no significant link has been found between childhood trauma and the development of panic disorder or agoraphobia. Hence, Jacobs and Nadel’s claim regarding “the tyranny of childhood” (p. 513) in the etiology of fear and phobia has received no empirical support. Second, the authors present neither research nor clinical evidence from human subjects demonstrating that the critical conditioning event had ever taken place during infancy. Finally, the contention that stress precipitates the “recovery” of this event later in life has never been supported.

2. Conclusion

The classical theory of conditioning has significantly changed since the original Pavlovian conception. Changes suggested by preparedness and interoceptive conditioning, which take into consideration variables such as genetic predisposition, personality factors, and learning history, minimize the difficulties this theory has encountered throughout the years. However, while advocates believe that this theory can account for the etiology of all types of fear and phobia, it seems that at this stage, its explanatory power is proven only with regard to specific phobias. The applicability of this theory to panic disorder and agoraphobia is still doubtful in light of fundamental difficulties, which question its validity.

2.1 Cognitive Theories

2.1.1 Conditioning Model

Although the cognitive account of conditioning agrees with behaviorism that fear and phobia develop out of learning experiences, advocates of this approach claim that conditioning results in the association between

stimulus-stimulus (S-S) rather than stimulus-response (S-R) (Davey, 1989a; Mackintosh, 1983). This hypothesis was supported by experimental studies showing that conditioned fears fail to develop when subjects are unaware that the CS signifies an aversive event, and that extinction is readily obtained when they are assured that the UCS will no longer follow the CS. (Bandura, 1971, 1977; Brewer, 1974; Davey, 1989b; Dawson, Schell, & Banis, 1986).

These findings led Bandura (1977) to propose the self-arousal theory, which states that conditioned fear is aroused through fear-provoking thoughts. He states, "For individuals who are aware that certain events forebode distress, such events activate fear-arousal of thoughts, which in turn produce emotional responses" (p. 69). Thus, conditioning is a matter of belief that past contingencies remain in effect and the more severe the effects are expected to be, the stronger the emotional arousal will be. A similar theoretical position was expressed by Beck (Beck, 1976; Beck, Emery, & Greenberg, 1985) in his perceived danger theory of phobia.

Davey (1989a, 1992b) suggested the concept of "latent inhibition", which refers to previous non-aversive exposures to CS, to account for cases of conditioning failure despite exposure to traumatic incidents. As proof, Davey (1989b) presented evidence that prior painless dental treatment inhibited the acquisition of dental phobia. With regard to the emergence of phobias in the absence of trauma, Davey (1989a) claimed that the CS-UCS association, a process termed "sensory preconditioning", might have been established at an earlier stage, when the UCS was only minimally aversive. At a later stage, an event inflates the negative effect of the UCS, in absence of the CS, resulting in an intensified fear towards the CS. For example, a person may witness a death caused by a heart attack (UCS) while riding a bus or train (CS) without developing observable fear. However, later exposure to the death of a relative brought about by heart attack may inflate the negative impact of the UCS and give rise to an acute anxiety toward public transportation (for additional examples see Davey, De Jong, & Tallis, 1993). In examining this hypothesis (White & Davey, 1989), a visual stimulus (CS) was associated with an innocuous 65dB tone (UCS). Then the level of aversion to the "UCS" was inflated, in the absence of the CS, by increasing the intensity of the tone to 115dB. Results showed that the CS aroused a significant conditioned response (skin conductance response) only after the inflation procedure, but not at the initial stage.

It is difficult, however, to see how Davey's concept can account for the development of agoraphobia and panic disorder. Considering the concept of latent inhibition, whereby a few painless treatments prevented the development of dentist phobia, one would expect that numerous fearless experiences with supermarkets and other public places would have immunized adults from developing agoraphobia and panic disorder, regardless of any preconditioning experience. It is also doubtful whether Davey's concept of sensory preconditioning is applicable to non-situational panic disorder, in the absence of agoraphobia, whereby the manifestation of panic is independent of any specific environmental stimuli (Marks, 1987b; Jacobs & Nadel, 1985).

Moreover, from a clinical standpoint, Davey had to demonstrate that agoraphobia and panic disorders are consequences of an inflation of earlier traumatic experiences. This idea is reminiscent of the Freudian concept of repression, particularly in its learning version, as formulated by Dollard and Miller (1950), which states that a previous fearful event, of which the subject is not aware, increases the individual's vulnerability to develop pathological behavior at a later stage. However, as previously stated, findings tend to refute the existence of this Freudian concept.

Furthermore, although some investigators succeeded in replicating White and Davey's (1989) aforementioned experimental findings regarding Davey's inflation theory (Hosoba, Iwanaga, & Seiwa, 2001), others obtained negative results (De Jongh, Muris, & Merckelbach, 1996; De Jongh, Merckelbach, Koetshuis, & Muris, 1994). Additionally, even if the inflation hypothesis had been consistently supported, this would not have necessarily been applicable to agoraphobia and panic disorder, as fundamental differences exist between laboratory-conditioned fears, which are easily extinguished when subjects are notified that the CS will no longer be followed by the UCS, and clinical phobias, which are highly resistant to extinction (Jacobs & Nadel, 1985; Seligman, 1988).

Additional problems concern the cognitive assertion that awareness is a necessary condition for the development of conditioned fear. Although much evidence is consistent with this theoretical position, some studies suggest that conditioning without awareness may occur (see review by Lovibond & Shanks, 2002; see also Clark, Manns, & Squire, 2002; Weike, Schupp, & Hamm, 2007). A more fundamental problem concerns the cognitive position that fear should, in fact, be extinguished once subjects become aware that the UCS no longer accompanies the CS (Davey, 1989a). Although this effect is typically observed in laboratory studies (Brewer, 1974; Davey, 1989b; Dawson et al., 1986), this is not the case in natural settings. As noted by Seligman (1971) "telling a phobic, however persuasively, that cats (CS) won't do him any harm, or showing him that the UCS doesn't occur when

cats are around is rarely effective” (p. 311). Similarly, as stated by Rachman (1990a) fears in everyday life “can arise and persist in the acknowledged absence of any threat or danger” (p. 74). Resistance to extinction is particularly puzzling with regard to agoraphobia and panic disorder, where patients resist abandoning their fears even after experiencing numerous non-reinforced exposures to the feared stimulus (Jacobs & Nadel, 1985; Seligman, 1988).

In an attempt to resolve this problem, Bandura (1971, 1977) claimed that fear-arousing beliefs become so powerful that they are not easily subject to voluntary control. In support of his claim, Bandura noted that acrophobics display fear when found in tall buildings, because they are unable to quell horrendous thoughts despite the safety of their situation. However, findings inconsistent with this claim indicate that perception of danger is, in fact, a weak predictor of acrophobic behavior (Menzies & Clarke, 1995b; Williams, Turner, & Peer, 1985; Williams & Watson, 1985) and that agoraphobics are rarely preoccupied with thoughts of danger when confronted with their feared situation (Williams, Kinney, Harap, & Liebmann, 1997). Hence, as noted by Williams et al. (1997), “rarity of danger thoughts poses an explanatory challenge for all cognitive theories of phobia and especially for the perceived danger theory” (p. 511).

Cognitive theory would expect negative cognitions to precede the experience of fear. However, although negative thoughts preoccupy the individual’s attention when exposed to the stimuli that they fear (De Jongh, Muris, Schoenmakers, & Ter Horst, 1995; De Jongh, Muris, Ter Horst, & Duyx, 1995; De Jongh & Ter Horst, 1993; Kent & Gibbons, 1987; Thorpe & Salkovskis, 1995), some studies indicate that negative cognitions follow, rather than precede, the experience of fear (Wolpe & Rowan, 1988). Moreover, negative thoughts may be a direct consequence of the fear (“If I feel anxious, there must be danger”; Arntz, Rauner, & Van den Hout, 1995), and fear may also be experienced in the absence of negative cognitions (Barlow, Brown, & Craske, 1994; Fleet et al., 2000; Kushner & Beitman, 1990; Williams et al., 1997).

In conclusion, it does not seem that the suggestions of the cognitive theory of conditioning, such as that awareness of CS-UCS is a necessary condition for the acquisition of phobia, latent inhibition and sensory preconditioning, can promote our understanding of agoraphobia and panic disorder. Adding these difficulties to those of the Pavlovian model raises serious doubts as to whether the conditioning model is an appropriate approach for understanding these disorders. Nevertheless, cognitive factors were incorporated within the contemporary theory of conditioning of human fear (Bouton et al., 2001; Mineka & Zinbarg, 2006), and there seems to be little doubt that these factors affect the acquisition of simple fear and phobia.

2.1.2 Misinterpretation Theory

Clark’s (1986, 1988) cognitive theory suggests that panic disorder results from catastrophic misinterpretation of benign bodily sensations of unclear or ambiguous origin, and that educating patients to interpret their bodily sensations realistically is an effective therapeutic intervention. This theoretical approach received significant empirical support for both the development (Austin & Richards, 2001; Cox, Endler, & Swinson, 1995; Goldberg, 2001; Margraf & Ehlers, 1991; Richards, Edgar, & Gibbon, 1996; Schneider & Schulte, 2007; Westling & Öst, 1995) and treatment (Beamish et al., 1996; Beck, 1988; Clark, 1988, 1999; Gelder, Clark, & Salkovskis, 1993; Hecker et al., 1998; Ollendick, 1995; Westling & Öst, 1995) of panic disorder.

These studies, however, do not necessarily confirm a causal relationship between cognitions and panic attacks. As noted by Rachman (1990a), catastrophic misinterpretation of thoughts may be “mere accompaniments of a fundamentally biological disorder or accompaniments of conditioned panic reactions” (pp. 129-130). Findings suggest that panic attacks may occur in the absence of catastrophic thoughts as well; for example, a number of investigators found that panic attacks occur during the non-dreaming stages of sleep, where catastrophic thoughts are absent (Craske & Barlow, 1989; Craske & Rowe, 1997; Hauri, Friedman, & Ravaris, 1989; Lesser, Poland, Holcant, & Rose, 1985; Ley, 1988; Mellman & Uhde, 1989). Although Schredl, Kronenberg, Nonnell and Heuser (2001) reported that nocturnal panic attacks are closely related to dreams and nightmares, they too reported that a subgroup of patients in their study experienced panic attacks in the absence of dreams. Furthermore, subjects may display diurnal panic attacks which are not preceded by catastrophic cognitions (Kenardy, Fried, Kraemer, & Taylor, 1992; Kenardy & Taylor, 1999; Rachman, Lopatka, & Levitt, 1988; Zucker et al., 1989).

Additionally, the theory does not address cases of “non-fearful panic disorder” or “non-cognitive panic”, which occur in the absence of fear or catastrophic cognitions (Barlow et al., 1994; Beitman et al., 1987; Beitman, Mukerji, Russell, & Grafing, 1993; Bringager et al., 2008; Fleet et al., 2000; Kushner & Beitman, 1990; Rachman, Levitt, & Lopatka, 1987; Rachman, Lopatka, & Levitt, 1988). A more fundamental problem concerns the development of agoraphobia. Considering cognitivists’ position that agoraphobia is a by-product of panic

disorder (Clark, 1986; Gelder, 1989), it is difficult to see how this theory can account for a substantial number of cases in which agoraphobia develops independently of panic attacks or panic disorder (Fava et al., 2008; Wittchen et al., 2008) and that agoraphobia without panic attack can in many cases predict the onset of panic disorder (Bienvenu et al., 2006).

A possibility was raised that fearful thoughts are sometimes “missing” because the catastrophic misinterpretation of bodily sensations takes place so quickly that panic patients may not be aware of their existence (Clark, 1988; Rachman et al., 1987). McNally (1990) noted, however, that patients would remember thoughts of having heart attacks, even if they were momentary. Furthermore, this claim renders Clark’s theory untestable. As noted by McNally (1990), if patients could become unaware of such self-producing catastrophic thoughts, “then what would constitute evidence against the hypothesis that catastrophic misinterpretation necessarily precedes panic attacks?” (p. 407; see also McNally, 1999, p. 8).

Cognitive theory also provides no explanation as to the mechanism, which makes patients, think irrationally or non-adaptively. While psychoanalysis attributes this effect to the unconscious (De Poderoso et al., 2005; Shilkret, 2002), conditioning theories to learning experiences (Bouton et al., 2001; Davey, 1989a), and biological models to adverse neurochemical factors (Barlow, 2004), cognitivists provide no explanation for why a minority of people suddenly begin to think irrationally.

It is also difficult to see how cognitive theory may account for the therapeutic efficacy of both antidepressants (Den Boer, 1998; Westenberg, 1996) and interoceptive exposure (Arntz, 2002; Beck & Shipherd, 1997; Beck, Shipherd, & Zebb, 1997; Hecker et al., 1998), despite the absence of corrective information that supposedly educates patients to interpret their bodily sensations rationally (Beck, 1988; Clark, 1988). It is additionally unclear why cognitive therapy (Van den Hout, Arntz, & Hoekstra, 1994; Williams & Falbo, 1996) is ineffective for treating agoraphobia, which cognitive theory believes to have the same etiology as panic disorder (Barlow, 2004; Gelder, 1989).

In addressing the efficacy of drugs, Taylor (2000) argued that when patients are informed of potential side effects, they reinterpret their bodily sensations as a sign that the medication is exerting its influence, in place of the previous perception that the sensations herald impending disaster. However, if this explanation were true, then any substance, which is perceived as a drug, should have a similar effect when patients are made aware of expected side effects. However, so far there is no evidence in support of this claim. As an alternative explanation, Taylor suggested that drugs increase patients’ psychological confidence in their own abilities to cope with the arousal-related sensations. Here too, however, a placebo should have a similar effect to the actual drug, since the crucial therapeutic factor is patients’ expectations and beliefs. Regarding the efficacy of interoceptive exposure, Arntz (2002) noted that “the hypothesis of Clark and his coworkers... that irrespective of the type of treatment, reduction of panicogenic beliefs is necessary for (stable) symptom reduction to take place, is not true” (p. 339).

In conclusion, findings consistently indicate that catastrophic cognitions accompany the experience of most panic attacks, and that changing these cognitions plays an important role in the treatment of panic disorder. However, the causal relationship between these cognitions and panic disorder remains unclear. Although in many cases catastrophic cognitions precede the experience of panic attacks, other evidence indicates that panic attacks may occur in the absence of negative cognitions. It is also doubtful whether this theory can account for the development of agoraphobia in the absence of panic disorder, and whether it can integrate the therapeutic effects of both interoceptive exposure and drug treatments into its theoretical framework.

2.1.3 Anxiety Sensitivity Theory

Anxiety sensitivity (AS) theory assumes the existence of a stable predisposition towards anxiety-related bodily sensations and/or emotions, which stem from the belief that these experiences have harmful physical, psychological or social consequences (Reiss, 1991; Reiss & McNally, 1985; Reiss, Peterson, Gursky, & McNally, 1986). Findings show that high AS individuals tend to implicitly associate anxiety-related symptoms with negative consequences (Lefavre, Watt, Stewart, & Wright, 2006), and that this tendency increases the risk of developing panic disorder (Grant, Beck, & Davila, 2007; Li & Zinbarg, 2007; Schmidt & Lerew, 2002; Schmidt, Lerew, & Jackson, 1999). Similar results were found in a longitudinal study of adolescents (Hayward, Killen, Kraemer, & Taylor, 2000; Hayward, Killen, & Taylor, 2003; Hayward & Wilson, 2007; Schmidt, Zvolensky, & Maner, 2006). Studies also report a significant relationship between AS and other anxiety disorders, such as OCD and social phobia (Anderson & Hope, 2009; Calamari et al., 2008; Rector, Szacun-Shmizu, & Leybman, 2007). Further studies demonstrate that apart from various anxiety disorders, AS facilitates the development of other anxiety-related behaviors. For example, AS has been found to be significantly related to smoking and substance abuse, as these behaviors enhance the individual’s ability to cope

with the unpleasant sensations resulting from stress (Battista et al., 2008; Bonn-Miller, Zvolensky, & Bernstein, 2007; Comeau, Stewart, & Loba, 2001; Feldner et al., 2008; Zvolensky et al., 2009).

Although AS is an important factor in predicting panic disorder, it does not provide a comprehensive account of this disorder: as noted by Bouton et al. (2001), only a small percentage of the variance (2%-16%) is accounted for in the disorder's development (Li & Zinbarg, 2007; Schmidt et al., 1999). Additionally, the mechanism by which AS exerts its influence is not yet clear, and various investigators account for its effect on the development of panic disorders with either the cognitive theory of panic disorder or interoceptive conditioning (McNally, 1999; Taylor, 2000; Zvolensky et al., 2006). Thus, while AS enhances our understanding of some central factors, which directly affect the development of panic disorder, it lends little information to help resolve the dispute between cognitivists and behaviorists regarding the mechanism by which panic disorder develops.

2.2 *Biological Models*

Advancements made in biological research increased the conviction that the biological approach may provide a better means for the understanding of deviant behavior. As stated by Reich (1982), "American psychiatry has in fact undergone a significant shift from an emphasis that was primarily psychological to one that is more clearly biological ... in every sphere of psychiatric enterprise" (p. 189). Likewise, Telch (1988) noted that "biological theories of panic and agoraphobia have shown a major increase in popularity" (p. 507). The biological perspective becomes particularly important in light of the growing dissatisfaction with the existing psychological theories of fear and phobia. This theoretical approach consists mainly of the non-associative account, which addresses the development of specific fears and phobias, and other models, which address the causes of panic disorder and agoraphobia.

2.2.1 The Non-Associative Account

The non-associative account observed that certain specific phobias (e.g., spider phobia and acrophobia) develop upon initial contact with the feared stimuli, in the absence of observable learning experiences (see review by Menzies & Clarke, 1995a; Menzies & Harris, 2001; Poulton & Menzies, 2002a). These findings were interpreted as evidence that both humans and animals have been biologically programmed through evolution to fear stimuli that might endanger their existence.

This theoretical approach was subject to a number of criticisms (Davey, 2002; Kleinknecht, 2002; Marks, 2002; Mineka & Öhman, 2002b; Muris et al., 2002b). One critique concerns the authenticity of retrospective reports (Kleinknecht, 2002; Mineka & Öhman, 2002b). The retrospective reports, however, were supplemented with prospective longitudinal studies (Poulton & Menzies, 2002a), as well as children's reports that were confirmed by their parents (Craske & Waters, 2005; Graham & Gaffan, 1997; Merckelbach, Muris, & Schouten, 1996; Merckelbach & Muris, 1997; Poulton & Menzies, 2002a). A recent study also found data that 7- to 18-month-old children display fear when observing films of moving snakes (DeLoache & LoBue, 2009). It would seem that the non-associative account's basic premise, which fear develops in the absence of observed learning experiences, is indisputable.

Nevertheless, the non-associative account is problematic for other reasons. For example, the lack of recollection of learning events is also observed with phobias that are certainly not evolutionarily significant, such as fear of injection (Kleinknecht, 1994), public speaking (Hofmann, Ehlers, & Roth, 1995) and driving (Ehlers, Hofmann, Herda, & Roth 1994; Taylor et al., 1999). Moreover, evolutionarily, there are some stimuli which have endangered the species' existence (e.g., various predatory animals and poisonous plants), yet have not resulted in common phobias (Davey, 2002; Delprato, 1980). By contrast, spiders are viewed as an evolutionary biological phobia by the non-associative account, despite the fact that "only 0.1% of the 35,000 varieties are dangerous to human beings" (McNally, 2002, p. 170). Furthermore, heritability of evolutionarily relevant fears tends to be low (Kendler et al., 1992) or at best moderate (Kendler, Karkowski, & Prescott, 1999; Kendler, Myers, Prescott, & Neale, 2001). At any rate, as noted by Kendler et al. (1999), environmental experiences still "play an important role in the development of phobias" (p. 539). Hence, these findings do not necessarily confirm the evolutionary basis of these fears and phobias.

Some investigators also claim that "evolutionary-relevant phobia" may be the consequence of interoceptive conditioning, caused by sudden terror or disgust sensitivity (Davey, 2002; Mineka & Öhman, 2002b) which is viewed as a substitute for the UCS. However, this claim is just as speculative as the non-associative account, as it has no supporting empirical evidence. Moreover, conditioning theorists have not yet accounted for the origin of the subjects' intense arousal. As noted by McNally (2002), "advocates consider sudden terror in the presence of the to-be-feared stimuli as conditioning events that explain the subsequent phobia ... This formulation, of course, begs the question of why the person experienced terror in the first place" (p. 170; see also Poulton &

Menzies, 2002b, pp. 198-199). An additional problem is that “a single stimulus can hardly serve as both the CS (i.e., neutral stimulus) and the UCS (i.e., fear-provoking stimulus) in the one event” (Poulton & Menzies, 2002b, p. 199).

In conclusion, there seem to be sufficient findings to support the basic claim of the non-associative account that certain specific fears and phobias emerge spontaneously upon first contact with the feared stimuli. However, the interpretation of these findings is controversial. While the non-associative account attributes the spontaneous fear to evolutionary/biological causes, learning theorists claim that this effect may be the result of conditioning. All the same, even if the non-associative account is valid, its theoretical proposal is applied to a very narrow range of fear and phobia. As acknowledged by Poulton and Menzies (2002b) themselves, “the non-associative model of fear acquisition postulates the existence of a limited number of innate evolutionary-relevant fears, while emphasizing conditioning modes of onset for evolutionary-neutral fears” (p. 197).

2.2.2 Biological Approach to Panic Disorder and Agoraphobia

The biological approach to panic disorder and agoraphobia bases its theoretical claims on four major groups of empirical findings: (1) Studies indicating that patients with panic disorder and agoraphobia suffer from structural brain abnormalities, such as in the temporal lobe, the basal ganglia, the cingulate, and the brainstem (Asami et al., 2008; Barlow, 2004; Ham et al., 2007; Han et al., 2008; Lee et al., 2006; Stein, 2008); (2) Studies showing that genetics play a significant role in the etiology of panic disorder and agoraphobia (Chantarujikapong et al., 2001; Hettema, Neale, & Kendler, 2001; Kendler et al., 1999; Kendler et al., 2001; Nocon et al., 2008; Stein, 2008); (3) Findings obtained using the paradigm of the biological challenge, whereby panic attacks can be experimentally induced in panic disorder patients using a variety of chemical substances (e.g., sodium lactate infusion and CO₂ inhalation; see Abrams, Schruers, Cosci, & Sawtell, 2008; Barlow, 2004); (4) Research demonstrating that drug therapy is an effective intervention in the treatment of these disorders (Furukawa, Watanabe, & Churchill, 2006; Mavissakalian & Ryan, 1998; Westenberg, 1996).

While these findings are impressive, and need to be taken into consideration for understanding panic disorder and agoraphobia, the extent to which biological factors are involved in the development of these disorders is unclear. Advocates have yet to prove that these disorders are uniquely associated with certain brain abnormalities, or that the existence of specific brain damage is a necessary condition for their development. As noted by Barlow (2004), “At the present time, there is no evidence for any specific biological marker; nor, for that matter, is there evidence for any important neurobiological differences between patients with panic disorder and individuals without panic” (p. 221). Similarly, genetic studies indicate that the concordance rates among monozygotic twins vs. dizygotic twins are 31%-42% vs. 0%-17% (Barlow, 2004), which point to the limitations of genetic influence and leaves much room for environmental/psychological factors. At any rate, it does not seem that biological factors on their own can account for the development of these disorders.

As for the biological challenge, biologists have not yet succeeded in identifying biological mechanisms that could account for the psychological impact of chemical substances (see review by Barlow, 2004). Barlow (2004) correctly pointed out that “It... seems safe to say at this time that there is no single underlying biological mechanism of action that can account for these diverse provocation procedures” (p. 178). Panic attacks can be provoked by such a wide variety of chemical substances (e.g., adrenaline, epinephrine, isoproterenol, yohimbine and caffeine; Barlow, 1988, pp. 112-121; Nutt & Lawson, 1992; Rapee, 1995) that Gorman (1987) wondered if there is “any active agent that does not cause a panic” (p. 6). Some studies also suggest that the effect of biological challenges can be accounted for in cognitive terms, whereby patients catastrophically misinterpret physiological sensations induced by these chemical substances (Rapee, 1995).

Additionally, the therapeutic efficacy of drugs does not necessarily validate the biological etiology of panic disorder and agoraphobia. In considering this issue, Acierno, Hersen and van Hasselt (1993) stated that “it is an error in logic to assume that because drugs alleviate symptoms, their absence (or the absence of their metabolites, etc.) is the cause of those symptoms” (p. 563). Similarly, Margraf, Ehler, and Roth (1986) noted that “the efficacy of different methods for treating panic attacks must be determined independently of any inferred etiology of those attacks” (p. 563).

In conclusion, none of the aforementioned findings of the biological approach is sufficiently convincing to necessitate the biological account of panic disorder and agoraphobia. However, these findings must be taken into consideration in any further attempt to understand the etiology of these disorders.

2.2.3 Suffocation False Alarm Theory

A more systematic attempt to understand the development of panic disorder in biological terms was made in Klein's (1993) suffocation false alarm theory, which suggests that panic attacks among panic disorder patients are the consequence of a malfunctioning brain suffocation monitor that erroneously signals a lack of useful air remaining in the body. In support of his theory, Klein (1993) reviewed a variety of data to draw a causal link between respiratory difficulties and panic disorder (Preter & Klein, 2007).

Klein (1993) noted that CO₂ has a central importance in stimulating panic attacks among panic patients, because the elevation of its level in the arteries (PCO₂) erroneously activates the suffocation alarm system. A number of experimental studies are consistent with this hypothesis (Asmundson & Stein, 1994; Gorman et al., 1994; Maddock, 2001; Pine et al., 1994). For example, in Asmundson and Stein's study (1994), panic patients displayed significantly shorter duration in a breath-holding task than did control subjects. These results were interpreted as evidence that subjects attempt to avoid the activation of their hypersensitive suffocation alarms. Based on cognitive theory, however, Schmidt, Telch, and Jaimez (1996) claimed that these findings could equally be accounted for by cognitive concepts, i.e., panic patients discontinue breath holding due to a catastrophic misinterpretation of dyspnea sensations. The authors reached the same conclusion with regard to the findings by Gorman et al. (1994) and by Pine et al. (1994). This claim could also be generalized to Biber and Alkin's (1999) study that examined the sensitivity of panic patients to CO₂.

Moreover, Schmidt et al. (1996) reported that contrary to the suffocation false alarm theory, no significant difference in dyspnea was found between a biological-challenge procedure which reduced the risk of activation of the suffocation alarm system (hyperventilation) and a method which increased this risk (inhalation of 35% CO₂). This theory was further challenged by findings demonstrating that cognitive-behavioral therapy effectively eliminated CO₂-induced panic attacks (Schmidt, Trakowski, & Staab, 1997). While at the pre-treatment stage a significant majority of patients experienced panic during the inhalation of 35% CO₂, only a minority of subjects did so at the post-treatment assessment. Studies also refute Klein's distinction between panic patients with intense dyspnea, which he attributed to dysfunction of the suffocation alarm system, and patients with fear-like panic experiences with little or no dyspnea, which he claimed to be a result of maladaptive learning (McNally, Hornig, & Donnel, 1995; Taylor et al., 1996; Vickers & McNally, 2005). These and other studies indicate that cognitive variables are more appropriate for explaining relevant findings and serve as better predictors of panic disorder than pulmonary measures (Carr, Lehrer, & Hochron, 1995; Moore & Zebb, 1999; Rose, 1998).

Further evidence that Klein (1993) considered to be support for his suffocation false alarm theory was the high frequency of panic disorder among patients with pulmonary diseases (Moore & Zebb, 1999; Nascimento et al., 2002; Roy-Byrne, Craske, & Stein, 2006; Shavitt, Gentil, & Mandetta, 1992; Valença et al., 2006). However, inconsistent with this theory, findings show that the high prevalence of panic disorder in asthmatic patients (9%), although higher than that of the general population, was very similar to the rate observed in non-asthmatic patients referred for a histamine provocation test (8.9%) (Van Peski-Oosterbaan et al. 1996). These authors also reported no difference in pulmonary function between asthmatics with and without panic disorder. The main difference between the two groups is a higher level of anxiety and depression among those with panic disorder (Dorhofer & Sigmon, 2002). Other investigators (Massana et al., 2001; Moore & Zebb, 1998, 1999) found similar results.

One last issue for consideration is Klein's (1993) claim that agoraphobia stems from the same psychological process as panic disorder, with agoraphobics experiencing more frequent and severe panic attacks, earlier onset and longer duration of illness. Aside from the aforementioned difficulties, the suffocation false alarm theory has an additional problem in accounting for a substantial number of cases of agoraphobia without panic (Fava et al., 2008; Goodwin et al., 2005; Hayward & Wilson, 2007; Wittchen et al., 2008; Wolitzky & Eagle, 1999).

In conclusion, there seems to be enough data indicating that people with pulmonary diseases are more likely to develop panic disorder and agoraphobia. However, findings cast serious doubts regarding the validity of Klein's suffocation alarm theory.

2.2.4 Mitral Valve Prolapse

Another attempt to account for the development of panic disorder and agoraphobia in biological terms was made by studies investigating the relationship between Mitral Valve Prolapse (MVP) and panic and agoraphobia disorder. MVP is a congenital cardiac abnormality whose symptoms include non-anginal chest pain, palpitations, dyspnea, light-headedness, and anxiety (Bowen, D'Arcy, & Orchard, 1991; Marks, 1987a). Several researchers found a relatively high prevalence of MVP among panic and agoraphobic patients, as compared to the general population (Bowen et al., 1991; Hamada, 1998; Katerndahl, 1993; Singh, 1996). This correlative data and the

general similarity of the symptoms led to the idea that MVP could be an important etiological cause of panic disorder and agoraphobia (Margraf, Ehlers, & Roth's review, 1988). However, as Margraf et al. (1988) showed, elevated prevalence of MVP was also reported for eating disorders (Kaplan et al., 1991), generalized anxiety disorder, and bipolar affective disorder.

Nevertheless, based on a meta-analysis of 21 studies, Katerndahl (1993) concluded that there appeared to be a significant relationship between MVP and panic disorder. Likewise, Gorman, Goetz, Fyer, King et al. (1988b), in re-examining this issue, reported that MVP is more common in those who suffer from panic and agoraphobia disorders. However, MVP in these patients was mild, was associated with neither thickened mitral leaflets nor small left ventricular size, and was not commonly conjunctive with moderate or severe prolepses. The authors concluded that although MVP is more common among these patients than in the general population, "there continues to be no evidence that MVP has any clinical relevance in the actual management of patients with PD/AgP [panic disorder or agoraphobia with panic attacks]" (p. 120). Additional indications call into question the causal relationship between MVP and panic disorder. Coplan, Papp, King, and Gorman (1992) claimed that MVP is the consequence rather than the cause of panic disorder. Accordingly, they found that panic disorder patients with MVP showed amelioration of prolapse on repeated echocardiograms after treatment for panic disorder. Indeed, a recent review article strengthened previous reports that the existing data are insufficient for determining a clear relationship between MVP and panic disorders, and that "if any relationship does actually exist, it could be said to be infrequent and mainly occur in subjects with minor variants of MVP" (Filho et al., 2008, p. 38). Further research may be needed to come to a firm conclusion regarding the relationship between MVP and panic and agoraphobia disorders, but its role in the development of these disorders seems at present to be negligible.

3. Discussion

3.1 Strengths and Weaknesses of Traditional Theories

Theories of fear and phobia have encountered fundamental difficulties in accounting for these behaviors. Although none of the existing theories provides a comprehensive account of the topic, each does provide its own unique contributions to the understanding of different types of fear and phobia. Upon completing the examination of the empirical status of the various theories, it is important to review the relative contributions of each theory, to specify the difficulties that have yet to be resolved, and to raise possible suggestions that may promote our knowledge of the factors involved in the development of fear and phobia.

When one examines the various types of fear and phobia, the reviewed literature indicates that specific phobia has received by far the most comprehensive explanation; behaviorism has successfully accounted for this phenomenon, outdistancing any other theory. Though this theory in its original form encountered some difficulties, advocates of this approach have made significant changes that adequately resolve these issues. One problem concerned the fact that people sometimes fail to develop conditioned fear despite exposure to an anxiety-provoking event (e.g. aversive experiences with dogs, painful dental experiences). In addressing this matter, Davey (1989a, 1992b) suggested the concept of latent inhibition, which refers to previous non-aversive exposures to the CS in order to account for cases of conditioning failure despite exposure to trauma (Mineka & Zinbarg, 2006).

Another challenge to conditioning theory concerned the claim of the non-associative account that childhood phobias often develop in absence of any observable conditioning event (Poulton & Menzies, 2002a). Conditioning investigators attributed these seemingly biological phobias to interoceptive conditioning caused by sudden terror or disgust (Davey, 2002; Mineka & Öhman, 2002b). McNally (2002) voiced reservations regarding this suggestion, asserting that interoceptive conditioning provided no explanation as to how spontaneous arousal occurs in response to such stimuli. Similarly, Poulton and Menzies (2002b) noted, "a single stimulus can hardly serve as both the CS (i.e., neutral stimulus) and the US (i.e., fear-provoking stimulus) in the one event" (p. 199). However, this argument does not necessarily pose a difficulty to conditioning theory. Studies indicate that both animals and humans are more likely to experience fear if the stimuli are novel or strange (Collard, 1967; Harlow & Zimmermann, 1959; Hebb, 1946; Marks, 1987a; Mussen, Conger, Kagan & Houston, 1984; Warr, 1990). While low or moderate levels of discrepancy between the subject's prior experiences (schema) and present stimuli may elicit attention and even excitement, a high discrepancy would be likely to produce fear (Mussen et al., 1984). Thus, when a young child first encounters stimuli such as spiders and snakes, the perception of this stimulus serves both as a CS and as a UCS because the unique shape, movement, and other perceptual characteristics of the stimulus are radically different from the individual's perceptual schema. This can cause a

spontaneous arousal as severe as an electric shock can (see case study by Merckelbach, Muris, & Schouten, 1996), thereby producing a conditioning effect.

The third problem concerned the distribution of fear and phobia and its inconsistencies with classic conditioning theory, such as the fact that snake phobia is far more prevalent than injection phobia despite the higher frequency of negative experiences with the latter (Rachman, 1977, 1990a). In an attempt to resolve this problem, Seligman (1971) suggested that organisms have been evolutionarily prepared to acquire certain fears more easily than others do. In accordance with this prediction, fear-relevant stimuli (e.g. pictures of snakes and spiders) were more easily conditioned than fear-irrelevant stimuli (e.g. picture of flowers and geometric shapes). Although these findings do not necessarily support Seligman's evolutionary claim, as they may be due to differences in structure, movement, and the subject's cultural background, this does not change the fact that some fears can be more easily acquired than others can. Considering these modifications, the classical conditioning theory seems to provide the most complete explanation for the development of specific fear and phobia.

Undoubtedly, cognitive and biological/genetic variables play an important role in the development of specific phobia. However, it does not seem feasible to account for the mechanism of phobia solely by cognitive theory, because unlike laboratory fear, phobia in real-life settings resembles a reflex-like response, in which the knowledge that a UCS is no longer present does not extinguish an individual's phobia. Similarly, although biological/genetic factors may also facilitate or inhibit the acquisition of fear and phobia by affecting, for example, emotional arousal (Mineka & Oehlberg, 2008), there is no evidence linking the variability of these behaviors to specific biological factors.

Unlike specific fear and phobia, there are inherent difficulties in the theories of the development of panic disorder and agoraphobia that have yet to be resolved. For example, the interoceptive conditioning theory has successfully demonstrated that similar to the CS in the conditioning paradigm, bodily sensations often trigger panic attacks among panic disorder patients (Barlow, 2004; Bouton et al., 2001), and exposure to interoceptive stimuli in the absence of cognitive intervention can result in significant therapeutic change (Beck & Shipherd, 1997; Beck et al., 1997; Hecker et al., 1998). However, it is hard to accept that the initial panic attack, attributed to stressful life events, serves as a substitute for a conventional UCS. If this is so, why is stress alone insufficient in accounting for the subsequent panic attacks? It is also unclear why hyperventilation, which subjects the individual to intense bodily sensations (CS), does not invariably lead to panic attacks among those suffering from panic disorder (Gorman et al., 1988a; Hibbert & Pilsbury, 1989; Nardi et al., 2004; Sanderson & Beck, 1989). A further challenge concerns the efficacy of cognitive therapy without exposure, which seems to alter the patient's belief rather than the S-R connection (Arntz, 2002; Clark, 1999; Salkovskis et al., 1991).

Cognitive theory has convincingly demonstrated that catastrophic beliefs are a central characteristic of patients with panic disorder, and that changing these beliefs has significant therapeutic effects (Clark, 1986, 1989, 1999; Austin & Richards, 2001; Schneider & Schulte, 2007). However, as noted above, the existence of catastrophic beliefs does not necessarily prove a causal relationship, especially because panic attacks may occur in absence of catastrophic thought (Craske & Rowe, 1997; Hauri et al., 1989; Ley, 1988; Mellman & Uhde, 1989).

Although the biological approach has provided a significant amount of evidence demonstrating the role of genetic and biological factors in the etiology of fear and phobia (Barlow, 2004; Mineka & Oehlberg, 2008), investigators have yet to present the necessary data to convincingly demonstrate that the development of panic disorder and agoraphobia is biologically determined. Further, the validity of Klein's (1993) suffocation false alarm theory is questionable; in fact, findings tend to be inconsistent with this theoretical position. Similarly, it is doubtful whether MVP plays any etiological role in the development of panic disorder and agoraphobia.

In addition to the aforementioned specific difficulties challenging behavioral, cognitive and biological theories, these theories share several fundamental difficulties. One issue common to these theories is that panic disorder and agoraphobia are rarely found in children under the age of ten (DSM-IV-TR, 2000; Goodwin et al., 2005), as opposed to specific phobias (Flatt & King, 2008; King et al., 1998; Marks, 1987a; Stinson et al., 2007). Another concern is that while existing theories view agoraphobia as a by-product of panic disorder (Bouton et al., 2001; Mineka & Zinbarg, 2006; Klein, 1993), agoraphobia develops in the absence of panic attacks in a significant number of cases, and at times may even predict the development of panic disorder (Bienvenu et al., 2006; Wittchen et al., 2008).

Although the abandonment of Freud's theory seems inevitable, it is premature to disregard Freud's clinical intuition that in order to understand the etiology of fear and phobia, one must comprehend how unawareness occurs. This is especially true with panic disorder and agoraphobia, which as demonstrated above develop in the absence of conventional UCS. There would be a scientific justification to dismiss the psychoanalytic approach if

rival theories could integrate relevant findings into one cohesive theoretical framework. Moreover, it is difficult to see how we could understand the development of some bizarre phobias, such as phobia of chocolate and vegetables (Rachman & Seligman, 1976), train phobia (Leonard, 1927), rat germ phobia (Brandt & Mackenzie, 1987) and phobia of AIDS (Glass, 1993), in the absence of an alternative theory to psychoanalysis. In fact, the inability of patients to account for the underlying causes for their dramatic behavioral change motivated Freud to suggest his psychoanalytic theory. As noted by Shevrin and Dickman (1980), “the clinical phenomena that led to the assumption of unconscious processes often takes the form of a patient describing a bothersome condition that the patient can neither account for nor control” (p. 422). Similarly Woody (2003) noted “the unconscious is invoked to explain behavior that is remarkable or portentous and inscrutable: actions and thoughts that seem otherwise inexplicable – bizarre behavior...” (p. 190; see also Erdelyi, 1985). Even Rachman (1990a), a leading orthodox behaviorist, acknowledged that although psychoanalysis cannot serve as a comprehensive account of all human fears, “it may help us to understand some of the more unusual fears” (p. 204).

There are three striking differences between simple and bizarre phobia, which strengthen the possibility that these are two distinct psychological phenomena that require different theoretical explanations. First, panic disorder and agoraphobia (Michelson et al., 1998; Milrod, Leon, & Shear, 2004; Scocco, Barbieri, & Frank, 2007; Venturello, Barzega, Maina, & Bogetto, 2002; Wardle et al., 1997) and unusual specific phobia (Brandt & Mackenzie, 1987; Glass, 1993; Rachman & Seligman, 1976), are generally preceded by stressful-life events not uniquely associated with the deviant behavior (Jacobs & Nadel, 1985). In contrast, common specific phobias tend to develop either spontaneously at an early age, in the absence of a learning experience (Poulton & Menzies, 2002a), or after an anxiety-provoking event directly linked to the phobia (e.g., a dog bite or painful dental treatment may cause dog phobia or dentist phobia, respectively, but a dog bite is unlikely to cause dentist phobia). Evidence confirming a direct link between type of trauma and type of phobia was observed regarding various types of specific phobia, including dental phobia (Davey, 1989b; De Jongh, Fransen, Oosterink-Wubbe, & Aartman, 2006) dog phobia (Di Nardo, Guzy, & Bak, 1988; Hoffman & Human, 2003), and spider phobia (Mercklebach & Muris, 1997). Second, bizarre behaviors, such as panic disorder and agoraphobia, are extremely rare; most studies found rates between 1%-2% (American Psychiatric Association, 2000). In contrast, common specific phobias of all types have a relatively high prevalence of 7.2%-12.5% (American Psychiatric Association, 2000; see also Kessler et al., 2005; Stinson et al., 2007). Third, bizarre disorders generally develop in later years. As stated in the DSM-IV (American Psychiatric Association, 2000), panic disorder and agoraphobia tend to develop between late adolescence and mid-30s. In contrast, common specific phobia typically develops during childhood onset peaks at age five with a secondary peak at age 10, mean age of onset 9.7 (Stinson et al., 2007).

In conclusion, it is necessary to distinguish between simple and bizarre phobia in order to gain true insight in the mechanisms by which fear and phobia develop. It is also necessary to explain why patients with bizarre phobia are unaware of the underlying causes of the dramatic change in their behavior. While the behaviorist's conditioning paradigm appears to be the best explanation for simple phobia, a revised version of psychoanalytic theory, seems most suitable for the explanation of bizarre phobia.

3.2 *The Rational-Choice Theory of Neurosis*

The Rational-Choice Theory of Neurosis (RCTN) (Rofé, 2010; Rofé, & Rofé, 2013), is a revised version of Psycho-bizarreness Theory, presented in a book entitled *The Rationality of Psychological Disorders* (Rofé, 2000; Lester, 2002, Sarma, & Garfield, 2001). The basic assumption of this theory is that individuals are likely to adopt neurotic disorders, such as panic disorder, agoraphobia, OCD and conversion disorder, when confronted with an intolerable level of stress and other options, such as suicide, drug abuse, and antisocial behaviors, are unavailable or too costly. The basic ideas of this theory are summarized below.

3.3 *The Need to Reinstate Neurosis*

RCTN agrees with psychoanalysis that the concept of neurosis is essential for understanding the development and treatment of these disorders. Accordingly, it rejects the DSM-III's decision to remove neurosis (American Psychiatric Association, 1980) by claiming, “There is no group of conditions which together comprise the ‘neurosis’” (American Psychiatric Association, 1976, p. 11). First, this decision might have been affected by personal interest as the many task force members had one or more financial ties to pharmaceutical companies (Pilecki, Clegg, & McKay, 2011). As noted by Pilecki et al. since the psychoanalytic therapy refers to underlying conflicts which necessitate relatively long intervention, “There was a desire to remove neurosis from diagnostic terminology and focus instead on descriptions of severe pathology that were more rare and justifiable in terms of reimbursement” (p. 196). Second, although the DSM claimed to be neutral, in reality, medical models implicitly determined the diagnostic categories (Burstow, 2005; Follette & Houts, 1996). As claimed by Pilecki et al. (2011)

the DSM “has not provided a neutral collection of observation-based syndromes and it seems naïve to have ever expected such an outcome” (p. 199). Third, although the DSM’s statement that psychoanalysis did not provide operational criteria is true, there was not scientific justification to remove this concept. The DSM’s task force arrived to the conclusion that neurosis has no common characteristic because they searched for only one common diagnostic criterion. However, much research and clinical data that are reviewed elsewhere (Rofé, 2000; Rofé, 2015), indicate that neurosis is a multi-dimensional concept, which shares five major diagnostic criteria. All the five characteristics must be present in order to classify a certain behavior as neurosis. Some of this evidence is reviewed below.

(1) Impact on Attention and Daily Activities: Research shows that the neurotic symptom has a powerful distractive value, as it becomes the focus of the individual’s attention due to its significant time-consuming and deleterious effects on daily activities and quality of life. For example, 49% of eating disorder patients spend more than three hours each day on their eating disorder rituals, and 16% spend more than 8 hours (Sunday, Halmi, & Einhorn, 1995). Similarly, panic disorder also interferes with daily life and activities and results in a significant reduction in quality of life (Carpiniello et al., 2002; Hoffman & Mattis, 2000; Perugi et al., 1998; Welkowitz et al., 2004). Similar effects were observed with bizarre phobias, such as train phobia (Leonard, 1927), chocolate phobia (Rachman & Seligman, 1976), rat germ phobia (Brandt & Mackenzie, 1987) and insect phobia (Jacobs & Nadel, 1985). In contrast, deviant behaviors other than neurosis, such as specific/simple phobia, do not necessarily preoccupy attention and disrupt one’s daily activities. As noted by Stanley and Beidel (1993), individuals with simple phobias can arrange their lives so that their symptoms do not interfere with their daily functioning.

(2) Spontaneous Mode of Onset: The onset of neurotic disorders is in the absence of a contingent event that exclusively associated with the deviant behavior or can account for its development. Bizarre phobias, such as train phobia (Leonard, 1927), chocolate phobia (Rachman & Seligman, 1976), and insect phobia (Jacobs & Nadel, 1985) fulfill this criterion, as their onset occurs in the absence of a preceding frightening event (e.g., traumatic experiences with trains) that could account for the dramatic behavioral change. Similarly, conversion disorder (Blanchard & Hersen, 1976; Jones, 1980) and a variety of OCD bizarre ritual behaviors (Fenichel, 1946, p. 271; Neale, Oltmanns, & Davison, 1982; Rachman & Hodgson, 1980, p. 65; Samuels et al., 2002) occur in the absence of a contingent event that is uniquely associated with these behavioral changes. The absence of an exclusive preceding event that can account for the development of neurosis is also illustrated in Rachman’s (1978) puzzling question regarding the onset of agoraphobia: “One needs to know... why do they acquire [the fear] when on hundreds or thousands of previous exposures to the same set of stimuli, they remained unaffected?” (p. 196).

Although stress must precede the development of neurotic disorders and seems to be a necessary condition for this behavioral change, this factor alone cannot compel the development of a specific neurotic symptom. First, stress is an insufficient factor, since the same unbearable stress may lead to a variety of deviant behaviors other than neuroses, such as depression or suicide. Second, stress is not exclusively associated with a specific neurosis, as it may cause a variety of neurotic disorders. For example, intolerable levels of stress resulting from marital problems or other family conflicts may precede the development of obsessive ruminations (McAndrew, 1989), dissociative fugue (Masserman, 1946), or various types of conversion disorder (Brady & Lind, 1961; Blanchard & Hersen, 1976).

Rival theoretical camps often report findings that seemingly indicate that a certain event is associated with and constitute the cause of a given behavioral disorder. Such evidence, however, violates the criterion of spontaneous onset only if the specific event has been unequivocally proven a sufficient condition for the development of a specific disorder or exclusively associated with this disorder. For example, the etiology of panic disorder and agoraphobia is still disputable among traditional theories of psychopathology, such as cognitive (Clark, 1986, 1988), medical (Uhlenhuth, Leon, & Matuzas, 2006), and psychodynamic (De Poderoso, Julian, & Linetzky, 2005) theories.

(3) Unawareness: Patients displaying neurotic behaviors are oblivious to the underlying causes of their dramatic behavioral changes. Although patients may provide rational explanations for their symptoms, such as anorexics attributing their behavior to being overweight (Bruch, 1973) and compulsive cleaners to biological vulnerability to infection (Rachman & Hodgson, 1980), these do not reflect genuine awareness, as they are incompatible with reality. This criterion is undoubtedly one of the fundamental features of all neurotic disorders, and the one that motivated psychoanalysts to assume the existence of the unconscious. Examples of lack of awareness can be seen in virtually all cases of neurotic disorders, such as hysterical blindness (Brady & Lind, 1961), OCD (Horowitz, 2004, pp. 169-186; McAndrew, 1989; Neale et al., 1982) and anorexia nervosa (Bruch, 1978) and

panic disorder (Jacobs & Nadel, 1985; Leonard, 1927). Unawareness resulting from normal forgetting processes would not fulfill this criterion, such as when adults are questioned about their specific childhood phobias (McNally & Steketee, 1985).

(4) Rarity: All forms of neurotic disorders have low prevalence, ranging between 1%-3.5% (American Psychiatric Association, 2000).

(5) Social Judgment: Since neurotic behaviors appear irrational, these behaviors were stigmatized. Although this criterion has received little empirical attention, a number of investigators acknowledge the importance of this factor in the diagnosis of abnormality. As noted by Carson, Butcher, and Coleman (1988), “Almost by definition, however, abnormal behavior is behavior that is *unintelligible* to the vast majority of persons observing it” (p. 17). Similarly, Bandura (1969) stated:

The designation of behavior as pathological thus involves social judgments that are influenced by, among other factors, the normative standards of persons making the judgments... Psychopathology is characteristically inferred from the degree of deviance from the social norms that define how persons are expected to behave at different times and places. Consequently, the *appropriateness* of symbolic, affective, or social responses to given situations constitutes one major criterion in labeling “symptomatic” behavior (p. 3).

Thus, given APA’s statement that “classification should be based on shared phenomenological characteristics” (American Psychiatric Association, 1976, p. 11) and evidence indicating that neurosis share five common characteristics, neurosis need to be reinstate as a diagnostic category.

3.4 New Concept of Repression

RCTM agrees with Freud (1914) that repression is the key for understanding neurosis. However, RCTM preserves only the essence of this concept, defined by Freud (1915) as “Turning something away and keeping it at a distance, from the conscious” (p. 147). Moreover, Erdelyi and Goldberg’s (1979) claim that the unconscious was not a critical theme in Freud’s original conception of this notion is consistent with RCTM’s theoretical position. “In his very earliest writings (Freud, 1894/1962) repression was treated as a potentially conscious mechanism... at least at times, repression is a conscious, deliberate act” (p. 365; Erdelyi, 2006). Accordingly, RCTM defines repression as a *conscious coping mechanism that deliberately eliminates threatening stimuli from attention through the employment of distractive maneuvers*. This new conceptualization is consistent with the bulk of experimental studies that found that repression is nothing more than conscious distraction (see review by Holmes, 1974, 1990).

When people encounter stress exceeding their normal coping resources, some people intuitively feel that a certain neurotic behaviors are the best way and the least costly response to cope with their stressors. The major psychological benefit of these behaviors is repression: Stress-related thoughts become inaccessible because one’s attentions is heavily preoccupied. Thus, contrary to psychoanalysis, madness arises in response to current stress rather than historical trauma. Most importantly, *repression is the consequence, and not the cause, of neurosis*.

3.5 Choice of Symptoms

The choice of a specific symptom is determined by the individual’s **need to exercise control** over the stressor (e.g., soldiers during WWII developed conversion symptoms since they increased their ability to escape from combat stress, see Ironside & Batchelor, 1945; Mucha & Reinhardt, 1970), **the availability** of this behavior through various channels of information (e.g., media, peer group, and family; see Spanos, 1996; Spanos, Weekes, & Bertrand, 1985), and **cost-benefit analysis** (e.g., men are less likely to choose neurotic symptoms due to damage to their work abilities and social embarrassment).

3.6 A Clinical Example

One example demonstrating RCTN’s theoretical position is the autobiographical account of Leonard (1927), a poet, writer, and a professor at the University of Wisconsin. At the age of 36, he experienced a sudden panic attack when he saw a train while standing alone on a cliff overlooking a quiet lake. As described below, the onset of his symptom was irrational and ridiculous even to him:

Then on the tracks from behind ... comes a freight-train, blowing its whistle. Instantaneously diffused premonitions become acute panic. The cabin of that locomotive feels right over my head, as if about to engulf me ... The train feels as if it were about to rush over me... I race back and forth on the embankment. I say to myself (and aloud): “it is half a mile across the lake—it can’t touch you, it can’t; it can’t run you down... I rush back and forth on the bluffs: My God, won’t that train go, my God, won’t that train go away!” I smash a wooden box to pieces, board by board, against my knee to occupy myself against panic... (pp. 304-307)

The panic had such a dramatic impact on Leonard that when he was taken to his parents' home he declared, "Father and mother, this looks like the end. I guess I am dying" (p. 308). At this time, Leonard could not go a hundred feet beyond his parents' home. Later, when the university authorities threatened to dismiss him due to his long absence, Leonard moved with his parents to an apartment across the street from the university (pp. 328-329). In his self-hypnosis, conducted more than ten years after the onset of his symptoms, Leonard recalled a childhood trauma at the age of two where he was almost run down by a thundering train. Both Leonard, who had extensive knowledge of psychoanalytic theory, and advocates of psychoanalysis (Allport, 1929; Culler, 1930; Taylor & Culler, 1929, 1931; White & Watt, 1981), attributed Leonard's symptoms to repression of the train trauma.

While it would be difficult to explain this case by conditioning or cognitive theories, it is also difficult to accept the psychoanalytic interpretation. First, a large amount of studies shows that people remember rather than forget their childhood and current trauma (Piper et al, 2008; Rofé, 2008). Second, the train episode was recorded in a diary Leonard's mother started keeping for him three days after the incident. She noted that Leonard was "Talking a great deal about it ever since" (p. 16), which means that he remembered the event, rather than repressed it. Third, Leonard continued to travel by trains afterward, so even if a fear originally developed, it would have been extinguished through repeated exposure to locomotives. Leonard himself testified that he "Developed no specialized fear of locomotive... on the contrary, trains became a childish passion" (p. 24). Fourth, even if Leonard was subconsciously affected by the train episode, it is not fully clear why he developed agoraphobia rather than train phobia.

RCTN claims that Leonard deliberately adopted his panic-agoraphobic symptoms as a coping mechanism in response to an intolerable level of stress. The panic attack occurred at the age of 36, soon after his wife, the daughter of a highly respected family, committed suicide. The community regarded Leonard as demanding and self-centered and almost unanimously blamed him for her death. Leonard contemplated a great deal about the death of his wife, and it seems that the major function of his neurotic disorder was repression. Instead of being preoccupied with stress-related thoughts, such as his self-criticism of his role in his wife's death, he chose to make himself the victim of a serious disease. The intensive preoccupation with his symptoms enabled him to block the accessibility of stress-related thoughts and relieve his intolerable level of depression. The symptom meets Leonard's controllability needs. It distanced him from the community who ostracized him, and prevented him from resuming his work at the university, a preventative measure to avoid social rejection also by his colleagues. Later, when the university authorities threatened to dismiss him due to his long absence--when the controllability demands changed--he moved closer to the university to resume his teaching obligations. Leonard also adapted his agoraphobic symptoms in accordance to his unique personal needs; he was able to ride his bicycle and purchase merchandise downtown (pp. 343, 346) and even travel twice to Chicago and once to New York to meet his fiancé. He rationalized this violation of his "illness" by saying he could control his phobia because "the speed of the bicycle magnified my beat..." (p. 343).

Leonard's symptoms also fulfil the RCTN's diagnostic criteria. His agoraphobic symptoms severely disrupted his daily activities (1); the onset was spontaneous, in the absence of any event that could unquestionably account for the radical change in his behavior (2); he was unaware of the underlying cause for his behavioral change (3); his symptoms were extremely rare (4); Leonard diagnosed himself, immediately after the onset of his symptom, as suffering from illness. "I know I am in a critical condition" (p. 308) (5).

3.7 Unawareness

Although the understanding of patients' unawareness of the underlying causes for a dramatic change in their behavior is a prerequisite for the understanding neurosis, it is difficult to accept Freud's resolution for this matter for reasons specified previously. Instead, RCTN suggests that neurotic symptoms are conscious behaviors and that patients become unaware of their Knowledge of Self-Involvement (KSI) through a number of cognitive processes. Before specifying these processes, it is important to indicate that decisions made analytically, where the individual examines various options before reaching decision, and intuitively, made with little or no conscious awareness. Intuitive decision is "often experienced in the form of feelings (not words)..." (Hogarth, 2001, p. 9). "A defining property of intuitive thoughts is that they come to mind spontaneously, like percepts" (Kahneman, 2003, p. 699). Intuitive decisions are often made during stressful situations "when an in-depth analysis is not possible and the decision-maker must move quickly to a plausible solution" (Sayegh, Anthony, & Perrewe, 2004, p. 183), and they are based on the individual's experiential resources stored in the long-term memory and usually are no less rational than conscious deliberate decisions (Glöckner & Witteman, 2010; Sayegh et al., 2004). This process seems to be the way by which neurotic symptoms are chosen. For example, it seems that Leonard intuitively felt that panic and agoraphobic symptoms would be the best possible coping

strategy, based on his childhood traumatic experience, wide knowledge in the psychoanalytic theory and his unique controllability demands. However, the intuitive processes lack executive abilities and it is the conscious that decided to implement the intuitive suggestion after rapid cost-benefit analysis.

The unawareness of KSI is obtained through a number of factors that disrupt the encoding of this information and memory-inhibiting mechanisms that cause the forgetting of this information immediately after the adoption of the neurotic symptoms. Soon afterwards, patients develop self-deceptive belief that rationalize the redisplay of the symptom and prevent the retrieval of the KSI. Space limitations do not allow specifying these psychological processes, which are discussed in details elsewhere, also in reference to Leonard's case (Rofé, 2000, 2010, 2015; Rofé & Rofé, 2013). Although RCTN's unawareness model lacks supportive evidence of its own, it has clear advantage over Freud's unconscious. It integrate a large amount of research and clinical data, and most importantly this is the only theory that succeeded to integrate of all therapeutic methods pertaining to neurosis into one theoretical framework (Rofé, 2000, 2010; Rofé, 2015).

In conclusion, this article showed the traditional theories of fear and phobia cannot adequately explain these behaviors. A necessary condition for the understanding these behaviors is to make a sharp distinction between simple and bizarre phobia. While the Pavlovian paradigm seems to be the best explanation of simple phobia, the revised version of psychoanalytic theory, termed, the Rational-Choice Theory of Neurosis, appear to be the most suitable explanation of bizarre phobia.

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Evolution of the Links between Research and Applications in Psychology across the United States and France: Illustrations and Consequences of an Endless Conflict

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Abstract

The author focuses on a historical analysis of the conflicting links between what is called “applications” or “practices” on the one hand and “theoretical research” or “experimental research” or “fundamental research” on the other, by following trends and cultures. Despite numerous declarations of intent advocating the need to link practices and theories, the fact remains that both types of psychology tend to move further and further away from this aim, since the birth of psychology. This growing gap questions the possibility of a total division between “applied psychology” and “fundamental psychology”. First, the author discusses the complexity of the terms used by the different authors, such as “applied psychology”, “practical psychology” and “concrete psychology”, compared to other terms such as “academic”, “experimental”, “theoretical”, “fundamental psychology”, etc. These different names are considered as an indicator of the fluctuations in the relationship between applications and theories. Second, the author shows that the field categories in psychology were built upon different foundations in France and underlines the consequences of this process. This viewpoint will be illustrated by a French case: that of the creation and dissemination of a new psychological discipline at the end of the 80s. The interest of this example is that it shows the disparities between the academic theories and practical developments. In addition, it allows us to highlight its tension lines, with considerable consequences for students and practitioners. The discussion shows the need to implement a real space that enables the analysis of concrete practices by psychologists considered as producers of new knowledge, and in this way to make the construction of new psychology models possible.

Keywords: applied psychology, concrete psychology, academic psychology, experimental psychology, conflicting links

1. Introduction

This text (Note 1) focuses on a historical analysis of the conflictual links between what is called “applications” (Geissler, 1917) or “practices” (Munsterberg, 1917) on the one hand and “theoretical research” or “experimental research” (Danziger, 1985) on the other, following trends and cultures. Indeed, despite numerous declarations of intent advocating the need to link practices and theories, the fact remains that both types of psychology tend to move further and further away from this, since the birth of psychology (Driesch, 1925; Cartwright, 1978). This distancing will even question certain researchers, as we will see, on the need for a total division between applied psychology and fundamental psychology.

In this article, we start by presenting the complexity of the evolution of the terms “applied psychology” (Geissler, 1917), “practical psychology” (Munsterberg, 1915) and “concrete psychology” (Politzer, 1928) compared to “academic”, “experimental”, “theoretical”, “fundamental psychology” (Boring, 1950). We follow the debates on the various names given to “applied psychology” in the United States from its beginning to the end of the 19th century. These semantic debates, far from being anecdotal, show the fluctuations in the relationships between applications and theories (Kanfer, 1990; Louw, 1993).

Second, we briefly show how the categories of the various psychology fields were built on different foundations in France and what the consequences were. We illustrate our viewpoint with a case: that of the creation and dissemination of a new psychology discipline in France at the end of the 80s. Health psychology as designed in

the United States. The advantage of this case is that it shows the disparities between the academic theories and practical developments and helps to better highlight the tension lines (Santiago-Delefosse, 2012). This comparison also underlines the risks of taking these concepts from a given culture without being aware of its historical origins, or of the debates taking place within that culture (Bayer & Shotter, 1998).

Lastly, we question the need for a real space to analyse concrete practices of psychologists as “knowledge producers”. Based on our historical review, we argue that such analysis (both, academic and applied) would be the best way to contribute to build new models in psychology. This refers to the necessity to define theoretical models that are anchored within the field research, which could ideally become a “fundamental field psychology” (Munsterberg, 1915; Vygotsky, 1927, 1930; Shotter, 1980).

2. Terminological Developments of “Applied” Psychology in the United States

2.1 Topicality

Defining “applied psychology” remains difficult because the task requires us to acknowledge a wide variety of conceptualisations of psychology. In addition, as we shall see, the term does not carry quite the same connotations in France as it does in the English-speaking world.

In the briefest terms, we can speak of two major conceptions of applied psychology (Jahoda, 1990; Sanderlands, 1990; Semmer, 1993; Schönplug, 1993a, 1993b). One of these has its origins in academia and is based in experimental research. Within this conception, practitioners in the field are bound by the models which basic researchers produce. Advocates of experimental research and a majority of psychology professors, including applied psychology researchers, argue in favour of this perspective, based on the view that applied psychology is the application of academic theory to the public outside the laboratory. One advantage of this view is that it unifies psychology as both “science” and “profession” (Geissler, 1917; Goldstein, 1986).

The second major conception of the links between academic theory and its applications states that practices in the field are sources of new knowledge. In this view, practice produces “specific knowledge”, which cannot be reduced to the application of theory (Von Mayrhauser, 1993; Hallinan, 1996). This conception has held currency in varying degrees since the beginnings of applied psychology: it first emerged in the United States during the 1920s, followed by variants in France, Switzerland and the Soviet Union during the 1930s and, more recently, has garnered increased interest since the 1980s (Dewey, 1917, 1985; Baldwin, 1897, 1930; Bülher, 1927; Driesch, 1925; Vygotsky, 1927; Mead, 1909, 1938; Stivers & Wheelan, 1986). Applied psychology, in this view, represents a form of self contained research that is carried out in the course of practice, through practice and with a focus on practice. In this perspective, we speak less of “applied psychology” and more of “psychological practice”.

The debate between these two conceptions has persisted, through various permutations, since the emergence of psychology in the 19th century and remains vigorous today. It is a debate between two epistemological approaches, two ways of conceiving practices and, indeed, two ways of understanding the links between theory and application. It involves, in fact, two visions of our profession, in which we are either “informed *appliers*” or “practicing *investigators*”.

An analysis of the terminological developments of “applied psychology” in the American context provides an illustrative starting point from which to tackle the conceptual, methodological, social and institutional issues at stake.

2.2 The 1920s: “Applied” Psychology or “Second Psychology”?

Applied psychology has its origins in the Enlightenment debate that pitted clerical thinking against currents of philosophy that sought rational foundations for the human subject. Two major theories of the individual emerged from this debate: that of experimental, objectivist psychology and that of the social individual situated in cultural and political contexts. Debates between these conceptions continued through the 19th century and were further nuanced by the pragmatic and utilitarian thought, which sought to put an end to speculative conceptual arguments through a focus on “empirical facts”. The encounter of these differing influences contributed to the creation of the first major experimental psychology laboratories and the emergence of applied psychology (Jahoda, 1990).

At the beginning of the 20th century, applied research focused on understanding human action and the impact of the human factor, as situated in complex contexts in which decision making, organisation, and production were seen as essential functions.

In the first issue of *Applied Psychology*, Ludwig Reinhold Geissler (1917) (Note 2) stated that applied psychology corresponded to what was also known as “practical psychology”, “psychotechnics” or “psychotechnology” and was opposed to “pure”, “theoretical” or “general psychology” (or “academic/experimental psychology”) as developed within the confines of university laboratories.

For Geissler, applied psychology was more akin to art than to science and was to focus on improving the human condition rather than becoming mired in intellectual discussion. Geissler’s definition was closely in line with contemporary social demand for measuring instruments that could increase human productivity and efficiency (at work and school, for example). Importantly, this definition of applied psychology allowed its proponents to relegate potential analyses of practices and of the role of practitioner-researchers to the background, thus widening the gap between theory and practice to the detriment of any methodical examination of existing divergences.

Other authors during the same period proposed a different approach to “applied” psychology, however. Notable among them was Hugo Münsterberg (1863-1916), a former student of Wilhelm Wundt (Blumenthal, 1980, 1985), associate of William James (1890) and director of Harvard’s psychology laboratory, who pioneered various branches of applied psychology in the United States (criminal, clinical, work and industrial psychology, among others).

Münsterberg (1913,1915) formalised two necessary and inseparable currents: causal psychology (the psychology of mental states, using experimental methods) and teleological psychology (the psychology of the individual, using social science methods with a focus on meaning). It is the latter current that became known as “second psychology”. In Münsterberg’s view, this psychology was to concentrate on individuals as producers of meanings who project themselves into the future, viewing subjects within specific contexts and employing methods specifically suited to this type of study (Münsterberg, 1915; Chandler, 2002). Among those who followed this path and developed methods and studies closely linked with fieldwork were Jean Piaget in Geneva (Cahan, 1984), Heinz Werner in Hamburg (1940), Lev Vygotski in Moscow (1927; Wertsch, 1981), and Henri Wallon in Paris (1938).

2.3 The 1930s, 40s and 50s: Economic Crisis and the Role of Philanthropic Foundations

One of the effects of the economic crisis of the 1920s was an intensification of “utilitarian” and pragmatic pressures. Subsequently, three forms of psychology coexisted during the 1930s and 1940s.

- 1) University researchers developed academic (experimental) psychology, proclaiming it the sole representative of scientific psychological research.
- 2) Münsterberg’s “second psychology” advocated the use of clinical and qualitative methods in the study of situated activity. It also held currency in universities (Moore, 1978; Geiger, 1986), but quickly entered into conflicts of interest with academic/experimental psychology (Freyd, 1927; Danziger, 1988).
- 3) The third form, “applied psychology”, which was closer to Geissler’s pragmatism, quickly spread beyond academia, largely due to the support of private philanthropic foundations.

In the view of many philanthropic foundations, research in psychology was to be concerned exclusively with the practical problems of everyday life; it was to be oriented towards, in their definition, “useful” objectives. Philanthropic foundations supported work specifically dedicated to individuals’ well-being (Note 3). They contributed to the financing of significant methodological innovations, as well as to the promotion of the psychological discipline among the general public, while at the same time increasing the social control function of applied research (Ross, 1991; Chandler, 2002). In the period following the Second World War, Münsterberg’s “second psychology” was gradually supplanted by the discipline’s experimental current. Subsequently, philanthropic foundations became major contributors in the financing of applied research in psychology and the social sciences (McKeachie & Brim, 1984).

This was the context in which American universities first designed applied research curricula for practitioner-researchers in the late 1940s (Harvard University, 1947; Moore, 1978). The curricula of academic/experimental psychology cohabited with applied psychology, but defined it as applying the models and theories produced by the more “scientific” approach (Freyd, 1926) (Note 4). There thus emerged a “marriage of convenience” between academic applied psychology and academic experimental psychology, from which both perspectives drew benefits: the former was able to attract greater numbers of students, while the latter was better able to ensure financing for its laboratories.

2.4 From the 1990s to the Present: An Ongoing Debate, a Thriving Semantic Field, a Turn towards “Practices” (“Applied Psychology”, “Practical Psychology”, “Investigative Practice”, “Knowing of the third kind”)

Debates on the definition of applied psychology and its object of study returned to the fore during the 1990s (Schönplflug, 1993a, 1993b), when proponents of three major perspectives vied for predominance.

- 1) Some advocated an “applied psychology” that was in line with academic/experimental psychology (Von Mayrhauser, 1993).
- 2) Others supported a relatively independent applied psychology that accorded place to the contributions of the academic/experimental viewpoint, in an approach similar to Münsterberg’s second psychology (Cahan & White, 1992).
- 3) Others yet backed an entirely independent applied psychology as an integral practice and research discipline unto itself (Louw, 1993).

Although relatively diverse as a group, proponents of entirely independent applied psychology generally argued for a “practical psychology”, which draws on the contributions of psychological practices exercised in context. These authors argued that practices produce new knowledge through their effects in context and that analyses of practices produce new learning and new models (Semmer, 1993; Sugiman, 2006).

Certain authors argued also that the differentiation of “practice” and “theory” originated in the postulate that “theoreticians” and “experimentalists” could not claim to exercise any “practices” by which to characterise their work. In this view, therefore, theory (knowing “what”) and practice (knowing “how”) are inseparable (Stivers & Wheelan, 1986; Sandelands, 1990). Thus, to place theory and practice in opposition was to avoid studying the links between them, neglecting the knowledge produced by their joint action (Shotter, 1980, 1993a, 1993b; Hill & Morf, 2000). Danziger (1987, 1994), in particular, proposed a focus on “psychologists” “investigative practices”, which he saw as the precise analysis of the work exercised by psychologists in the various contexts of their work. This analysis was to favour the development of theories connected to the reality of psychologists’ work, as well as the comprehensive examination of their activity through dialogic interaction, integrating contingent social aspects (Note 5). Examining the joint action of theory and practice, in this view, would produce new psychological, a knowledge “knowing of the third kind” (Shotter, 1997).

Briefly speaking, therefore, in the past thirty years we have seen a gradual shift from a conception of practice as the reproduction of theory in non-experimental settings towards that of a critical questioning of the foundations of applied psychology. Increased interest in “investigative practices” and in the knowledge produced by the joint action of theory and practice in the course of psychologists’ work signals a turn towards the analysis of practices and, indeed, towards a new conception of practices as integral sources of knowledge (Note 6).

3. France: From “Applications of Psychology” to “Psychological Practices”; Different Debates in a Different Culture.

3.1 From the Late 19th Century to the 1920s: Experimental Psychology Laboratories Spur the Emergence of the “Applications” of Psychology

The position of applied psychology in France has been conditioned by a distinct set of cultural and historical developments, producing specific categories and concepts. Notable among many other differences is that divisions within the discipline in France have not followed the American pattern of opposition between academic/experimental and applied psychology (Carroy, Ohayon, & Plas, 2006).

In the late 19th and early 20th centuries, it was the directors of French experimental laboratories who provided support for applied psychology. In those early days, laboratory directors in France were often psychiatrists, working in hypnosis and influenced by work in biology, or philosophers specialising in the humanities and linguistics. Work in French experimental laboratories during the period produced applications in many domains, including :

- 1) Pathological psychology, including work on hysteria, hypnosis, etc. (Charcot, Ribot, Janet) (Bonduelle, Guelfand, & Goetz, 1996; Ribot, 1900; Janet, 1889, 1929).
- 2) The social psychology of Tarde (1902) and Le Bon (1895).
- 3) The first psychometric tests, developed by Binet (1903) and Simon (1904).
- 4) Lahy’s selection tests (Edouard Toulouse and Maurice Lahy founded a psychotechnics laboratory for the Paris transit authority in 1924) (Lahy, 1916; Toulouse, 1910).

These developments were not, however, identified as “applied psychology”. Indeed, the term was only rarely encountered during the period. They were rather seen as the “practical” extensions of the results of research in laboratories, most often categorised according to sub-discipline, such as general, clinical, social, counselling, school, or work psychology. In 1929, Pierre Janet (1859-1947), the research Chair in experimental and comparative psychology at Collège de France, noted that “*psychology would be futile if it satisfied only the authors of philosophical systems, without any value to the public, to the merchant, for example, who may say: I would like for this to help me make money*” (Carroy, Ohayon, & Plas, 2006, p. 185).

3.2 Between Two Wars: A Broad Expansion of Applications Driven by Laboratories and their Directors

In the inter-war period, pressing social needs contributed to an increase in the demand for psychological applications in the domains of work, professional assessment and counselling, among others. In the field of psychopathology, psychiatrists advocating for a pathological psychology (whether biological or social) began to promulgate their ideas through journal publications, driving forward the idea of an independent “new, practical, essentially clinical psychology” (eg. *L'Evolution Psychiatrique*, first published in 1925).

Many directors of experimental/academic psychology laboratories reacted to these developments by insisting on the social and political dimensions of the increased social demand for applications (Henri Wallon, 1879-1962, Laboratoire de psychobiologie de l'enfant EPHE-Wallon, 1938). Henri Piéron, founder of the Institut de Psychologie and director of the experimental psychology laboratory at the Sorbonne, succeeded in making the counseling psychology curriculum the first branch of applied psychology to achieve the status of a recognised university degree programme, in 1938 (Piéron, 1949). It is interesting to note that Piéron's conception of the links between theories produced by laboratory research and their applications in the field was at once thoroughly positivist and profoundly engagé politically. Piéron wanted psychology to help secure the individual's place in rational social organisation, to rectify class privileges in favour of those less capable, since the community loses out on the benefit of high skills when these are ignored because they belong to classes that are effectively sacrificed (Piéron, 1949).

Throughout the development of the “science” of psychology, until the 1960s, much research and laboratory work was devoted to developing applications designed to aid the emancipation of the working classes. This work, however, was not identified as applied psychology, but as the direct application of laboratory work. It was only in 1959 that a *Revue de Psychologie Appliquée* first appeared, published by a private research centre involved in the production of psychometric tests.

During the 1930s, the field's greatest concern were abuses of psychology outside of the laboratory, given the increased numbers of untrained individuals attracted by the social demand described above. This period also saw the first extensive critiques of psychology, which, originating in philosophy, questioned the discipline's conceptual and methodological approaches.

In 1928, in his *Critique des Fondements de la Psychologie*, Georges Politzer opposed idealised and abstract approaches to psychology, in opposition to which he proposed a “concrete psychology” focused specifically on the individual and the individual's lived experience as a synthesis of individuals' behaviours and the meaning they accorded to their actions. This “concrete psychology” was to be both a research method and a practice based in the “fieldwork” of everyday life. Politzer's definitions have much in common with Münsterberg's “second psychology”, whose conception of a psychology anchored in specific practices later influenced not only the founders of the new psychology of the 1950s (Lagache, 1949; Merleau-Ponty, 1945), but philosophers (Foucault, 1954; Canguilhem, 1958) as well. Following the temporary discontinuation of these debates during the Second World War, Daniel Lagache established France's first Bachelor's degree in psychology in 1947.

3.3 The 1950s: Academic Experimental Psychology and Academic Clinical Psychology in Opposition; Method and Practice as Generators of New Knowledge

From the beginning of the 1950s, the combined influence of two opposing camps resulted in the separation of university psychology programmes from philosophy: experimental psychology researchers, who strove for recognition as “scientists”, and clinical/pathological psychology researchers, who sought to establish a distinct profession.

It was during this decade that Daniel Lagache (1903-1972), psychiatrist, philosopher and psychoanalyst, played a major role in firmly establishing psychology as a research discipline in French universities and as a new profession. Lagache believed that psychology was fundamentally unified, despite the existence of the two major contrasting methodologies of the discipline's experimental and clinical branches; Lagache identified the psychoanalytical method as belonging to the clinical branch (1949).

Consequently, for Lagache, psychological applications and, in particular, clinical psychology could not be reduced to an applied psychology. It was both a research method and a fertile professional practice that together generated new, distinct and specific knowledge.

3.4 The Emergence of Clinical Psychology in Health Settings: A New Field of Professional Practice

Among Lagache's numerous contributions to the field during the 1950s was his elaboration of a new sub-discipline of clinical psychology, closely linked with "medical psychology". Remarkably, the objectives which Lagache elaborated for clinical psychology in 1955 remained relevant in 1980, when the APA published its definition of health psychology (Lagache, 1955). According to Lagache, clinical psychology in health settings was to:

- extend psychological care to patients suffering from somatic illnesses;
- understand the effects and consequences of the physician-patient-family relationship;
- describe psychological traits comparatively to type and form of illness;
- and identify the impact of group values and beliefs, including their influence on such aspects as adherence to prescriptions and preventive recommendations.

Specific to Lagache's vision was that this approach to psychology in health settings was to be an integral part of clinical psychology, in the full acknowledgment of clinical methods and the contributions of psychoanalysis (Santiago-Delefosse, 2000, 2002). By the late 1950s, general hospitals (somatic health) were hiring clinical psychologists, whose education was primarily focused on clinical methods and psychoanalytic theory.

At this time, practising psychologists in health settings in France did not consider themselves to be practising "applied psychology" (Note 7). Nevertheless, questions on the social uses of psychology were being hotly debated in the pages of specialised journals and among the ranks of psychological associations.

3.5 The 1960s and 1970s: A Critique of the Role and Function of Psychologists as Researchers and Practitioners

Beginning in the 1960s, sustained critiques by philosophers (Foucault, 1954; Canguilhem, 1958), psychoanalysts (Roudinesco, 1982) and psychiatrists (Evolution Psychiatrique group) (Note 8), argued that the new generation of psychologists were neither philosophers, nor psychoanalysts, nor physicians. It was the philosopher and physician Georges Canguilhem (1904-1995) who formulated the most enduring of these critiques when he questioned the discipline's status and foundations, as well as its function as an instrument of social control. For Canguilhem, "Psychology is a discipline whose status remains unfixed and which lacks foundations. It draws in unequal and uncontrolled measure on philosophy, on psychiatry, and on received ideologies about social roles and positions... A great deal of researches in psychology mix: a philosophy without rigour, ethics without exigency, and medicine without control" (Canguilhem, 1958). Canguilhem warned, moreover, against the social use of insufficiently controlled social practices in the service of power. Not without of a sense of humour, he recalled that when one "*exits the Sorbonne onto the rue Saint-Jacques, one can walk either uphill or downhill; if you turn uphill, you get closer to the Panthéon, where several great men are preserved, but if you go downhill, you most assuredly wind up at the Police Prefecture*" (1958).

3.6 From 1985 to the Present: The Institutionalisation of Psychology Intensifies, "Health Psychology" Emerges

In 1985, France adopted legislation regulating the exercise of the psychological profession. In defining the parameters of practitioners' activity, the new law contributed to the institutionalisation of psychology. The legislation reserved the title of psychologist to individuals having completed a minimum of 5 years of higher education in the discipline (equivalent to the combined duration of Bachelor's and Master's degrees) and having obtained a high-level diploma, signifying adequate training in research and practices. In doing so, the law responded to the concerns of professional associations at a time of accelerated influx of new students into psychology programmes in French universities. In fact, the numbers of French students enrolling in psychology programmes had been on the rise since 1980. For the most part, these new entrants opted for curricula leading to career paths in children's education and health settings, rather than extended academic careers. The most employable degrees in psychology at the time were those in work psychology, childhood psychology and clinical psychology. These were, consequently, the options taken by most students. In response to this trend, some researchers working in laboratory and basic research sought to link their work more closely with applications so as to attract students to their research areas; avec ces changements, peut-être que la phrase précédente devient moins nécessaire? (For the most part, these new entrants opted for curricula leading to career paths in children's education and health settings, rather than extended academic careers).

This was the context into which health psychology arrived from the United States at the beginning of the 1990s. The French researchers who subsequently contributed to the field had closer ties with experimental laboratories and psychobiology than with clinical psychology (Note 9); they were even less closely tied with clinical psychology in health settings, which had already developed a strong background in practices since the 1960s. They thus carried over with them curricula and research directions marked by the assumptions of applied psychology, as developed by Geissler and experimental researchers in the United States during the 1960s.

3.7 American Mainstream Health Psychology: A Rejection of Active Practice

Seen by many as a transplantation of ideas from experimental psychology, the new stream of health psychology did not enjoy a warm reception in France (Giarni, 1997). Researchers in clinical psychoanalytic psychology, in particular, were wary of what they perceived as a challenge to clinical methods and psychoanalytic theory.

The most extensive critiques, however, came from professional associations and practitioners, who based their arguments on their practices. Importantly, they objected to being reduced to the role of “appliers” of methods and questionnaires developed in laboratory research; they objected also to the imposition of socio-cognitive and behavioural theories akin to bio-medical thought. And, in addition, they questioned the ethics of practices that paid scant attention to individuality and distinct life experiences (Sidot, 1997).

Thus the encounter of health psychology and the long French tradition of clinical psychology in health settings may best be described as a head-on collision. Since most French practitioners formulating these critiques were likely unfamiliar with the discipline’s debates in the English-speaking world, most also likely did not know how closely their ideas aligned with English-language discussions on critical psychology. In addition, French practitioners’ thinking on these issues also paralleled the “turn towards practices”, which emerged from reflections on the links between theory and practice. Their critiques, operating on the conceptual, methodological, professional and ethical levels, argued that health psychology was characterised by:

- an individualistic, reductive conception of linear causality;
- a lack of reference to subjectivity and subconscious mechanisms;
- an absence of a psychological theory of the human individual;
- the application of socio-cognitive experimental research theory without reference to fieldwork knowledge;
- a widening of the gap between theory and practice;
- the paramedicalisation of the profession as an adjunct of medical practice, employed only to aid its efficiency and comfort;
- a reduction of psychologists to the role of “appliers” of theory within bio-medical models;
- and a failure to reflect on psychological ethics.

The arrival of health psychology in France resulted in a clash of cultures. In 1997, the president of the European Society of Health Psychology, reflected on the discipline’s reception in France: “With our first conference in France, we are making another significant step towards becoming a Society that truly represents all health psychologists in Europe ... Since France has been under-represented in our Society so far, I am curious about the long-term effects of the meeting in Bordeaux.” (Schwarzer, President, EHPS Newsletter, 1997).

3.8 Practicing Psychologists: Recognising the Role and Importance of Practices as Contributions to the Production of Knowledge

Clinical psychology in health settings remains a dominant force in psychological practice. Over time, health psychology curricula have become increasingly diversified under the influence of individual researchers and university programmes. Some, though not many, continue to teach mainstream health psychology on its own. Most, however, have integrated its contributions into the wider scope of psycho-social and clinical knowledge (Note 10).

In France, the discipline’s conceptual and methodological rivalries have not been put to rest and practitioners continue to vociferously argue that professional practices are generators of knowledge, rather than simply applications. In 2006, a public petition signed by French practicing psychologists, which even garnered media attention, asserted their conception of psychological practices and their rejection of the profession’s medicalisation by insisting that:

- Psychology, which has its origins in philosophy, belongs to the social sciences and evolves through practices based in dialogue and exchange.

- Psychologists working in the health field seek to re-establish the patient's connection between the somatic and the psychic, with regard to each individual's history.
- Medicine and psychology are two fundamentally distinct disciplines, which are sometimes complementary, but in no circumstance is it possible to substitute one for the other or to subordinate one to the other.

The two currents of health psychology operating in France propose radically different conceptions of "applications". Adherents of mainstream health psychology continue to advocate the application of theories originating in academic knowledge and research laboratories. Adherents of clinical psychology in health settings, on the other hand, argue that intervention and research practices must be designed so as to allow for the generation of new knowledge, placing particular emphasis on psychologists' research, everyday practice and ethics.

4. Discussion: Theorising Practice, towards a Basic Fieldwork Research?

As we have seen, discussions in the United States and in France—although originating from different premises and operating in unconnected categories—have nevertheless arrived at similar positions and produced comparable results. If the existing oppositions are to be transcended, however, current positions in social science research must change, as must also, by consequence, the methods of acquiring knowledge. Such transformation requires basic research in the field to focus on the concepts that construct facts, on the realities that underpin them, and on the tools used to establish models and interpret theories.

Ultimately, it is practice—whether in psychopathology, psychopedagogy, criminal psychology, work psychology or organisational psychology—that allows us to contrast conceptually idealistic positions with the effects of fieldwork. Practice, therefore, cannot be considered as merely a platform for the application of theory or as the end result of theory. On the contrary, in fact, practice is the anchor and the compass of theory in the advancement of social science (Argyris & Schon, 1976; Barlow, Hayes, & Nelson, 1984; Kanfer, 1990; Hill & Morf, 2000). Writing in 1927, Vygotsky expressed a similar view when he stated that the way out of the crisis between causal and teleological psychology required the analysis of practices, indeed, practice insinuates itself into the deepest foundations of the research process and transforms it, from beginning to end Vygotski (1927/1999): *"The most complicated problems of psychological methodology are transplanted into the field of practice and it is only there that solutions to them may be found. There, discussion ceases to be sterile, it is over. "Method" means "way"; we think of it as a means of gaining knowledge, but the way is determined in all respects by the end to which it leads. That is why practice restructures all methodology in science"*. (Vygotsky, 1927, p. 236)

Danziger's work on investigative practices and the analysis of methodologies, which allows us to understand what it is we do and to theorise the psychologist's activity, takes a similar direction. We must however remain careful not to confound "theorising" with "rationalising", in particular when investigating practices.

"Rationalisation" is the purview of intellectualisation mechanisms that ignore field-based knowledge, resulting in theories viewed as indisputably applicable in the field. This is entirely different from the tension at play between theory and practice, when practice is both the starting point and the culmination of the process. Analyses of this tension must define the constituent parts of practice and the causes and means of its operation, as well as question its contradictions and limits, seeking to account comprehensively for its development, character and meaning. The analysis of the researcher's activity is part of the methodology, as is the historical analysis of the methodological apparatus, including its assumptions, ideological and epistemological foundations, and its dynamic. The intersection of Danziger's work on investigative practices and Vygotsky's methodology for "analyses of the traces of activity" reveals the importance of practices which are decidedly not mere "applications". In fact, practices structure interventions, methodologies and theories to such a degree that their analysis could provide the anchor and the compass of future directions in research for various disciplines.

Such a methodological utopia, however, necessitates two components: first, laboratory research must focus on its own practices, methods and potential conceptualisations in order to understand how and why it establishes specific practices of inquiry; second, fieldwork analyses must avoid overly concentrating on the "subject's truths" and extend their scope to include methods of intervention, as well as the underlying frameworks and the types of knowledge they generate. This joint methodological outlook remains to be constructed (Santiago-Delefosse, 2012).

5. Conclusion

This brief historical overview of the conceptual developments of "field", "applied", "second" (Cahan & White, 1992), "concrete" (Politzer, 1928), "practical" (Sanderlands, 1990; Craig, 1996), "investigative" (Danziger,

1987), and “third kind” (Shotter, 1993) psychology has highlighted the key challenges of the attempts to define applied psychology.

The comparison between the United States and France shows the risks underlying the act of taking certain concepts from one culture and to transfer them to another one, without any awareness of internal debates or origins of the borrowed concepts. By following this approach, there is the risk of stressing the misunderstandings and oppositions towards a given theoretical perspective because of a badly known terminology. Be that as it may, both in the United States and in France, the debate to acknowledge the theoretical contributions from field practices remain open. No matter the eventual outcome of these debates, whether they lead to the discipline’s independence or not, it is clear that since the 1970s increasing numbers of researchers have refused to view the psychology of practitioners as no more than a platform for the application of academic theory (Danziger, 1987, 1990; Schotter, 1993b).

Inquiries have shifted towards the search for a deeper understanding of practices and their effects, that is, towards analyses of the exercise of practices (both in the field and the laboratory). This “practical and concrete psychology” (Poltzer, 1928) has the benefit of focusing on the analysis of real psychological practices as generators of psychological knowledge (Vygotsky, 1927; Kozulin, 1990). The approach helps to tie together practice and theory, thereby acknowledging the creative role of practitioners in the field, opening onto a psychology that is not averse to practices and a reflexivity on those practices (Meyerson, 1947; Argyris & Schon, 1976). The tying together of practices and conceptual models implies that without conceptual reflexivity there can be no transferable practices to contribute to the development of knowledge; by the same token, without practices there can be no theory, only intellectualisations that idealise the possible applications of theory. As our brief historical review shows, this, indeed, is the fundamental difference between an applied psychology in the service of utilitarian pragmatism and a practical psychology that allows for basic research in the field (Sugiman, 2006; Santiago-Delefosse, 2012).

The integration of “first” and “second” psychology sought by Münsterberg (Münsterberg, 1915) has not yet become reality and neither has Danziger’s (Danziger, 1987) wish for the primacy of investigative practice. A developmental psychology focused on the analysis of traces of activity, as envisioned by Vygotsky (Vygotsky, 1927; Del Rio Carral & Santiago-Delefosse, 2015), remains to be developed at the level of practices and methodological tools. Linking laboratory inquiry with inquiry in the field through the medium of analyses of psychologists’ activity offer an avenue: not of reconciliation and, even less so, of unification among the branches of psychology, but one serving to set them in mutual tension. Such tension would provide an additional level of opportunity for the production of knowledge in the links between practice and theory.

Failing such a setting in tension, we will continue to have theory that is inconsistent with work in the field and practices without underpinnings, increasingly tied to illusory facts of lived experience, making impossible any effective modelling of their activity and modes of action. For now, the research practices [methods?] of “basic grounded psychology” remain to be developed, as do the models that will allow for its formalization (Note 11).

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Notes

Note 1. Part of this research was the subject of a conference at the 28th International Congress of Applied Psychology.

Note 2. A native of Germany, Ludwig Reinhold Geissler held the position of Associate Professor of Psychology and Education at the University of Georgia from 1912 through 1916. Prior to his time at UGA, Geissler studied and taught under Professor E. B. Titchener at Cornell. In 1916, while at the University of Georgia, Geissler became the principal founder of *The Journal of Applied Psychology* with the aid of G. Stanley Hall and John Wallace Baird of Clark University in Worcester, Massachusetts. For Geissler, what is applied psychology depends (a) upon the meaning of the word “psychology”, and (b) upon an understanding of the differences between “applied” or its synonyms and “pure” or its synonyms: “By ‘applied psychology’ we mean what is sometimes called practical psychology or psychotechnics or psychotechnology as opposed to “pure” or “theoretical” or “general” psychology. The aim of the applied sciences, on the other hand, is more prosaic, for they strive to enrich and improve the conditions and phases of human life and conduct, that is, they try to help us master or control difficult situations or meet them with more successful responses” (1917).

Note 3. In the period 1922-1929, the Laura Spelman Rockefeller Memorial Fund awarded 41 million dollars to interdisciplinary research on work and the social sciences.

Note 4. General and applied psychology are apparently not to be distinguished in regard to method. Although psychology cannot be applied, it can and should be made a broader and more practical science by enlarging its scope and making its experiments where people work and play as well as in the laboratory. The psychologist should be thought of as one who studies human behavior under all conditions without exception.

Note 5. It is neither purely conceptual knowledge, nor is it knowledge on the use of theories and methods; it is rather a “knowing of the third kind”, which is co-constructed in and by action.

Note 6. Rather than as “reproducers” of existing models and theories.

Note 7. Near the end of my studies, in the late 1980s, I had been utterly stunned when the editor of a basic psychology journal informed me that a text I had submitted dealt with “applied psychology”, when I had written on theoretical psychology and attendant methodological and clinical issues. The identity of clinical psychologists was based on Lagache’s assumptions, in which the analysis of practices linked with the method of inquiry was to produce new basic knowledge.

Note 8. Such attacks point also to disputes and rivalries among researchers.

Note 9. Coming from a background in differential and social cognitive psychology, Bruchon-Schweitzer (1994, 2002) worked on the development and recognition of the mainstream health psychology. During the same period, Fischer (1998, 2002), with a background in social and community psychology, proposed a somewhat different definition. According to him, health psychology is “an approach that brings together various contributions from psychology, especially those of social psychology and of clinical psychology, and it takes into account the context of the illness and the social environment”. Fischersdefinition should have been less liable to offend established “psychologists in health settings”, because it is quite close to the one proposed by Lagache and leaves room for psychodynamic approaches.

Note 10. Bordeaux and Toulouse: Health Psychology mainstream (Bruchon Schweizer, 2002; differential psychology)—Aix-en-Provence: Social and health psychology (Morin, 2004) and Psychopathology (Gori & Del Volgo, 2005)—Metz: Clinical and health psychology (Fischer, 1998; social clinical psychology)—Amiens: Clinical and Health Psychology (Santiago-Delefosse, 2002)—Poitiers: Psychoanalysis and psychosomatics (Keller, 2006)—Rennes: Psychoanalysis and medicine (A. Abelhauser, Doucet, & Gaspard, 2011).

Note 11. These debates also touch on questions of researchers’ training and their familiarity, or lack thereof, with practices in the field. Many researchers who teach either the one or the other branch of applied psychology hold,

for the most part, an idealised vision of the field of application and its complexity. This in turn helps to explain their adherence to a vision of practice as a platform for the application of academic theories (whether applied or basic). The gap between such academic teaching and practitioners in the field keeps growing due to the lack of a thorough consideration of the knowledge and learning that practices produce in action.

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Group Based Cognitive Behavioral Therapy for Depressed Iranian Migrants in Austria

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Abstract

The purpose of this study was to evaluate the effectiveness of Group based Cognitive-Behavioural Therapy (GCBT) for Iranian migrants with Major Depressive Disorder (MDD) in Austria. Twenty-three Iranian women and men with an average, 40.4 years old that met DSM-IV criteria for MDD were randomized to the GCBT, Individual CBT, and Waiting-List control groups. All two types of interventions comprised 17 sessions lasting 60 minutes for individual CBT and 120 minutes for GCBT. The results showed a significant reduction in depression symptoms in GCBT group, evaluated by BDI-II, BSI (scale 4), and ATQ. The significant decrease in depression was found for individual CBT group with respect to BDI-II and ATQ as well. However, individual CBT in this study was not successful to decrease depression mood evaluated by BSI (scale 4) from pre- to post-intervention. A significant group differences between GCBT and individual CBT in BSI (scale 4) at post-intervention may highlight that GCBT in this study showed a stronger effect on depressed mood compared to individual CBT. The follow-up measurements revealed a significant deterioration for both groups. The findings from this study suggest that the reasons behind the Iranian migrant's depression may be related to their chosen dysfunctional acculturation strategies. Therefore, GCBT can be considered an appropriate treatment for Iranian migrants with MDD by encouraging them to be more in contact with people from their own socio-cultural background and motivating them to modify their acculturation attitudes.

Keywords: immigration, acculturation attitude, Iranian migrants, major depressive disorder, Group based Cognitive-Behavioural Therapy

1. Introduction

Migration as a global phenomenon may confront immigrants, who left their own country in pursuit of financial, political, social, familial, educational, and personal goals, with a confusing number of threats to their self-esteem and cultural identity (Berry, Kim, Minde, & Mok, 1987a). According to Berry's model of acculturation, there are two main factors in estimating the type of acculturation: retention of the heritage culture and attainment of the new one. These factors result in four acculturation strategies: integration (retention of one's heritage culture as well as attainment of the new one), separation (retention of the heritage one but not attainment of the new one), assimilation (abandonment of one's heritage culture and adoption of the new one), and marginalization (the loss of one's heritage culture while failing to adapt to the new one). Although bicultural (integrated) individuals must be more under pressure from both the heritage and host culture communities, they generally have a better psychological adaptation (Berry, 1997). Berry et al. (1987a) showed that the Cultural marginalization is significantly related to depressive symptoms and it is expected to be relevant to psychological disorders and psychosomatic problems. In some studies, Loneliness, has been mentioned as a negative outcome of immigration (Sam & Eide, 1991; Zheng & Berry, 1991) and has been connected to diverse types of psychological distress, including mood disturbances (Ward & Kennedy, 1994), reductions in life satisfaction (Neto, 1995), and decreased satisfaction with coping potency (Chataway & Berry, 1989). Similarly, some investigations have found the reliable link between migration and physical and mental health problems (Ward, Bochner, & Furnham, 2001). The results of study about Iranian migrants conducted by Ghafarian (1998) revealed that striving to be concurrently connected to both the heritage and host cultures may result in high levels of mental pressure. In another study, Ekblad, Abazari and Eriksson (1999) found that Iranian migrants' well-being and mental health

status in Sweden was lower than non-immigrants. In case of Iranian migrants, depression can be brought about by deficit arising from failure to stabilize contradictory gender roles, family hierarchy, and traditional standards in the host culture. The cognitive schema of Iranian migrants is erected based on belief and value systems raised from their collectivistic socio-cultural background. Process of migration, loss of old friends, family, social support, obstacles to communicate successfully, and difficulties in changing life style, value system and some traditional beliefs can be able to disrate self-respect and increase the possibility for depression (Mohammadi, Taylor, & Fombonne, 2006). As numerous studies confirmed the effectiveness of social support on decreasing the psychological problems (Biegel, Naparstek, & Khan, 1980; Neto, 1995), group based therapies such as GCBT may be considered an effective way for motivating the Iranian migrants to be more in contact with people from their own culture. So consequently it can detract their depression by eradicating their negative cognitions which were shown by Kwon and Oei (2003). They demonstrated that automatic thoughts might play the mediating role between depression and dysfunctional attitudes. These results were also confirmed by Clark, Beck and Alford (1999). They showed the significant reduction in severity of depression after changes in automatic thoughts and dysfunctional attitudes. According to Beck' cognitive theory of depression, the basic causes of depressive symptoms are recognized as negative thoughts, which are brought about by dysfunctional beliefs. Considering a direct relationship between the amount of people's negative thoughts and the severity of their depressive symptoms, high level of depression' severity can be experienced by the more amounts of negative thoughts. Beck also demonstrated that depressed people's way of thinking is dominated by three major dysfunctional "schemas" as follows: 1) I am imperfect and insufficient, 2) All of my experiences and plans lead to defeats, so I am complete failure and useless, and 3) The future is just disappointing and hopeless. Together, these three dysfunctional themes are characterized as the Negative Cognitive Triad by which occurring the depressive symptoms is clearly predictable (Beck, 2011). Therefore, depressive symptoms can be reduced by some major changes in negative thoughts and dysfunctional attitudes and CBT is effective for depression because of its specific concentration on these negative automatic thoughts and dysfunctional beliefs. Other studies have also assessed the effectiveness of GCBT on depression (Antonuccio, Akins, Chatham, Monagin, Tearnan, & Ziegler, 1984; Jacobson & Hollon, 1996). They recommended that GCBT can be considered a main treatment for depression. Considering the Iranian's collectivistic nature of culture, depression or other psychological problems may be brought about by feeling isolated and marginalized, therefore GCBT may motivate the Iranian migrants with depression to be more involved in Iranian socio-cultural activities and have more connection with people from their own culture.

1.1 Overview of the Present Study

The overarching aim of the present study is to evaluate the effectiveness of GCBT among Iranian migrants with MDD in Austria. Considering the limited availability of Iranian psychotherapists in Austria as well as the costlier affected characteristics of GCBT (Oei & Dingle, 2008), it should be taken into account that the GCBT may offer advantages for Iranian migrants. The findings of the current study can pick out and emphasize the special effects of intra-ethnic/racial based group therapies in treatment of migrants with depression. Furthermore, they can clarify exactly how/why intra-ethnic/racial based group therapy increases the psychological well-being among Iranian migrants with MDD and also which factors can make its influence stronger. In addition, as the main theory behind this study is Berry's acculturation theory, the findings can show that which kinds of acculturation attitudes may be mostly chosen by Iranian migrants in Austria and how/why it could lead them to psychological disturbances such as depression.

1.1.1 Hypotheses

Based on the results of the aforementioned studies: 1) With respect to between group post-intervention comparison, the GCBT is expected to be significantly more effective than the individual CBT; 2) With respect to pre-intervention/post-intervention comparison, a significant reduction in clinical symptoms after interventions in both GCBT and individual CBT conditions is expected; 3) With respect to follow-up measurements, the effectiveness of both GCBT and individual CBT in intervention groups is expected to be persistent.

2. Method

2.1 Participants

Although 41 Iranian migrants had indicated that they wished to participate, 23 participants could be included in the analysis of final outcomes. 1) Five participants failed to present for the first session and they informed that they had lost interest. 2) Three participants did not meet the proper criteria for participation. 3) Four participants entered interventions, but had failed complete the sessions. 4) Six participants became ineligible after starting antidepressants after third session of the GCBT and after second session of the ICBT (the participants, who took

medicine, were not asked to leave the interventions, but their results were not added to the final results). 5) Two participants failed to show up for one-month follow-up examination and could not be reached by email and phone. 6) One participant did not show up for six-month follow-up examination, because she had left Austria.

To be included in the present study, the participants had to meet the following criteria:

1) The participant must be between 30- 60 years old. 2) The participants must confirm their consent to participate. 3) The participants must fulfill DSM-IV criteria for Major Depressive Disorder (DSM-V had not been published yet). 4) The participants must have suffered from mild/or moderate depression for at least 1 month. 5) The participants must not have any other comorbid disorders, such as anxiety disorders, or any different types of addiction. 6) The participants must not have suicidal ideation. 7) The participants must have been living in Austria more than three years. 8) The participants must have Austrian citizenship.

Table 1. Descriptive statistics for age and duration of settling in Austria

| | N | Mean | SD | SD Error | Min | Max |
|----------|----|-------|-------|----------|-----|-----|
| age | 23 | 40,43 | 5,623 | 1,173 | 31 | 55 |
| duration | 23 | 14,00 | 4,786 | ,998 | 6 | 25 |

Table 2. Descriptive Statistics for education, marital status, gender, and occupation

| | | N | Percent |
|----------------|------------|----|---------|
| Education | Diploma | 6 | 18% |
| | Bachelor | 12 | 67% |
| | Master | 4 | 12% |
| | M.D. | 1 | 3% |
| Marital Status | Divorced | 10 | 61% |
| | Married | 8 | 24% |
| | Single | 5 | 15% |
| Gender | Female | 15 | 76% |
| | Male | 8 | 24% |
| Occupation | Unemployed | 3 | 9% |
| | Employed | 20 | 91% |

2.2 Materials

All the scales were used in Farsi language version. All of them had been translated into Farsi and validated for Iranians before. Therefore, the Iranian norms of the scales were used in this study.

2.2.1 Demographic Data

The general background information, such as gender, age, marital status, occupation in Iran and in Austria, education, and date of arrival in Austria was obtained using a brief demographics questionnaire.

2.2.2 Brief Symptom Inventory

Symptoms of depression were measured by Farsi version of Brief Symptom Inventory (BSI; Mohammadkhani, Dobson, Amiri, & Ghafari, 2010), which comprises 53 items on nine scales Somatization (Cronbach's $\alpha=0.87$; test-retest reliability=0.68), Obsessive-Compulsive (Cronbach's $\alpha=0.79$; test-retest reliability=0.85), Interpersonal Sensitivity (Cronbach's $\alpha=0.78$; test-retest reliability=0.85), Depression (Cronbach's $\alpha=0.87$; test-retest reliability=0.84), Anxiety (Cronbach's $\alpha=0.84$; test-retest reliability=0.79), Hostility (Cronbach's $\alpha=0.79$; test-retest reliability=0.81), Phobic Anxiety (Cronbach's $\alpha=0.75$; test-retest reliability=0.91), Paranoid Ideation (Cronbach's $\alpha=0.80$; test-retest reliability=0.79) and Psychoticism (Cronbach's $\alpha=0.71$; $r=0.78$) plus the global severity index (GSI, the arithmetic mean of all items of the BSI; Cronbach's $\alpha=0.96$; test-retest reliability=0.90). In this study, scale 4 (depression) was used in final analysis.

2.2.3 Beck Depression Inventory

Intensity of depression was measured by the Farsi version of the Beck Depression Inventory (BDI-II; Ghasemzadeh, Mojtabei, Karamghadiri, & Ebrahimkhani, 2005) with answer options ranging from 0 (e.g., “I have not lost interest in other people or activities”) to 3 (e.g., “It is hard to get interested in anything”) and high Cronbach’s alpha (0.87) and test-retest reliability (0.73). Only people with mild or moderate depression were included.

2.2.4 Automatic Thoughts Questionnaire

The types and severity of Automatic Thoughts were assessed by the Farsi version of the Automatic Thoughts Questionnaire (ATQ; Ghasemzadeh, Mojtabei, Karamghadiri, & Ebrahimkhani, 2006) with answer options ranging from 1 (Not at all) to 5 (All the time) (e.g., “I am worthless”) and high Cronbach’s alpha (0.96) and test-retest reliability (0.84).

2.2.5 Depression Anxiety Stress Scale

Generalized Anxiety Disorder (GAD) as a common comorbid disorder with MDD was distinguished by the Farsi version of the Depression Anxiety Stress Scale (DASS-21; Bayani, 2010) with answer options ranging from 0 (Did not apply to me at all) to 3 (Applied to me very much, or most of the time) (e.g., “I found it difficult to relax”) and high test-retest reliability (0.72) and Cronbach’s alpha (total scales: 0.91; Anxiety: 0.88; Depression: 0.92; and Stress: 0.82). People with only MDD were included.

2.2.6 Beck Scale for Suicidal Ideation

Depressed people with suicidal ideation were distinguished and excluded by the Iranian version of Beck Scale for Suicidal Ideation (BSSI; Mousavi, Keramatian, Maracy, & Fouladi, 2012) with answer options ranging from 0 (None) to 2 (Moderate to strong) (e.g., “Attitude toward ideation/wish”) and high test-retest reliability (0.87) and Cronbach’s alpha (0.95).

2.2.7 The Acculturation Scale

The Farsi version of The Acculturation Scale (Shahim, 2007; Cronbach’s $\alpha=0.83$, $0.25 \leq$ test-retest reliability ≤ 0.65) was used to evaluate cultural attitudes, cultural identity, cultural values, and language preferences. Responses are ranged from (1) *low acculturation* or higher maintenance to Iranian cultural values to (3) *high acculturation* or lower maintenance to Austrian cultural values. The total score can be interpreted based on Berry’s model of acculturation as score 1 may represent “Separation”; 2 may represent “Integration”; 3 may represent “Assimilation”; and 0 may represent “Marginalization”.

2.2.8 Qualitative Data

As the fundamental aim of this study was understanding the basic reasons of the Iranian migrant’s depression and also the failures and successes regarding effectiveness of group based CBT, the qualitative method was also applied. The qualitative data were collected through the interviews with group-members. To obtain more information from the participants, they were asked to talk about their childhood and teenage years, reasons for emigration, their life-style before and after immigration, and their social situations.

2.3 Data Collection

Prior to study, the researcher introduced herself and informed the participants about the purpose of study. The participants were told that the basic aim of this study was to examine the effectiveness of group based CBT as a non-medication therapy for depression. They were also informed that their collaboration in the study was completely voluntarily and withdrawal from the interventions at any time was plausible without any problem. The time table for the interventions was also explained. If the participant was interested, one appointment was scheduled for him/her to be evaluated based on the inclusion criteria. Prior to entering the interventions, all interested participants were privately interviewed based on Major Depressive Disorder section of Farsi version of Structured Clinical Interview for DSM-IV (SCID; Sharifi, Assadi, Mohammadi, & Amini et al., 2007). The psychometric tests were also performed and demographic information was also obtained. The participants, who met the inclusion criteria, were requested to confirm in writing their consent to participate in this study. The participants, who did not meet the inclusion criteria, were explained about it and referred to the Iranian psychiatrist, especially in case of having suicidal ideation. The confidentiality of participants in this study was protected by filing all data based on an allocated numbers and codes rather than the name or other special personal information. Interviews and psychometric tests were conducted between July/August 2013 and May/June 2014 at four time points: prior to therapy, after intervention, one-month and six-month follow-up. Patients who did not complete interventions as planned by the therapist (myself) were interviewed voluntarily to

explain their reasons. All participants were also interviewed in the middle of intervention, to reflect openly their experiences and expectations. At the end of the study, in one organized session for each group, the study debriefing was provided to the participants. The hypotheses and main questions, the way of testing the hypotheses, the importance of the study and the main outcomes and results were explained completely to the participants. One extra session was organized for those participants, who had more questions and were interested to know more about the practical goals of the study.

2.4 Interventions

The included participants were randomized to three different groups: (1) ICBT, (2) GCBT and (3) wait-list control condition that was offered GCBT at the end of the study. The GCBT included seventeen sessions per 120 minutes, twice a week, plus two follow-up (one-month & six-month) measurements. The manual of GCBT for MDD was used for group therapy in this study (Bieling, McCabe, & Antony, 2006). The ICBT consisted of seventeen sessions per 60 minutes, twice a week, plus two follow-up (one-month & six-month) measurements. The basic theory behind the ICBT in this study was “Beck’ cognitive theory of depression” (Beck, Rush, Shaw, & Emery, 1979). The participants in waiting-list control group were regularly checked by phone once a week to be assured that none of them were given any kind of psychological or medical treatment. All the interventions covered the basic components of Cognitive Behavioral Therapy as follows: 1) Psycho-social education; 2) Cognitive modification; 3) Behavioral modification; 4) Homework assignment.

2.5 Statistical Data Analysis

2.5.1 Quantitative Analysis

In order to analyze the quantitative data, the program “SPSS for Windows, version 20 SPSS Inc” (Statistical Package for the Social Sciences) were employed.

In order to examine whether the GCBT and ICBT in intervention groups and waiting-list control group are significantly effective, the Paired Sample T-test was used.

In order to evaluate whether the GCBT and ICBT in intervention groups are significantly more effective than GCBT in waiting-list control group, the One-Way between subjects ANOVA was applied.

In order to calculate the Follow-up measurements for all three groups, the Mixed-design ANOVA was employed.

2.5.2 Qualitative Analysis

In order to analyze the interviews, GABEK method (GANzheitliche BEwältigung von Komplexität; Holistic Processing of Linguistic Complexity; Zelger, 1991) was applied. The Software for GABEK-Applications is WinRelan. GABEK is a comprehensive method for qualitative social studies and enables the connection and use of resources for planning and evaluation of measures. GABEK method explains “how individuals perceive and understand different experiences, describe and explain them, feel about them, judge them, remember them and interpret them”. As in other methods of qualitative study, most GABEK-projects start with gathering verbal data using interviews (Zelger & Oberprantacher, 2002).

3. Results

3.1 Quantitative Results

3.1.1 Pre-Intervention Comparison of Quantitative Data

This part evaluates sample comparability before interventions. in order to make sure about the absence of pre-existing differences among three groups, one-way between subjects ANOVA were employed.

Table 3. Descriptive results of variables (BDI-II, ATQ, and BSI) in pre-intervention

| | | N | Mean | SD | Min | Max |
|-----|------|----|-------|-------|-----|-----|
| | GCBT | 13 | 22 | 2.27 | 18 | 25 |
| BDI | ICBT | 9 | 21 | 2.6 | 18 | 25 |
| | WL | 11 | 21.45 | 2.16 | 18 | 25 |
| ATQ | GCBT | 13 | 50.54 | 10.46 | 21 | 61 |
| | ICBT | 9 | 48.89 | 8.02 | 36 | 58 |

| | | | | | | |
|-----|------|----|-------|------|------|------|
| | WL | 11 | 50.73 | 8.83 | 31 | 60 |
| | GCBT | 13 | 2.23 | .25 | 1.89 | 2.63 |
| BSI | ICBT | 9 | 2.18 | .26 | 1.85 | 2.76 |
| | WL | 11 | 2.19 | .16 | 1.96 | 2.43 |

Legend: ICBT=Individual Cognitive Behavioral Therapy; WL=Wait List control condition; GCBT=Group based Cognitive Behavioral Therapy; BDI-II=Beck Depression Inventory version II; BSI=Brief Symptom Inventory; ATQ=Automatic Thought Questionnaire.

As one-way between subjects ANOVA depends on the test of homogeneity of variance, the basic assumption of homogeneity of variance was evaluated using the Levene's test for homogeneity of variances. Table 4, demonstrates the outcomes of Levene's test of equality of variance of the three groups in pre-intervention.

Table 4. Levene's test of equality of variance for the variables in pre-intervention

| | Levene Statistic | df1 | df2 | p |
|-----|------------------|-----|-----|------|
| BDI | .434 | 2 | 30 | .652 |
| ATQ | .006 | 2 | 30 | .994 |
| BSI | .609 | 2 | 30 | .551 |

Note. *significant values ($p < .05$)

As it can be seen in Table 4, none of the variables showed significant outcomes. The one-way between subjects ANOVA results are presented in Table 5.

Table 5. One-way between subjects ANOVA at Table 1 (pre-intervention)

| Variable | Source | Sum of Squares | df | Mean Square | F | P |
|----------|----------------|----------------|----|-------------|------|------|
| | Between Groups | 5.455 | 2 | 2.727 | | |
| BDI | Within Groups | 162.727 | 30 | 5.424 | .503 | .610 |
| | Total | 168.182 | 32 | | | |
| | Between Groups | 19.941 | 2 | 9.970 | | |
| ATQ | Within Groups | 2614.301 | 30 | 87.143 | .114 | .892 |
| | Total | 2634.242 | 32 | | | |
| | Between Groups | .014 | 2 | .007 | | |
| BSI | Within Groups | 1.514 | 30 | .050 | .141 | .869 |
| | Total | 1.528 | 32 | | | |

Legend: ICBT=Individual Cognitive Behavioral Therapy; WL=Wait List control condition; GCBT=Group based Cognitive Behavioral Therapy; BDI-II=Beck Depression Inventory version II; BSI=Brief Symptom Inventory; ATQ=Automatic Thought Questionnaire.

As it is represented in Table 5, there was no significant group difference pre-intervention with regard to severity of depression scores as measured with the second version of Beck Depression Inventory (BDI-II), automatic thoughts scores as measured with the Automatic Thoughts Questionnaire (ATQ), and depression scores as measured with the Scale 4 of Brief Symptom Inventory (BSI). As it can be seen in Table 4, the homogeneity of variance assumption was met.

3.1.2 One-way Between Subjects ANOVA for Post-Intervention Comparison of Quantitative Data

In order to ensure the significant difference between intervention groups and control group, one-way between

subjects ANOVA were applied.

Table 6. Descriptive results of variables (BDI-II, ATQ, and BSI) in post-intervention

| | | N | Mean | SD | Min | Max |
|-----|------|---|-------|-------|------|------|
| BDI | GCBT | 9 | 18.67 | 1.73 | 16 | 21 |
| | ICBT | 6 | 19.17 | 2.14 | 17 | 22 |
| ATQ | GCBT | 9 | 36.44 | 10.69 | 12 | 51 |
| | ICBT | 6 | 35.17 | 3.87 | 32 | 41 |
| BSI | GCBT | 9 | 1.92 | .14 | 1.78 | 2.14 |
| | ICBT | 6 | 2.19 | .29 | 1.85 | 2.67 |

Legend: ICBT=Individual Cognitive Behavioral Therapy; GCBT=Group based Cognitive Behavioral Therapy; BDI-II=Beck Depression Inventory version II; BSI=Brief Symptom Inventory; ATQ=Automatic Thought Questionnaire.

Table 7. The effects of GCBT and ICBT as compared to WL at post-intervention

| | | Sum of Squares | df | Mean Square | F | P |
|-----|----------------|----------------|----|-------------|-------|-------|
| BDI | Between Groups | 37.080 | 2 | 18.540 | 4.174 | .031* |
| | Within Groups | 88.833 | 20 | 4.442 | | |
| | Total | 125.913 | 22 | | | |
| ATQ | Between Groups | 931.097 | 2 | 465.548 | 5.501 | .012* |
| | Within Groups | 1692.556 | 20 | 84.628 | | |
| | Total | 2623.652 | 22 | | | |
| BSI | Between Groups | .432 | 2 | .216 | 5.800 | .010* |
| | Within Groups | .745 | 20 | .037 | | |
| | Total | 1.177 | 22 | | | |

Note. *significant values ($p < .05$)

Legend: BDI-II=Beck Depression Inventory version II; BSI=Brief Symptom Inventory; ATQ=Automatic Thought Questionnaire.

The One-way between subjects ANOVA revealed the significant difference among GCBT, ICBT and WL groups at post-intervention. It is also important to underline that there was no significant difference in BSI (scale 4), BDI-II and ATQ scores among three groups in demographic variables. Post-hoc analyses using Tukey's HSD were applied to compare groups with respect to the mean difference between pre-post BDI-II, ATQ, and BSI scores (Table 8).

Table 8. Pairwise comparisons among three groups for BDI-II, ATQ, and BSI Scores

| Dependent variables | Group I | Group J | Mean differences (I-J) | SD Error | p |
|---------------------|---------|---------|------------------------|----------|-------|
| BDI-II | GCBT | WL | -2.83 | 1.02 | .031* |
| | ICBT | WL | -3 | 1.10 | .034* |
| ATQ | GCBT | WL | -12.81 | 4.47 | .025* |
| | ICBT | WL | -14.08 | 4,97 | .026* |
| BSI (scale 4) | GCBT | WL | -.29 | .094 | .016* |
| | | CBT | -.27 | .10 | .039* |

Note. *significant values ($p < .05$)

Legend: ICBT=Individual Cognitive Behavioral Therapy; WL=Wait List control condition; GCBT=Group based Cognitive Behavioral Therapy; BDI-II=Beck Depression Inventory version II; BSI=Brief Symptom Inventory; ATQ=Automatic Thought Questionnaire.

Post-hoc analyses using Tukey's HSD indicated that the mean score for the WL control condition at t2 was significantly different from the GCBT (BSI, scale 4: $p=.002$; BDI: $p=.012$; ATQ: $p=.032$) and ICBT (BDI: $p=.027$; ATQ: $p=.020$) groups and the mean score for GCBT group at t2 was significantly different from the ICBT (BSI, scale 4: $p=.002$). However, the GCBT did not significantly differ from the ICBT in BDI-II and ATQ scores.

3.1.3 Paired Sample T-test to Examine the Significant Effect of GCBT and ICBT

As it was mentioned before, the effects of the GCBT and the ICBT on depression were assessed by BDI-II, ATQ and Scale 4 of the BSI.

Table 9. The effects of GCBT and ICBT at post-intervention

| | | Paired Differences | | | | | | |
|--------|------|--------------------|------|----------|------|----|--------|-----|
| | | Mean | SD | SD Error | t | df | p | d |
| BDI-II | GCBT | 2.89 | 1.83 | .61 | 4.73 | 8 | .001* | .86 |
| | ICBT | 3 | 1.26 | .52 | 5.81 | 5 | .002* | .93 |
| ATQ | GCBT | 12.89 | 6.88 | 2.29 | 5.52 | 8 | <.001* | .89 |
| | ICBT | 14.17 | 6.18 | 2.52 | 5.62 | 5 | .002* | .93 |
| BSI | GCBT | .35 | .22 | .072 | 4.80 | 8 | .001* | .86 |
| | ICBT | .033 | .036 | .015 | 2.30 | 5 | .070 | .72 |

Note. *significant values ($p<.05$)

Legend: ICBT=Individual Cognitive Behavioral Therapy; GCBT=Group based Cognitive Behavioral Therapy; BDI-II=Beck Depression Inventory version II; BSI=Brief Symptom Inventory; ATQ=Automatic Thought Questionnaire.

A significant reduction in depression scores in BDI-II and ATQ in both groups and BSI (scale 4) in GCBT between t1 and t2 (pre- & post-intervention) means that the interventions were significantly effective. However, the same results were not found for ICBT, which means that although ICBT could decrease intensity of depression (based on score of BDI-II) and negative automatic thoughts (based on score of ATQ), it was not completely successful to reduce depressed mood (based on BSI; scale 4) in participants. These results suggest that GCBT and ICBT were significantly effective for Iranian migrants with MDD. Although both interventions were equally effective in declining the severity of depression and negative automatic thoughts, the significant difference between GCBT and ICBT in BSI scores indicated that GCBT was stronger than ICBT in reducing depressed mood.

3.1.4 Paired Sample T-test to Examine the Significant Effect of Intervention in Wait-List Control Group

Table 10. Descriptive results of variables in WL control group in post-intervention

| | | Pre-intervention | | | Post-intervention | | |
|----|--------|------------------|-------|------|-------------------|-------|------|
| | | N | Mean | SD | N | Mean | SD |
| WL | BDI-II | 11 | 21.45 | 2.16 | 8 | 19.38 | 2.33 |
| | ATQ | 11 | 50.73 | 8.83 | 8 | 42.63 | 9.81 |
| | BSI | 11 | 2.19 | .16 | 8 | 2.10 | .17 |

Legend: WL=Wait List control condition; BDI-II=Beck Depression Inventory version II; BSI=Brief Symptom Inventory; ATQ=Automatic Thought Questionnaire.

Table 11. The effects of intervention in WL control group at post-intervention

| | | Paired Differences | | | | | | |
|----|--------|--------------------|------|----------|------|----|--------|-----|
| | | Mean | SD | SD Error | t | df | p | d |
| | BDI-II | 2.13 | 1.55 | .55 | 3.87 | 7 | .006* | .83 |
| WL | ATQ | 6.63 | 2.72 | .96 | 6.88 | 7 | <.001* | .93 |
| | BSI | .11 | .096 | .034 | 3.08 | 7 | .018* | .76 |

Note. *significant values ($p < .05$)

As it is illustrated in Table 11, depressive symptoms as measured by the BDI-II, ATQ and Scale 4 of the BSI were reduced significantly from pre- to post-intervention, which means that the GCBT was significantly effective in Wait-List control group as well.

3.1.5 Follow-up Measurements

In addition to the F- ratio, partial η^2 was extracted to evaluate the effect size.

The Descriptive Results for BDI-II, ATQ, and BSI scores are shown in Table 12.

Table 12. Mean and SDs of BDI-II, ATQ, and BSI in Pre-intervention, Post-intervention, one- and six-month Follow-up in individual CBT and group based CBT

| | | Pre-intervention | | | Post-intervention | | | One-month follow-up | | | Six-month follow-up | | |
|-----|------|------------------|-------|-------|-------------------|-------|-------|---------------------|-------|-------|---------------------|-------|-------|
| | | N | Mean | SD | N | Mean | SD | N | Mean | SD | N | Mean | SD |
| BDI | GCBT | 13 | 22 | 2.27 | 9 | 18.67 | 1.73 | 9 | 19.78 | 2.39 | 8 | 20.63 | 2.2 |
| | ICBT | 9 | 21 | 2.6 | 6 | 19.17 | 2.14 | 4 | 19.25 | 2.5 | 4 | 20 | 2.16 |
| ATQ | GCBT | 13 | 50.54 | 10.46 | 9 | 36.44 | 10.69 | 9 | 43.11 | 12.67 | 8 | 45.63 | 11.83 |
| | ICBT | 9 | 48.89 | 8.02 | 6 | 35.17 | 3.87 | 4 | 49.50 | 3.11 | 4 | 52.5 | 3.7 |
| BSI | GCBT | 13 | 2.23 | .25 | 9 | 1.92 | .14 | 9 | 2.14 | .21 | 8 | 2.23 | .25 |
| | ICBT | 9 | 2.18 | .26 | 6 | 2.19 | .29 | 4 | 2.02 | .18 | 4 | 2.04 | .15 |

Legend: ICBT=Individual Cognitive Behavioral Therapy; GCBT=Group based Cognitive Behavioral Therapy; BDI-II=Beck Depression Inventory version II; BSI=Brief Symptom Inventory; ATQ=Automatic Thought Questionnaire.

The results of the mixed-design ANOVA for BDI-II scores are shown in Table 13.

Table 13. Results of the mixed-design ANOVA of Group, Time and Time by Group of BDI-II from Pre-intervention, Post-intervention to one- and six-month follow-up

| Source | Sum of Squares | df | Mean Square | F | P | η^2 |
|--------------|----------------|----|-------------|--------|-------|----------|
| Group | .500 | 1 | .500 | .016 | .908 | .005 |
| Time | 26.125 | 3 | 15.231 | 23.222 | .003* | .886 |
| Group x Time | 1.250 | 3 | .887 | .882 | .439 | .227 |
| Error | 4.250 | 9 | 1.417 | | | |

Note. *significant values ($p < .05$)

Legend: Group=2 (Individual Cognitive Behavioral Therapy and Group based Cognitive Behavioral Therapy); Time=4 (Pre-intervention, Post-intervention to one- and six-month follow-up).

As it can be seen in Table 13, there was a significant main effect for time. Partial eta² demonstrates a large effect size for time. Although participants in both intervention groups (ICBT, GCBT) showed significantly more improvement with respect to Beck Depression Inventory (BDI-II) from pre-intervention to post-intervention, there was deterioration for two groups in one- and six-month follow-up.

The results of the mixed design ANOVA for ATQ scores are shown in Table 14.

Table 14. Results of the mixed-design ANOVA of Group, Time and Time by Group of ATQ from Pre-intervention, Post-intervention to one- and six-month follow-up

| Source | Sum of Squares | df | Mean Square | F | P | η ² |
|--------------|----------------|----|-------------|---------|--------|----------------|
| Group | 225.781 | 1 | 225.781 | 3.787 | .147 | .558 |
| Time | 1165.844 | 3 | 867.454 | 105.886 | <.001* | .972 |
| Group x Time | 43.094 | 3 | 27.547 | 1.729 | .267 | .336 |
| Error | 74.781 | 9 | 15.934 | | | |

Note. *significant values (p<.05)

Legend: Group=2 (Individual Cognitive Behavioral Therapy and Group based Cognitive Behavioral Therapy); Time=4 (Pre-intervention, Post-intervention to one- and six-month follow-up).

As it can be seen in Table 14, there was a significant main effect for time. Partial eta² illustrates a large effect size for time. Although participants in both intervention groups (ICBT, GCBT) showed significantly more improvement with respect to Automatic Thoughts Questionnaire (ATQ) from pre-intervention to post-intervention, there was deterioration for two groups in one- and six-month follow-up.

The results of the mixed-design ANOVA for BSI scores are shown in Table 15.

Table 15. Results of the mixed-design ANOVA of Group, Time and Time by Group of BSI from Pre-intervention, Post-intervention to one- and six-month follow-up

| Source | Sum of Squares | df | Mean Square | F | P | η ² |
|--------------|----------------|----|-------------|-------|-------|----------------|
| Group | .140 | 1 | .140 | .760 | .448 | .202 |
| Time | .214 | 3 | .130 | 9.580 | .022* | .762 |
| Group x Time | .169 | 3 | .123 | 7.622 | .045* | .718 |
| Error | .067 | 9 | .007 | | | |

Note. *significant values (p<.05)

As it can be seen in Table 15, There was a significant main effect for time and a significant interaction effect of group x time. Partial eta² illustrates a larger effect size for time compared to interaction effect of group x time.

Participants in GCBT group showed significantly improvement with respect to Brief Symptom Inventory (BSI) from pre-intervention to post-intervention. However, there was deterioration for both groups in one- and six-month follow-up.

3.1.6 Acculturation Attitudes

In this part, in order to assess acculturation orientation in participants, Descriptive Statistics were used.

Table 16. Descriptive Statistics for Acculturation Attitude Scale

| GCBT | | | GCBT | | | ICBT | | | ICBT | | |
|------------------|------|----|-------------------|------|----|------------------|------|----|-------------------|------|----|
| Pre-intervention | | | Post-intervention | | | Pre-intervention | | | Post-intervention | | |
| N | Mean | SD | N | Mean | SD | N | Mean | SD | N | Mean | SD |

| | 13 | 1.23 | 1.42 | 9 | 1.89 | 1.17 | 9 | 1.22 | 1.48 | 6 | 1.33 | 1.51 |
|-----------------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|
| AS | frequency | percent | frequency | percent | frequency | percent | frequency | percent | frequency | percent | frequency | percent |
| Assimilation | 4 | 31% | 3 | 33% | 3 | 33% | 2 | 33% | | | | |
| Separation | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| Integration | 2 | 15% | 4 | 44% | 1 | 11% | 1 | 17% | | | | |
| Marginalization | 7 | 54% | 2 | 23% | 5 | 56% | 3 | 50% | | | | |

Legend: AS=Acculturation Strategy; ICBT=Individual Cognitive Behavioral Therapy; GCBT=Group based Cognitive Behavioral Therapy.

As can be seen in Table 16, participants tended to be more marginalized before attending the GCBT and ICBT sessions. After GCBT, their tendency to become integrated becomes higher. However, as can be seen in Table 16, ICBT was not as strong as GCBT to change the acculturation orientation in participants. These results suggest that GCBT was effective to motivate the Iranian migrants to become more socially and culturally involved with people from their heritage culture.

3.2 Qualitative Results

The results are organized under three themes:

- 1) Becoming depressed
- 2) Effective group based CBT (Feeling better)
- 3) Approach to interventions

Pattern analysis of the first theme “becoming depressed”, brought about some main factors showing a process of getting depressed. Pattern analysis of the second theme “effective GCBT”, resulted in some major factors showing a process of reduction in symptoms of MDD after interventions had ended. Pattern analysis of the third theme, showed the main reasons behind the non-persistent effect of the interventions in follow-up measurements.

3.2.1 Becoming Depressed

Data regarding feeling depressed were organized along a time-line: reported feelings prior to interventions, in the middle of interventions, after interventions, and in one-and six-month follow-up. The reported feelings prior to treatments were tremendously helpful to find the main reasons behind the participants’ depression. As can be seen in Figure 1, seven main factors emerged regarding the feeling depressed: 1) Immigration; 2) Unemployment; 3) Getting divorced; 4) Having a boring life; 5) Being misunderstood; 6) Having a stressful childhood; 7) Having problem with past life.

A pattern was found among these factors, showing processes, which led the Iranian migrants to depression. On the other hand, by experiencing such feelings, they became more sensitive and vulnerable to some stressful and negative events through the immigration process.

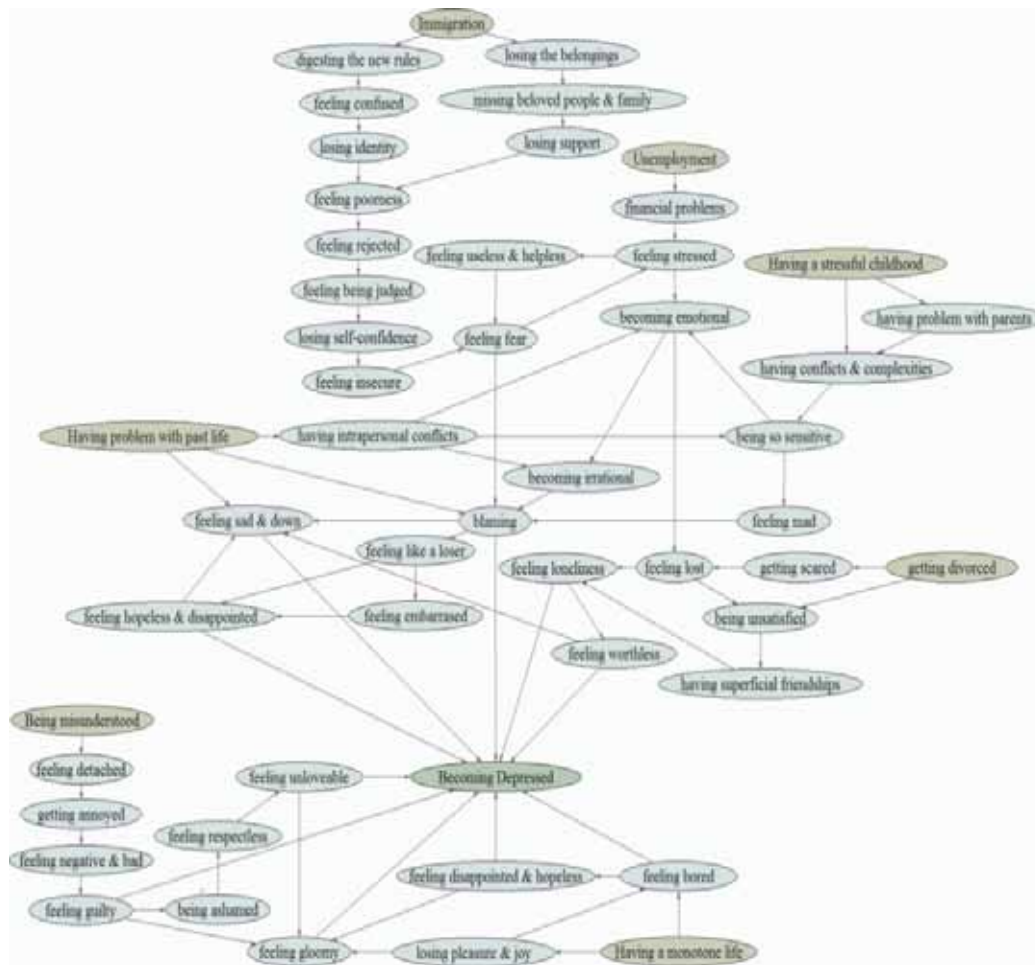


Figure 1. The main factors are shown in dark gray and the processes of becoming depressed are shown in light

3.2.2 Effective GCBT (Feeling better)

Data regarding effectiveness of interventions, especially GCBT on MDD were organized along a time-line: 1) Reported symptoms prior to interventions; 2) Reported symptoms in the middle of interventions; 3) Reported symptoms after interventions; 4) Reported symptoms in one-and six-month follow-up.

Seven major factors emerged regarding the obtained positive effect (see Figure 2):

- 1) Talking about negative feelings;
- 2) Talking about fears and loneliness;
- 3) Meeting people from same culture;
- 4) Practicing not to be judgmental;
- 5) Practicing not to blame;
- 6) Learning some productive strategies;
- 7) Doing useful home-works.

A pattern was found among these factors, showing processes of changes in symptoms of MDD from the beginning to end of interventions. The participants started feeling better by getting involved into some positive processes of thinking and reacting, such as feeling satisfied, relaxed, safe and less scared, likable, and worthy.



Figure 2. The major factors are shown in dark gray and the processes of feeling better are shown in light

3.2.3 Approach to Interventions

All participants in this study described their approach to the interventions prior to-, right after-, one- and six months after treatments, with most reporting a small positive expectation at the beginning, but experiencing remarkably impressive moments during the interventions.

As can be seen in figure 3, two categories emerged regarding the approach to interventions: 1) Positive approach; 2) Negative approach

A pattern was found among these categories, showing that the effect of interventions was not persistent, especially for participants who had a negative approach, and mentioning the main reasons behind it as well.

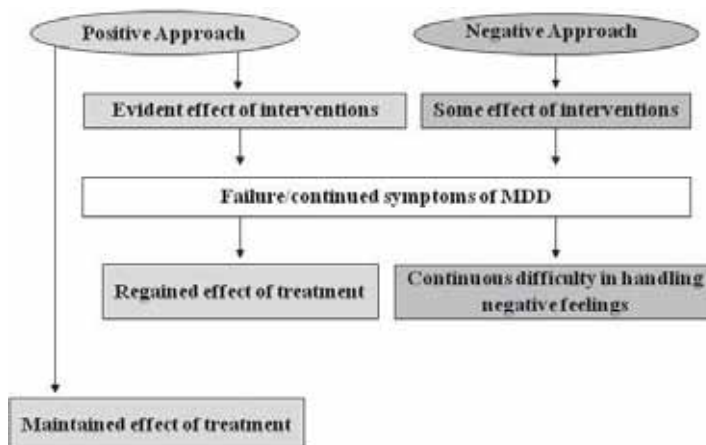


Figure 3. Two different approaches to interventions

3.2.3.1 Positive Approach

These participants showed a positive expectation of the interventions from the beginning. They tended to believe that something positive and effective would happen after treatments. They were completely active during the group sessions. In follow-up measurements, they mentioned that they continued working on their problems actively by giving themselves exercises based on what they had learned during the interventions and also tried to increase their knowledge about MDD and CBT by reading some books or articles on the internet. All described a continuous effort to handle their problems to prevent from backing into old patterns of thinking and behaving. They had been still feeling better in six-month follow-up. However, they did not mention that they felt completely well.

3.2.3.2 Negative Approach

There were participants who showed a negative expectation of the interventions at the beginning, although they described some positive effect of treatments immediately after interventions. They also explained how their increased expectation of treatments made them completely motivated to be more active and productive during the interventions. These individuals mentioned that they tended to repeat the techniques they had learned from the interventions, but as soon the interventions ended they lost their motivation. From their point of view, the main reason was that they expected more from the interventions and they did not obtain what they exactly went for. In their opinion, the interventions were too short and they did not have enough time to receive what they deeply needed. These participants also reported how they started feeling negative and worse again. They had been still feeling depressed in six-month follow-up.

4. Discussion

The main purpose of this study is to investigate the effectiveness of GCBT for Iranian migrants with Major Depressive Disorder (MDD) in Austria. To the best of our knowledge, no research study has been evaluated the effectiveness of GCBT on Iranian migrants with MDD.

The interpretation of results in this study is divided into two parts: 1) Interpretations based on quantitative results; 2) Interpretations based on qualitative results and acculturation theory.

4.1 *Interpreting the Results Based on Quantitative Approach*

4.1.1 Effectiveness of Interventions (Pre-Intervention to Post-Intervention)

The GCBT and ICBT groups demonstrated that both individual and group based interventions significantly reduced depressive symptoms. However, non-significant group differences with respect to BDI-II and ATQ scores were observed, which is consistent with the study of Khodayarifard, Shokoohi-Yekta and Hamot (2010) demonstrated that both ICBT and GCBT were equally effective in reducing the depression symptoms.

In the present study, the individual CBT was not a successful approach to reduce depressed mood as measured by BSI (scale 4) at post-intervention. As a justification, it can be noted that although ICBT was successfully able to decrease the negative way of thinking in Iranian migrants with depression, it was not strong enough to increase the positivism among them. On the contrary, at post-intervention examination, GCBT found to be clearly sufficient to increase positivism among Iranian migrants with depression. As an explanation, it should be pointed that GCBT was more successful due to its ability to enhance the amount of mutual trust and unconditional acceptance among the group members, especially because of its cultural sensitivity. This result is also confirmed by study of Hollon and Shaw (1979). They also showed that the impact of GCBT was stronger than ICBT. It is important to be mentioned that non-significant results in this study should be also discussed in the light of small sample sizes. According to the study of Fiedler and Kareev (2006), the accuracy levels can be increased by relatively small sample sizes. They suggested that differences tend to be more extreme for small than for large sample sizes; this is because rare events tend to be underrepresented in small samples. On the other hand, one advantage of small samples is that only findings with large effect size can reach significance. Therefore, small effects may be overlooked in small sample sizes.

4.1.2 Effectiveness of Interventions (one-month and six-month Follow-ups)

The present study did not demonstrate the robust effectiveness of both, ICBT and GCBT, in follow up examinations which may indicate that the Iranian migrants were not completely ready to stop the interventions. It may lead to this conclusion that they needed longer-term treatments and interventions to feel higher levels of trust and acceptance in interactions with other group members. As such, this generic tendency may be considered as encouraging because it offers the potential for Iranian migrants with depression to anticipate feelings of trust and acceptance as they approach group communication. These findings are consistent with the prediction that

people will respond more favorably to interactions with in- group members, as people tend to feel greater attraction to members of their own group when group membership is relevant to their social context (Hogg & Hains, 1996; Tajfel, Billig, Bundy, & Flament, 1971).

4.2 Interpreting the Results Based on Qualitative Approach and Acculturation Theory

Whereas a remarkable number of participants had dropped out untimely, qualitative assessments of those who completed the study not only explained the main reasons behind Iranian migrants' depression as well as the effectiveness of GCBT and ICBT, but also highlighted the cultural characteristics of Iranians that made the effectiveness of GCBT stronger.

One of the main reasons that the interventions were effective is the participants' approach to psychotherapy. According to the qualitative results, most of the participants reported a positive expectation of the interventions from the beginning and they tended to believe that something positive and effective would happen after treatments. However, the effectiveness of the interventions was not persistent during follow-up period, which may be explainable based on the participants' acculturation orientation.

It is noticeable that feeling not being judged by other group members, supported, accepted, calm, peaceful, safe and satisfied were the most common experiences for the participants after GCBT, which may confirm that they tended to be more integrated after interventions. It may be considered as another reason that GCBT was stronger than ICBT to increase the positivism among Iranian migrants with depression. There are numerous worthy researches that show the significant negative relationship between social support and depression, anxiety, and stress (Yasin, Safree, & Adawiah, 2010). Therefore, in the absence of a naturally-arising social support, it is important to connect Iranian migrants to the Iranian guided self-help groups and communities. Additionally, it should be taken into account that as a group member's cultural-religious beliefs were close and tolerant, they became more motivated to stay and finish the therapy sessions, although they were very conservative and defensive at the beginning and also expected to feel less trust and acceptance in Iranian-group interactions. Surprisingly, after some group therapy sessions the participants started trusting each other and feeling accepted again and consequently, these kinds of feelings resulted in the sense of belonging to a specific group that helped them be more flexible and comfortable, which is confirmed by the study of Baumeister and Leary (1995). They concluded that people seek frequentative, meaningful, long-term and caring communications and relationships that obviate their need to belong and improve their psychological health and well-being as well.

5. Limitations

Considering the high number of dropouts and significant deterioration in follow-up measurements, the limitations of our procedure can be explained as follows: Firstly, the short-term 2 months of therapy did not give the participants enough time to trust the therapist and other group members completely, which was requisite for the Iranian immigrants in this study. Moreover, in this GCBT, because of the snowball sampling some of the members knew each other somehow and this may have kept many group members from expressing their thoughts and feelings openly. Other limitations of this study comprise (a) This research was carried out on small sample size (b) many individuals with depression symptoms are comorbid with other mental disorders, such as anxiety disorders, suicidal ideations, and in some cases substance abuse, but this study excluded people with this mentioned comorbid disorders, which may influence the results' generalizability.

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Decision-Making Style in Leaders: Uncovering Cognitive Motivation Using Signature Movement Patterns

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Abstract

Leaders can and do vary substantially in their decision-making styles. One promising approach for capturing such variation is to analyze signature movement patterns that reflect cognitive priorities and motivations manifested during various stages of the decision making process. Prior work has shown that Assertion and Perspective—two broad dimensions of decision-making style derived from application of Movement Pattern Analysis (MPA)—reliably predict individual differences in decision making process as assessed experimentally. In this study, we examine underlying motivational propensities as applied by leaders across stages of the decision-making process to illuminate the most salient indicators of decision-making style, ones that are predictive of variations in decision-making behavior. Motivations across three stages of decision making revealed by MPA—Attention, Intention, and Commitment—were recorded from observational data by trained coders. While individual differences were notable across all three stages, those associated with Intention were most predictive of two indicators of decision-making process recorded during laboratory assessment. The implications of this work for capturing indicators of motivational bases of individual differences in decision-making style in high-level leaders are discussed.

Keywords: Movement Pattern Analysis (MPA), decision-making style, decision-making stages, individual differences, leadership

1. Introduction

Although leaders undoubtedly share many characteristics, there is increasing recognition that they can vary substantially in a number of stylistic aspects of their actions. Particular attention has been directed toward the notable differences in decision-making style that can be observed when studying a group of leaders (see Connors, Rende, & Colton, 2013; Connors, Rende, & Colton, 2014). For example, prior studies have shown notable variation in decision-making style in experienced leaders in general (Carnevale, Inbar, & Lerner, 2011), leaders across different types of professional background (Laureiro-Martinez et al., 2014), and military officers (Thunholm, 2004).

Recent research has taken a more fine-grained approach to identifying specific processes that drive the observable individual differences in decision-making style of potential interest to the study of leaders. One promising line of work has focused on the different stages of cognitive effort that comprise the decision making process (White et al., 2014). From a methodological perspective, individual differences become prominent when paradigms are used that permit subjects to direct their own decision-making processes (see Barnes, Anderson, Plitt, & Martin, 2014), rather than adhere to strict constraints in time (e.g., requiring a decision within a specific window of time) and choice (e.g., offering limited choices based on restricted information). For instance, while the manner in which subjects balance speed and accuracy concerns (two considerations that come into play in certain decision-making contexts) is often directly manipulated in the laboratory via instruction, individual differences in spontaneous behavioral tendencies emerge when no such manipulation is offered. The result for the investigator is an ability to discern how different people coordinate these two interacting but separate processing strategies in different ways (Perri, Berchicci, Spinelli, & Di Russo, 2014). A similar perspective on

individual differences in decision-making strategies emerges when examining use of prior knowledge during decisions (Hansen, Hillenbrand, & Ungerleider, 2012), coordinating habitual and goal-directed decision-making (Eppinger, Walter, Heekeren, & Li, 2013), and employment of multiple memory systems to serve different computational strategies during decision-making (Doll, Shohamy, & Daw, 2015). Given this prominent attention to utilizing new methods that elicit, rather than inhibit, individual differences (see Connors et al., 2013), it is perhaps not surprising that we see an accumulation of robust evidence supporting the variability of decision-making strategies (e.g., Mishra, 2014; White et al., 2014), including more precision in identifying specific stages in movement cognitive processing that best reveal decision-making style.

Individual differences in components of decision-making process can be reliably elicited in the laboratory, but a challenge is to develop methods that can reliably predict decision-making style, particularly on the part of leaders of interest such as military, business executives, and heads of state. Most methods used to date have focused on self-report, which while valuable carry some limitations. For example, it is not clear the extent to which individuals have the necessary insight into their own decision-making style to serve as the sole or primary source of information about that variable. Furthermore, in some fields, the analyst may want mainly to capture information on decision-making style in leaders who would not be available for self-assessment or direct study, such as heads of state (e.g., Connors, 2006; Connors et al., 2013).

One promising approach that addresses these concerns is to focus on methods that capture signature movement patterns observable in a number of ways and codable by trained experts. These, we submit, reliably predict decision-making process at the individual level. In this paper, we focus on Movement Pattern Analysis (MPA), a theory-driven observational methodology which has been used for decades in business to guide executive recruitment, position selection, and the building of management teams, and has been applied in physical and psychological therapies (see Lamb, 2012; Moore, 2005). Briefly, MPA centers on the recording and coding of a number of “posture-gesture mergers” (PGMs), which are observable behaviors that are considered to correspond to multiple stages of the decision-making process (see Connors et al., 2013; Connors et al., 2014, for more detailed description).

In the MPA framework, PGMs are used to generate two Overall Factors—Assertion and Perspective—that together represent a signature decision-making style. The core idea is that individuals need to balance multiple actions/motivations throughout stages of decision making (see Connors et al., 2013; Connors et al., 2014). Assertion reflects the exertion of tangible energy (physical and mental) in the environment in order to get results and make things happen. Perspective involves shaping the body to position oneself to receive from the environment information to derive insight on how a decision relates to the whole or to other decisions. Differences in how individuals achieve their own *balance* between Assertion and Perspective capture different decision-making styles. For example, individuals high on Assertion rely upon decision-making motivations that include intensively focusing to probe and gather knowledge, applying pressure to support determination, and pacing in time to reach a decision at just the right moment. In contrast, individuals high on Perspective are considered more strategic and are receptive to a broad scope of ideas and information alternatives—they shape their bodily position to reflect on the decision’s relative value or priority and in such a way to gain perspective on how the stages of decision implementation may strategically achieve an overall outcome. Connors et al. (2013) provide examples of signature movements reflecting Assertion and Perspective.

MPA has been shown to yield excellent inter-rater reliability (Connors et al., 2013), a necessity for any observational methodology. Furthermore, recent experimental work has demonstrated that MPA is predictive of decision-making process as elicited in the laboratory (Connors et al., 2013; Connors et al., 2014). A sample of military leaders were shown to vary substantially in the way in which they balanced the need for Assertion and Perspective, based upon their MPA profile. Importantly, these individual differences in decision-making motivation were highly predictive of their recorded decision-making processes, evoked via completion of a battery of hypothetical decision-making scenarios in which subjects could control the amount of information they needed before coming to a decision (Connors et al., 2013). Those who relied more upon Perspective as opposed to Assertion reached for more information before arriving at a decision, and had overall longer reaction times. Further work revealed that the type of patterning that is coded in MPA—the individually-referenced balance between Assertion and Perspective—is a superior metric for predicting decision-making process, as compared to raw counts of signature movements representing Assertion and Perspective (Connors et al., 2014). The current work linking MPA to observable decision-making process converges with recent studies, reviewed above, on individual differences in decision making, in two regards. First, there is recognition of the need for individuals to strike their own balance between complementary decision-making strategies. Second, these

individually-defined propensities impact recordable behaviors during decision-making as studied in the laboratory.

The present study extends this work by delving deeper into the underlying elements of the Overall Factors of Assertion and Perspective in the MPA model, so as to examine if specific stages of decision-making motivation are especially predictive of individual differences in decision-making behavior. MPA theory posits, and assesses, three distinct stages in the decision-making process that require balancing the motivations (referred to as Action Motivations) underlying Assertion and Perspective (see Lamb, 2012; Moore, 2005). A first stage, Attention, involves the requisite process of scanning, probing, and deciphering all relevant information (Investigation, which is reflective of Assertion), along with surveying the broader scope represented by potential information (Exploring, which is reflective of Perspective). A second stage, Intention, is devoted to building the resolve necessary to move toward a decision (Determining, which is reflective of Assertion) while weighing the relative importance of information in hand as it relates to potential actions (Evaluating, which is reflective of Perspective). A final stage, Commitment, focuses on modulating the pace of implementing a decision (Timing, which is reflective of Assertion) while orchestrating the overall progression toward a decision and implications of the decision (Anticipating, which is reflective of Perspective). MPA records the unique individual patterning of Action Motivations across each of these stages, as individuals allocate their own balance between Assertion and Perspective differentially across all three stages.

In this study, we build on our prior experimental work showing how individually-defined balance between Assertion and Perspective predicts decision-making process in the laboratory to examine if these indicators are more telling at specific, consecutive motivational stages. We employed hypothetical decision-making scenarios. These have been widely used in both cognitive and political science and have been shown to have strong linkages to real-world decision making (Parker & Fischhoff, 2005)—which permitted subjects the freedom to control their own information search via the option of making requests for more information prior to coming to a decision, with no specific time constraints.

We recruited a group of seasoned decision-makers—senior military officers with decades of experience—as notable differences in decision-making style such as initiation and maintaining intention have been observed in prior studies of military leadership (e.g., Thunholm, 2004), with implications for real-world behavior (Mintz, Redd, & Vedlitz, 2006). Building on our prior focus on Assertion and Perspective (Connors et al., 2013; Connors et al., 2014), here we examine the extent to which the balance between Assertion and Perspective at each of the three successive stages in the MPA model predicts future decision-making process in the laboratory tasks.

2. Methods

2.1 Subjects

Twelve current or retired U.S. military officers participated in the study. They had between twenty and thirty years of military service, and represented all branches of the armed forces with the exception of the Army. There were three females and nine males. All subjects provided informed consent via a protocol approved by the appropriate Institutional Review Board.

2.2 MPA

Following the methodology of MPA, each subject participated in a two-hour interview with one MPA interviewer. During the interview, subjects were presented with a series of open-ended questions that focus on personal milestones, career history, and present situation. Posture-Gesture Mergers (PGMs) (as defined in the Introduction) were recorded by the interviewer, as expressed across multiple stages of the decision-making process (see Lamb, 2012; Moore, 2005). The PGMs are coded as representing one of six Action Motivation behaviors, with the three stages of decision making (Attention, Intention, Commitment) each comprising two Action Motivations, with one reflecting Assertion and another Perspective. The proportions of their total PGMs are then tallied across the six Action Motivations, with the distribution of proportions reflecting each individual's decision-making motivation. Connors et al. (2013) provide examples of such PGMs that would correspond to Assertion and to Perspective at each stage of the motivational decision-making process (Attention, Intention, Commitment).

Individual differences come into play as individuals find their own balance between the complementary factors of Assertion and Perspective. In our prior work we created a Perspective/Assertion Balance score—P/A Balance—which we define as follows: % Perspective-% Assertion (Connors et al., 2013). With this difference score, a positive number reflects more distribution to Perspective, and a negative number reflects more distribution to Assertion. We have shown that this metric is coded with excellent reliability across raters and that

it is more predictive of decision-making process, as assessed via completion of hypothetical decision-making scenarios, than raw counts of signature movements corresponding to the Overall Factors (Connors et al., 2014).

In this study, we applied the same approach to create difference scores, reflecting a balance between Assertion and Perspective, at each of the three stages of decision-making motivation, namely Attention, Intention, and Commitment. This metric provides a window into how each individual balances the need for both Assertion and Perspective at the more fine-grained level of staging throughout decision-making, permitting an opportunity to see if there are stages that are especially illuminating with respect to individual differences. The variables were created as follows:

Attention Balance=% Exploring-% Investigating

Intention Balance=% Evaluating-% Determining

Commitment Balance=% Anticipating-% Timing

In each case, a positive score indicates higher Perspective relative to Assertion, a negative score indicates higher Assertion relative to Perspective, and a 0 score indicates an even balance, specific to each of the three decision-making stages in the MPA model.

2.3 Hypothetical Decision-Making Scenarios

Four hypothetical decision-making tasks (Financial, Health, Voting, and Strategy) were designed for this study, drawing on prior use of this general paradigm in political science and other behavioral research (e.g., Dawes, 2007; Gartner, 2008; Mintz et al., 2006). Subjects completed each of these in a laboratory setting. During each task, subjects were given the option to seek out—one at a time—additional information to consider before coming to a decision, or to move on to make a final decision (see Connors et al., 2013, for an example of one scenario).

The number of information draws (requests for additional information) and response time (measured in seconds) were recorded electronically for each scenario. Information search and response time are presumed to be sensitive quantitative indicators of decision-making process that would reveal differences across individuals. To capture the process of decision-making—and not the actual decisions being made—we created two summary outcome measures based on subject behavior across all four scenarios. Total Response Time was computed as total chronological time (in seconds) summed across all four hypothetical scenarios. Total Info Draws was computed as the total number of requests for additional information summed across all four hypothetical scenarios. While noting a significant correlation between these outcome measures ($r=.54$, $p<.05$), we consider both variables separately in our prediction models as we have done in prior work (Connors et al., 2013).

2.4 Analytic Plan

Given the exploratory nature of this investigation, we opted to perform multiple regression analysis with backward elimination (see Dunkler, Plishke, Leffondre, & Heinze, 2014) for each of the outcome variables (Total Info Draws, Total Response Time), using the three Action Motivation balance scores as predictors. With a small data set and no a priori prediction, backward elimination provides a rational first step for determining a best-fitting model. It is noted that, by convention, the present sample size is small relative to the number of predictors for multiple regression. However, as this paper represents an initial exploration, we suggest that the fundamental issue comes down to having a sufficient number of subjects to detect the expected effect size in the model. Based on our prior work (Connors et al., 2013, 2014), we expect moderate to large effect sizes. As such, we favor an exploratory application of backward elimination, with the understanding that future work with larger samples would be needed to generate more stable and generalizable parameter estimates.

3. Results

Notable individual differences were found for all measures used in this study. Table 1 presents descriptive statistics on the three Action Motivation balance scores. The skew toward Assertion (as evidenced by mean scores which are negative) is consistent with the overall distributional pull toward Assertion in this sample (Connor et al., 2013). As discussed in prior publications (e.g., Connors et al., 2013), the Total Info Draws ranged from 10 to 21, and Total Response Time ranged from 365.62 seconds to 943.53 seconds. For each of these measures, there was a relatively equal distribution of scores between the two endpoints noted above. Notable covariation amongst the 3 Action Motivation balance scores as well as divergence was found. Attention Balance was distinct, correlating $-.02$ (ns) with Intention Balance, and $.13$ (ns) with Commitment Balance. Intention Balance and Commitment Balance were highly associated, correlating $.80$ ($p .01$), but were still considered as

separable predictors in the backward elimination multiple regression models, which would factor in the observed collinearity.

Table 1. Descriptive statistics for the action motivation balance scores

| Action Motivation Balance Scores | Minimum | Maximum | M (SD) |
|----------------------------------|---------|---------|----------------|
| Attention Balance | -24.00 | 6.00 | -10.50 (7.50) |
| Intention Balance | -21.00 | 10.00 | - 6.58 (9.40) |
| Commitment Balance | -20.00 | 20.00 | - 5.58 (12.68) |

Note. M=mean, SD=standard deviation

For each of the outcome measures, we ran a backward elimination multiple regression model, which initiated with all 3 Action Motivation balance scores, and then employed a probability of F-to-remove of $\geq .100$ in sequence. Table 2 presents the results of the 3 iterations that emerged for Total Response Time, and Table 3 presents the results of the 3 iterations that emerged for Total Info Draws.

Table 2. Backward elimination multiple regression model predicting total response time from action motivation balance scores

| Model | Unstandardized Coefficients | Standardized Coefficients | |
|--------------------|-----------------------------|---------------------------|--------------|
| | B (Std. Error) | Beta | t (p) |
| 1: | | | |
| Attention Balance | 0.018 (0.153) | .037 | .119 (.908) |
| Intention Balance | 0.242 (0.141) | .618 | 1.715 (.125) |
| Commitment Balance | -0.023 (0.183) | -.047 | -.123 (.905) |
| 2: | | | |
| Intention Balance | 0.237(.128) | .606 | 1.85 (.097) |
| Commitment Balance | -0.014 (0.157) | -.028 | -.087 (.933) |
| 3: | | | |
| Intention Balance | 17.603 (1.114) | .590 | 2.311 (.043) |

Note. B=unstandardized beta coefficient, Std. Error=standard error, t=t statistic, p=probability associated with t value.

Table 3. Backward elimination multiple regression model predicting total info draws from action motivation balance scores

| Model | Unstandardized Coefficients | Standardized Coefficients | |
|--------------------|-----------------------------|---------------------------|--------------|
| | B (Std. Error) | Beta | t (p) |
| 1: | | | |
| Attention Balance | 0.726 (7.696) | .028 | .094 (.927) |
| Intention Balance | 4.366 (7.077) | .700 | 2.030 (.077) |
| Commitment Balance | -3.145 (9.180) | -.125 | -.343 (.741) |
| 2: | | | |
| Intention Balance | 14.189 (6.437) | .691 | 2.20 (.055) |
| Commitment Balance | -2.792 (7.906) | -.111 | -.353 (.732) |
| 3: | | | |
| Intention Balance | 12.892 (5.049) | .628 | 2.553 (.029) |

Note. B=unstandardized beta coefficient, Std. Error=standard error, t=t statistic, p=probability associated with t value.

The results converged on the same best-fit model for both outcome predictors. Intention Balance emerged as a significant predictor of both Total Response Time and Total Info Draws, whereas Attention Balance and Commitment Balance were excluded based on the statistical model employed. Thus this staging in the MPA model seems to be an especially salient predictor of decision-making process as elicited using the particular paradigm employed in this study. It is notable that the magnitude of the effect was substantial as well, as reflected in the Beta estimates shown in Tables 2 and 3. The positive nature of the Beta estimates suggests that the degree to which an individual is driven by a motivation toward Perspective is predictive of requesting more information draws, and having a longer response time, when involved in the decision-making scenarios. Furthermore, it is informative to reference the variance explained in each final model. For Total Response Time, the unadjusted R^2 was 35%, and the adjusted R^2 was 28%. For Total Info Draws, the R^2 was 40%, and the adjusted R^2 was 28%. These values suggest a strong predictive value of MPA in general on decision-making process, and the specific potential offered via assessment of Intention.

4. Discussion

The results of this study build on our prior papers (Connors et al., 2013; Connors et al., 2014) and add empirical evidence that signature movement patterns, as revealed by use of MPA, yield important signals on decision-making style and are predictive of decision-making process. While a number of laboratory-based protocols have been used to elicit individual differences in decision making (as reviewed in our Introduction), there have been few attempts to generate methods that offer some prognostic value, particularly going beyond the inherent limitations of self-report (Connors et al., 2013). Thus our accumulating data supporting the utility of MPA as a predictor of notable individual differences in leaders speaks to the potential that comes from applying observational methodologies in general, and specially those that are movement-based, to reveal reliable indicators of decision-making style that are predictive of future decision-making process.

The specific contribution here is to plumb the motivational stages of decision-making posited in the MPA model (Lamb, 2012; Moore, 2005). Our primary finding is that Intention, the middle of the 3 stages in MPA, was the most salient motivational indicator of observed individual differences in decision-making process. As noted earlier, the MPA model suggests that Intention is devoted to Determining (building the resolve necessary to move toward a decision) while also Evaluating (weighing the relative importance of information in hand as it relates to potential actions). Determining is one of the Action Motivations that comprise Assertion, while Evaluating is one of the processes underlying Perspective. Our findings suggest that the way an individual balances, in terms of complementary underlying motivations associated with Intention, the need for determination when formulating a decision to push and get results while prioritizing the available information to design results is an especially sensitive indicator of decision-making style. An inclination toward Evaluating leads individuals, in the protocol used in this study, to reach out for more information before coming to a decision (as indexed by total info draws), and to spend more time arriving at a decision (as indexed by total response time). It is noted that information draws and response time are, in this study, proximal indicators of an overall decision-making process, and the linkages with MPA suggest that signature movement patterns can provide insight into a general propensity to weigh the need for action (Assertion) versus the need for reflection (Perspective), and that such individual differences are most telling during the Intention stage.

It is critical to emphasize that all subjects need to employ both Determining coded relative to what the subject's body is revealing through increasing or decreasing pressure, and Evaluating coded in how the body shapes to rise and descend along the vertical dimension to size up an issue from above and below. What this study demonstrates is the predictive potential of deciphering individuals' motivational tendencies as referenced to stages of decision making, which converge with observable behavioral differences when faced with decision-making tasks. In this sense, this work converges with a theme emerging from a number of disciplines and methodologies used to uncover individual differences in decision making—there are a multitude of processes that need to be evoked, and individual differences arise in the differing priorities individuals give when balancing complementary cognitive strategies.

We do not claim that the other stages of decision-making motivation in the MPA model are irrelevant. In the MPA model, the Intention stage is a bridge between Attention (which involves a focus on information) and Commitment (in which a decision is implemented). Rather, we say that Intention, rather than Attention or Commitment, emerged as the best predictor of individual differences in the specific aspects of decision-making process required in the experimental paradigm used in this study. Variation in the motivational balance applied to Perspective and Assertion in Attention and Commitment is revealed to predict other aspects of decision-making process in future studies. To that point, we again emphasize the complexity of cognitive and motivational processes that underlie decision-making in general, and the multitude of indicators that may reveal

multiple bases of individual differences in process and style when faced with a range of decision-making tasks. Furthermore, our work has been devoted to military leaders and it may be that Intention is a particularly relevant stage for this population that drives differences in decision-making style. While future work will be necessary to build on the findings reported in this paper, the results do add credence to the suggestion that movement-based methods such as MPA offer potentially powerful approaches for gaining insight into the motivational bases of decision-making style and may offer prediction of future decision-making behavior in leaders of interest, particularly as movement can be observed from videotape as well as in person.

In conclusion, we note considerations of the study design we employed. In addition to focusing on one specific type of leader, our sample was modest in size, in part due to the intensive nature of conducting both MPA and the experimental protocol. The results of the regression analyses, while sensitive to the effect sizes observed in our sample using these methodologies, would need to be replicated with larger samples in order to provide more stable estimations of parameters in the models. Future research that broadens this focus would be welcome. In addition, additional types of decision-making process may be studied experimentally and would offer fertile ground for expanding our understanding of the potential utility of MPA as a predictor of decision-making process. Overall, this work adds to the growing emphasis on bringing attention to the notable individual differences in decision-making process that may be found in the general population, and specifically in various types of leaders who are charged with making complex decisions on a regular basis.

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Assessing for Rising Visuospatial Ability of School Leavers

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Abstract

This paper investigated increasing visuospatial ability in three countries. Drawing on the Flynn Effect some researchers (Greenfield, 1998; Neisser, 1997) hypothesized that visuospatial ability may be increasing. I explored rising visuospatial abilities amongst school leavers in the UK, Australia and Nigeria. In one study Cocodia et al. (2003) found that exposure to new technology may be impacting on ability to carry out tasks that require high levels of visuospatial ability more efficiently. Results suggest that increasing visuospatial ability may be occurring due to a more visual environment and more access to multimedia. The core component of the present research paper was to investigate whether visuospatial ability is indeed rising as it is a feature of the human intelligence framework (Halpern & LaMay, 2000; Alias, Gray, & Black, 2001). Data analysis of examination results in specific subjects indicated that visuospatial abilities are rising. It was hypothesized that visuospatial ability is rising in industrialized nations due to more access to multimedia, and cognitive manipulation task in general.

Keywords: Australia, Nigeria, United Kingdom, school leavers, visuospatial ability

1. Introduction

Visuospatial ability is a subset of the human intelligence structures. Lohman (2000, p. 285) describes visuospatial ability as an aspect of spatial ability which assists to mentally “*generate, retain, retrieve, and transform well structured visual images*”. It is also defined as: “...*the ability to manipulate and rotate two- and three- dimensional pictorially presented stimulus objects*” (McGee, 1982, p. 893). Significantly, Flynn (1984, 1987) found that scores on those IQ tests which rely heavily on visuospatial ability, were higher than verbal ability test. Visuospatial strategies may also be employed to solve mathematical problems on tests which require advanced mathematical reasoning (Thomas & Higbee, 1999; Halpern & LaMay, 2000; McGee, 1982; Wilson & Swanson, 2001). Halpern and LaMay (2000) point out that visuospatial ability consists of subsets of abilities and is not a unitary construct. There are 5 abilities within the visuospatial framework (see Table 1).

Table 1. Five abilities within the visuospatial framework (Adapted from Halpern & LaMay, 2000, pp. 235-236).

| Abilities | Description |
|---|--|
| Spatial perception | <i>Requires a participant to locate the horizontal or vertical in a stationary display while ignoring distracting information;</i> |
| Mental rotation | <i>Involves the ability to imagine how objects may appear when they are rotated in two- or three dimensional spaces;</i> |
| Spatial Visualisation | <i>Refers to the complex analytic multistep processing of spatial information</i> |
| Spatiotemporal ability | <i>Involves judgements and responses to dynamic (i.e. moving) visual displays.</i> |
| Generation and maintenance of a spatial image | <i>Require one to generate an image form long or short term memory, using the information to perform a specific cognitive task</i> |

2. Technological Advancement and Rising Visuospatial Abilities

Exposure to technological and visual environments in modern society is described as part of the cultural development of a society (Neisser, 1997). According to Neisser increased access to information and communication technology has been suggested as a possible causal factor for rising IQ test scores. Others have also linked the perceived rise to general technological advancement (Teasdale & Owen, 2000; Greenfield, 1998). Television, film, visual media, and internet access are just some of the changes which have impacted on the human environment since the 1920s. More access to information means people have access to more knowledge. Knowledge is described as information which is acquired and accumulated (Gilhooly, 1994). Through more information mediums like these we can acquire a large pool of knowledge as well as other skills and concepts. Depending on how highly structured one's knowledge base is, the information we acquire can assist in IQ tests. This is especially pertinent when performance involves problem solving tasks (Ceci, 1991). For example, if a test item requires the examinee to mentally rotate objects on a picture test, playing computer games have been found to enhance this skill (Greenfield, 1998). If an individual's reservoir of knowledge in a given domain is well structured, the relevant cognitive processes (e.g. encoding, retrieval, inference) that access this knowledge when solving new problems will be utilized efficiently (for a full account of how our cognitive architecture and processes influence knowledge acquisition see Sweller, 1999).

Increasing technical and visual environments are also evident in formal education settings. Children now have more access to more technology and computers for a variety of classroom activities including mathematics and science. Schools have integrated computer technology in classroom practice (Ogbu, 1994). Theories have emerged suggesting that continuous contact with these technologies may be impacting IQ test scores. Curtis and Lawson (2002) list the benefits of computer games and new computer applications as inclusive in the development of language, problem solving and social interaction. One may use domain specific knowledge like inferring, monitoring or deductive reasoning to solve such problems (Sherwood, 1988; Henderson-Lancett & Boesen, 1986). A person's store of knowledge helps to comprehend a situation, select moves which in turn affect outcomes. These skills obviously become very useful when taking IQ tests. Greenfield (1998) proposes that students spend long periods playing computer video games which may help develop visuospatial skills which are useful for completing items on nonverbal IQ tests. These skills are essential for completing tasks on nonverbal IQ measures such as various block design tests. Specifically, object Assembly Subtests of the Wechsler Scales and the Raven Matrices are examples of block tests. Greenfield points out that some video and computer games require the player to position objects on certain parts of the screen. More recent development of computer application may further enhance these skills. Hence, the player has to mentally manipulate each object before physically making his/her next move. The argument is that such tasks exploit skills like visuospatial representation and iconic imagery. Long periods of playing computer games requiring mental manipulations of spatial imagery may stimulate internal forms of representation (Greenfield, 1998; Okagaki & Frensch, 1994). Many of these computer games also require one to solve puzzles or assemble two or three dimensional images on the screen. Assembling images may require mental rotations and manipulations that are also required by mental paper folding tests (e.g. Stanford-Binet Mental Paper folding Test and the Wechsler Scales for Children). Greenfield (1998) pointed out that film, television and video are more iconic in nature, that is, they require iconic rather than symbolic imagery over word as do nonverbal IQ tests. In addition, film and video assist in visual perspective-taking skills. These include computer software which require visual perspective skills. The author proposes that although we engage in mental manipulations using external apparatus, this should transcend to internal forms of representation (i.e. schemas) which would manifest when taking tests.

Studies have found that television and films may also influence verbal ability of children (Rice et al., 1990; Rice & Woodsmall, 1988; Salomon, 1977; Stein & Friedrich, 1975). This implies that if basic vocabulary is improving, verbal IQ score should be rising (Greenfield, 1998; Williams, 1998). In a longitudinal study, Rice et al (1990) studied children over a period of two years to investigate the effect of television on vocabulary development. The sample consisted of over 300 children aged between 3-7 years. Rice et al. reported that watching Sesame Street (an educational programme) did contribute to increases in vocabulary of preschoolers. However, it is not clear whether IQ scores also increased. Rice et al. noted that increases in vocabulary occurred regardless of environmental and social factors such as family size, parent education, parent attitude, presence of sibling or any other factors. This significant finding may have been influenced by the content and presentation of Sesame Street. Firstly, the program is well suited for the age group sampled. Secondly, language and performance of actors have also been developed to appeal to young children. However, the study does suggest that watching television for long periods may have an impact on basic vocabulary skills which may influence performance on verbal IQ tests.

3. Methodology

3.1 The Sample

Data was collected from national examination bodies in Australia, United Kingdom (U.K.) and Nigeria. Australia and the U.K. were selected as they are highly industrialized, while Nigeria was included because it is a developing country. Performance on subjects which require high levels of visuospatial ability was sought. Subjects such as technical drawing and art were selected as sketching and drawing require high levels of visuospatial ability (Alias, Black, & Gray, 2002). Mathematics was also selected for the same reason. Organisations responsible for administering school leaving examinations in each country were contacted directly. The following sections provide relevant details about the method employed in obtaining and analysing the data sample. It also includes information about the national examination framework of each of the countries included in the study.

3.1.1 Australia

In New South Wales Australia, the school leaving examination is called High School Certificate Examination (HSC). Students who have successfully completed years 11 and 12 of senior secondary school in Australia are eligible to sit for this examination. Completion of year 12 is not compulsory in New South Wales. Students have the option of pursuing various pathways at the end of year 10 which include vocational studies, a traineeship or an apprenticeship. The Board of Studies, New South Wales is the body responsible for conducting the examination. They are also responsible for school curriculum development across all levels of primary and high school education in New South Wales.

3.1.2 United Kingdom

In the U.K. the Department For Education and Skills (DFES) in collaboration with other bodies administer the school leaving examinations. The Qualification and Curriculum Authority (QCA) ensures that standards are maintained. The United Kingdom includes England, Scotland, Wales and Northern Ireland. However, England, Wales and Northern Ireland share a similar qualifications framework while Scotland has a separate framework (The Scottish Certificate of Education) which differs from that of the other three regions. Public examinations and qualifications include the General Certificate of Secondary Education (GCSE) and the General Certificate of Education Advanced level (GCE A level). The GCSE examinations are taken by 15 to 16 year olds after completing 5 years of secondary school. The GCE A level is usually taken by 18 years and over. The GCE A level is equivalent to Australia's HSC and was included in this phase of the study. The Qualifications and Curriculum Authority (QCA) is the body responsible for quality control.

3.1.3 Nigeria

The West African Examination Council (WAEC) conducts four main categories of examinations in the sub region of West Africa. These categories are: National Examinations, International Examinations, Examinations conducted in collaboration with other Examining Bodies, and Examinations Conducted on behalf of other Examining Bodies. Since its inception in 1952 examinations conducted by the council includes the School Certificate/General Certificate of Education at both the Ordinary and Advanced levels for member countries. Current member countries include: Liberia, Nigeria, Ghana, Sierra Leone, The Gambia and Guinea. Membership is not automatic instead it remains optional. As such, each country joined the council on separate occasions. School leavers' examination performance in Nigeria was examined as the country has been a member of the council since its commencement. All states and regions in Nigeria take the national school leaving certificate examinations. Historically the GCE Ordinary and Advanced levels were the national examinations taken in Nigeria until 1988. This later changed to the Senior Secondary School Certificate Examinations (SSCE) and the West African Secondary School Certificate Examinations (WASSCE). The core difference between the previous and current school leaving examinations is that the SSCE and WASSCE are taken after 6 years of secondary school education usually at the age of 17 years and above. While the GCE "O" and "A" levels have some similarities with that of the United Kingdom examination system. The Advanced level examination was for those aged 18 and above, while the Ordinary level was for ages 15 or 16 years. These two examinations were changed to a compulsory 6-3-3-4 system of education. This includes 3 years in junior secondary school and three years in senior secondary school with the option of pursuing vocational and technical studies after junior secondary school. However the content of the old and new education system remain comparable.

3.2 Procedure

Data collection and analysis entailed liaising with research and measurement unit or department of the examination bodies in all three countries. The research unit assisted in sorting through archives and selecting relevant data for this study. Subjects chosen include Technical Drawing/Design and Technology, Mathematics and Art. The criteria for

data selection included: a) subjects chosen must be a common paper that has been on offer for up to ten years, b) the subjects chosen should involve high levels of visuospatial ability to complete tasks, c) furthermore in order to make meaningful comparisons over time the data had to be made consistent so it could be analysed. Therefore only passes and above in each subject were included in the analysis. The actual number of candidates who achieved passes of up to 50% (or its equivalent) and above was included. The total number of students with passes was then changed to percentages. The period of study was between 1978 and present. Due to the large volume of data, there was a need to select five years for which data was consistently available in all three countries. Hence, years 1, 2, 3, 4, and 5 are represented in the sections below across all three countries

3.3 Results and Discussion

The mean and standard deviations (in percentage) of passes in all three subjects are shown in

Table 2. The data was analysed using an F test to test the statistical significance of the differences among the obtained means of subjects in all three countries (

Table 1). The statistical analysis was conducted at the 0.05 level of significance with the critical value of F being 3.88. The number of students who achieved passes in each subject is shown in Table 3, Table 4 and Table 5.

Table 2. Means and standard deviations of passes (in percentages) and F test statistics

| | Art | | | Technical Drawing | | | Mathematics | | |
|--------------------|---------|------|-----------|-------------------|------|-----------|-------------|------|-----------|
| | Nigeria | UK | Australia | Nigeria | UK | Australia | Nigeria | UK | Australia |
| Central Tendency | | | | | | | | | |
| Mean | 37.6 | 85.7 | 56.5 | 25.8 | 78.3 | 50.5 | 14.8 | 78.9 | 58.3 |
| Median | 29.4 | 90.0 | 58.0 | 32.1 | 79.8 | 50.0 | 18.1 | 77.9 | 64.0 |
| Dispersion | | | | | | | | | |
| Range | 41.0 | 26.1 | 13.8 | 25.6 | 22.5 | 5.7 | 9.5 | 21.0 | 17.3 |
| Standard Deviation | 18.8 | 10.1 | 6.2 | 11.9 | 8.7 | 2.1 | 4.6 | 7.8 | 8.7 |
| Variance | 3.5 | 1.0 | 0.4 | 1.4 | 0.8 | 0.0 | 0.2 | 0.6 | 0.8 |
| d f (c-1), (n-c) | 2, 12 | | | | | | | | |
| ($\alpha=0.05$) | | | | | | | | | |
| F Ratio | 10.6 | | | 28.1 | | | 61.2 | | |

Tabled value for $F(2,12)=3.88, P<.05$

Table 3 shows the percentage and actual numbers of school leavers who achieved passes in technical drawing in all three countries. As seen in Figure 1 (also Figure 2) when compared to performance in year 1, the number of students with passes in technical drawing (TD) in each country in year 5 increased significantly. In Australia, 48 percent of school leavers passed TD in year 1 while 54 percent passed in year 5. A total of 66 percent of U.K. school leavers passed in year 1 and 88 percent passed in year 5. Performance in Nigeria also increased from 32 percent in year 1 to 38 percent in year 5. Increasing performance of school leavers in technical drawing is significant $F(2, 12)=10.6, p<0.05$ suggesting that visuospatial ability is rising.

Table 3. School leavers achieving passes in technical drawing

| Year | Nigeria (SSCE) | | UK (GCE A LEVELS) | | Australia (HSC) | |
|------|----------------|------|-------------------|------|-----------------|------|
| | n | % | n | % | n | % |
| 1 | 621 | 32.1 | 2838 | 65.8 | 221 | 48 |
| 2 | 273 | 32.5 | 5360 | 74.3 | 818 | 51 |
| 3 | 710 | 13.5 | 2160 | 83.4 | 2245 | 50 |
| 4 | 1023 | 12.7 | 5086 | 79.8 | 2300 | 49.9 |

| | | | | | | |
|---|------|------|------|------|------|------|
| 5 | 2027 | 38.3 | 7148 | 88.3 | 2500 | 53.8 |
|---|------|------|------|------|------|------|

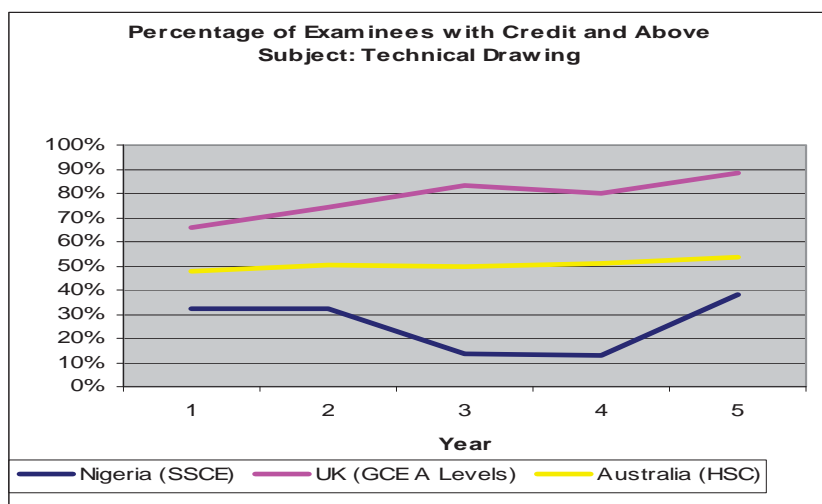


Figure 1. Percentage of examinees with credit and above in technical drawing

Table 4 shows the percentage and actual numbers of school leavers who achieved passes in art. Performance in Art has increased significantly in all three countries (Figure 2). A total of 50 percent of Australian school leavers had passes in year 1 with 58 percent achieving passes in year 5. In the UK, 69 percent of year 1 school leavers obtained passes compared to 96 percent in year 5. Only 29 percent of Nigerian school leavers had passes in year 1 which increased to 62 percent in year 5. School leavers performance in art increased significantly $F(2, 12)=61.2, p < 0.05$ in all three countries.

Table 4. School leavers achieving passes in Art

| Year | Nigeria (SSCE) | | UK (GCE A LEVELS) | | Australia (HSC) | |
|------|----------------|------|-------------------|------|-----------------|------|
| | n | % | n | % | n | % |
| 1 | 3255 | 29.4 | 15493 | 69.4 | 1760 | 49.5 |
| 2 | 3726 | 22.1 | 14710 | 82.9 | 2140 | 50.4 |
| 3 | 1164 | 53 | 21000 | 90 | 5360 | 61.6 |
| 4 | 2331 | 22.2 | 31450 | 90.5 | 5925 | 63.3 |
| 5 | 1089 | 62.2 | 36424 | 95.5 | 5710 | 58 |

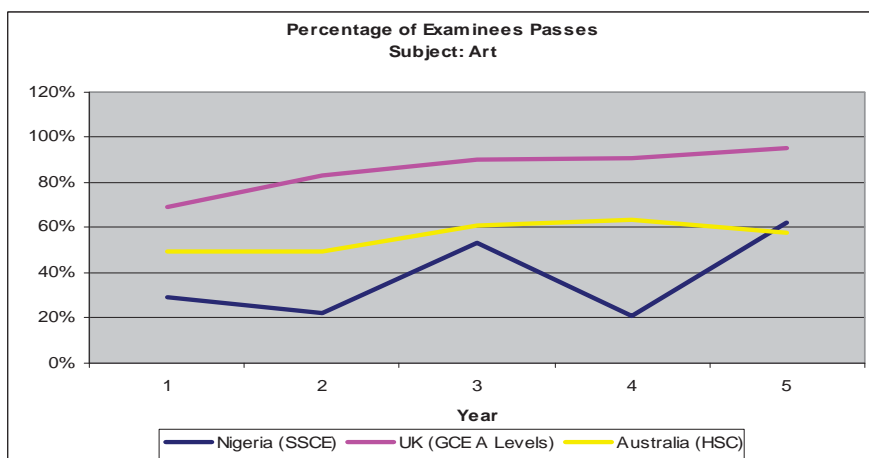


Figure 2. Percentage of examinees passes in Art

Table 5 shows the percentage and actual numbers of school leavers who achieved passes in mathematics. Performance in all three countries were statistically significant $F(2, 12)=28.1, p<0.05$. Performance increased significantly in Australia from 49 percent in year 1 to 64 percent in year 5. In the UK 69 percent of the year 1 school leavers passes with a significant rise in year 5 to 90 percent. Nigeria was the only country where performance remained at 18 percent for both year 1 and year 5 school leavers. There was also a drop to 9 percent in year 3. This rose slightly to 11 percent in year 4. This drop in performance levels may be as a result of the transition between 1989 and 1992 in the Nigerian secondary school system from a five and seven year system, to a six year system.

Table 5. School leavers achieving passes in mathematics

| Year | Nigeria (SSCE) | | UK (GCE A LEVELS) | | Australia (HSC) | |
|------|----------------|------|-------------------|------|-----------------|------|
| | n | % | n | % | n | % |
| 1 | 16117 | 18.1 | 37570 | 68.8 | 1115 | 48.6 |
| 2 | 26042 | 18.1 | 41380 | 75.7 | 7521 | 49.1 |
| 3 | 7985 | 8.8 | 36910 | 77.9 | 20098 | 65.9 |
| 4 | 53559 | 11 | 54664 | 82.4 | 19778 | 64 |
| 5 | 138098 | 18.3 | 61515 | 89.8 | 14688 | 64 |

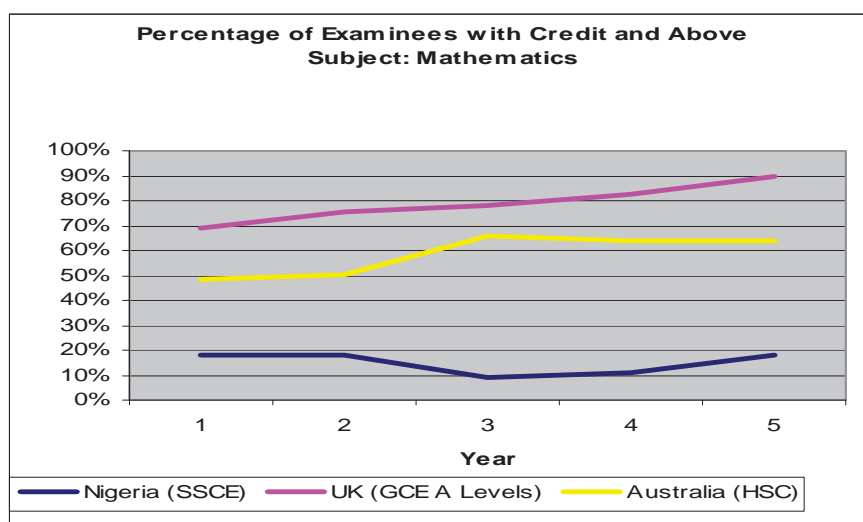


Figure 3. Percentage of examinees with credit and above in mathematics

4. Conclusion

Results indicate that school leavers' performance on subjects which require high levels of visuospatial ability has risen significantly. It is evident that industrialised nations such as Australia and the United Kingdom show particularly high performance levels in these subjects. This may be linked to the highly technological environment of industrialised nations. Nigeria also showed increases in school leavers' performance which suggests that developing nations may indeed be experiencing increasing visuospatial ability. This may occur regardless of how minimal access to technology and visual stimulation may be. Increasing visuospatial ability is evident in all three nations along with the reported rise in average general intelligence.

The Nigeria data however showed a slump in performance between year 3 and year 4. As mentioned previously, and at this point, the most likely explanation is that the dip may be as a result of the transition to the 6-3-3-4 school system in 1989. This change was gradual with schools in all 32 states in Nigeria shifting from the old system to the new system very slowly. This may have affected the number of students who sat for the Senior Secondary School

Certificate Examination between 1989 and 1993. This in turn may have had an influence on the number of passes reported by the West African Examination Council during the same period. The performance of school leavers subsequently rose in later years.

As with most research there are clear limitations to the study. Although the researcher has attempted to compare like for like subjects one must be mindful that very educational system goes through periods of change. For instance, in New South Wales Australia there has been a revamp of the curriculum authority and NSW Board of Studies structure. Whether these changes may impact on curriculum delivery is yet to be tested.

Another limitation to the current study is that testing on a sample of students using computer application or 3D video game did not occur here. Further studies may explore recruitment of such a sample.

Overall it is evident that performance in all three subject shows increases in those subjects that require visuospatial skills. It appears that these increases are occurring at different rates hence I mentioned previously may be due to a variety of factors such as internal changes within individual education bodies. In addition, using mature samples in all three countries is quite consistent with Flynn's (1987) study where raw scores of army recruits on IQ tests were analysed. Flynn pointed out that mature individuals are nearer the peak of their raw score performance when compared to children. The maturity of the school leavers have assisted in presenting accurate evidence that visuospatial abilities are increasing.

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Thank you to the staff of the West African Examination Council (WAEC) for providing relevant school leavers' examination results for Nigeria. I acknowledge the assistance of Dr. Bob McCann at the former New South Wales Board of Studies (BoS) for giving me access to school leavers' examination results. Similarly, I appreciate the help of staff of the Department of Education and Skills (DfES) for providing access to UK school leavers' results and relevant longitudinal data.

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Are Obese Mothers of Children Aged 1-6 Years Evening-Typed?

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Abstract

Obesity is a serious problem that is growing in developed countries and many children as short-sleepers have been reported to be obese. However, no studies have been conducted on the relationship between BMI shown by mothers of children aged 1-6 years and their own circadian typology. This study aims to clarify this relationship in Japanese mothers. An integrated questionnaire on diurnal rhythms (including the Diurnal Type Scale constructed by Torsval & Åkerstedt), sleep habits, meal habits, lighting conditions at night, weight and height was administered to mothers and their children aged 1-6 years. Sixty-two percent of 863 mothers answered the questionnaire for themselves and their children. All the obese mothers (BMI of 28 or more) had MEQ scores of less than 18 and were more evening-typed than non-obese mothers (BMI of less than 28) ($p=0.02$). A higher ratio of obese mothers watched TV after 11:00 p.m. ($p=0.049$) and used fluorescent lights while watching TV after 11:00 p.m. ($p=0.023$) compared to non-obese mothers. Obese mothers showed a higher frequency of depression ($p=0.044$) and tended to have higher frequency of becoming irritated ($p=0.09$) than non-obese mothers. The children of obese mothers were significantly more evening-typed (Mean \pm SD=18.5 \pm 3.6) than those of the other mothers (21.1 \pm 3.2) ($p=0.018$). Evening-typed life of mothers with watching mid-night TV would be related to obesity of mothers and children. This study concludes that obese mothers of children aged 1-6 years are evening-typed and the children of obese mothers are also more evening-typed than those of non-obese mothers

Keywords: Japanese young children, circadian typology, body mass index of mothers, TV watching at night, obesity

1. Introduction

A tremendous number of studies have been reported especially the last couple of years on the relationship between sleep duration and obesity. Nielsen et al. (2011) summarized the 71 recent original studies and seven reviews on the relationship between short sleep duration and obesity and concluded that the relationship is clear in young children and adolescents but not in adults. For example, Drescher et al. (2011) performed the Tucson Children's Assessment of Sleep Apnea follow-up study (TuCASA) cohort study for children aged 10-17 years and concluded that decreased total sleep time and increased caffeine intake and screen time may result in a

higher obesity risk in the adolescent population. The Council of Communications and Media, The Academy of American Pediatrics (2011) recently warned that children who watch TV late at night have a high risk of obesity, because they have higher-fat diets, drink more soda and have lower calorie expenditure from less exercise (O’Keeffe et al., 2011; Council of communications and media & The Academy of American Pediatrics, 2011). An epidemiological study on Chinese kindergarten children showed that, compared with children reporting over 11 hours of sleep per night, the odds ratio for childhood obesity was 4.76 (95% CI, 1.28-17.69) for children with less than 9 hours of sleep, and 3.42 (95% CI, 1.12-10.46) for children with 9.0 to 9.4 hours of sleep after adjustment for age, sex, and other risk factors (Jiang et al., 2009). In a study on Australian children aged 5-10 years old, Taylor et al. (2012) reported that, compared with children of normal weight, those who were overweight or obese were more likely to spend no time studying, spend more than 2 hours per day in screen-based activity and sleep less than 10 hours per night. Lucassen et al. (2013) recently reported that Eveningness was associated with eating later and a tendency towards fewer and larger meals and lower HDL cholesterol levels in US 119 participants aged 18-50 yrs.

What are the mechanisms for obesity from short sleep duration? One possibility is that a long time awake at night is associated with consuming junk food and sweet beverages while watching nighttime TV (Council of communications and media & The Academy of American Pediatrics; O’Keeffe et al., 2011). Olds et al. (2011) only reported that late-bed/late-rise Austrian adolescents showed higher BMI scores than early-bed/early-rise adolescents independent of age, sex, household income, geographical remoteness and sleep duration. This suggests that a delayed phase of the circadian clock may be related to obesity in humans. No studies to date have examined the relationship between circadian typology and obesity of mothers with 0-6-year-old children. This study aims to examine this relationship from epidemiological point of view, as well as to examine the relationship between the obesity of mothers and nighttime TV and lighting.

2. Participants and Methods

The data used was collected from responses to questionnaires completed in 2009 by 440 parents (more than 95% are mothers, response rate: 62%) of children aged 1-6 (231 girls and 209 boys) in 9 city-run nursery schools and 1 kindergarten affiliated to the Faculty of Education, Kochi University located in Kochi city (33.3 °N). The questionnaires included The Diurnal Type Scale by Torsvall and Åkerstedt (1980) and a revised version for children (Harada et al., 2007), questions on mental health of the children (such as anger and depression) (Harada et al., 2007) and questions only for parents about night lighting (Table 1A) and late night TV watching (Table 1B). The Diurnal Type Scale (Torsvall & Åkerstedt, 1980) and the version for children (Harada et al., 2007) were used to objectively measure diurnal preference. This part consisted of seven questions: three pertaining to sleep onset, three to sleep offset and one to peak timing of activity. Each question allows for choice (scored from 1 to 4) and the M-E score was the sum of the 7 answers. Scores ranged from 7 to 28, with lower scores representing evening-types and higher scores representing morning-types. The section of sleep habits consisted of questions on sleep onset and offset timings on weekdays and weekends and questions about the quality of sleep such as mood upon falling asleep and waking up. The data was statistically analyzed using χ^2 -tests, Mann-Whitney U-tests, and Pearson’s correlation analysis with SPSS 12.0 statistical software. M-E scores were expressed as means plus or minus the standard deviation (Mean \pm SD).

The study followed the guidelines established by the Chronobiology International journal for the conduct of research on human subjects (Portaluppi et al., 2010). Before administrating the questionnaires, each participant (parents or guardians) was given a written explanation that detailed the concepts and purposes of the study and stated that their answers would be used only for academic purposes. After the above explanation, all parents (or guardians) agreed completely with the proposal. The study was also permitted by the kindergarten nurses’ committees of the eleven kindergartens which carried out an ethical inspection of the contents of the questionnaire. As the children could not complete the questionnaires themselves, their parents or guardians completed them on their behalf.

3. Results

Most of the mothers with a BMI of 28 or more (“obese mothers”) had M-E scores of less than 18 and more evening-typed than those with a BMI of less than 28 (“non-obese mothers”) (Mann-Whitney U-test: $z=-3.024$, $p=0.02$) (Figure 1). A higher ratio of the obese mothers watched late night TV (after 11:00 p.m.) (χ^2 -test: χ^2 -value=16.997, $df=1$, $P<0.001$) (Figure 2) and used fluorescent lamps from sunset to bed time than that of non-obese ones (χ^2 -value=18.360, $df=1$, $P<0.001$) (Figure 3).

Obese mothers showed a higher frequency of depression (χ^2 -test: χ^2 -value=8.08, $df=1$, $p=0.044$) (Figure 4A) and tended to have higher frequency of becoming irritated (χ^2 -test: χ^2 -value=6.44, $df=3$, $p=0.09$) (Figure 4B)

than non-obese mothers. The children of obese mothers were significantly more evening-typed (Mean \pm SD=18.5 \pm 3.6) than those (21.1 \pm 3.2) of non-obese mothers (Mann-Whitney U-test: $z=-2.36$, $p=0.018$) (Figure 5). A significant positive correlation was seen between the BMIs of 1 year olds and their mothers, but the correlation was reduced for children aged 4 years old (Figure 6).

Table 1. Questions and answers about night lighting (A) and late night TV watching (B) for parents (mostly mothers)

| | |
|------------|--|
| Question A | What kind of lighting do you use between sunset and bedtime? (multiple answers are allowed) |
| Answers A | (1) Fluorescent light on the ceiling or walls of the room, (2) Incandescent light or other kind on the ceiling or walls of the room, (3) Fluorescent lamp stand on the desk, (4) Incandescent lamp stand or other kind on the desk, (5) Small incandescent light, (6) Light from the display of a TV or computer, (7) No lighting. |
| Question B | Do you watch TV or play video games after 11:00 p.m.? If so, how frequently? |
| Answers B | (1) Yes (i. everyday, ii. 4-5 times (a week), iii. 2-3 times, iv. 0-1 time(s)) (2) No |

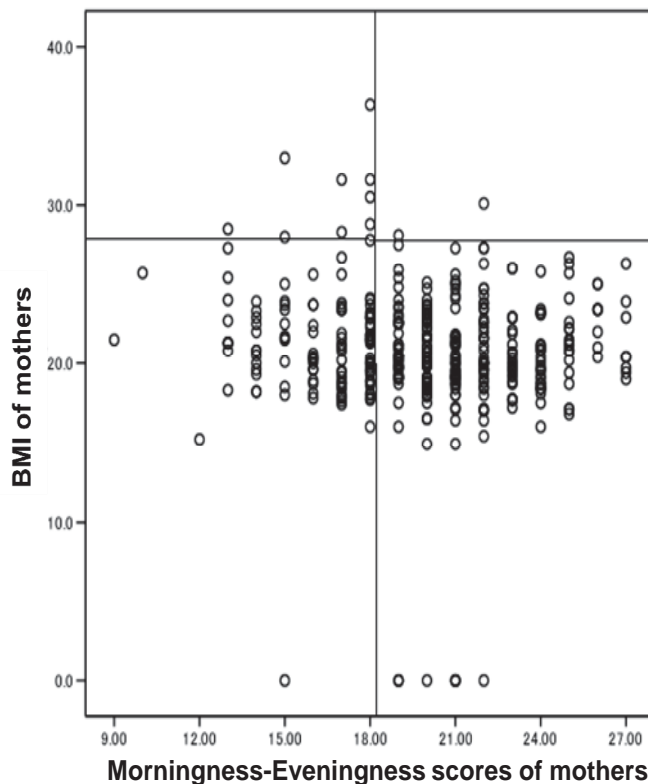


Figure 1. Relationship between BMI and circadian typology of mothers of Japanese young children aged 1-6 years.

Note. Most of obese mothers with a BMI of 28 or more were evening typed with an M-E score of less than 18.0.

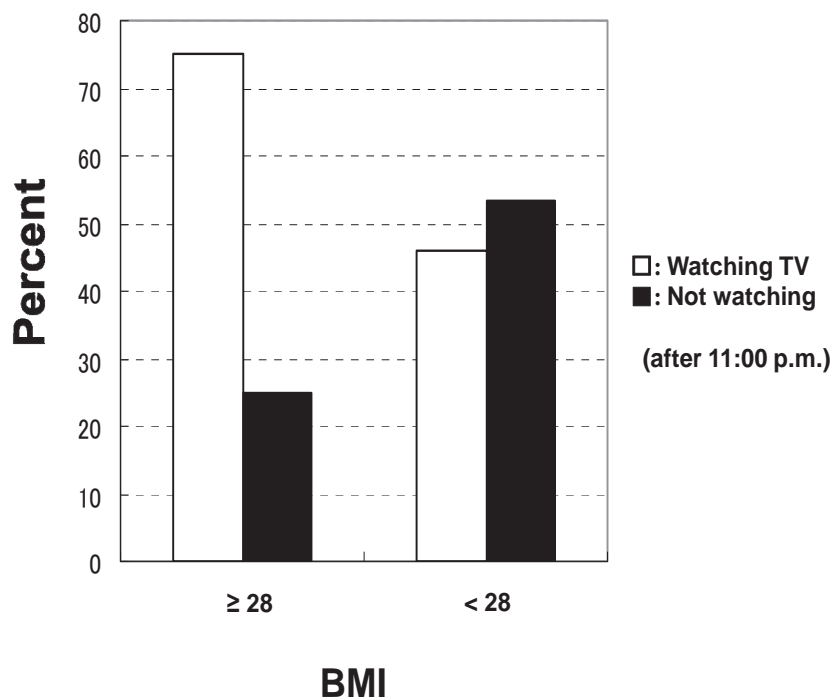


Figure 2. The relationship between BMI and the ratio of mothers who watch late night TV after 11:00 p.m.

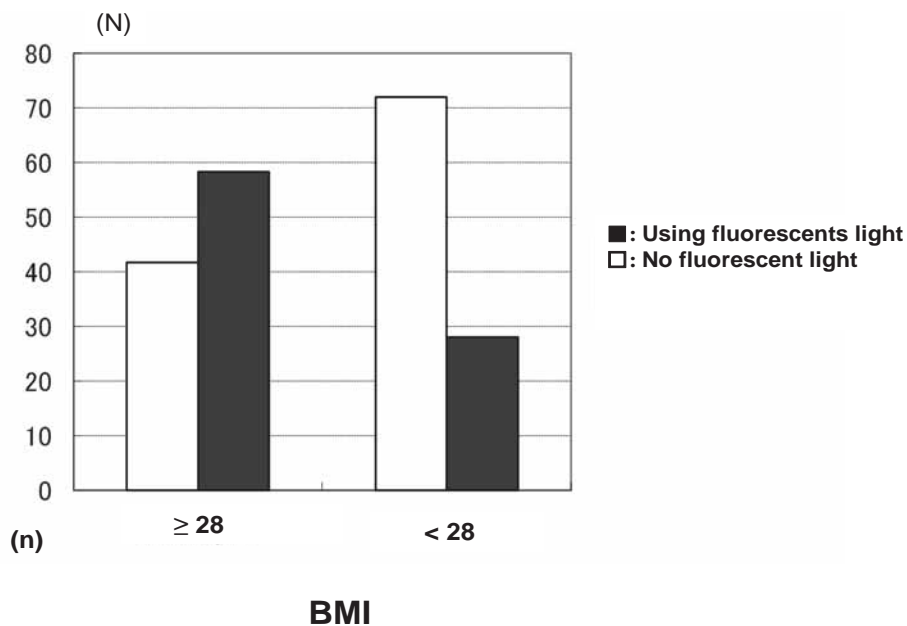


Figure 3. A high ratio of obese mothers used fluorescent lamps emitting light that includes short wave light with high color temperature, between sunset and bedtime (χ^2 -value=18.360, df=1, p<0.001)

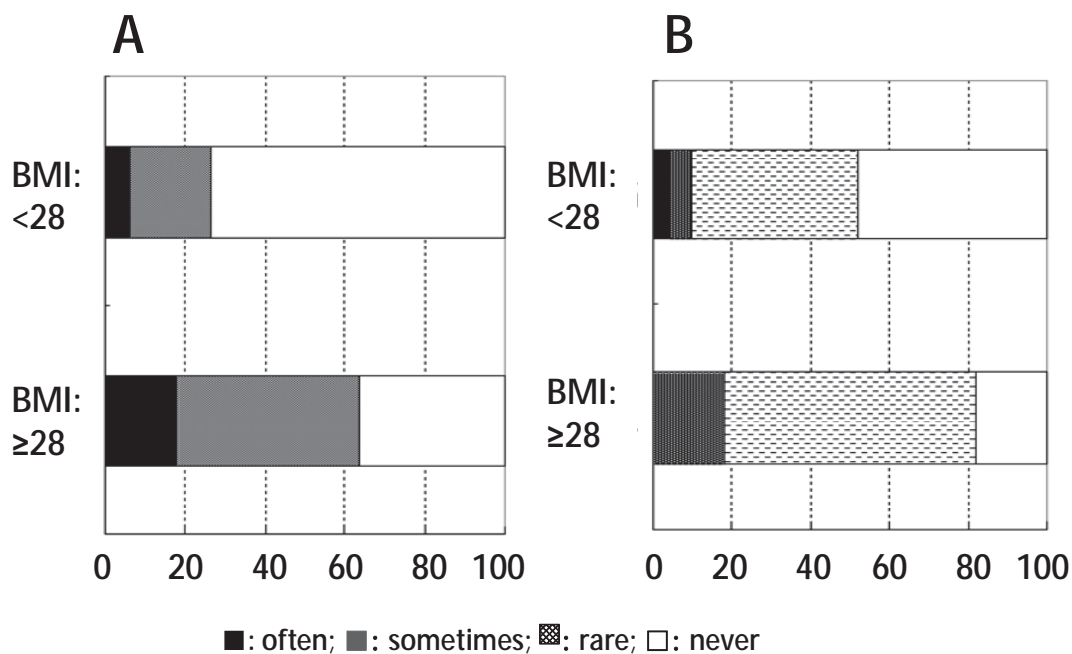


Figure 4. Obese mothers show higher frequency of depression (A: χ^2 -value=8.075, df=3, p=0.044) and irritation (B: χ^2 -value=6.439, df=3, p=0.092)

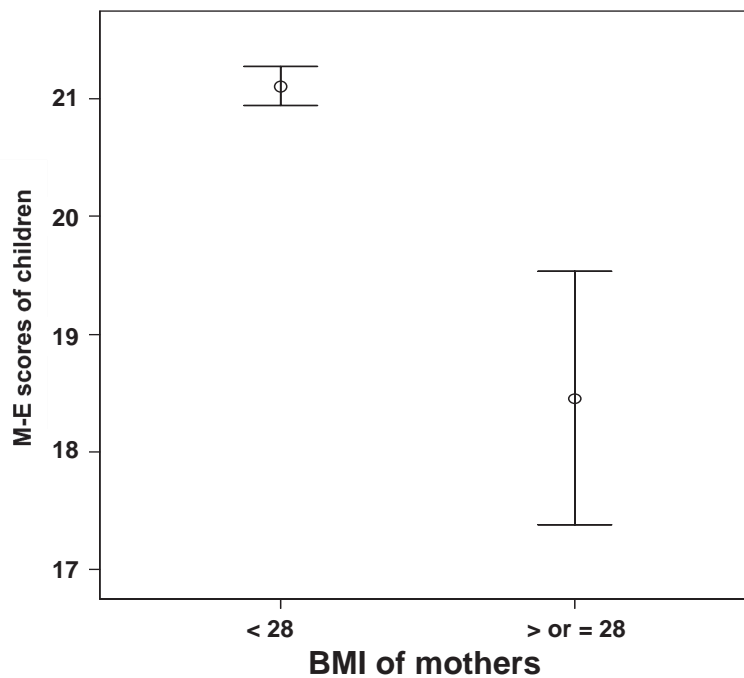


Figure 5. Young children of obese mothers were significantly more evening-typed (18.5±3.6: mean ±SD) than those of non-obese mothers (21.1±3.2)

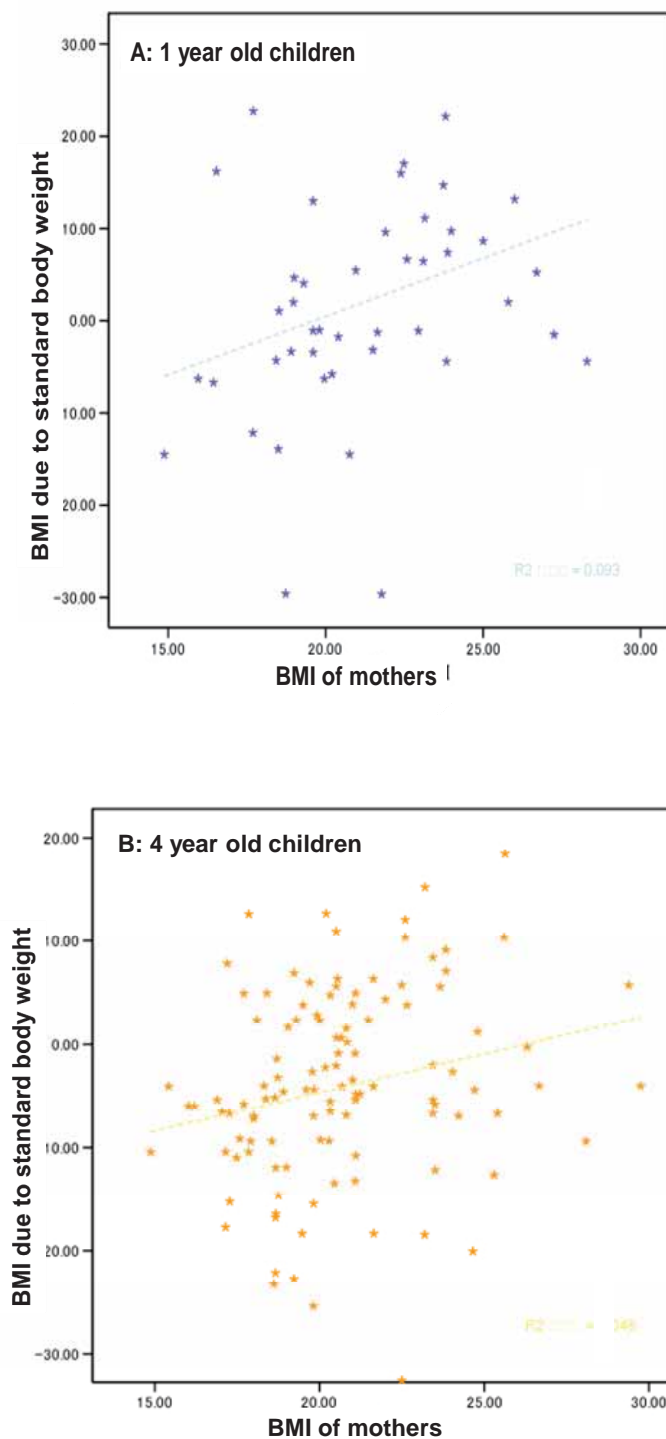


Figure 6. Correlation between BMI shown by young children and that of their mother (Pearson's correlation test: A, 1 year old, $r=0.305$, $p=0.042$, $n=45$; B, 4 years old, $r=0.219$, $p=0.019$, $n=115$)

4. Discussion

Evening-typed life for mothers of young children might be related to 24-hour society which is advancing in Japan and includes nighttime services such as late night TV that is broadcast all night on some channels in Japan. A delayed circadian phase of the sleep-wake cycle in these mothers might relate to both their own obesity and

that of their children. A long time awake at night may be associated with consuming junk food and sweet beverages while watching late night TV. It might be speculated that children may follow the same habits of watching late night TV and having high calorie junk foods and drinks as their mothers. Sasaki et al. (2010) reported that there was no significant correlation between TV watching hours and obesity in Japanese preschool children. However, late night TV watching by mothers could have an impact on their children, because many families in Kochi live in apartments in which a single room functions as both the family bedroom and living room because of low income (3889 thousands yen per year on average, 42.2 years old, 11.4 years carrier in Kochi, 39th rank of 47 prefectures of Japan, 2008) (Nenshu-labo, 2012). In such case, sounds and light emitted from TVs could disturb the sleep of the children. A phase delay of their circadian clock could be promoted by the exposure to blue light at night included in light emitted from TV displays, fluorescent lights and LED (Lockley et al., 2003; Revell et al., 2012).

Another possible mechanism might be the difference in energy expenditure between morning-typed and evening-typed mothers. University students had been phase-advanced by 2 hours by using low color temperature lighting (incandescent light), while those using fluorescent lamps (including short-wave components with high color temperature) as a night lighting did not show such phase advance. The students who used the incandescent light showed 1.5 times of activity amount in an actigraph study throughout the day compared to those using the fluorescent lamp (Harada et al., unpublished).

5. Conclusion

A delay of the circadian phase caused by evening-typed life might reduce the activity level and promote obesity due to the reduction of calorie expenditure. Recently, a mutant mouse created by a reduction of the BMAL1 gene that encodes proteins regulating circadian rhythm was reported to show about a 30% of reduction in muscle force and 40% reduction in mitochondrial volume (Andrews et al., 2010). A circadian phase of the human circadian clock might be related to skeletal muscle amounts and mitochondria volume via BMAL1 gene also in humans, although there have no studies on such relationship in humans which remains to be studied in the future.

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Alcohol Use and Risky Behaviour: Evidence of Anxiolysis-Disinhibition from a Naturalistic Drinking Study

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Abstract

Aims: Alcohol use and intoxication have been widely linked with the incidence of crime and antisocial behaviour. Reduced risk perception following alcohol consumption has been proposed as a possible reason for why people take part in such activities. This study aimed to identify if “intention to act” and “perception of risk” were similarly or differentially affected by alcohol consumed in a natural environment. Furthermore the relationship between amount consumed and degree of impact was investigated.

Design: A single factor independent groups design was employed.

Participants: 60 participants aged 18-23 were recruited.

Measures: Participants indicated their likelihood of engagement in a range of acts, and stated how risky they thought each behaviour was via a questionnaire.

Findings: Data analysis revealed a significant effect of alcohol group on reported likelihood of engagement such that likelihood increased with alcohol consumption. However, perceived risk was not subject to any effect, and increased intention to engage in a risky behaviour was not associated with a decreased perception of risk.

Conclusions: These results may provide support for an anxiolysis-disinhibition model of alcohol induced risky behaviour. Certainly the data indicate that cognitive appraisal of the behaviours is not impaired or related to increased engagement.

Keywords: alcohol, intoxication, risk, anxiety

1. Introduction

Awareness of the problems associated with alcohol use has increased in recent years. Plant et al. (2006) report that as alcohol consumption rises or falls, the levels of social problems associated with heavy drinking follow the same pattern. Alcohol is related to crime both directly, e.g. drink-driving or drunk and disorderly, and indirectly through offences committed (at least potentially) as a consequence of being intoxicated. The link between alcohol and violent crimes is particularly strong with nearly half of the one million violent crimes annually reported being attributed to alcohol (Office for National Statistics, 2012). Giancola et al. (2009) experimentally assessed the effects of alcohol on aggression in both males and females, finding aggression increased for both sexes after alcohol, but that this increase was more apparent in males. However, research into adolescents does show increasing rates of violence among females too (Odgers et al., 2007), and Graves (2007) concludes that gender differences in serious violent acts are fading. Research employing a large student sample identified a particular problem of increased risk taking when intoxicated, and that these risks covered a variety of domains e.g. sexual, aggression and motoring (O'Brien et al., 2008), and the authors conclude that further research is required to understand this relationship. It is the purpose of the current study to further this understanding.

The psychological factors underpinning the link between alcohol, risk taking and crime have received considerable attention. The presence of a heightened intentional bias after consuming alcohol has been proposed as a possible explanation. This theory states that people believe the behaviour of others is carried out with intent, and that this belief is accentuated by alcohol. As a consequence individuals act in a more aggressive and

antisocial manner when under the influence of alcohol in response to the *perceived* intent of others (Bègue et al., 2010). However, explanations grounded in intentional bias describe reactive rather than proactive behaviour and as such are hardly universal—many risky behaviours are self initiated by the drinker. A widely reported alternative explanation of the effects of alcohol on behaviour is Steele and Josephs (1990) Alcohol Myopic Model (AMM)—the proposal that alcohol intoxication restricts the range of cues we are able to process and accurately extract the meaning from. Specifically, alcohol permits one to attend to immediate cues but less able to respond to more peripheral cues, meaning that if the salient cues draw focus to aggression and the peripheral ones inhibit it, alcohol will increase the chance of aggressive behaviour. If this is the case then people may act impulsively; committing risky behaviours in situations for which they do not have an accurate interpretation, however much they may believe that they do.

Distorted perception of the level of risk associated with a given behaviour has also been offered as an explanation of a cause of antisocial or criminal behaviour when intoxicated. Risk perception generally is the subjective assessment of the probability of an accident happening, and evaluations of the negative consequences of an action, (Sjöberg, Moen, & Rundmo, 2004). It has been hypothesized that those who have been consuming alcohol are susceptible to a reduced sense of risk, increasing the likelihood of them engaging in high risk, often disorderly, behaviour. For example, Banks et al. (2004) found that at legal-to-drive blood alcohol concentrations, alcohol appeared to weaken drivers' ability to detect a crash risk in the environment. However, the incorporation of partial sleep deprivation in the study somewhat confounds the interpretation of a clear alcohol effect. In a different risk-taking arena, gambling research has provided some supporting evidence, with participants who have consumed alcohol being found to persist longer on betting trials and lose more of their original cash than a placebo control group (Kyngdon & Dickerson, 1999).

Probably the most researched area is the effect of alcohol consumption on sexually risky behaviour. When intoxicated there is an increased likelihood to partake in sex or to conduct indiscriminate forms of risky sex (Thayer et al., 2014). This finding has been found in both between and within subject designs, suggesting that alcohol, rather than other individual differences between those who do and do not drink is the contributory factor (Cooper, 2002). However, the majority of investigators report retrospective rather than prospective data, leaving the evaluation of how participants view something “yet to be done” unreported (e.g. Halpern-Filsher et al., 1996).

Alternative explanations have also been provided regarding the apparent effect of alcohol. Bègue et al. (2009) conducted a naturalistic field experiment and reported that expectancies significantly increased aggressive behaviour, whereas the actual amount of alcohol given did not. Similarly, it has been argued that an individual's belief about the effects of alcohol, both implicit and explicit, may lead to a self-fulfilling prophecy. The behaviour of others reinforces an individual's own beliefs, thus making it seem an acceptable way to act. Subra et al. (2010) showed that the association between alcohol and aggression is so strong that the sheer exposure to alcohol-related primes is enough to automatically activate and increase aggression. This suggests that the association between alcohol and how one should behave is so strong that even words relating to alcohol causes this self fulfilling prophecy to be manifest.

The anxiety-disinhibition model (Sayette, 1993) posits that under normal conditions risky behaviour is inhibited by increased subjective anxiety in response to cognitions related to the behaviour. Intoxication with alcohol over-rides or reduces the anxiety response and as such increases risky behaviour via the moderation of a presumably adaptive preventative mechanism. Such a model would suggest that cognitive appraisal of an event need not be impaired or distorted for an aggressive or risky behaviour to be promoted.

The current study aims to improve our understanding of alcohols effects on the likelihood to commit, and the perception of risk associated with risky behaviour through the use of prospective evaluations. The current investigation is also designed to possess high ecological validity through data collection in a bar-room setting where participants have been consuming alcohol (or not) at their leisure. It is hypothesised that alcohol consumption will increase the likelihood of engagement with a range of behaviours classed as risky. The evaluations of perceived level of risk will potentially permit informed suggestions regarding the underlying cause of any such increase.

2. Method

2.1 Design

A 3 (sober vs moderate vs high alcohol levels) by 2 (gender) independent measures design was employed. The distinction of moderate versus high alcohol groups was made post hoc on a median split of blood alcohol content (BAC) for the alcohol consuming participants. The median value of 0.06% equated to the UK BAC upper limit

for driving, and as such made a logical as well as practical point of separation for the groups. The dependent variables derived from the questionnaire were an assessment of how likely students felt they were to engage in the described acts, and the level of risk they associated with the said acts.

2.2 Participants

An opportunity sample of thirty male and thirty female students attending a university in the North East of England were recruited in the students' union bar. There was an age range of 18-23 years old ($M = 20.4$ $SD = 1.6$). All participants were volunteers and no compensation was made for their completion of the study. The sample size was based on G* Power calculations indicating a sample of 64 would produce a power of 0.8 in the presence of an effect size of $F = .40$. All participants indicated that they were regular drinkers in the bar and that they had been following a usual behaviour pattern in the preceding 24 hours. Potential participants were excluded from the study if they were unable to relay the purpose and process of the study back to the researcher following the provision of the information sheet. This decision was based on the assumption that failure to be able to do so precluded fully informed consent from being possible.

2.3 Apparatus/Materials

A 16 item questionnaire consisting of 8 different scenarios (see Table 1 for a complete list) was used. The questionnaire was subdivided into different types of risky behaviours; aggressive (items 2 & 6), antisocial (items 3 & 7), moral transgressions (items 4 & 8), and petty theft (items 1 & 5).

Table 1. Scenarios used in the questionnaire

| | |
|-------------------|---|
| Scenario 1 | You are walking home and see a pizza delivery moped at the side of the road with some pizzas on the back, but the rider is nowhere to be seen. Would you take the pizzas? |
| Scenario 2 | You are in a bar and someone bumps into you and knocks over your drink. Would you respond aggressively? |
| Scenario 3 | You are out in a public place with friends. Would you take your clothes off and "streak", if dared to? |
| Scenario 4 | You find a purse lying on a table in a club. Would you take the purse and keep any money in it? |
| Scenario 5 | On your way home you see a freestanding road sign that has your name on it. Would you take it? |
| Scenario 6 | Someone pushes into the front of a taxi queue that you have been in for some time. Do you respond aggressively to this? |
| Scenario 7 | You are walking home through a residential area late at night, singing songs with friends. You are asked to keep the noise down by a resident. Would you carry on making noise? |
| Scenario 8 | Someone who you know or believe to be under the age of 18 asks you to buy them cigarettes or alcohol. Would you buy them the product? |

For each scenario, the participants indicated how likely they would be to engage in the behaviour (1 = Definitely yes to 6 = Definitely no), and stated how risky they believed the behaviour to be on a scale of 1 (not at all risky) -10 (extremely risky). An Alcoscan AL6000 breathalyzer was also used to measure participants' blood alcohol content according to the manufacturer's instructions.

2.4 Procedure

The study gained ethical clearance from the Department of Psychology ethics committee. Participants were recruited in the students union bar, where students had been consuming alcohol (or not) at their leisure. Once informed consent was obtained participants were tested individually to avoid discussion of the questionnaire items. Testing took approximately 15 minutes to complete and participants were asked not to consume alcohol while taking part to ensure the reliability of the breathalyser readings. Upon finishing the questionnaire, participants were asked to provide a sample of breath into the breathalyser. Finally, they were debriefed and thanked for their time.

3. Results

3.1 Questionnaire Evaluation

To examine the reliability of the scale, coefficient alpha was calculated and produced a value of $\alpha = .716$ indicating the scale to be reliable and further no indication that α would improve if any items were removed.

To assess the conceptual structure of the eight scenarios loading onto four underlying factors principle components analyses with varimax rotation were performed in SPSS for both intention to engage and ratings of risk. With regard to intention to engage a four factor solution explaining 77% of the variance was achieved in 5 iterations. The loadings of the items onto the components is presented in Table 2 below and supports the structure of the eight scenarios representing four concepts. As a consequence the ratings for each pair of items corresponding to the four concepts were summed to give total scores that constituted the data for further analysis. With regard to assessment of risk a four factor solution explaining 75% of the variance was achieved in 7 iterations. The loadings of the items onto the components is presented in table 2 below and further supports the structure of the eight scenarios representing four concepts. As a consequence the ratings for each pair of items corresponding to the four concepts were summed to give total scores that constituted the data for further analysis.

Table 2. Factor loadings for likelihood to engage items and estimated risk on the four conceptualised areas

| Scenario | Risk | | | | Likelihood | | | |
|----------|------------|-------|-------|------------|------------|-------|-------|------------|
| | Aggression | Theft | Moral | Antisocial | Aggression | Theft | Moral | Antisocial |
| 1 | | .913 | | | | .813 | | |
| 2 | .869 | | | | .743 | | | |
| 3 | | | | .808 | | | | .563 |
| 4 | | | .870 | | | | .497 | |
| 5 | | .758 | | | | .786 | | |
| 6 | .879 | | | | .829 | | | |
| 7 | | | | .696 | | | | .883 |
| 8 | | | .717 | | | | .945 | |

3.2 Alcohol Groups

The alcohol groups were based on the participants' BAC (% by volume) readings. All participants tested who produced values of .01% or less were classified as constituting the sober group. Participants who possessed BAC values between .01% and .06% were categorised as the moderate group, and those with BAC readings above .06% formed the high alcohol group.

3.3 Data Analysis

The data were analysed using the Multivariate Analysis of Variance (MANOVA) procedure in SPSS, with summed evaluations of likelihood to engage forming the dependent variables in one analysis, and the summed evaluations of risk forming the dependent variables in a second Manova. Independent factors for both Manovas were alcohol group and participant gender. Significant Manovas were followed up by Bonferroni corrected univariate analyses of variance (ANOVA) and pairwise comparisons where appropriate, for each behaviour concept in the questionnaire. Partial correlations were also performed to identify if any relationships between BAC and likelihood to engage in a type of behaviour were potentially mediated by evaluations of risk.

3.4 Likelihood to Engage in Risky Behaviours

For the present data the Homogeneity of Covariance Matrices was not significantly violated, Box's M = 65.655, $F(50, 5351.928) = 1.057$, $p = .366$, permitting confident use of MANOVA. The multivariate tests revealed a significant main effect of alcohol group on the likelihood of engaging in the behaviours, Wilks' lambda = .323, $F(8, 102) = 9.688$, $p < .001$, and a significant main effect of sex of participant, Wilks' lambda = .637, $F(4, 51) = 7.267$, $p < .001$. However, there was no significant group*sex interaction, Wilks' lambda = .771, $F(8, 102) = 1.769$, $p = .092$. Univariate Anovas were then performed on evaluations for each concept separately and outputs considered in line with the two main effects found to be significant in the Manova. To maintain brevity of reporting only significant effects for these analyses are presented here. Descriptive statistics are presented in Table 3 below.

Table 3. Mean (and standard deviation) for likeliness of engagement reported by the three alcohol groups on the four behaviour subdivisions

| Behaviour | Alcohol Group | | | Significant Comparisons |
|----------------------|---------------|--------------|-------------|------------------------------------|
| | Sober (1) | Moderate (2) | High (3) | |
| Aggression | 4.07 (0.75) | 3.70 (1.10) | 2.55 (0.79) | 1 vs 3*** 2 vs 3*** |
| Petty Theft | 5.00 (1.11) | 3.73 (1.31) | 2.23 (0.90) | 1 vs 2** 1 vs 3*** 2 vs 3*** |
| Antisocial Behaviour | 4.45 (1.03) | 3.03 (1.06) | 2.35 (1.01) | 1 vs 2*** 1 vs 3*** |
| Moral Transgression | 5.21 (0.86) | 4.75 (0.82) | 3.63 (0.89) | 1 vs 3*** 2 vs 3*** |

Note. All significant comparisons are Bonferroni adjusted; * < .05, ** < .01, *** < .001.

3.5 Aggressive Behaviour

There was a significant difference between the alcohol groups in terms of their stated likelihood to engage in aggressive behaviour $F(2, 54) = 16.305, p < .001$. Bonferroni corrected post hoc comparisons revealed that the sober group (mean = 4.07) and moderate group (mean = 3.70) were significantly less likely to engage in the aggressive behaviour than the high alcohol group (mean = 2.55), $p < .001$ in each case.

3.6 Petty Theft

There was a significant difference between the alcohol groups likelihood to engage in Petty theft $F(2, 54) = 29.725, p < .001$. Bonferroni corrected post hoc comparisons revealed that the sober group (mean = 5.00) were significantly less likely to engage in the behaviour than both the moderate alcohol group (mean = 3.73) $p = .006$, and the high alcohol group (mean = 2.23), $p < .001$. The moderate group were also significantly less likely to engage in petty theft than the high group, $p < .001$.

3.7 Antisocial Behaviour

There was a significant difference between the alcohol groups likelihood to engage in Antisocial behaviour $F(2, 54) = 30.603, p < .001$. Bonferroni corrected post hoc comparisons revealed that the sober group (mean = 4.50) were significantly less likely than the moderate alcohol group (mean = 3.03) or the high alcohol group (mean = 2.35) to engage in antisocial behaviour, $p < .001$ in each case. There was also a significant main effect of sex on likelihood to engage in antisocial behaviour $F(1, 54) = 20.030, p < .001$ with males (mean = 2.70 significantly more likely to engage than females (mean = 3.86).

3.8 Moral Transgressions

There was a significant difference between the alcohol groups likelihood to engage in moral transgressions $F(2, 54) = 18.776, p < .001$. Bonferroni corrected post hoc comparisons revealed that the sober group (mean = 5.21) and the moderate alcohol group (mean = 4.75) were significantly less likely than the high alcohol group (mean = 3.63) to engage in this behaviour, $p < .001$ in each case.

4. Risk Perception

For risk perception, Box's $M = 58.020, F(50, 5351.928) = .934, p = .606$, so the MANOVA can be confidently performed. No significant main effect of alcohol group was found on the composite perceived risk, Wilks's $\lambda = .790, F(8, 102) = 1.591, p = .137$. No significant sex difference was found, Wilks's $\lambda = .932, F(4, 51) = .924, p = .458$. No significant group*sex interaction was found, Wilks's $\lambda = .849, F(8, 102) = 1.085, p = .380$. As a consequence, no further analyses were performed. Descriptive statistics are presented in Table 4 below.

Table 4. Mean (and standard deviation) for risk perception reported by the three alcohol groups on the four behaviour concepts

| Behaviour | Alcohol Group | | |
|----------------------|---------------|-------------|-------------|
| | Sober | Moderate | High |
| Aggression | 5.30 (1.66) | 5.15 (1.55) | 4.60 (1.17) |
| Petty Theft | 5.08 (1.62) | 4.33 (1.66) | 3.95 (1.16) |
| Antisocial Behaviour | 4.35 (1.31) | 3.95 (1.33) | 3.47 (0.96) |
| Moral Transgression | 6.53 (1.71) | 5.71 (1.79) | 5.40 (1.38) |

4.1 Partial Correlations

Correlations between BAC and likelihood to engage were negative and highly significant for all risky behaviours indicating that as blood alcohol levels increased the likelihood to engage in risky behaviours increased. None of these changed substantially when the relationship with evaluation of risk was partialled out (Table 5).

Table 5. Zero order correlations between BAC and Likelihood and BAC and Risk, plus Partial correlations for relationship between BAC and likelihood when the relationship with risk is controlled for

| | $r_{Likelihood.BAC}$ | $r_{Risk.BAC}$ | $r_{Likelihood.BAC (Risk)}$ |
|----------------------|---------------------------|---------------------------|-----------------------------|
| Aggression | $r(58) = -.627, p < .001$ | $r(58) = -.172, p = .189$ | $r(57) = -.618, p < .001$ |
| Antisocial Behaviour | $r(58) = -.680, p < .001$ | $r(58) = -.280, p = .030$ | $r(57) = -.646, p < .001$ |
| Petty Theft | $r(58) = -.758, p < .001$ | $r(58) = -.214, p = .100$ | $r(57) = -.762, p < .001$ |
| Moral Transgressions | $r(58) = -.618, p < .001$ | $r(58) = -.297, p = .021$ | $r(57) = -.580, p < .001$ |

5. Discussion

A significant effect of alcohol consumption on students' likelihood of engagement in all categories of risky behaviour assessed was clearly identified in this study. This prospective data supports previously reported retrospective survey data on the link between students' alcohol use and risk taking (O'Brien et al., 2008). However, this was not matched by a similar effect for the perception of risk indicating that an increase in the likelihood of the behaviour is not a consequence of viewing it as less risky when intoxicated. A significant sex difference was also found for the likelihood of engaging with the behaviours that was equally not matched when considering risk perception. These two factors also clearly acted independently with no interactions evident for any of the dependent variables. Furthermore, the relationship between perceived risk and likelihood to engage did not mediate the relationship between blood alcohol content (BAC) and the likelihood to engage in risky behaviour.

The finding that the likelihood to engage in risky conduct increased with the amount of alcohol consumed is consistent with previous claims that "the amount one drinks should also make a difference ... because alcohol's impairment of perceptual and cognitive functioning increases with dosage" (Steele & Josephs, 1990, p. 924). With regard to the student population such increases in risky behaviour when intoxicated are well recognised (Wechsler et al., 2000; Hingson et al., 2005; Abbey et al., 2003). Consequently, the current data adds additional support to the relationship between alcohol and disorderly behaviour as it can be concluded that the more alcohol consumed, the more likely students are to engage in risky behaviours—many of which may have negative consequences.

The significant sex difference related to likelihood to engage might also have been anticipated. In the present study males indicated they were more likely than females to engage in the behaviour whether alcohol was involved or not, thus suggesting that males appear to be more risk-oriented than females on the whole. This effect does not appear to be either exaggerated or mitigated by alcohol however as no interactions were evident.

This runs somewhat counter to previous findings. For example, Giancola et al. (2009) found that aggression increased for both males and females after alcohol consumption, but was more apparent in males. Here however, the impact of gender and alcohol were additive rather than interactive.

No support was found for the possibility that alcohol may reduce risk perception. This somewhat counters Phillips and Ogeil (2010) who concluded that alcohol appeared to influence risk evaluation, and that the encountered problems associated with warning information is consistent with alcohol induced myopia. Participants took longer to make decisions in a situation of high risk when in the high alcohol condition suggesting when intoxicated, more time is needed to process important information. In the current study it would seem that the information was processed and that similar evaluations of risk were arrived at for all behaviours irrespective of alcohol consumption. However, consideration of the mean values indicates that as alcohol consumption increases, ratings of risk reduce and this might suggest a small effect exists but that the sample size in the current study was not sufficient for this to translate to statistical significance. A repetition of this study with a sample size calculated based on the size of effects observed here would allow a further opportunity to investigate the potential presence of this effect. The data from the current study offers partial support to the research reported by Fromme et al. (1997) who demonstrated that alcohol rather than expectancy was the contributing aspect to rating negative outcomes as less likely.

Leigh (1999) proposed a personality approach to the impact of alcohol on behaviour. This was subsequently evidenced by Giancola et al. (2011) who found that alcohol was significantly more likely to increase aggression in participants with a higher aggressive personality score. This presumably would extrapolate to other aspects of risk-taking, impulsivity, and antisocial personality—possibilities that warrant further investigation. In contrast, the situational approach describes how alcohol and potential risks are found in the same environments causing the opportunity for disorderly behaviour to increase. However, the current study might be argued to provide support for a combination of influences. Personality factors might affect who was available for recruitment in the bar, and further those who took up the opportunity. These factors might affect likelihood to engage in risky behaviour, but the consumption of alcohol in the bar environment significantly increased likelihood estimates compared to the non-drinking participants. Importantly however, cognitive explanations based around failure to process risk related information do not stand up here as risk perception was not reduced by alcohol. A more plausible explanation of the alcohol induced increase in risk taking intentions observed here might be drawn from anxiety-disinhibition literature (Sayette, 1993; Ito et al., 1996; Phillips & Giancola, 2008). This model posits that arousal of anxiety occurs in situations where risky or disorderly behaviour might be instigated, and that this anxiety prevents engagement with the risky act. Alcohol may override this arousal of anxiety and thus permit engagement with behaviours that would under sober circumstances be inhibited. In other words (and as reported here) the perception of risk is appraised as the same in circumstances of sobriety and intoxication alike, but the level of engagement increases in proportion to alcohol consumption.

The implications for research showing that the more alcohol consumed, the more likely one would engage in risky behaviours irrespective of risk appraisal are rather complex. Simple predictive relationships cannot be identified and should not be sought, but with alcohol related harm costing the UK an estimated £20 billion a year (Blair, 2006) the extent of the problems caused by alcohol should not be underestimated. Steele and Josephs (1990) speak of how individual differences alone cannot be the only cause for deciding to engage in certain disorderly behaviours, including the individual reactions to alcohol and personality. This is because alcohol affects behaviours and emotions of everyone, not just those with a special reactivity, and it may affect the same person differently on different days of drinking.

Although providing interesting data, the methodology employed here, i.e. self-report measures, carries some limitations. The relationship between stated intention and actual behaviour patterns is by no means consistent. Sheeran and Abraham (2003) report that in a review of intention—behaviour studies, intention accounted for less than 30% of the variance in behaviour patterns. Clearly the relationship between likelihood to engage in risky behaviour and actual activity will not be exact. However, with its high ecological validity and reliability, along with use of a breathalyser as measurement of intoxication, the current study has produced intriguing and valid results from which insightful conclusions can be drawn. Specifically, the data show a clear relationship between alcohol consumption and students' expressed likelihood of engaging in a range of risky behaviours. Furthermore, by engaging students who were drinking in a naturalistic setting these data might be more valuable than those collected in a laboratory based study due to possessing greater ecological validity. It would be of considerable value to repeat such a study to include actual risk taking opportunities following alcohol consumption to further understand the relationships involved. Importantly, it is argued that the data here might be explained via the process of anxiety-disinhibition. If more data were to confirm such an explanation it would provide impetus for

developing risk aversion interventions that might be beneficial to the student population and beyond. Further research is warranted into this complex and socially important area.

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Development and Validation of Retirement Anxiety Scale for Secondary School Teachers in Osun State, Nigeria

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Abstract

The study conducted a factor analysis of Retirement Anxiety Scale (RAS) for secondary school teachers. It developed a set of appropriate and homogeneous items on retirement anxiety suitable for Nigerian school teachers. It also determined the reliability indices of the scale and established its factor structure. The study population comprised all secondary school teachers in Osun state. Teachers that had less than ten years to retire from the service were the targeted population. A sample size of 204 teachers was purposively selected from four randomly selected local government of the state, based on the years left in service. The selected teachers completed the Retirement Anxiety Scale (RAS). The result was subjected to Principal Component Analysis with varimax rotation (PCA). The results of the PCA revealed that the communality h^2 of each item was more than 0.5, which implied a satisfactory quality. The KMO > 0.8 showed that the data were sufficiently enough to undergo factor analysis, while the Barlett sign $p < 0.001$ revealed a sensible PCA. The reliability coefficient Cronbach α was statistically significant (0.863) indicating a high degree of internal consistency. The study concluded that the RAS instrument was valid and reliable for measuring retirement anxiety among secondary school teachers and also found suitable for Nigerian schools. The six-components released by the PCA could be used as a guide for school counsellors in pre-retirement counselling of secondary school teachers.

Keywords: retirement, anxiety, validation, scale, principal component analysis.

1. Introduction

In everyday life, the way an individual perceives an event, whether favourably or unfavourably, could generate diverse changes within the individual, which may lead to physiological, mental or emotional changes. Any of these changes could result in anxiety for the individual. Anxiety could be seen as a feeling of unease, apprehension or worry which may be associated with physical symptoms such as rapid heartbeat, feeling faint and trembling; it can also be a normal reaction to stress or worry, or sometimes a part of a bigger problem. Alken (1976) has described anxiety as a state of arousal that comes through bodily, emotional and mental changes which an individual encounters when facing a stimulus. Anxiety, therefore, could further be seen as a state of heightened alertness arising from uncertainty. It does appear that every human endeavour or engagement of importance where uncertainty is involved could attract anxiety: going for a medical check, embarking on a journey, going for an examination, preparing for a wedding, plunging one's resources or borrowing to pursue a business transaction, etc. One of the situations that could engender anxiety for workers is going into retirement.

Retirement has been described variously by different researchers. To Manion (1976), retirement is a complex social phenomenon of modern industrial society which defines a person as being old and therefore requires withdrawal from customary activity in business, industry, or service. It is also a termination of a pattern of life or the end of an employment or completion of a career which has won someone renown, and movement into a new beginning in the future (Akinade, 1993). A number of factors like old age, ill-health, unhappiness with conditions of service, familiar considerations, rules of the job, etc., could motivate retirement (Quadagno, 2002; Wolcott, 1998). According to Akpochafo (2005), the time of approaching retirement for workers has generally been identified as a source of worry, anxiety and stress, which could be as a result of uncertainties regarding life after retirement. Relatedly, retirement anxiety can be described as feeling of intense fear, discomfort, and uncertainties that consistently interfere with prospective retirees' thought processes and preparations towards

their retirement. It is characterised by both positive and negative emotions, depending on how the retirement-eligible retirees perceive their pre-retirement preparation, whether adequate or otherwise, as well as their view on the adequacy and consistency of their employers in some aspects of their post-retirement needs.

It does appear that any area of perceived need in retirement that any eligible retiree has not adequately prepared for could induce anxiety. Relatedly, Olatomide and Akomolafe (2012) explored the pre-retirement guidance needs of primary school teachers approaching retirement and found, in order of relative importance, that: locating income-returning ventures that require little capital to setup, work-substitute in retirement, wisdom in financial management, the advantages retirement could offer, healthy living guides, expanding social network, time management skills, how to involve family members in pre-retirement planning, social acceptance and relevance within the community, continued relevance to the family, decision-making skills, effective ways of handling family idiosyncrasies, and reading materials to warm the brain are potential pre-retirement guidance needs of the respondents as they draw near their retirement.

In Nigeria, as workers advance towards retirement, they go through both positive and negative emotions. Nsirimobi and Ajuwede (2005), stated that pre-retired workers in Nigeria perceived retirement as a punitive outcome, which must be avoided; and that they become shivery at the approach of retirement. This underpins pre-retirement *nervousness*. Similarly, Denga (1996), as well as Okorodudu (1998), submitted that pre-retired workers experience *uncertainty*, having analytically assessed and evaluated themselves in respect to their goals, in order to determine if they have achieved their work goals or otherwise. In addition, Nsirimobi and Ajuwede (2005) found that as workers advance towards retirement, they exhibit *lack of motivation* about their retirement preparedness. This is because, even for most of them who possess effective pre-retirement skills that could enhance their retirement adjustment, they go through absence of pre-retirement motivation and adjustment, presumably due to lack of expert's guidance on effective pre-retirement preparation to validate their skills. Each of these is an example of negative pre-retirement emotions. On the other side, prospective retirees also go through positive emotions. Nsirimobi and Ajuwede (2005) submitted that retirement-eligible workers in the well-organised private sectors view retirement as a pleasant experience, and earnestly look forward to its coming due to employer-organised post-retirement preparations, especially in the area of finance. This is an example of pre-retirement preparation *excitement*. Similarly, both Denga (1986) and Okpede (1998) agreed that as workers are close to retirement, the well-prepared ones (though relatively few), exhibit security-induced *confidence*, which propel them to look towards their eventual retirement with eagerness and demonstrated *easiness*. Each of these is an example of negative emotions towards retirement preparedness.

In Nigeria, some researchers appear in the literature to have worked on pre-retirement anxiety of workers as they approached retirement, for instance, Clifford, Ogbebor, and Enakpoya (2010) as well as Akpochofo (2005), or their pre-retirement guidance, for instance, Olatomide and Akomolafe (2012), including Eyitayo, Lucy, and Obadofin (2008). Interestingly, however, to the best knowledge of these researchers, none of these studies delved into development and validation of anxiety scale for Nigerian workers, especially among the secondary school teachers. There is the need, therefore, to develop a high psychometric quality instrument on retirement anxiety that is most appropriate for Nigerian setting.

The objectives of these studies were to:

- (1) Develop appropriate and homogeneous items on retirement anxiety that is suitable for Nigerian Schools
- (2) Determine the reliability indices of the scale and
- (3) Establish the factor structure of the scale

2. Method

This study employed survey design to investigate secondary school teachers retirement anxiety and to obtain accurate data of high response. The study population consisted of all Secondary school teachers in Osun state. Teachers that have less than ten years to retire were the targeted population. The sample size consisted of 204 teachers purposively selected on the basis of years in service from four randomly selected local governments of the state. As the first step towards the development of the retirement anxiety scale (RAS), 24 positive and negative statements that expressed anxiety towards retirement were written after a careful study of related literature on anxiety and practical experience retrieved from retiree. These questions which were of a 5-point Likert scale were administered to 204 teachers that had below 10 years to retire from the service. Principal Component Analysis with Varimax Rotation which produced the dimension of differentiation was used on the data to determine the suitability of the scale on factor analysis. The Kaise-Meyer Olkin measure (KMO) of sampling adequacy was employed to determine the sample sufficiency. The criterion of Eigen value or

characteristics root (Eigen value ≥ 1) was used to determine the number of factors that were kept. The evaluation of the questionnaire reliability internal consistency was made possible by Cronbach α which was considered the most important reliability index and was based on the number of the variable or items of the questionnaire as well as the correlations between the variables

3. Results

Objective 1: Development of an appropriate and homogeneous items on retirement anxiety that is suitable for Nigerian Schools

Table 1 presents the initial items on the Retirement Anxiety Scale (RAS). The twenty four items relating to retirement anxiety were administered on 204 participants. This scale consisted of both positive and negative items. The responses were analyzed using percentages. Items 12 and 24 were the same; hence item 24 was removed leaving a total of 23 items resulting to 12 positive and 11 negative items

Table 1. Retirement Anxiety Scale (RAS)

| Items | Agree | Disagree | Undecided | Total |
|--|-------|----------|-----------|-------|
| Retirement thought make me feel comfortable and easy | 80.4 | 12.3 | 7.4 | 204 |
| Retirement thought make me look forward to my retirement with happiness | 85.8 | 6.9 | 7.4 | 204 |
| I feel that retirement will be most pleasant period for me | 91.7 | 2.9 | 5.4 | 204 |
| I feel calm when I think about the approaching retirement | 70.6 | 17.2 | 12.3 | 204 |
| My mind goes blank when I am asked how well I have prepared for my retirement | 32.8 | 53.9 | 13.2 | 204 |
| I find reading materials on how to prepare for retirement interesting to me | 78.9 | 13.2 | 7.8 | 204 |
| I find it enjoyable asking retirees how to prepare for retirement | 85.8 | 6.9 | 7.4 | 204 |
| I experience pleasantness when I feel my retirement could come forward by some years than expected | 58.3 | 27.9 | 13.7 | 204 |
| Seeing a retiree that I know gives me fear about my approaching retirement | 34.8 | 58.8 | 6.4 | 204 |
| I feel relaxed when I am about doing something positive in preparation for my retirement | 84.3 | 11.8 | 3.9 | 204 |
| I find collating my records of service an interesting activity for me | 71.6 | 13.2 | 15.2 | 204 |
| I am scared about discussing the preparation of my retirement with members of my family | 17.6 | 74.5 | 7.8 | 204 |
| Retirement thoughts make me feel uncomfortable and uneasy | 15.2 | 78.9 | 5.9 | 204 |
| Retirement thought make me look forward to my retirement with sadness | 6.4 | 85.3 | 8.3 | 204 |
| I feel that retirement will be most dreaded period for me | 6.9 | 82.4 | 10.8 | 204 |
| I feel nervous when I think about the approaching retirement | 14.7 | 78.4 | 6.9 | 204 |
| My mind is filled with answers when I am asked how well I have prepared for my retirement | 68.6 | 20.1 | 11.3 | 204 |
| Reading materials on how to prepare for retirement gives me headache | 12.3 | 79.9 | 7.8 | 204 |
| I am afraid to ask questions from retirees on how to prepare for retirement | 9.3 | 85.3 | 5.4 | 204 |
| I become nervous when I feel my retirement could come forward by some years than expected | 25.5 | 65.2 | 9.3 | 204 |

| | | | | |
|--|------|------|------|-----|
| Seeing a retiree that I know make me look forward to my retirement with happiness | 75.0 | 15.7 | 9.3 | 204 |
| I feel nervous when I am about doing something positive in preparation for my retirement | 20.1 | 71.6 | 8.3 | 204 |
| I find collating my records of service an uninteresting activity for me | 19.6 | 68.1 | 12.3 | 204 |
| I am scared about discussing the preparation of my retirement with members of my family | 17.6 | 74.5 | 7.8 | 204 |

Objective 2: To determine the reliability indices of the retirement anxiety scale suitable for secondary school teachers in Osun state

Table 2. Reliability indices of Retirement Anxiety Scale

| Anxiety Items | Dimension | Correlation Total | Cronbach Alpha |
|--|-----------|-------------------|----------------|
| Retirement thought make me feel comfortable and easy | Positive | 0.461 | 0.856 |
| Retirement thought make me look forward to my retirement with happiness | Positive | 0.536 | 0.855 |
| I feel that retirement will be most pleasant period for me | Positive | 0.488 | 0.856 |
| I feel calm when I think about the approaching retirement | Positive | 0.359 | 0.860 |
| My mind goes blank when I am asked how well I have prepared for my retirement | Negative | 0.361 | 0.860 |
| I find reading materials on how to prepare for retirement interesting to me | Positive | 0.190 | 0.865 |
| I find it enjoyable asking retirees how to prepare for retirement | Positive | 0.160 | 0.865 |
| I experience pleasantness when I feel my retirement could come forward by some years than expected | Positive | 0.260 | 0.864 |
| Seeing a retiree that I know gives me fear about my approaching retirement | Negative | 0.509 | 0.855 |
| I feel relaxed when I am about doing something positive in preparation for my retirement | Positive | 0.319 | 0.861 |
| I find collating my records of service an interesting activity for me | Positive | 0.311 | 0.861 |
| I am scared about discussing the preparation of my retirement with members of my family | Negative | 0.558 | 0.853 |
| Retirement thoughts make me feel uncomfortable and uneasy | Negative | 0.594 | 0.852 |
| Retirement thought make me look forward to my retirement with sadness | Negative | 0.640 | 0.851 |
| I feel that retirement will be most dreaded period for me | Negative | 0.597 | 0.853 |
| I feel nervous when I think about the approaching retirement | Negative | 0.628 | 0.850 |
| My mind is filled with answers when I am asked how well I have prepared for my retirement | Positive | 0.165 | 0.866 |
| Reading materials on how to prepare for retirement gives me headache | Negative | 0.568 | 0.853 |
| I am afraid to ask questions from retirees on how to prepare for retirement | Negative | 0.484 | 0.856 |
| I become nervous when I feel my retirement could come forward | Negative | 0.557 | 0.853 |

| | | | |
|--|----------|-------|--------------|
| by some years than expected | | | |
| Seeing a retiree that I know make me look forward to my retirement with happiness | Positive | 0.445 | 0.857 |
| I feel nervous when I am about doing something positive in preparation for my retirement | Negative | 0.471 | 0.856 |
| I find collating my records of service an uninteresting activity for me | Negative | 0.360 | 0.860 |
| <i>Total Cronbach α Reliability test</i> | | | 0.863 |

From Table 2 none of the items had a Cronbach Alpha that was less than 0.800. These revealed that the reliability index of the items was high. The overall total Cronbach Alpha Reliability test was 0.863. This implied an overall high reliability index of all the items that constitute the Retirement Anxiety Scale

Objective 3: To establish the factor structure of the Retirement Anxiety Scale suitable for Secondary School teachers in Osun state

Table 3. Factor structure of Retirement Anxiety Scale

| Factor Analysis | F1 | F2 | F3 | F4 | F5 | F6 | Communality |
|--|-------|-------|-------|-------|----|-------|-------------|
| Retirement thought make me feel comfortable and easy | | | 0.659 | | | | 0.583 |
| Retirement thought make me look forward to my retirement with happiness | | | 0.747 | | | | 0.727 |
| I feel that retirement will be most pleasant period for me | | | 0.539 | | | | 0.526 |
| I feel calm when I think about the approaching retirement | | | 0.683 | | | | 0.531 |
| My mind goes blank when I am asked how well I have prepared for my retirement | 0.676 | | | | | | 0.557 |
| I find reading materials on how to prepare for retirement interesting to me | | | | 0.809 | | | 0.676 |
| I find it enjoyable asking retirees how to prepare for retirement | | | | 0.801 | | | 0.663 |
| I experience pleasantness when I feel my retirement could come forward by some years than expected | | | 0.496 | | | | 0.463 |
| Seeing a retiree that I know gives me fear about my approaching retirement | 0.721 | | | | | | 0.667 |
| I feel relaxed when I am about doing something positive in preparation for my retirement | | 0.412 | | | | | 0.481 |
| I find collating my records of service an interesting activity for me | | | | | | 0.656 | 0.677 |
| I am scared about discussing the preparation of my retirement with members of my family | 0.723 | | | | | | 0.633 |
| Retirement thoughts make me feel uncomfortable and uneasy | 0.597 | | | | | | 0.632 |
| Retirement thought make me look forward to my retirement with sadness | 0.551 | 0.485 | | | | | 0.646 |

| | | | | | | | |
|---|-------|-------|-------|-------|-------|-------|-------|
| I feel that retirement will be most dreaded period for me | 0.552 | | | | | | 0.654 |
| I feel nervous when I think about the approaching retirement | 0.559 | | | | | | 0.583 |
| My mind is filled with answers when I am asked how well I have prepared for my retirement | | | | | 0.814 | | 0.681 |
| Reading materials on how to prepare for retirement gives me headache | 0.684 | | | | | | 0.592 |
| I am afraid to ask questions from retirees on how to prepare for retirement | 0.726 | | | | | | 0.575 |
| I become nervous when I feel my retirement could come forward by some years than expected | 0.587 | | | | | | 0.492 |
| Seeing a retiree that I know make me look forward to my retirement with happiness | | | | | 0.443 | 0.477 | 0.591 |
| I feel nervous when I am about doing something positive in preparation for my retirement | 0.497 | | | | | | 0.396 |
| I find collating my records of service an uninteresting activity for me | 0.635 | | | | | | 0.517 |
| Eigen Value | 6.399 | 2.174 | 1.528 | 1.248 | 1.127 | 1.070 | |
| % of total variance | 27.82 | 9.45 | 6.64 | 5.43 | 4.90 | 4.65 | |
| Cumulative % of Variances | 27.82 | 37.27 | 43.92 | 49.34 | 54.24 | 58.89 | |
| Cronbach α (%) | | | | | | | |
| Total cronbach α (%) | | | | | | | |

Note. Kaiser-Meyer-Olkin Measure (KMO) of sampling adequacy = 0.841

Bartlett's test of sphericity: $\chi^2 = 1544.730$; $df = 254$; $p < 0.001$

Twenty three questions relating to retirement anxiety scale (RAS) using Principal Component Analysis (PCA) with a varimax (orthogonal) rotation was conducted on data gathered from 214 participants. The analysis yielded six factors explaining a total of 58.89% of the variance for the entire set of variables. An examination of the Kaiser-Meyer Olkin measure of sampling adequacy suggested that the sample was factorable (KMO = 0.84) with the Bartlett's Test of Sphericity less than 0.05.

The results of an orthogonal rotation of the solution were as shown in the Table three above. When loadings less than 0.40 were excluded, the analysis yielded a six-factor solution with a simple structure (factor loadings ≥ 0.40). The variables loading onto each of the six-factor solution are explained below.

Seven items loaded on factor one (F1) which explained 27.82% of the variance, seven items loaded on factor two (F2) which explained 9.45% of the total variance, five items loaded on factor three (F3) which explained 6.64%, two items loaded on factor four (F4) which explained 5.43%, two items loaded on factor five (F5) which explained 4.90% and two items loaded on factor six (F6) which explained 4.65% of the total variance.

Some of the items such as "seeing a retiree that I know make me look forward to my retirement with happiness" loaded on F5 and F6, "retirement thought make me look forward to my retirement with sadness" loaded on F1 and F2 had factor loadings greater than 0.40.

The communality of each of the variables included is relatively high (more than 0.40) except "I feel nervous when I am about doing something positive in preparation for my retirement" whose communality is lower (0.396), having a small amount of variance in common with other variables in the analysis.

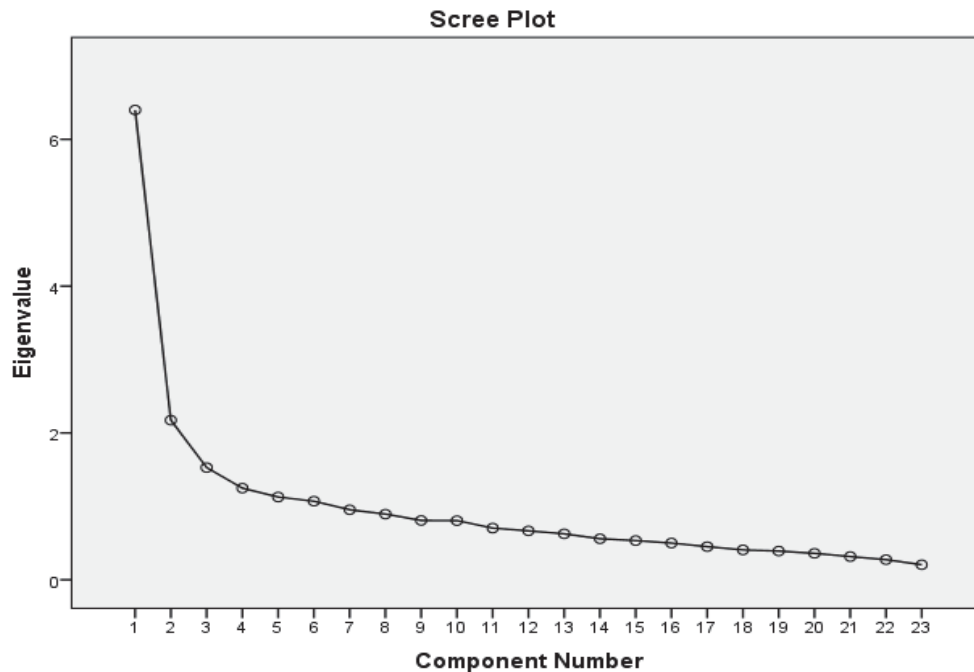


Figure 1. Scree plot on Retirement Anxiety Scale

The scree plot (Figure 1) further revealed the relevance of each factor in the entire components of the analysis. The eigen value is plotted against the number of components included in the analysis. As shown in the figure, the eigen value was above 1.00 only among the first six factors, indicating that only six factors have significant contribution in the items used for the analysis.

4. Discussion

The rating of the 24 items Retirement Anxiety Scale (RAS) for Secondary School teachers first led to the rejection of one item as a result of duplication. The item rejected was item 24 which is the same item with item 12. All the negative items were rated low on the 5-point Likert Scale while the positive items were rated high by the respondents, indicating the homogeneity and appropriateness of the item. Except for item 22 the communality h^2 , of each item was more than 0.5, which revealed a satisfactory quality of the 6-factor component model, therefore the scale satisfied the condition as stated by Rumel (1970).

The sample sufficiency index (KMO) > 0.8 showed that the sample data were sufficient to undergo factor analysis and sphericity test (Barlett's sign $p < 0.001$ also showed that the principal component analysis was sensible). Through this analysis, data were grouped on the basis of their in-between correlations aiming at sorting out those factors which clearly described teacher's attitudes to the object of the research (retirement anxiety). The principal component analysis released six components which jointly attributed to 58.89% of the total variance. These components were found to be related with and classified as F1 = sense of Nervousness, F2 = Uncertainty, F3 = Easiness, F4 = Motivation, F5 = Confidence, F6 = Excitement with the overall reliability coefficient Cronbach α statistically significant (0.863) indicating a high degree of internal consistency for group analysis which is acceptable as cited in Anastasi and Urbina (1998).

The high internal consistency of the Retirement Anxiety Scale (RAS) also suggested that the 24 items even though bi-dimensional (12-positive, 12-negative) turned out to be an internally consistent measure of retirement anxiety scale construct which the respondent's responses were highly reliable, stable and true measurement of anxiety retirement rating because the higher the value of the more reliable the test. Thus this follows the rule of thumb for the values > 0.9 = excellent, > 0.8 = good, > 0.7 acceptable, > 0.6 questionable, > 0.5 poor, < 0.5 unacceptable George and Mallary (2003).

5. Conclusion

From this study, results indicated that the Retirement Anxiety Scale (RAS) that was developed and validated was a valid and reliable instrument for measuring retirement anxiety among secondary school teachers and was also

found to be suitable for Nigerian schools. The six-components released by the Principal Component Analysis (PCA) which were tagged senses of Nervousness, Uncertainty, Easiness, Motivation, Confidence and Excitement would help the school counsellors in pre-retirement counselling of secondary school teachers.

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Insisting on Depression, but not Showing Symptoms: A Japanese Study of Excuse-Making

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Abstract

Since the late 1990s, Japanese psychiatrists have reported the appearance of a Modern Type Depression (MTD), which has different features from melancholic depression. Using a case vignette method, we looked at one of the distinctive features of MTD; that is, “insisting on depression”. In particular, we examined whether the statement “I think I may have depressive disorder” can be accepted as an excuse for not fulfilling ones’ duty when one does not show any symptoms of depressive disorder. Participants comprised 344 Japanese undergraduates who were presented with a short scenario describing social predicaments and who subsequently assessed the excuse value in terms of impression and behavioral reaction on the transgressor. Results showed that even though the transgressor did not show any symptoms of depressive disorder, insisting that one may have depressive disorder seemed to be accepted. Additionally, consistent with Weiner’s cognitive (attribution)–emotion–action model, the more positive impressions observers have on the transgressor, the more they are motivated to react kindly to the transgressor. Some unexpected findings and limitations of the present study were discussed.

Keywords: account, attribution, depression, excuse, explanation, impression management, self-presentation, predicament

1. Introduction

The purpose of the present study is to examine whether, despite the excuse maker (“I”) not clearly displaying any depressive symptoms, the statement “I think I may have depressive disorder” can be accepted as a reason for not fulfilling one’s duty. There is a social background that makes us ask such a research question; that is, the appearance of “modern type depression (MTD)” in Japan (e.g., Kato et al., 2011; Tarumi, 2005). Having been reported since the late 1990s, the MTD has been widely noticed by not only Japanese clinicians but also by the general population, as the MTD has different features from those of the traditional and well-known type depression (i.e., melancholic depression) (Note 1). For instance, melancholic depression is likely to occur in middle age, while the MTD is likely to occur for those who are young. Although the two types have a common depressive symptom (i.e., complaining of depressed mood), the severity and contents are different, as the symptoms of MTD are relatively mild. While the main depressive symptoms of melancholic depression will be psychomotor agitation or retardation, exhaustion and blaming oneself, those of MTD will be fatigue, not feeling good enough, avoidance, and blaming others. Among the different features between the two types of depression, the most important one that delineates the confusing MTD may be insisting on “depression”. Specifically, although people with melancholic depression resist accepting a diagnosis of depression, those with MTD are willing to accept and sometimes even request a diagnosis of depression. As some Japanese psychiatrists noted (e.g., Nomura, 2008; Yoshino, 2009), the label of being depressed may function as a reason to not fulfill one’s duty (stated later, in detail), which may make people with MTD insist on “depression.” However, such a self-presentational explanation is hypothetical and must be examined empirically. In the present study, we examine the self-presentational hypothesis in terms of self-presentation, in particular, excuse-making, which has long been studied in social psychology.

In the area of self-presentation, mental illness, as well as excuse-making, is categorized as defensive impression management, which occurs when an individual experiences or anticipates a predicament in order to restore a positive identity or to avoid negative reactions from others (Tedeschi & Norman, 1985). Previous studies

suggested that various psychological symptoms serve to a self-protective function (Baumgardner, 1991; Baumgardner, Lake, & Arkin, 1985; B. Braginsky & Braginsky, 1967; Jones & Burglas, 1978; Snyder & Smith, 1981). Regarding depressive disorder, Schouten and Handelsman (1987) investigated this from the perspective of self-handicapping. They examined the discounting effect of depression via an experimental survey with vignettes describing situations in which two protagonists: one who is depressed and the other who is non-depressed, violating social norms. They found that the target person showing symptoms of depressive disorder was seen as being less responsible for the cause of negative outcomes and less to blame. Furthermore, information about diagnosis, medication, and hospitalization did not affect these ratings more than symptom presentation alone. Thus, from their findings, it appeared that showing symptoms of depression may reduce responsibility for the negative outcome.

Based on the previous studies as mentioned above, we believe that there are two points to be considered. First, in the case of people with MTD, it is the statement they make that matters, not the symptoms they show. As stated above, people with MTD frequently show mild symptoms of depression compared to traditional depression, and the depression is not seen from the objective perspective (Matsuo, 2009; Nomura, 2008). In other words, depression for people with MTD appears to be seen with regard to the statement instead of their symptoms. Therefore, we believe it important to examine whether the statement functions as self-presentation. The other point is that Japanese psychiatrists noted that excuse-making is a form of self-presentation that people with MTD use, but that it is not self-handicapping. While self-handicapping is also categorized into protective self-presentation and its function is similar to excuse-making, the difference is with the timing of when individuals make a statement. While self-handicapping involves claiming an obstacle prior to performance (Berglas & Jones, 1978), excuse-making is a way of coping with failure (Snyder & Higgins, 1988); that is, it occurs after a failure. Hence, this study examined the impact of insisting on being depressed from the perspective of excuse-making, not from the perspective of self-handicapping.

Additionally, this study aimed to confirm the process of how individuals perceive and react to insisting on being depressed as an excuse. In order to accomplish this purpose, this study employed the cognitive (attribution)–emotion–action model (Weiner, 1995). This model describes the process of motivating behavior relating to the responsibility judgment. In this model, the process of judgments regarding the responsibility is divided into the following three steps. First, when people observe a person's failure, causal attribution then takes place; the observer assesses the cause within causal dimensions, specifically, controllability (Weiner, 1979). Second, depending on the result of causal reasoning, subsequent affects that arise therein are differed. Third, the prior affects decide the behavior of the observer to an observed. For example, if people observe a person's failure, and attribute the cause to uncontrollable factors, such as illness (in the first step), then positive affects, such as sympathy will arise (in the second step), which will facilitate helping behaviors to the person (in the third step). Reverse cases are also possible—if people observe a person's failure, and attribute the cause to controllable factors, such as laziness (in the first step), then negative affects, such as anger will arise (in the second step), which will make them withdraw from helping behaviors (in the third step). Thus, the excuse is thought to be attributional manipulations or impression management techniques to shift the attribution—either not to the self, or to the self but where the cause was not controllable (Weiner, 2006).

In sum, the aims of this study were to (a) examine the effect of insisting on depression as an excuse, and (b) confirm the process of evaluation of that excuse. To accomplish these goals, two vignettes describing the social predicament in different situations were prepared. In particular, the protagonist (i.e., excuse-maker) in the hypothetical vignettes did not show symptoms of depression but stated that they were depressed after a fault. After reading each vignette, participants assessed their impression on the target, a feeling towards an excuse-maker, and behavior they would deliver to the excuse-maker. Additionally, the controllability of depression was also assessed. We predicted that while there was no description about depressive symptom, only stating that one might have depressive disorder functioned as an excuse. In other words, people implying a depressive disorder would be able to maintain one's image and deter punishments.

2. Method

2.1 Participants and Design

Participants were 344 (175 men, mean age = 21.11, $SD = 5.51$; 169 women, mean age = 22.85, $SD = 8.52$) Japanese undergraduates enrolled in general psychology and several other courses at four large private universities located in the east area of Japan (i.e., Kanto-area). This study was described as a survey about interpersonal impression. Participants were randomly assigned to an excuse or no excuse condition. All questionnaires were completed anonymously. It should be noted that, to examine the process of people

evaluating the excuse via structural equation modeling in the excuse condition, we prepared 1.5 times more the number of questionnaires in the excuse condition compared to the no excuse condition.

2.2 Materials

Two vignettes (see Appendix) were written, referring to a previous study (Tyler & Feldman, 2007). Both vignettes described a social predicament in which a target person failed to fulfill a promise, but the situations differed. In Vignette A, a student taking a course in college, did not complete the group homework assignment while other members did (college scenario); and, in Vignette B, a student, who worked at a part-time job, was absent from his work without notice (workplace scenario). These vignettes were divided in two parts.

The first half of each vignette was the making promise part. It briefly introduced the target person, the situation, and the scene ended with the protagonist making a promise to his friends. However, there was no description of psychosomatic symptoms suggesting depressive disorder. The second half of each vignette was the renegeing part. Although the target person made a promise before, he did not fulfill his duty. Furthermore, the manipulation of the excuse was conducted in this part. In the no excuse condition, the vignettes ended with a sentence describing a situation in which the target broke his promise. On the other hand, in the excuse condition, the following sentences were added to the last part of vignette: *When asked by the other members about why he had not done so, he replied, "I could not do it, I think I may have depressive disorder"*. The difference between the two conditions was only the presence of these sentences. Each participant received a booklet that contained all two vignettes, presented in counterbalanced order within the condition.

2.2.1 Dependent Variables

After each scenario, the dependent variables shown in Table 1 were presented. The dependent variables included ratings to assess the impression and feeling towards target (12 items; e.g., likeability, integrity, sympathy) and to gauge the behavior they would deliver (7 items; e.g., punishing, forgiving, blaming, commiserating) (Note 2). These items were adapted from previous studies (Pontari, Schlenker, & Christopher, 2002; Tyler & Feldman, 2007). The response options ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Ratings for negative contents were reverse-scored to facilitate interpretation. Hence, high scores represented positive cognition/affects or positive behavioral response. The items aggregated across both scenarios indicated acceptable internal consistency reliability for each measurement; Cronbach's alpha = .87, 95% CI [.85, .89] (impression, vignette A), alpha = .79 [.75, .83] (behavior, vignette A), alpha = .85 [.82, .87] (impression, vignette B), alpha = .78 [.75, .83] (behavior, vignette B).

2.2.2 Uncontrollability of Depression

After assessing dependent variables, participants were presented with a question measuring their causal attribution of uncontrollability on depressive disorder. This item was rated on a bipolar 7-point scale in the same way as the Attribution Style Questionnaire (Peterson, Semmel, Von Baeyer, Metalsky, & Seligman, 1982) and a higher score was seen to represent people attributing depressive disorder as uncontrollable.

2.3 Manipulation Checks

To check the responsibility of the target, three items were provided after the first half of each vignette, because the previous study indicated that an excuse resulted in minimal differences in character ratings and negative repercussions from no excuse when the transgressor was perceived as being less responsible to the particular detrimental consequences (Tyler & Feldman, 2007). Three items were on the basis of triangle model of responsibility (Schlenker, Britt, Pennington, Murphy, & Doherty, 1994): "An obligation or duty the target person had to do was clear", "The target person had enough capacity to perform his obligation or duty" and "The target person personally committed his obligation or duty." A 5-point Likert scale was used to score each item, from 1 (*strongly disagree*) to 5 (*strongly agree*).

2.4 Procedure

Questionnaires were administered to participants during a lecture slot but they completed all measures individually and without discussion. Participants were briefly oriented to the broad study aims, but were not informed about the specific issues of interest to the experimenter. Students were then asked to complete the questionnaire on their own and to return the completed instrument at the end of the lecture slot. After collecting all questionnaires, participants were thoroughly debriefed. They were fully informed about the true nature of the experiment and received a handout, which was prepared so that they could understand the major depressive disorder correctly.

Table 1. Items of dependent variables

| Impression and feelings |
|--|
| A is immature |
| It is natural that A is criticized |
| A is earnest |
| I may work again with A |
| A is faithful |
| A is a weak person |
| A is a favorable person |
| I empathize with A |
| I feel sympathy for A |
| I feel anger for A |
| A is incompetent |
| A is reliable |
| Behavioral reaction |
| When A is not present, I say that A is irresponsible |
| I console A |
| I directly tell A to be irresponsible |
| I forgive A |
| I punish A |
| I am kind to A |
| I express anger toward A |

Note. When asking about the target in a second vignette, A was replaced by B.

2.5 Statistical Analysis

R for Windows version 2.15.0 (R Development Core Team, 2012) and “anovakun version 4.6.2,” an ANOVA function that runs on R software, were used for all statistical analyses. Structural equation modeling was conducted using R package lavaan (Yves, 2012). The analysis used the maximum-likelihood method of parameter estimation and, for the model estimation, we used the following goodness-of-fit indexes: CFI (comparative fit index), TLI (Tucker-Lewis Index), RMSEA (root mean square error of approximation), SRMR (standardized root mean square residual). CFI and TLI values close to 1 or at least greater than 0.95 indicate good fit. In contrast, RMSEA and SRMR values less than .05 are considered as good fit. The significance level for all analyses was set at $\alpha = .05$.

3. Results

3.1 Manipulation Check

Some participants were excluded from the analyses after an initial inspection of the data, because they regarded the target as less responsible to his duty. More precisely, 70 participants who responded to manipulation checks assessing responsibility of the target with 1 or 2 at least 1 item were excluded from the following analyses.

3.2 Descriptive Statistics

Table 2 presents the means, standard deviations, and 95% confidence intervals of mean for all variables in the analysis across the two conditions. Because there was no significant difference between sex or major (psychology major students and non-psychology major students) in all variables, all data are presented for the total population.

3.3 Analysis

First, the effect of the excuse and the difference between the situations were evaluated using 2 (excuse vs. no excuse) \times 2 (college scenario vs. workplace scenario) between-within mixed-model analysis of variances (ANOVAs). The first factor was a between-subjects factor and the other was a within-subjects factors. The dependent measures included the impression on the target and behavioral reaction to the target.

Results of ANOVA on the total means obtained for the impression on target yielded a significant main effect of excuse, $F(1,272) = 36.93, p < .001, \eta_p^2 = 0.12, 95\% \text{ CI} [0.06, 0.19]$, and a significant main effect of situation, $F(1,272) = 32.94, p < .001, \eta_p^2 = 0.11 [0.05, 0.18]$. However, there were no significant interaction effects, $F(1,272) = 0.08, p = .078, \eta_p^2 = 0.0003 [0.00, 0.02]$. ANOVA on the total means obtained for the behavioral reaction to target indicated similar results as the means of impression score. Each of the main effects was significant but there was no significant interaction: For excuse, $F(1,272) = 53.67, p < .001, \eta_p^2 = 0.16 [0.09, 0.24]$; for situation, $F(1,272) = 10.08, p = .0017, \eta_p^2 = 0.04 [0.01, 0.09]$; and for excuse \times situation interaction, $F(1,272) = 0.23, p = .063, \eta_p^2 = 0.0008 [0.00, 0.02]$. In sum, the ANOVA results revealed that on both impression score and behavioral reaction score, the target in the excuse condition was evaluated more positively than in the no excuse condition; in particular, the most positive evaluation was in the workplace scenario.

Table 2. Descriptive statistics for all variables in the analysis across the two conditions

| Variable | Excuse condition | | | No excuse condition | | |
|---|------------------|-----------|-----------|---------------------|-----------|-----------|
| | <i>M(SD)</i> | 95% CI | | <i>M(SD)</i> | 95% CI | |
| | | <i>LL</i> | <i>UL</i> | | <i>LL</i> | <i>UL</i> |
| Impression (College scenario) ^a | 33.51(6.84) | 32.47 | 34.56 | 29.16(5.88) | 28.02 | 30.30 |
| Impression (Workplace scenario) ^a | 35.51(6.32) | 34.55 | 36.47 | 31.36(5.90) | 30.21 | 32.51 |
| Behavioral response (College scenario) ^b | 23.61(4.74) | 22.89 | 24.33 | 20.36(3.68) | 19.65 | 21.08 |
| Behavioral response (Workplace scenario) ^b | 24.55(4.04) | 23.93 | 25.17 | 21.06(4.16) | 20.25 | 21.87 |
| Uncontrollability | 5.14(1.50) | 4.91 | 5.36 | 5.06(1.51) | 4.76 | 5.35 |

Note. CI = confidence interval; *LL* = lower limit, *UL* = upper limit.

^aThe possible range for item scores is 12 to 60.

^bThe possible range for item scores is 7 to 35.

^cThe possible range for item scores is 1 to 7.

Finally, to examine the process in which people evaluate the excuse being made in this study, path analysis with manifest-variable using structural equation modeling was employed for the excuse condition samples. Intercorrelations among the variables are summarized in Table 3. The hypothetical model was developed based on the cognitive (attribution)–emotion–action model (Weiner, 1995). The model test of the college scenario suggested that the model fit the data well, $\chi^2(3) = 221.04, p < .001$ (CFI = .997, TLI = .991, RMSEA = .048, SRMR = .021). As shown in Figure 1, all paths were significant and the coefficients of determination for the impression score and for the behavioral reaction were as follows: $R^2 = .02, R^2 = .54$. Similarly, the model test of the workplace scenario was conducted. The result of SEM shows the model fit the data well, $\chi^2(3) = 225.58, p < .001$ (CFI = 1.00, TLI = 1.00, RMSEA = 0, SRMR = .008). All paths were significant and each coefficient of determination were similar to those of the college scenario (impression score: $R^2 = .02$; behavioral reaction: $R^2 = .55$).

Table 3. Summary of intercorrelations for scores on the impression and behavioral response of each vignette in excuse condition ($n = 169$)

| | 1. | | 2. | | 3. | |
|------------------------|-----|-----|-----|-----|-----|----|
| 1. Impression | - | | .71 | *** | .24 | ** |
| 2. Behavioral response | .74 | *** | - | | .17 | * |
| 3. Uncontrollability | .24 | ** | .19 | * | - | |

Note. Intercorrelations in the college scenario were presented below the diagonal, and intercorrelations in the workplace scenario were presented above the diagonal. * $p < .05$, ** $p < .01$, *** $p < .001$

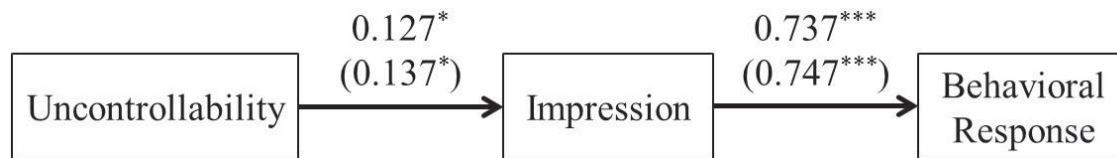


Figure 1. Relationship between causal attribution of uncontrollability on depressive disorder, impression on target, and behavioral response on target.

Note. All estimates were standardized. Numbers in parentheses show the estimates in the workplace scenario.

* $p < .05$, *** $p < .001$

4. Discussion

Since the late 1990s, Japanese psychiatrists have reported the appearance of MTD, which has different features to melancholic depression. Nevertheless, until now, few empirical studies have looked at the psychological aspects of MTD. The present study approached one of the distinctive features of MTD—“insisting on depression.” In particular, we examined the interpersonal consequences of saying “I think I may have depressive disorder” in two different case vignettes and confirmed the process of evaluating that statement. Results indicated that the statement made by people who show no depressive symptoms seemed to be accepted as an excuse. Furthermore, consistent with the cognitive (attribution)–emotion–action model (Weiner, 1995), the more positive impression that observers have (e.g., likability, sincerity, or sympathy) toward the transgressor, the more they are motivated to react positively (e.g., forgiving, or taking care) to the transgressor. However, there were also two unexpected findings. First, the reactions of participants on the target person differed significantly in the situations. Second, in our results, attribution about the uncontrollability of depressive disorder did not account for a significant amount of variance in the impression on the transgressor. In the following section, we discuss some of the implications of these results while considering these unexpected findings.

In social predicaments, the impression on a transgressor who insisted on having depression was evaluated more positively than who did not; likewise, the motivated behavior was more positive for the target in the excuse condition than in the no excuse condition. Tyler and Feldman (2007) found that offering an invalid excuse did not disengage people from negative outcomes. Moreover, it might result in unfavorable character assessment or increase a judgment-maker’s motivation to deliver a negative reaction. Hence, our results are interpreted as suggesting that insisting on having depression without any symptom functions as a valid excuse. These results seem to support what Japanese psychiatrists have noted on the basis of their clinical experiences: that people with MTD take advantage of depressive disorder in order to shift the responsibility and/or to excuse their inconvenient behavior (e.g., poor job performance, and the requirements from the social environment) (Nomura & Hirakawa, 2009; Yoshino, 2009).

Conversely, the difference between the response in the college scenario and the response in the workplace scenario was unexpected. Because the study participants were undergraduates, we used those two scenarios in order to ensure the cross-validity of the results, although the MTD has become a subject of discussion in company organizations. Previous studies about interpersonal consequences of excuse-making manipulated together the contents of the excuse and the situation in which the excuse was made (Pontari et al., 2002; Tyler, & Feldman, 2007) or presented multiple excuses in the same situation (Weiner, Folkes, Amirkhan, & Verette, 1987). Thus, these different results among the situation are not well understood at this time. However, one can consider the possibility that participants assessed the fault in the college scenario (i.e., not doing the assignment) as more pernicious than the one in the workplace scenario (i.e., the absence without notice). As Blumstein et al. (1974) suggested, there appears to be a relationship between the perceived offensiveness of a violation and the offender’s ascribed causation (i.e., controllability of the deed in question). Hence, comparing the consequences of excuse-making in multiple situations, controlling the offensiveness of the violations is needed.

Next, path analysis with manifest-variable using structural equation modeling demonstrated that a more positive impression of the excuse-maker was associated with more favorable reactions toward him. In light of this result, we may interpret that people react to the transgressor who insists on having depressive disorder in the same way as other cases of moral judgment. However, because the low coefficient of determination showed a small positive association between the impression on target and the causal attribution of uncontrollability about depressive disorder, it is still unclear what factors influenced on impression formation, despite these variables

being significantly correlated. Accordingly, further study should be conducted to examine what factors determine a judgment maker's impression on the transgressor who insists on having depressive disorder. One possibility is that familiarity with mental illness (Holmes, Corrigan, Williams, Canar, & Kubiak, 1999) has an effect on the impression towards the transgressor. A study on stigma of mental illness demonstrated that greater familiarity with mental illness was associated with feeling greater pity, less anger, and being more willing to help people with schizophrenia (Corrigan, Markowitz, Watson, Rowan, & Kubiak, 2003). Hence, it is likely that familiarity with mental illness affects impression formation in the case of evaluating an excuse, such as insisting on depressive disorders.

Finally, in addition to the problems discussed above, two limitations of the present study must be considered. One limitation is that because this was an initial study about those insisting on depressive disorders being an excuse without any typical symptom of depression, the main focus of the study was to confirm whether at least the statement "I think I may have depressive disorder" functions as an excuse. Thus, the present study did not examine the differences among other types of excuses. Therefore, future study should compare multiple excuses, including insisting on depression, to examine the relative effects of each excuses, making it more possible to understand precisely the characteristics of insisting on depression, as well as the interpersonal aspects of depression.

The other limitation is as follows. Essentially, we have attempted to approach one of the controversial features of people with MTD. However, because the discussion about MTD is limited in its description of the variety of syndromes comprising MTD (Kato et al., 2011) and there is still no agreement about the common cognitive and behavioral features of MTD, we were unable to describe directly a protagonist in our vignette as a "typical" person with MTD. Instead, we excluded descriptions of symptoms of depression to differentiate from melancholic depression. It is hoped that further discussion will create a common understanding of the characteristics of MTD.

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Notes

Note 1. Tarumi (2005) suggested that the waning social order or social role disruption may cause MTD. For instance, in the 1970s, the occupational role was more dominant than currently, combined with a period of high economic growth in Japan. MTD might be influenced by a loss of such roles, as they are replaced by a kind of overprotected individualism which has become the framework within Japan (Tarumi & Kanba, 2005).

Furthermore, enlightenment regarding depressive disorders, as well as social change, might contribute to MTD. In Japan, health promotion regarding depression has increased (Kanba, 2011). As a result, the stigma of depression has reduced somewhat (Hayashi, 2001). Accordingly, the number of Japanese people who suspect that one has depressive disorder and voluntarily get check-ups at the hospital has increased (Kanba, 2011; Nomura & Hirakawa, 2009). However, it seems that this is not solely positive; people who do not have clear/severe depressive symptoms, but who are convinced that they suffer from depressive disorder, have appeared (Nomura & Hirakawa, 2009).

Note 2. Although the original model by Weiner (1995) included only affects as the component, which arose subsequent to causal inference, we put impression and affects together, because those were treated in parallel as a result of excusing behaviors (Weiner et al., 1987).

Appendix

Appendix A

Scenario in which a student participating in a group project failed to undertake the work assigned to him while all the other group members did. Student A attends a university in Tokyo. A group work project has been assigned in one of his classes, which requires Student A to work with a set of friends on a collaborative presentation. Student A's group decided to divide the work such that each member would research a topic under a certain section. Student A was assigned the section that he wanted. Each member was asked to report his or her findings 3 days later and then continue the project as a group. It was mentioned that the project would be jeopardized if even a single member of the group failed to carry out the assigned work. Therefore, all members promised to do what they were assigned so as not to let the others down. The members then dispersed.

When the group met again three days later, everyone had completed their research work except for Student A. When asked by the other members why he had not done so, he replied, "I could not do it, I think I may have depressive disorder".

Student A's speech and behavior suggest that he actually believes that he suffers from depression.

Appendix B

Scenario in which a student and part-time worker failed to turn up for work while all other staff members did.

Student B attends a university in Tokyo. He also works part time at a large chain izakaya (Japanese-style bar). The izakaya has recently grown in popularity. The shop is now packed with customers regularly, which means that the staff members are constantly busy.

Student B's was scheduled to come to work in 3 days' time. A number of parties had already been booked for that day, so the staff members were aware that it would be extremely busy. For this reason, Student B and the other staff members were told that they should do their best to come to work on that day. The staff conferred among themselves and agreed that the higher the number of people that come to work, the lighter the load will be. Therefore, all staff members promised to do what they needed to not let the others down. Student B and the rest of the staff members then went home.

Three days later, everyone except Student B turned up for work. On a later day, Student B was asked by one of the staff members why he did not turn up for work. He replied, "I could not come, I think I may have depressive disorder".

Student B's speech and behavior suggest that he actually believes that he suffers from depression.

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The Effect of Listening to Recordings of One's Voice on Attentional Bias and Auditory Verbal Learning

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Abstract

Previous studies have shown that exposure to recording of one's own voice can cause a negative reaction. This reaction may affect one's attentional system and auditory verbal learning rate. The aim of this study was to assess the effect of listening to recordings of one's own voice on attentional bias in one experiment and to assess the effect on auditory verbal learning in a second experiment. The present study was an experimental study that was designed and conducted as two separate experiments. Fifty-five subjects participated in the first experiment to investigate the effect of listening to recordings of one's own voice on attentional bias. The auditory Stroop test was performed on a computer with two different voices, i.e., 1) the recorded voice of another person and 2) a recording of the participant's own voice. The average reaction time of the participants was compared for the two recordings. Sixty-one subjects participated in the second experiment to assess the effect of listening to a recording of one's own voice on auditory verbal learning. The 61 subjects were divided randomly into two groups, i.e., an experimental group (31 participants) and a control group (30 participants). The Rey auditory verbal learning test (RAVLT, Persian version) was used with two different recordings, i.e., recordings of the participants' own voices for the experimental group and recordings of another person's voice for the control group. The mean scores of the two groups were compared for each trial. The comparison of the participants' mean of reaction time, which was measured twice in the experimental group, showed a significant difference. The comparison of participants' mean scores between the two groups in the second experiment, showed a significant difference only in the first trial (word span), and no significant difference was found in the other trials. The findings of the study showed that listening a recording of one's own voice caused attentional bias. Also, listening to a recording of one's own voice resulted in less auditory verbal learning in word span than listening to the recorded voice of another person.

Keywords: attentional bias, auditory verbal learning, RAVLT, Stroop test

1. Introduction

1.1 Background

Today, with the advancement of technology and the convenience afforded by electronic devices, such as personal audio and video devices, people are communicating increasingly using their voices and pictures. Studies that have examined this issue have concentrated more on the topic of self-recognition, especially recognizing one's own face. (Uddin et al., 2005). Several studies have shown that self-voice recognition is more difficult than self-face recognition (Ellis, Jones, & Mosdell, 1997; Hanley, Smith, & Hadfield, 1998; Joassin, Muraige, Bruyer, Crommelinck, & Campanella, 2004; Joassin, Muraige, & Campanella, 2008). However, few studies have been conducted in the field of self-voice recognition (e.g., Holzman, Rousey, & Snyder, 1966; Nakamura et al., 2001; Olivos, 1967; Rosa, Lassonde, Pinard, Keenan, & Belin, 2008; Rousey & Holzman, 1967). Despite the practical importance of recorded self-voice, few studies have conducted on how people perceive recorded self-voice, especially its impact on auditory verbal learning (Gaviria, 1966; Yeager, 1966).

1.2 Statement of the Problem

Holzman and Rousey (1966) conducted a study in which the participants' reactions to their own recorded voices were assessed, and they observed negative affective reactions. However, the participants did not have such a reaction when they listened to the recorded voices of other people. The researchers mentioned the difference

between the perception of the voice that participants expected to hear and the voice they actually heard. Participants also focused more on grammar, syntax, and personality and psychological characteristics when they were listening to others' recorded voices, but they focused on the quality and tone of recordings of their own voices. Also, Holzman, Berger, and Rousey (1967) conducted a study of bilinguals that showed that listening to their recorded self-voices in their native languages created a more negative affective reaction than when they listened to their recorded self-voices in a second language. Another study that was conducted with people who had a speech defect showed that their negative affective reactions were significantly greater than those who did not have a speech defect when the two groups listened to their recorded self-voices. The results showed that, irrespective of speech defects, female subjects had greater negative affective reactions (Weston & Rousey, 1970).

The perceptions of the recorded self-voice and the recorded voice of other people differ in nature. When we speak naturally, the sound waves reach our ears in two ways, i.e., via air conduction and bone conduction. But when we hear our recorded voice (or the recorded voices of other people talking normally), the sound waves reach our ears only by air conduction. When the sound of our voices is received by both bone conduction and air conduction, the lower frequencies are strengthened, and, as a result, we hear a somewhat distorted version of our own voices (Holzman et al., 1967; Maurer & Landis, 1990; Tonndorf, 1972). Due to this phenomenon, Yeager (1966) conducted a study in which she examined the effect of recorded self-voice on learning with two different presentations (air and bone conduction). The results of her study showed that there was no significant difference between them in the rate of learning in two different presentations.

Neuroimaging studies in which people were examined as they were listening to their self-voices have reported that specific neurocognitive processes that are involved in the perception of one's own voice. The neurocognitive processes were different from the processes that occurred when the subjects were listening to the voices of other people (Allen et al., 2005; Kaplan, Aziz-Zadeh, Uddin, & Iacoboni, 2008; Nakamura et al., 2001). Also Graux et al. (2013) conducted an electrophysiological study that showed that different neural processes occur when discriminating the self-voice from the voices of others. Other studies that have examined the effect of recorded self-voice on psychophysiological responses also achieved significant results (Olivos, 1967; Holzman, Rousey, & Snyder, 1966). These studies showed that participants' psychophysiological responses when listening to their recorded self-voices were significantly greater than when they were listening to the recorded voices of others. These differences in psychophysiological responses occurred irrespective of whether the participants recognized their own voices. Gaviria (1966) examined the effect of recorded self-voice on learning. He conducted the study with the assumption that the increased psychophysiological responses while listening to recorded self-voice would enhance learning. The results of his study indicated that there were no significant differences between the rate of learning through listening to recorded self-voice and the rate of learning through listening to the recorded voices of others.

Studies have shown that words that subjects read aloud are remembered better than words that the same subjects read silently. This phenomenon is called the production effect (MacLeod, Gopie, Hourihan, Neary, & Ozubko, 2010). Also, MacLeod (2011) conducted a study in which, for comparative purposes, words were read aloud, words were read silently, words were read aloud by another person, and words were read aloud simultaneously by the subject and another person. The results indicated that words that are read aloud by the person being tested are more likely to be remembered. These studies were conducted with people using their actual voices, so the effect of recorded self-voice was not determined. In a study conducted by Aruffo and Shore (2012) on the McGurk effect, they reported implicit own voice processing. Since the McGurk effect is automatic, mandatory, and uninfluenced by attention, the results of their study showed that listening to recorded self-voice reduced the McGurk effect. Another study conducted recently by Candini et al. (2014) reported an implicit own voice processing. Their results showed that participants in the implicit self-voice recognition tasks had better and more accurate voice responses than they did in the explicit self-voice recognition tasks.

1.3 Objectives

A few studies were conducted about 50 years ago to examine the effects of recorded self-voice on learning, even though people at that time had few opportunities to hear their own voices. Currently, however, people have many occasions to encounter their recorded self-voices due to the ever-increasing technological advances. Given the importance of the perception of recorded self-voice, the aim of this study was to evaluate the impact of recorded self-voice on audio-verbal learning. Also with regard to the direct impact of the attentional system on learning, a separate experiment was conducted to assess the impact of recorded self-voice on attentional bias.

2. Materials and Methods

2.1 Research Design and Setting

This was an experimental study that was designed and conducted in two separate experiments. The first experiment was designed and conducted to examine the effect of recorded self-voice on attentional bias. A second experiment was designed and conducted to assess the effect of recorded self-voice on auditory verbal learning. Differences in the types and manners of conducting the tests to measure attentional bias and auditory verbal learning led to the design and implementation of two separate experiments. The study populations were students from Sistan University and Baluchistan University. The study ran for two years, i.e., from the beginning of 2013 until the end of 2014.

2.2 Sample Size and Sampling Method

In the first experiment, 55 subjects participated, i.e., 28 females and 27 males with the mean age of 22.02 ± 1.7 years. In the second experiment, 61 subjects participated, which included a control group of 30 subjects and an experimental group of 31 subjects. In the control group, there were 14 females and 16 males with the mean age of 22.3 ± 1.9 , and, in the experimental group, there were 15 females and 16 males with the mean age of 21.4 ± 1.8 years. The convenience sampling method was used in both experiments, and informed consent was obtained from all participants; the subjects had no problems with speech or hearing. They did not have any diseases or personal habits that affected these two abilities, such as hoarseness, colds, or smoking. While they were participating in the research, they did not use any drugs that could have influenced their abilities to pay attention and concentrate. Persian was the native language of all of the subjects.

2.3 Auditory Stroop Task and Rey Auditory Verbal Learning Task

A computerized auditory Stroop test with two conditions was used in Experiment 1. One condition involved participants hearing their own voice naming colors and the other a gender matched saying color names. Our measurement tool was a modified version of Roelofs (2005) test. We used SuperLab Pro 4.0.7 SKD software to modify the test, and, in doing so, we considered the way that Ghawami, Raghibi, and Daryadar (2013) modified and used the test in their study. Experiment 1 used a Stroop task and one condition assessed response times to color names for another's voice and the other condition the participants' own voice. In the second test, we used the Persian version of Rey's auditory verbal learning test (Rezvanfard et al., 2011). This test has five main trials, including a list of 15 words that are read for participants in each trial. When the words were read, the rate of recalling was recorded. The numbers of words recalled in the first trial (word span), the fifth trial (final acquisition level), and the total of the first through the fifth trials (total acquisition) were examined in this study. A recording of the list of words for the control group was played with an unfamiliar voice of their own gender, whereas the recorded self-voice was played for the experimental group.

2.4 Data Collection

This study consisted of two experiments. Samples for each test were collected separately and at different times. Each experiment consisted of two sessions. The objective of the first session was to record the test content with the voice of the subject, and the objective of the second session was to conduct the test. In the first experiment, after the first session (recording subjects' voices), the auditory Stroop test with recorded self-voice was conducted separately for each subject. A few days later, at the second session, the subjects' reaction times were measured by conducting duplicate Stroop tests of their recorded voices. The first measurement was done using an unfamiliar recorded voice of the subjects' own gender, and the second measurement was done using the subjects' recorded self-voices.

In the second experiment, after the first session in which the voices of the 61 subjects were recorded, the 61 subjects were randomly divided into experimental and control groups. Then, the audio files of reading the test words were provided with recorded voices of the subjects of the experimental group. Two audio files of different genders were made for the control group. Six months after the first session, the second session was conducted separately for each subject. In the second session, the auditory verbal learning test for the experimental group was conducted using the recorded self-voices, and the test was conducted for the control group using an unfamiliar recorded voice of each subject's own gender. In the second experiment, we assessed the recall accuracy of subjects.

2.4.1 Experiment 1

2.4.1.1 First Session

After confirming the students' interest in participating and cooperating in the first experiment to investigate the effect of recorded self-voice on attentional bias, a briefing session was held and coordination was made with 57 participants for implementing the first session. After obtaining demographic data and written informed consent, the subjects were asked to record their voices, and the dialogue between the examiner and each subject (related to issues of the students' lives and their future careers) was recorded by a Sony PCM-D50 digital recorder at the highest quality. In the middle of the conversation, the participants were asked to read loudly and clearly a list of 10 words, including the name of colors. The target colors (red, blue, and green) were inserted among the words. Then, the second session was planned based on the students' schedules and availability.

2.4.1.2 Making Tests

The file containing the recorded voices of the participants was given to a sound specialist to analyze and compile. He examined the various qualitative and quantitative aspects of the sounds using Adobe Audition Cs 5.5 v4.0 software and chose the appropriate files for use in the test. Among the extracted files, two participants' ways of reading did not meet the necessary criteria and were excluded. The voices of the other 55 subjects naming colors (red, blue, and green) were found to be suitable for conducting the auditory Stroop test. Then, the software SuperLab Pro 4.0.7 SKD conducted an auditory Stroop test for each participant separately from her or his own recorded voice. The two other auditory Stroop tests of recorded voices with the unfamiliar sound of different genders also were designed and produced, and the auditory Stroop test of the recorded voice of one's own gender was used in the first measurement. After designing the tests, the participants were invited to participate individually in the second session.

2.4.1.3 Second Session

The tool used in the second session consisted of a personal computer with a standard 15-inch monitor that was about 40 cm from the participant. The computer had a standard keyboard on which three keys that were covered with white labels were used by the subjects to respond to stimuli. Creative Inspire T3030 speakers were used, and the speakers were placed at the left and right sides of the participants. In the second session, first the computerized auditory Stroop test with recorded unfamiliar voice of their own sex was played, and the reaction time of the participant was recorded. A short time later, the computerized auditory Stroop test with recorded self-voice was played, and the reaction time of the participant was recorded. The mean of each participant's reaction time was calculated and collected for analysis. At the end of the test, the participants were asked questions to determine whether they recognized their recorded self-voices.

2.4.2 Experiment 2

2.4.2.1 First Session

In the second experiment, the effect of listening to the recorded self-voice on auditory verbal learning was discussed. After confirming the students' interest in participating and cooperating in the second experiment, a briefing session was held and coordination was made with 87 participants for implementing the first session. In the first session, after obtaining demographic data and written informed consent, the subjects were asked to record their voices, and the dialogue between the examiner and each subject (related to issues of the students' lives, their future careers, and the importance of co-participants by the end of the study) was recorded by a Sony PCM-D50 digital recorder at the highest quality. During the conversation, the participants were asked to read loudly and clearly a list of 90 words, including word lists Rey, Lezak, Shapiro, and Harrison's version of the AVLT test (Rezvanfard et al., 2011). The 15 target words of Rey's test were inserted in the middle of the list. Then, the second session was planned based on the students' schedules and availability.

2.4.2.2 Making Tests

The files that contained the recorded voices of the participants were given to a sound specialist to analyze and compile. He examined the various qualitative and quantitative aspects of the sounds using Adobe Audition Cs 5.5 v4.0 software and chose the appropriate files for use in the test. After designing the tests, the participants were invited to participate individually in the second session. Among the extracted files, 26 participants' ways of reading did not meet the necessary criteria, and they were excluded. The voices of the other 61 subjects were found to be suitable, and they were divided randomly into an experimental group (31 subjects) and a control group (30 subjects). An audio file that contained a list of 15 words was prepared with the recorded self-voice. For the control group, two audio files were prepared with people of different genders reading the list of 15 words.

2.4.2.3 Second Session

Six months after the first session, the participants were invited to return for the second session. In the second session, a personal computer and two speakers of a standard Creative Inspire T3030 model were placed to the left and right of the participants to play the sound. The test was conducted according to the procedures used in the AVLT test in Rezvanfard et al.'s (2011) study. The only difference was that we used recorded voices rather than actual voices. The recorded voices we used were those of the participants in the experimental group and the unfamiliar recorded voice of each gender for the control group. In each trial, the recorded voices were played, and the researcher immediately recorded the rates at which the subjects recalled the voices. The test was conducted five times, and the participants' scores were recorded each time. At the end of the test, the scores of the two groups were collected for analysis. After the participants in the experimental group completed the test, they were asked questions related to their recognition of their recorded voices.

2.5 Ethical Consideration

This study was approved by the Research Ethics Committee of the School of Psychology at the University of Sistan and Baluchestan (No. 91.3.5883). Before conducting the experiment, written consent was obtained from each participant. Also, the students' interest in participating was enhanced by offering them a token for buying books, free use of the University's facilities. After each experiment, a psychologist had a conversation with each subject about the issue of hearing the recorded self-voice to ensure that there was no resentment about being exposed to the recorded self-voices that could have distorted the findings. Two special sessions were held to share the results of the study with the participants from each experiment.

2.6 Statistical Analyses

SPSS version 21 software was used to analyze the data. A paired samples t-test was used to compare the mean reaction times in the two conditions of the Stroop test in Experiment 1. In the second experiment, an independent groups t-test was used to compare the mean number of recalled words in the experimental and control groups.

3. Results

3.1 Experiment 1

In the first experiment, two runs of the computerized auditory Stroop test were conducted with a group of 55 people. The mean of the subjects' reaction times in providing correct responses by naming the colors was calculated, and then the mean of the groups' reaction time was obtained. The mean of the participants' reaction times in the first run, i.e., an unfamiliar voice of their own gender, was approximately 709 ms. This mean had a standard deviation (SD) of approximately 117 ms.

Responses to voices of the same gender as the participant were significantly shorter ($M=709$ ms, $SD=117$) compared to when the voice was that of the participant's own voice ($M=748$ ms, $SD=151$). Analyzing the data using the paired t-tests to compare the means indicated that the mean of the participants' reaction times in the second run (recorded self-voice), with the mean difference of 39 ms ($SD 77$), was significantly meaningful ($P<0.0001$, $t(54)=37.3$, $df=54$) and greater than the mean of the participants' reaction times in the first run (recorded unfamiliar voice of their own gender). From the 55 participants, 24 (43.6%) recognized their voices in the experiment.

3.2 Experiment 2

In the second experiment, the auditory verbal learning test was performed on the experimental group and the control group. The sum of the first through the fifth trials also was calculated as total acquisition. Table 1 shows the mean of the two groups for each trial and the total performance across the 5 trials.

Table 1. Mean of the numbers of words recalled by members of the experimental group and members of the control group in each trial (Experimental group $n=31$, Control group $n=30$)

| Condition | Group | Mean | Standard Deviation |
|---------------------|--------------|-------|--------------------|
| Trial 1 (word span) | Control | 8.33 | 1.605 |
| | Experimental | 7.10 | 1.599 |
| Trial 2 | Control | 10.97 | 1.790 |
| | Experimental | 10.77 | 1.857 |

| | | | |
|----------------------------------|--------------|-------|-------|
| Trial 3 | Control | 12.70 | 1.535 |
| | Experimental | 12.29 | 1.883 |
| Trial 4 | Control | 13.43 | 1.194 |
| | Experimental | 13.19 | 1.851 |
| Trial 5 (Final acquisition) | Control | 13.90 | 1.029 |
| | Experimental | 13.81 | 1.078 |
| Σ 1-5 (Total acquisition) | Control | 59.33 | 5.492 |
| | Experimental | 57.16 | 6.929 |

The mean of word recalling number in the two groups in each trial was analyzed by the test of comparing the mean of the independent t-tests. The results showed that the difference was significantly meaningful only in the first trial (word span). The mean of word recalling number in the control group in the first trial (word span) was greater than that of the experimental group ($P > 0.004$, $t(59) = 3.014$, $df = 1.24$). There was no significant difference in the other trials, including the fifth trial (final acquisition level) and the total acquisition (sum of the first through the fifth trials). Table 2 shows the results of the independent t-tests comparing the means for the experimental group and the control groups in each trial. At the end of the second experiment, among the 31 subjects in the experimental group who listened to their recorded self-voices, 15 subjects (48.4%) recognized their voices, and 16 subjects (51.6%) did not.

Table 2. Comparison of the means of the two groups' in each trial by the independent t-test

| Condition | t | df* | Sig. (2-tailed) |
|----------------------------------|-------|-----|-----------------|
| Trial 1 (Word span) | 3.014 | 59 | 0.004 |
| Trial 2 | 0.412 | 59 | 0.682 |
| Trial 3 | 0.930 | 59 | 0.356 |
| Trial 4 | 0.599 | 59 | 0.552 |
| Trial 5 (Final acquisition) | 0.347 | 59 | 0.730 |
| Σ 1-5 (Total acquisition) | 1.354 | 59 | 0.181 |

Note. * Degrees of freedom

4. Discussion

4.1 Experiment 1

In the first experiment, we examined the effect of the recorded self-voice on attentional bias with two different runs of the auditory Stroop test (recorded self-voice and unfamiliar recorded voice of their own gender). The results showed that the means of the participants' reaction times in the Stroop task were greater when they listened to their recorded self-voices than when they listened to unfamiliar recorded voices of their own gender. Hence, listening to one's own voice leads to attentional bias. One of the reasons that can be cited to explain this phenomenon is a negative affective reaction that the participants showed when listening to the recorded self-voice (Holzman & Rousey, 1966). This negative affective reaction may engage the attentional system when responding to the test content in the second run (recorded self-voice) and cause increases in the participants' reaction times. Increasing reaction time is a phenomenon that has been observed in studies using the emotional Stroop test (Williams, Mathews, & MacLeod, 1996). The negative affective reaction of the participants was due to the difference of the voices that the participants expected to hear and what they actually heard (Holzman & Rousey, 1966). This difference in their perception of their recorded self-voices and their perception of listening to self-voice while speaking naturally was created by the differences in the ways that sound can be transmitted. When a person hears her or his recorded voice, the sound is only received via air conduction. However, when we hear our natural voice as we are speaking, the sound is received through both the air and bone conduction, which enhances the lower frequencies (Holzman, Berger, & Rousey, 1967; Maurer & Landis, 1990; Tonndorf, 1972).

Neuroimaging studies examining the recognition of self-voice have reported the involvement of different brain areas when listening to the recorded self-voice. These areas are different from those that are involved when listening to recorded voices of other people (Kaplan et al., 2008; Allen et al., 2005; Nakamura et al., 2001). The results of an electrophysiological study conducted by Graux et al. (2013) also showed that the discrimination of one's own voice involves a different neural process than discrimination among unknown voices. In addition, studies have indicated that participants exhibit more psychophysiological responses when listening to recorded self-voices than when listening to the recorded voices of other people. These responses occur irrespective of whether the participants recognized their own self-voice (Olivos, 1967; Holzman, Rousey, & Snyder, 1966). This phenomenon reflects an implicit processing of self-voice hearing. A study by Aruffo and Shore (2012) examined the McGurk effect and reported the implicit processing of self-voice. Since the McGurk effect is mandatory, automatic, and uninfluenced by attention, the subjects showed weaker McGurk effect when they heard their self-voices. A recent study by Candini et al. (2014) found that subjects in implicit tasks can recognize the recorded self-voice better and more accurately than they can in explicit tasks. In our experiments, listening to recorded self-voice caused attentional bias, but only 43.6% of the subjects were able to recognize their self-voices at the end of the experiment, which suggested an implicit process of recorded self-voice.

4.2 Experiment 2

The second experiment examined the effect of recorded self-voice on auditory verbal learning by comparing the mean of the number of recalled words of RAVLT in each trial in the two experimental groups (listening recorded self-voice) and the control (listening recorded voice of their own gender). The results showed that there were significant differences only in the first trial (word span), and the rate of auditory verbal learning in word span when the subjects listened to their recorded self-voices (experimental group) was less than it was when they listened to unfamiliar voices (control group). Despite the lower ability to recall words in the word span (first trial), there was no significant difference between the groups in rate of recalling in final acquisition level (fifth trial) and total acquisition (sum of the first through the fifth trials).

The findings of Gaviria's study (1966) that examined the effect of self-voice on verbal learning showed that there is no difference between rates of learning whether listening to recorded self-voice or learning with the recorded voices of others. Also Yeager (1966) emphasized how sound is transmitted (air and bone conduction) and showed that there was no difference between learning with recorded self-voice and learning with the voices of other people. The results of the present study on the level of final acquisition (fifth trial) and total acquisition (sum of the first to the fifth trial) were compatible with these results. However, the reduction in the rate of recalling word span (first trial) while listening to recorded self-voice was different from the previous results. The first experiment showed that listening to recorded self-voice caused attentional bias. This attentional bias may cause a reduction in the rate of recalling word span (first trial) by engaging the attentional system. Holzman and Rousey (1966) reported negative affective reaction of subjects while they were listening to recorded self-voices. This negative affective reaction may be an effective factor in recalling the word span at a lesser rate (first trial). In addition, more psychophysiological responses while listening to recorded self-voices also may be effective in reducing the rate at which words were recalled in the first trial. Studies that have reported increases of psychophysiological responses in listening to recorded self-voices also noted that this phenomenon also occurred when the subjects were not able to recognize their recorded self-voices (Olivos, 1967; Holzman, Rousey, & Snyder, 1966). In the experimental group of our experiment, only 48.4% of the subjects were able to recognize their recorded self-voices at the end of the experiment. In previous studies, the rate of recognition of recorded self-voice was about 50% (Holzman & Rousey, 1966; Rousey & Holzman, 1967). With the development of technology and people's increased exposure to recorded self-voices, such as voice messages, video cameras, and other devices, the rate of self-voice recognition has been increased significantly. For example, in the study of Hughes and Nicholson (2010), the rate of accurate recognition of recorded self-voice was 89-93%, and it was 94-96% in the study of Rosa et al. (2008). One reason for the low rate of self-voice recall in this study was that the participants were not informed that they would hear their self-voices, whereas, in some studies that examined the recognition of recorded self-voices, the participants knew that they would hear their self-voices. This recognition rate of recorded self-voice was compatible with studies that have reported implicit own-voice processing (Aruffo & Shore, 2012; Candini et al., 2014).

4.3 Limitations

The subjects in this study were students in a university in Iran, so there was an age limitation and a cultural limitation in that the students were from the Persian culture and spoke the Persian language. Therefore, the generalization of the results to other communities and languages is not feasible.

5. Conclusions

The findings of this study showed that listening to recorded self-voice caused attentional bias and reduced the auditory verbal recalling rate in word span (trial 1). The implication of these findings is for educational research and practice, where the effect of exposure to recorded self-voice in teaching and learning can be taken into account. Conducting other research on the effectiveness of recorded self-voice on the systems of attention and learning in other communities and languages with neurological approach may be an appropriate path for future research.

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Religious Priming Increases Help if Requesters Dress Poorly: Effects of Dress, Priming, and Task Difficulty on Helping Behaviors

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Abstract

The present study investigated requester–helper interaction, helper personal disposition, and their interactions in effecting helping behavior. In a $2 \times 2 \times 2$ experimental design, participants were asked to help with an effortful or effortless task by a well-dressed or poorly dressed help requester after being primed with religious or neutral words. Results showed that well-dressed requesters, religious primes, and effortless tasks independently increased helping behavior, and helping with effortful task requested by poorly dressed requesters particularly increased after religious primes. These findings provide an integrated understanding of the micro and meso causes of helping behavior.

Keywords: dress, religious priming, helping behaviors

1. Introduction

According to a multilevel perspective, prosocial behaviors are explained by causes in three levels, namely the micro level, involving a helper's personal disposition, the meso level, involving helper–recipient interaction, and the macro level, involving group and societal contexts (Penner, Dovidio, Piliavin, & Schroeder, 2005). However, studies of prosocial behaviors have focused mostly on one level and have rarely provided an integrative understanding of interactions across different levels. The present study explored the interplay between the micro level and the meso level by identifying one cause from each level and studying the interaction between the two causes. This study also explored strategies that can increase help in a one-time help request; macro-level causes were thus not included in this study because they involve organizational and societal contexts that are unchangeable in a short time. Whether a person desires to help is determined by various factors, including personal tendencies such as primed mindset, empathetic affects, other positive emotions, and agreeable personality (Ashton, Paunonen, Helmes, & Douglas, 1998; Davis, Luce, & Kraus, 1994; Eisenberg, Fabes, Guthrie, & Reiser, 2000; Abbate, Boca, Spadaro, & Romano, 2014), as well as requester–helper interaction such as the relationship between the two, the appearance of requesters, and the helper's emotional arousal stimulated by the requester (Ainscough & Motley, 2000; Batson & Moran, 1999). Priming was considered as a micro-level cause in this study because other micro-level causes are personal traits that cannot be manipulated or studied for short-term or one-time effect. The clothing of a help requester was considered as a meso-level cause because clothing substantially affects the appearance of the requester and easily and immediately influences a potential helper's decision to help (Long, Mueller, Wyers, Khong, & Jones, 1996).

1.1 Priming of Religion

People exposed to particular primes show increased prosocial behaviors including helping strangers. For example, after exposure to words related to help in a sentence construction task, participants became more likely to assist another person whom they barely knew with dropping pens, compared with participants who were exposed to only neutral words (Macrae & Johnson, 1998). Priming concepts of friendship elicited increased helping behaviors in participants toward strangers, particularly when a stranger resembled a friend of the participants (Berk & Andersen, 2000; Fitzsimmons & Bargh, 2003). Implicit bystander effects showed that participants primed with the scenario of being alone were more likely to offer help than those primed with the scenario of being in a crowd (Abbate et al., 2014; Garcia, Weaver, Moskowitz, & Darley, 2002).

Among various information that can be primed in people to effectively increase helping behaviors, religion-related information was adopted in this study for three reasons. First, as micro-level causes of prosocial behaviors that represent personal disposition (Penner et al., 2005), faiths are implantable in people throughout their lifetime, in contrast to other primes such as scenarios of crowdedness and friendship reminders (Batson, Schoenrade, & Ventis, 1993). In accordance with the purpose of this study, which was to seek ways to promote help toward strangers, information that can be primed in people in a short time and that are crucial to people's exposure to religious beliefs in the long term were applicable. Second, people with religious beliefs have high social desirability that prepares them to access prosocial thoughts and engage in prosocial behaviors (Trimble, 1997). Compared with other primes such as friendship-related information that concerns a relatively small group of recipients, religious primes have wider social implication because they enhance coalition and reciprocity of large groups (Kirkpatrick, 2005). Third, because religious primes are not immediately related to help, they can more likely prevent participants from guessing the linkage between primes and the invitation to help than can primes that are directly about help. Although religious primes are indirect primes for help, they are effective in eliciting help even if the priming information is presented briefly and unconsciously (Pichon, Boccato, & Saroglou, 2007).

People with religious beliefs are generally helpful although they have preferences and egoistic purposes in helping (Batson et al., 1989; Saroglou, Pichon, Trompette, Verschuere, & Dernelle, 2005). They tend to help religious charities rather than nonreligious groups (Hunsberger & Platonow, 1986) and the native homeless rather than the immigrant (Pichon & Saroglou, 2009); people intrinsically oriented to religion prefer to participate in volunteer work that is planned rather than to offer help in response to unexpected requests (Hansen, Vandenberg, & Patterson, 1995). Various reasons why religious people help have been identified. Religious thoughts evoke feelings of siblinghood and extend biological kinship to societal kinship, thereby promoting prosocial behaviors in the extended kinship (Batson et al., 1993). Responsibilities to fulfill God's mission (Einolf, 2011) and feelings of being watched by God (Milinski & Rockenbach, 2007) are also reasons for prosocial behaviors. Moreover, rather than focusing on the need of the help requester, religious people are driven to help because of social rewards such as enhanced reputation and self-rewards such as positive mood (Batson & Flory, 1990).

Various studies have reported that priming people with religion-related information increased helping behaviors. Religious primes, even without people's awareness, activate the cognitive network related to religious concepts such as extended brotherhood, mission of God, a just world that repays virtuous deeds, and others that reduce one's threshold of offering help. After subliminal exposure to religion-related words, participants took away more pamphlets about volunteer work than did participants exposed to only neutral words (Pichon et al., 2007). Participants primed with God-related ideas in a sentence construction task with religious words donated more money than those primed with neutral information (Shariff & Norenzayan, 2007). The priming effect of religion was effective even when the religion of the primes was different from the religion that the participants identified with (Clobert & Saroglou, 2013). Therefore, we hypothesized that religious priming, compared with neutral priming, elicits more help in participants.

1.2 Dress

Compared to distressed facial expression that requires careful observation and strong empathy to identify, clothing is obvious and has direct and instant influence on a potential helper's perception of the requester. Well-dressed requesters are more likely to receive help than are poorly dressed requesters. For instance, a woman dressed neatly received more money than a woman dressed sloppily while asking for a dime to make a phone call in an airport (Kleinke, 1977). Well-dressed people calling for help by a roadside were more likely to stop passing cars compared with poorly dressed people (Mallozzi, McDermott, & Kayson, 1990). People dressed in a business suit rather than a work uniform received more help while searching for lost money (Bickman, 1971).

A few reasons explain why well-dressed people are well received. First, the perceived attractiveness of well-dressed requesters is higher than that of poorly dressed requesters (Benson, Karabenick, & Lerner, 1976). People like the attractive more than the unattractive and hence are more willing to help attractive people. Moreover, attractive requesters induce positive mood rather than disgust in potential helpers, and the positive mood causes positive thoughts and intention of behaviors such as help (Rind, 1997). Association between positive moods such as happiness and prosocial behaviors was identified (Schaller & Cialdini, 1990). Second, desirable attire, similar to luxury accessories, is a sign of high status (Solomon & Herman, 1977), and people prefer to help the high- rather than the low-status because the high-status are believed to be more capable of repaying a favor (Flynn, 2003). The expectation for reciprocity may not be conscious when people offer help;

however, potential benefits gained from helping affect one's willingness to help (Lu & Chang, 2011). Therefore, among other signs of high status, such as the possession of an expensive car and decent occupation (Goodman & Gareis, 1993; Solomon & Herman, 1977), dressing well is effective in inducing help. Third, the well-dressed are perceived as more trustworthy than the poorly dressed are. People hesitate to offer help partly because of uncomfortable feelings toward the requester (Long et al., 1996), particularly when the requester appears to be dishonest. For example, when requesters ask for money, people assume that the well-dressed requesters are truly in need otherwise they would not seek help, whereas the poorly dressed requesters are habitual beggars who are not in urgent need (Kleinke, 1977). Therefore, we hypothesized that people are more likely to help when the help requester is well-dressed rather than poorly dressed.

1.3 Why Interaction between Priming and Attire?

Studying ways to increase the likelihood of helping behaviors is crucial in the first encounter between a potential helper and requester to ensure that people in urgent need are likely to receive help from the society. According to the multilevel analysis of help (Penner et al., 2005), various reasons from the micro and meso levels affect one's decision on helping. We studied two reasons that could be manipulated, one from each level, and their interaction to seek ways to increase assistance between strangers. Personal traits and characteristics such as agreeableness are the micro-level reasons for help; however, one's predisposition to help and habitual prosociality cannot be cultivated during a short encounter between helper and requester. One micro-level reason that can function within a short time and immediately affect social behaviors is priming, which activates cognitive networks that are associated with one's personal traits, attitudes, and knowledge (Greenwald et al., 2002). Within a short time, either explicitly or even implicitly, primes dispose a person to particular behavioral tendencies according to the purpose of priming (e.g., Oda, Niwa, Honma, & Hiraishi, 2011; Shariff & Norenzayan, 2007). Therefore, priming was adopted as a micro-level variable of reasons for help in this study.

The clothing of the requester is one meso-level reason of help because it affects the helper-requester interaction. Clothing is a potential cue that indicates the requester's social status (Goodman & Gareis, 1993) and it effectively affects a potential helper's perception of the requester's reliability and neediness (Long et al., 1996). Although clothing is obvious in interpersonal perception, it is less likely to change. A person of low social status may find difficulty in dressing well to elicit help. With this constraint, requesters must seek ways to increase the likelihood of receiving help. One feasible way is priming that enhances behavioral prosociality in a potential helper. Priming probably means little when a requester is well dressed; however, when a requester is poorly dressed, a supplementary way to elicit help is crucial. We hypothesized that the attire of the requester interacts with religious priming on the helper. The likelihood of help was higher in religious priming than in neutral priming conditions when the requester dressed poorly, whereas the likelihood of help was equal in religious priming and neutral priming conditions when the requester dressed well.

1.4 Overview of the Present Study

We studied whether people help and the willingness to help in a field setting. When people behave altruistically, they calculate the costs and benefits of helping. For the same helping task, helping a stranger is more costly compared with helping friends and blood relatives because one's future interaction with a stranger is less and the chance of receiving reciprocation is low. If no return benefit is expected from a stranger, the cost of help is critical in one's decision to help (Stewart-Williams, 2007). In real life, a help request can be costless or costly. Costless help requires a short time, little physical effort, and little financial cost, whereas costly help requires a longer time, more physical effort, and more financial expenditure. Thus, the characteristics of help, represented by difficulties of the help task, were also included in this study.

To explore the effects of clothing, primes, and task difficulties on helping behaviors in a real-life situation, participants resting alone in a shopping mall were invited to help an investigator who dressed well in half of the cases and dressed poorly in the other half of the cases. The research sites were rest areas in a shopping mall because people there were assumed to be relatively available and less occupied with personal business compared with people who were walking or standing elsewhere. The research sites in this study were similar to that of airport waiting areas in which other field studies of helping behaviors have been conducted (Fitzsimmons & Bargh, 2003; Kleinke, 1977). After being primed with neutral words or religion-related words, participants were requested to help the investigator with a task that should be completed at the same venue (effortless) or at another venue that required walking for a few minutes (effortful). Positive and negative answers to the help request and the extent to which a participant was willing to help were recorded. We had four hypotheses: (a) more help occurs when a requester dresses well than poorly; (b) participants primed with religion-related words are more likely to help than those primed with neutral words are; (c) participants are more likely to help with an

effortless than an effortful task; (d) the effect of religious primes was stronger when the help requester dressed poorly than well.

2. Method

2.1 Participants

In a rest area of a shopping mall, a male investigator recruited participants by randomly approaching potential participants and asking them to complete a word game that took three minutes. If the investigator was declined, he tried another target in another rest area in the same shopping mall. Participants were included if they agreed to proceed with the word game. Recruitment ended when both poorly and well-dressed conditions each had 80 participants. The mean age of the 160 participants (37 males) was 40.64 with a standard deviation of 12.01.

2.2 Design

This study was a 2 (dress: poorly vs. well) \times 2 (prime: religious vs. neutral) \times 2 (task difficulty: effortful vs. effortless) between-subjects design. Participants were randomly assigned into one of the experimental conditions, with 20 participants being in each condition.

2.3 Materials and Procedure

Priming. The word game that participants were invited to complete was the prime. It was a phrase construction task in which participants had to find four characters corresponding to a Chinese phrase out of five Chinese characters placed in a random sequence. After constructing a phrase, participants had to read it out to the investigator. This task of phrase construction from scrambled characters was adapted from previous works that supported the link between religious priming and prosocial behaviors (Ahmed & Salas, 2011; Shariff & Norenzayan, 2007). Under the neutral priming condition, participants had to complete ten neutral phrases that were plain descriptions of natural phenomena (e.g., warmth in winters and coolness in summers; in Chinese: *Dong Nuan Xia Liang*; participants had to construct this phrase from five scrambled characters: *Dong Li Liang Nuan Xia*). Under the religious priming condition, participants had to complete seven phrases related to religion and virtuousness (e.g., God loves the world; in Chinese: *Shen Ai Shi Ren*; participants had to construct this phrase from five scrambled characters: *Ai Zu Ren Shi Shen*) and three neutral phrases. The mixture of seven religion-related and three neutral phrases in the religious priming conditions was designed to prevent participants from guessing the purpose of the study.

Under the poorly dressed condition, the male investigator wore a wrinkled old shirt, a pair of dirty jeans, and a pair of slippers. Under the well-dressed condition, the investigator wore a business suit with a tie and a pair of leather shoes. He approached a potential target in a rest area of a shopping mall and invited him or her to complete a word game. Upon agreeing to complete the game, the participant was presented with a sheet on which scrambled characters of ten phrases were written. After reading aloud all four-character phrases that the participant had identified, he or she was asked to help the investigator with an additional phrase construction task similar to the previous one. In the effortless condition, the participant was able to complete the task at the same venue, whereas in the effortful condition, the participant was asked to walk to another rest area at the other end of the same shopping mall because the question sheet was at that investigation site. The hassle of walking and the longer time needed to complete the task were assumed to be more costly for participants compared to the task in the effortless condition. Whether a participant wanted to help with the additional task was recorded. If the participant agreed to help, he or she was further asked to indicate his or her willingness to help on a 6-point Likert scale with 1 representing *least willing to help* and 6 representing *very much willing to help*.

Participants did not have to actually complete the additional phrase construction task. As a manipulation check, they were asked whether they knew about the linkage between the word game and the subsequent help task. Participants were then debriefed with a consent form for the study and a gift as reward, and their age and religious belief (Buddhism, Christianity, Islam, Others, Atheism, or Agnosticism) were recorded at the end of the study.

3. Results

In order to recruit 80 participants for each condition, 221 and 131 people were approached by the investigator under poorly and well-dressed conditions, respectively. That is, 141 and 51 people declined the first approach from the investigator. The head count showed that the investigator received more rejection when he was poorly dressed than well dressed ($\chi^2(1) = 20.52, p < 0.001$).

The numbers of participants who agreed to help and who rejected to help with the additional task in different conditions are shown in Table 1. The results showed that more participants agreed to help in the religious

priming condition than in the neutral priming condition, $\chi^2(1) = 14.63, p < 0.001$. More participants helped in the well-dressed condition compared with the poorly dressed condition, $\chi^2(1) = 3.66, p = 0.06$, and more participants helped in the effortless task condition than in the effortful task condition, $\chi^2(1) = 5.71, p < 0.05$. Neither gender differences nor religious belief differences were correlated with agreeing to and rejecting to help, $\chi^2(1) = 0.85, p = 0.36$ and $\chi^2(2) = 2.00, p = 0.37$, respectively. These results showed that the experimental conditions affected whether participants helped or not, whereas demographic variables had no effect on whether they helped.

Thirteen out of 160 participants were aware of the linkage between the priming task and willingness to help. They were hence excluded from further analysis because the awareness of the priming task may have affected the response of willingness to help. The willingness to help of participants who rejected to help was coded as 0. Figure 1 shows the extent to which participants were willing to help under different conditions. A 2 (dress: poorly vs. well) \times 2 (prime: religious vs. neutral) \times 2 (task difficulty: effortful vs. effortless) between-subjects analysis of variance (ANOVA) was conducted with willingness to help as the dependent variable. Results showed a three-way interaction, $F(1, 139) = 4.28, p < 0.05, \eta^2 = 0.03$; a main effect of attire that willingness to help was higher in the well-dressed condition than in the poorly dressed condition ($F(1, 139) = 32.53, p < 0.001, \eta^2 = 0.19$); a main effect of prime that willingness to help was higher in the religious priming condition than in the neutral priming condition ($F(1, 139) = 40.86, p < 0.001, \eta^2 = 0.23$); and a main effect of task difficulty that participants were more willing to help with the effortless task than with the effortful task ($F(1, 139) = 9.72, p < 0.01, \eta^2 = 0.07$).

Table 1. The numbers of participants who agreed and who rejected to help in different conditions

| | Agreed to Help | Rejected to Help | Total |
|------------|----------------|------------------|-------|
| Priming | | | |
| Neutral | 62 | 18 | 80 |
| Religious | 78 | 2 | 80 |
| Dress | | | |
| Poor | 66 | 14 | 80 |
| Well | 74 | 6 | 80 |
| Help task | | | |
| Effortful | 65 | 15 | 80 |
| Effortless | 75 | 5 | 80 |
| Gender | | | |
| Female | 106 | 17 | 123 |
| Male | 34 | 3 | 37 |
| Religion | | | |
| Buddhism | 10 | 0 | 10 |
| Christian | 13 | 3 | 16 |
| Agnostics | 117 | 17 | 134 |

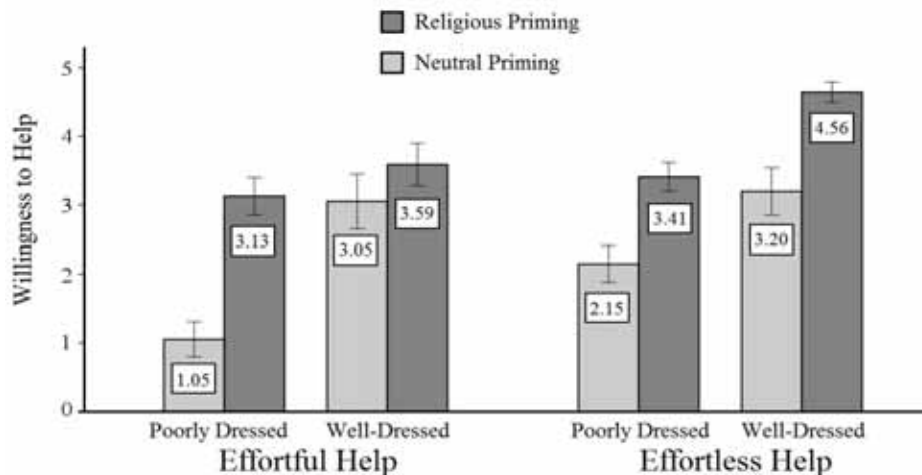


Figure 1. Willingness to help as a function of priming, dress, and task difficulty (error bars indicate ± 1 standard errors)

In the effortless task condition, a 2 (dress: poorly vs. well) \times 2 (prime: religious vs. neutral) ANOVA showed that participants were more willing to help when the help requester was well-dressed ($M = 3.86$, $SD = 1.40$) than poorly-dressed ($M = 2.73$, $SD = 1.22$), $F(1, 70) = 18.72$, $p < 0.001$, $\eta^2 = 0.21$, and that participants were more willing to help after religious primes ($M = 4.03$, $SD = 0.97$) than after neutral primes ($M = 2.68$, $SD = 1.46$), $F(1, 70) = 26.30$, $p < 0.001$, $\eta^2 = 0.27$. No interaction effect was observed ($F(1, 70) = 0.12$, $p = 0.73$, $\eta^2 = 0.00$).

In the effortful task condition, a 2 (dress: poorly vs. well) \times 2 (prime: religious vs. neutral) ANOVA showed a main effect of attire ($F(1, 69) = 14.58$, $p < 0.001$, $\eta^2 = 0.17$) with willingness to help being higher in the well-dressed ($M = 3.30$, $SD = 1.58$) than in the poorly-dressed condition ($M = 1.97$, $SD = 1.52$), a main effect of prime ($F(1, 69) = 16.41$, $p < 0.001$, $\eta^2 = 0.19$) with willingness to help being higher in the religious priming ($M = 3.36$, $SD = 1.94$) than in the neutral priming condition ($M = 2.05$, $SD = 1.80$), and an interaction effect ($F(1, 69) = 5.67$, $p < 0.05$, $\eta^2 = 0.08$). Simple effect comparison showed that in the well-dressed condition, willingness to help was similar after religious primes ($M = 3.59$, $SD = 1.28$) and neutral primes ($M = 3.05$, $SD = 1.79$), $t(35) = 1.03$, $p = 0.31$, whereas in the poorly dressed condition, willingness to help was higher in the religious priming ($M = 3.13$, $SD = 1.09$) than in the neutral priming condition ($M = 1.05$, $SD = 1.15$), $t(34) = 5.52$, $p < 0.001$. These results suggested that when the help was effortful, the decent attire of the help requester stimulated helping regardless of types of primes, whereas religious primes promoted helping if the help requester was poorly dressed.

4. Discussion

Participants' willingness to help under various conditions of priming, clothing of the help requester, and task difficulties was examined in this study. Results showed that religious primes compared with neutral primes, a well-dressed requester compared with a poorly dressed requester, and an effortless task compared with an effortful task increase the likelihood of help. Most participants agreed to help with an additional task; this was not an unexpected result because the participants had already accepted the invitation to complete a word construction task, and hence they were more likely to help than were people who had declined the invitation from the investigator at the beginning. Among those who had agreed to help, the participants varied in willingness to help under different experimental conditions, with willingness to help being highest in the condition with religious primes, decent attire, and an effortless task, and lowest in the condition with neutral primes, poor attire, and an effortful task.

When the help requested was effortless to the participants, both the decent attire of the requester and the religious primes were effective in increasing help. However, when the help requested was effortful, the effect of religious primes on increasing help was not significant if the requester dressed well, but was substantial if the requester dressed poorly. These results were partly consistent with our hypothesis of an interaction between priming and attire, showing that the interaction occurred but only in the effortful help task condition. A possible interpretation is that cost-benefit calculation substantially affects one's decision to help. Costless help with little effort is affordable and thus people are less concerned about reciprocation (Kruger, 2003; Stewart-Williams, 2007). Decisions of effortless help are more likely to be affected by the instant mood (e.g., Isen & Simmonds,

1978), primed mental states (e.g., Scaffidi Abbate et al., 2014; Shariff & Norenzayan, 2007), and helper–requester interaction (e.g., Stewart-Williams, 2007). By contrast, when the help is effortful, people are more likely to calculate the chance of receiving return benefits. Willingness to help is assumed to be low if the helper expects no return from the help requester, regardless of whether the requester dresses well or poorly and whether helpers are primed with religious or neutral information. When making helping decisions, people also take into consideration their own helping conditions. For example, individuals who are concerned about their own economic conditions were less likely to offer others financial aid (Long et al., 1996). Therefore, primes on potential helpers and the attire of help requesters can affect the willingness to help, but only to a particular extent if the requested help is costly.

Religious primes on participants were effective particularly when the help requester was poorly dressed. These results suggested that people with constraints of appearance and status can adopt other strategies to increase help, such as activating the cognitive network associated with religion by priming potential helpers. In this study, religious words were used as primes in a word construction task. Although only two to three minutes were needed to complete the task, the time was considered long in the applied settings. Future studies can explore more feasible ways to prime religious mental states in real-life situations. For example, the primes can be posters of religious symbols such as portraits of Gods and the Cross, or accessories of religious figures and articles worn by help requesters. Symbols of eyes such as an eye-like painting (Oda et al., 2011), a pattern resembling a face with a pair of eyes (Haley & Fessler, 2005), and the eyes of a robot (Burnham & Hare, 2007) have increased cooperation and prosocial behaviors and reduced undesirable social behaviors. Eye symbols activate people's awareness of reputation because eyes resemble the presence of audiences, and also the awareness of being watched by the supernatural (Milinski & Rockenbach, 2007). Religious symbols, in addition to activating feelings of being watched, also activate feelings of extended siblinghood, which enhance prosocial and altruistic behaviors (Batson et al., 1993; Einolf, 2011), because people feel positively towards kin and prefer to help kin more than strangers (Lu & Chang, 2009).

This study contributed evidence to the integrative understanding of interplay between micro-level and meso-level causes of helping behavior, with priming representing the micro level because it affects personal disposition, and attire of the requester representing the meso level because it affects interpersonal perception in requester–helper dyads. The two variables were manipulatable in the experimental design, which explored ways for increasing help. Future studies can examine other variables, either unchangeable or manipulatable, from the micro and meso levels and explore their interactions. For example, the mood and emotionality of the helper are micro-level variables; dispositional positive emotionality is positively correlated with help, and induction of positive mood increases help (Eisenberg et al., 2000; Rind, 1997). Shared social identity between helper and requester is a meso-level variable that affects the likelihood of help. Help is positively correlated with closeness in relationship, and priming common membership of a group increases help between different group members (Gaertner et al., 2000). Studies on possible interaction between emotion and group identity in affecting helping behaviors will improve the understanding of micro and meso factors that increase help.

This study had several limitations. First, the investigator was a man, and the reaction of potential female helpers and male helpers toward a male requester can be different. However, effects of requester's gender on eliciting help were mixed and sometimes men and women equally received help (Long et al., 1996; Mallozzi et al., 1990). To maintain consistency of the help requester, this study included only one investigator. Second, there were more female than male participants in this study because the research site was in a shopping mall. However, no conclusive findings showed whether men or women were more likely to help (Eagly & Crowley, 1986). The disproportion of gender may have little effect in biasing the results. Third, few participants had religious beliefs in this study. Including more religious participants ensures that the proportion of theists and atheists is even. Nonetheless, religious priming was effective in both theists and atheists (Shariff & Norenzayan, 2007), and cross-religion priming in which the primed religion and participants' religion were different was also effective (Clobert & Saroglou, 2013). Whether participants had religious beliefs should not affect the results of this study. Despite these limitations, this study provided an integrative understanding of the effect of priming on helpers and the attire of requesters on increasing helping behaviors.

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The Effect of Retrospectively Perceived Parental Bonding on Resilience in Adulthood

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Abstract

Parenting is reported to be a crucial factor for children's resilience; however, it is still unknown whether the effect of parental bonding in childhood persists on resilience later on in adulthood. The aim of our research is to evaluate the effect of retrospectively perceived parental bonding on adult resilience and its change in adulthood; we aim to study parental care, authoritarianism and behavioral control as the dimensions of parental bonding. A total of 745 adults from 18 to 81 years of age ($M=44.54$, $SD=17.96$) completed Lithuanian versions of the abbreviated Parental Bonding Instrument (PBI) and the 14-Item Resilience Scale (RS-14). Results show that there is a small though significant effect of parental bonding on resilience: the importance of parental care persists even into older age, but the significance of authoritarianism diminishes with age.

Keywords: adulthood, authoritarianism, care, control, parental bonding, protectiveness, resilience

1. Introduction

Various studies with different research strategies confirm that parenting qualities are crucial for resilience in children (Masten, 2001). The relation of parenting and resilience is well supported with evidence from a child's life trajectories, but there is a lack of empirical evidence, whether this relation of parental qualities and resilience is retained in adulthood or if it changes during the life span, since later in life other factors moderate the process of resilience and the importance of this parent-child connection might diminish.

Individuals experience various levels of stress, trauma, threats, and adversities in their life, but there is also some degree of psychological resilience, which is common for all individuals (Masten, 2001). Resilience moderates the negative impact of stress, traumas or adverse situations (Ahern, Kiehl, Lou Sole, & Byers, 2006) and ensures normal development even in the face of severe adversity. As there are various degrees of risk and adversity, there are also various potential qualities of the individual and the environment, which might moderate the effect of adversities, increasing resilience and protecting the individual (Masten, 2001).

Positive aspects of the family are listed as one set of external environmental factors of resilience (Kumpfer, 1999; Luthar, Cicchetti, & Becker, 2000). Various studies indicate that parenting practices mediate children's vulnerability to trauma exposure and post-traumatic symptoms (review by Gewirtz, Forgatch, & Wieling, 2008), positive parenting predicts good outcomes across competence domains, even in the context of severe, chronic adversity (Masten, 2001; Masten et al., 1999). A longitudinal study by Masten et al. (1999) showed the fundamental importance of parenting for children's and youths' adaptation in comparison to other risk and protective factors.

In addition to specific parenting practices, having a good relationship with a parent is mentioned as a family protective factor for positive child adjustment across social, emotional, and academic domains (Vanderbilt & Shaw, 2008). Research supports the separation of warmth and control dimensions of parent-child relations (Suchman, Rounsaville, DeCoste, & Luthar, 2007). The dimension of warmth or care forms a continuum of parental acceptance and rejection (Rohner, Khaleque, & Cournoyer, 2005), which "has to do with the quality of the affectional bond between parents and their children, and with the physical and verbal behaviors parents use to express these feelings" (Rohner et al., 2005, p. 305.). The control dimension of parental bonding has more than one form, according to the multiple-forms approach. One form of control forms a continuum between parental controlling behavior and the support of autonomy (Grolnick, 2002); it is called authoritarianism,

characterized by parental pressure, intrusiveness, and dominance in relation to children (Grolnick & Pomerantz, 2009). Other forms of control can be operationalized as behavioral control—monitoring of children’s behavior, involvement in making decisions (Grolnick & Pomerantz, 2009), which provides guidance and is important for child development. We find these three dimensions of parental bonding—care, authoritarianism, and behavior control—important and include them in our research.

Though there are many studies on parenting and resilience, most of them (Masten et al., 1999; Vanderbilt & Shaw, 2008) are focused on children and adolescents with a lack of studies among adults, especially older adults. There is evidence that other risk and protective factors intervene and affect the resilience of the individual in their life span (Masten, 2001). However, it is not clear, whether the effect of parental bonding on resilience persists or changes during adulthood. The aim of our research is to evaluate the effect of retrospectively perceived parental bonding on adult resilience and its change in adulthood.

2. Method

2.1 Participants

The participants of the study were 745 adults aged between 18 and 81 years ($M=44.54$; $SD=17.96$), 41% men ($n=303$) and 59% women ($n=442$). Participants were selected according to quota sampling to meet the criteria of education, place of residence (urban or rural), gender and age to correspond to the diversities of the Lithuanian population, according to Lithuanian population census data. From the total sample 30% were from rural areas ($n=226$), 28% lived in smaller cities ($n=210$), and 41% ($n=308$) were from the largest cities (from 0.5 mil. to 0.1 mil. of residents) of Lithuania; 15% ($n=114$), 38% ($n=280$) and 46% ($n=345$) of participants had low, medium, and high educational levels respectively; 56% ($n=417$) were actively working, 19% ($n=142$) were studying and 23% ($n=169$) of the participants were retired; 49% ($n=362$) were married and 31% ($n=229$) single. Participants were predominantly from an ethnic Lithuanian background (81%).

2.2 Procedures

Data for this study was collected through in-person interviews at participants’ homes or working places; the study was a part of a larger project. Interviews were carried out by trained research assistants (undergraduate and postgraduate psychology students) and PhD level university researchers. Informed consent was obtained from all participants before the data gathering. The questionnaires were completed mostly by the participants themselves, researchers read the questionnaires for the participants to respond in cases of poor eyesight or poor reading abilities. Some participants have not completed the Parental Bonding Instrument because of the absence of their mother (3%) or father (9%) in childhood; their data was eliminated only from the relevant analyses.

2.3 Measures

A Lithuanian version of the 14-item Resilience Scale (RS-14) (Wagnild, 2009) was used to identify the degree of individual resilience (Mazulyte et al., 2014). RS-14 consists of 14 items (e.g. *I usually manage one way or another*); all items are scored on a 7 point Likert type scale with two anchor points: 1—*totally disagree*, 7—*totally agree*. All the items of the scale are worded positively and the score is summed; higher scores reflect higher resilience. The scale is based on grounded theory research (Wagnild & Young, 1993), and various studies support its validity and reliability (Ahern et al., 2006; Wagnild, 2009). The internal validity of the Lithuanian version of RS-14 had a Cronbach’s α value of .87 (Mazulyte et al., 2014).

Perceived parental bonding was measured with a Lithuanian abbreviated version of the Parental Bonding Instrument (PBI) (Parker, Tupling, & Brown, 1979). PBI is a self-report questionnaire developed to measure the subjective experience of being parented to the age of 16 years (Parker et al., 1979). It is used to measure parenting style in a range of clinical and non-clinical subject groups (Wilhelm, Niven, Parker, & Hadzi-Pavlovic, 2004); there are separate scales to evaluate mother’s and father’s parenting behavior. All participants of the study were over 18 years old, so all the evaluations of the participants were retrospective. There are a few possible ways to compute factors comprising the PBI. We used the three factor model of care, protectiveness (behavioral control), and authoritarianism, proposed by Kendler (1996), and empirically confirmed in a study by Tsaousis, Macha and Giovazolias (2012). The original PBI scale comprises of 25 items, an abbreviated version of the PBI, constructed by the authors of the article, consisted of 9 items. The abbreviated version was developed according to Kendler’s three-factor solution and the parameter estimates of each item (Tsaousis et al., 2012). The three items with the highest parameter estimates were selected for each factor: care (“Spoke to me in a warm and friendly voice”, “Enjoyed talking things over with me”, “Frequently smiled at me”), protectiveness (“Tried to control everything I did”, “Tried to make me feel dependent on her/him”, “Was overprotective of me”), and authoritarianism (reversed items: “Liked me to make my own decisions”, “Let me decide things for myself”,

“Gave me as much freedom as I wanted”). All items were scored on a 4-point Likert type scale from 0 (*very unlikely*) to 3 (*very likely*), the scores were summed. Lithuanian abbreviated version of the PBI showed adequate internal consistency, the Cronbach’s alpha values for different factors in this study ranged from .69 to .83.

2.4 Data Analysis

Bivariate correlations were used to examine relations between variables. Separate hierarchical analyses were calculated for every parental bonding factor to examine the unique effects of each parameter on resilience. In order to evaluate the effect of age, as well as the effect of interaction of age with parental bonding, three steps were included in all regression analyses: age, parental bonding factor and interaction between age and parental bonding factor. Analyses were conducted using IBM SPSS Statistics 21 software. Skewness and kurtosis of all study variables were acceptable.

3. Results

3.1 Primary Correlational Analysis

There was no statistically significant increase or decrease of resilience related with age ($r=.06$) (see Table 1). Two of the parental bonding factors were valued differently in relation with the age of participants: the older the participants, the more parental care and protectiveness from the father they reported ($r=.16$). Since the age of participants was related to the evaluations of parental bonding, we included Age and Age \times Parental bonding interaction in further analyses.

Table 1. Intercorrelations among age, resilience and parental bonding variables

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-----------------------|--------|---------|---------|--------|---------|---------|-----|
| 1. Age | - | | | | | | |
| 2. Resilience | .06 | - | | | | | |
| 3. M care | -.03 | .23*** | - | | | | |
| 4. M protectiveness | .06 | .01 | .03 | - | | | |
| 5. M authoritarianism | -.05 | -.16*** | -.54*** | .24** | - | | |
| 6. F care | .16*** | .15** | .35*** | .10** | -.20*** | - | |
| 7. F protectiveness | .16*** | .06 | .19*** | .51*** | -.02 | .21*** | - |
| 8. F authoritarianism | -.10* | -.20*** | -.28*** | -.01 | .42*** | -.61*** | .01 |

Note. M=mother; F=father.

* $p<.05$, ** $p<.01$, *** $p<.001$ (two-tailed).

There were statistically significant correlations between resilience and parental bonding. Resilience was positively related to the care factor ($r=.23$ mother’s care, $r=.15$ father’s care), and negatively related to the authoritarianism factor ($r=-.16$ mother’s authoritarianism, $r=-.20$ father’s authoritarianism). Resilience was not related to the protectiveness factor neither for the mother’s, nor for the father’s evaluations ($r=.01$, and $r=.06$ respectively).

Parental bonding factors were correlated intersubjectively (see Table 1). The evaluations of mother’s and father’s bonding were similar ($r=.35$ for care, $r=.51$ for protectiveness, $r=.42$ for authoritarianism). The care factor was negatively related with the authoritarianism factor for both parents (r from $-.20$ to $-.61$). Mother’s protectiveness was positively related to mother’s authoritarianism ($r=.24$), but not with mother’s care ($r=.03$). Father’s protectiveness was associated with father’s care ($r=.21$), but not associated with father’s authoritarianism ($r=.01$). Based on these correlations, we further analyzed the prediction of resilience by each parental bonding factor separately.

3.2 Resilience Prediction Analysis

Hierarchical regression analyses were computed to predict resilience from parental bonding (see Table 2); it showed a small but significant effect of parental care and parental authoritarianism (mother’s care $R^2=.06$, $F(1, 714)=40.20$, $p<.001$; father’s care $R^2=.03$, $F(1, 670)=15.95$, $p<.001$; mother’s authoritarianism $R^2=.03$, $F(1, 714)=19.40$, $p<.001$, father’s authoritarianism $R^2=.04$, $F(1, 669)=26.16$, $p<.001$). There was no significant effect

of parental protectiveness on resilience. No significant effect of age per se was found on resilience. There were small but significant effects of the Age \times Parenting factor interaction for the authoritarianism factor ($R^2=.03$, $F(1, 713)=3.84$, $p=.050$ for mother's scales, and $R^2=.05$, $F(1, 668)=4.12$, $p=.043$ for father's scales), but there was no effect of the Age \times Parenting factor interaction for care or protectiveness factors.

Table 2. Summary of hierarchical regression analyses predicting resilience

| Steps of regressions | <i>R</i> | ΔR^2 | β | <i>t</i> |
|--|----------|--------------|---------|----------|
| Age | .05 | .003 | .06 | 1.68 |
| Mother's care | .24 | .053** | .23 | 6.33** |
| Age \times Mother's care | .24 | .000 | -.002 | -0.07 |
| Age | .06 | .004 | .04 | 1.10 |
| Father's care | .17 | .023** | .15 | 3.93** |
| Age \times Father's care | .17 | .003 | -.05 | -1.32 |
| Age | .05 | .003 | .05 | 1.45 |
| Mother's protectiveness | .06 | .000 | .01 | 0.19 |
| Age \times Mother's protectiveness | .07 | .002 | .05 | 1.25 |
| Age | .06 | .004 | .05 | 1.35 |
| Father's protectiveness | .08 | .003 | .05 | 1.28 |
| Age \times Father's protectiveness | .08 | .000 | .02 | 0.52 |
| Age | .05 | .003 | -.05 | 1.34 |
| Mother's authoritarianism | .17 | .026** | -.17 | -4.54** |
| Age \times Mother's authoritarianism | .19 | .005* | .07 | 1.96* |
| Age | .06 | .004 | .04 | 1.15 |
| Father's authoritarianism | .20 | .037** | -.19 | -5.01** |
| Age \times Father's authoritarianism | .22 | .006* | .08 | 2.03* |

Note. The β and *t* values are obtained at the final step of the analysis; * $p \leq .05$; ** $p < .001$.

4. Discussion

The current study examined the effect of retrospectively perceived parental bonding on resilience in adulthood. Results show that there is a relation between parental bonding and resilience in adulthood, but it depends on the estimated quality of parental bonding: the more care from the mother or father adults remembered when they were young, the more resilience they reported; if the father or mother was remembered as more authoritarian, the degree of resilience was reported to be smaller. Protectiveness, the third measured quality of parental bonding was not related to resilience in any way.

The age of participants was not related to resilience, but relations of parental bonding and age were found: older participants remembered more of their father's care and protection. As the age factor was included in the analyses, no direct effect of age on resilience was found, but there was a significant effect of the interaction of age and the authoritarianism factor. As the importance of parental care for resilience remains even in older age, the significance of authoritarianism diminishes with age; the older the person, the less significant authoritarian behavior of parents become for adults' resilience.

The results of the study support other studies (Masten, 2001; Rohner et al., 2005) and extend their findings into adult life. It is important to note that the degree of mother's or father's behavior, which shows affectional bonds between a parent and child, such as talking in a warm and friendly voice, frequent smiles, enjoying talking things over with the child, has importance not only in childhood, but also in adulthood and even in older age. The fact that the effect of authoritarian behavior, such as opposing autonomous decisions, or intrusiveness, diminishes with age, suggests that other factors might intervene and change the path to resilience.

Results should be considered in the light of several limitations. There were major changes during the 20th century in Lithuania, when all participants grew up. Parenting itself and its evaluations might be sensitive to these cultural changes, as older participants report more of father's care and protectiveness: the oldest group was raised after the Second World War and the role of a father in the post war society in an occupied country might be different. Some longitudinal studies should be carried out to support our results. We did not evaluate the current communications status with parents—whether they are still alive, whether the relations are satisfying or poor, and so on. This aspect might also affect the retrospective evaluations of parental bonding. It is also important to remember, that the relations of parental bonding evaluations and resilience do not explain the cause and effect of these phenomena, because of the bidirectional nature of the influence in living systems (Masten, 2001). It is possible that more resilient individuals were easy going in childhood and received more smiles from caregivers than the ones who were less resilient then and now. It is clear that longitudinal studies with a personality assessment would be valuable to further evaluate the relation between parental bonding and resilience.

In spite of the limitations of the study, the results contribute to the creation of preventive programs, as it once more reminds us of the importance of parental warmth, care, and respect for children's autonomy in childhood and adulthood.

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Perceived Paternal Parenting Style and Proactive Coping Strategies of Indian Adolescents

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Abstract

Parental child rearing practices are regarded as significant step towards development of coping skills in children and adolescents. The role of fathers in child's progress from infancy through adulthood is undeniable. The unique bond that a father and a child share is instrumental in influencing various behavioural outcomes in children. For a traditional country like India the emergence of active involvement of fathers in parenting is increasingly becoming popular. The present study investigates the influence of perceived paternal parenting styles on adolescents' coping strategies. Family structure, gender of adolescents and income of father were taken as moderators in the study. The sample of this study was N = 180 (male 45.6% and female 54.4 %). Adolescents from standard X-XI, belonging to joint family (22.8%) and nuclear family (77.2%) were selected from different schools in Kharagpur, West Bengal (India). Analysis of variance and hierarchical multiple regression analysis were carried out for data analysis. Results revealed that adolescents' perception of paternal demandingness and autonomy granting significantly predicts preventive and instrumental coping strategies among adolescents. Income of father and gender of adolescent were found to moderate the relationship between perceived paternal parenting style and coping strategies.

Keywords: adolescents, proactive coping strategies, family structure, income of father, paternal parenting styles

1. Introduction

The changing face of Indian parenting with its unique assimilation of traditional and new is promising when it comes to children's capacity development. The present day globalized society has provided a new platform to bring forth a mix of old eastern and western concepts in the area of parenting. For a traditional country like India the emergence of active involvement of fathers in parenting is increasingly becoming popular. Indian fathers are generally portrayed as authoritarian (Kakar, 1978). Nevertheless, recent researches suggest that middle-class fathers in urban India are increasingly becoming actively involved in their children's lives (Roopnarine, Talukder, Jain, Joshi, & Srivastav, 1990). Paternal involvement not only suggests a promising cultural shift in the parenting concepts of Indian fathers; but child outcomes as well. Contemporary investigations on Indian paternal parenting show significant influence on child outcomes; such as social competence (De Souza & Paul, 2013), academic achievement (Lakshmi & Arora, 2006), emotional intelligence (Shalini & Balakrishna, 2013), anxiety (Thergaonkar & Wadekar, 2007), Depression (M. Sharma, Sharma, & Yadava, 2011) and coping with emotion and stress (Bhat & Aminabhavi, 2011). However, literature specifically exploring the relationship of Indian paternal parenting style and specific coping strategies are rare.

1.1 Cultural Context in Parenting

Chao (1994), Darling and Steinberg (1993) have argued that child outcomes prompted by parenting style may be the result of differences in social environment, the cultural meaning of specific dimensions of parenting practices and parent-child interaction. The sense of being controlled or manipulated by parents in one may be associated with feelings of love and concern in a different culture (Mason, Walker-Barnes, Tu, Simons, & Martinez-Arrue, 2004). Across diverse culture the different communicative transactions that parents have with their children has given rise to a collective outlook towards child rearing. The parenting practices or specific behaviours when put under one comprehensive umbrella becomes parenting style (Spera, 2005). Darling and Steinberg (1993) regard the concept of parenting style as conglomeration of parental attitudes expressed towards children.

Darling and Toyokawa (1997) developed three subscales to assess the three dimensions of maternal parenting style: demandingness, emotional responsiveness, and psychological autonomy-granting. Autonomy is referred to as self-initiation and self-regulation of one's own actions (Deci, Vallerand, Pelletier, & Ryan, 1991). Baumrind (1991) refers to demandingness construct as the parent's willingness to involve the child in to the family as a whole guided by their supervision, disciplinary effort and willingness to resist disobedience from children. On the other hand, Responsiveness is parental recognition of and child's individual existence (Baumrind, 1991).

The central theme in case of an Asian parenting is family and family interdependence (Chao & Tseng, 2002). The striking distinction between South Asian families and East Asian families is the concept of interdependence, which traditional Indian families practice in vogue (Chao & Tseng, 2002; Jambunathan & Counselman, 2002). The presence of extended family in an Indian family environment results in diminished autonomy for the child and increased parental control (Rose, Dalakas, & Kropp, 2003). It has been found that the concept of autonomy is influenced as much by culture as by parenting (Manzi, Regalia, Pelucchi, & Fincham, 2012).

1.2 Coping and Parenting Style

Coping is defined as "constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984). We observe developmental trends in the materialization of various coping strategies (Compas et al., 1991). Positive relationship with parents is found to act as type of social support, thereby enhancing psychological resources. Increased social support helps the adolescents in turn to cope with stressful events (Cohen & Wills, 1985; Baumrind, 1991). The present study hence attempts to investigate the relationship between paternal parenting style and coping strategies.

Every parenting style is unique in its own way, and each of it has a different relationship with various child and adolescent behavioural outcomes, such as coping. Parenting styles are found to have direct relationship with coping strategies (Lin & Lian, 2011). Controlling parenting styles are found to closely relate to psychological disturbance in adolescence (Dusek & Danko, 1994). Whereas autonomy granting parenting is found to contribute to lower levels of behaviour problems, healthy psychosocial wellbeing and development and increased academic achievement (Gray & Steinberg, 1999). Paternal warmth on the other hand was found to correlate significantly with active coping styles (Wolfdrat, Hempel, & Miles, 2003).

1.3 The Moderating Role of Gender of Adolescents, Income, and Family Structure

Previous investigations on Indian parenting style also focuses on the requirement to study background information like; parents' age, educational level, socio-economic status, and family size as potential factors influencing parenting (Akhtar, 2012). In addition, this study also addresses another gap in literature that is, the role of moderators in determining the relationship paternal parenting style and coping strategies. Western literature on parenting style point out quite a few number of variables to be potential moderators and mediators such as temperament, gender of adolescents, socioeconomic status and ethnicity of parents, the child's age, and family structure (Terry, 2004). The present study considers the role of three moderators namely income of father, gender of adolescent, and family structure as significant contributor to the relationship between paternal parenting style and coping strategies.

Socio-economic status of parents too plays a significant role in determining parenting styles. Authoritarian parenting from lower socioeconomic status is found to predict externalizing behaviours among adolescents (Meteyer & Jenkins, 2009). Investigations indicate that Indian parents from lower socio-economic status might not value other attributes as they would value obedience in their children (Verma & Sharma, 2006). Galy (2007) examined the moderating effects of important family socio-economic factors such as parents' education, family income and gender on the association between parenting styles, family environment and adolescent wellbeing. Family income was found to significantly moderate the relationship between authoritative parenting and adolescents' self-esteem in Galy's (2007) research rather than age and gender. Certain other studies also point out the significance of parental income; where high income is found to foster supportive parenting styles whereas parenting under low income circumstances shows hindered development of children leading to attention problem, delinquency, and aggression (Barnow et al., 2002).

Family structure is at the core of Indian parenting. With the concept of interdependence that Indian joint families foster or the growing trend of individual atmosphere fostered by the present day urban and suburban nuclear families; family structure is deemed significant while considering child rearing practices in India. Indian children in nuclear families are reported to enjoy greater autonomy in comparison to those growing up in a joint family atmosphere (D'Cruz & Bharat, 2001). More of authoritarianism is practiced in case of an extended or joint family environment. Joint family requires its members to co-operate according to the authority of the household;

on the other hand nuclear promotes more individualism (D'Cruz & Bharat, 2001). It is also reported that most "unhealthy" children come from joint families; because of the constraint that forces living together out of compulsion not choice (Isaac, Annie, & Prashanth, 2014). But nuclear families also suffer on premises of autonomy provided to children which is at times found to be indistinctly demarcated by parents (Chaddha & Deb, 2013). Older western researches also points the distinct role of family structure; where it is found to moderate the relation between parenting style and children related outcomes like school achievement (Baron & Kenny, 1986). A dearth has been felt while exploring related literature on role of family structure as moderators influencing the association of parenting styles and child related outcomes.

The traditional concept of males over females as reported by Dasgupta (1987) by both mother and father is slowly losing its ground in urban and suburban areas in India. Indian Fathers' traditional image of an authoritarian parent to their children (Kakar, 1978) too is being overshadowed with emergence of urban fathers who are responsive, interactive and affectionate (Roopnarine, Talukder, Jain, Joshi, & Srivastav, 1990). Rai, Pandey and Kumar's (2009) investigation Khasi adolescents revealed a drift from the traditional perception on Indian parenting by gender. Natarajan's (2010) exploration of perceived parenting styles among immigrated India to U.S.A found that females reported parents as more authoritative (higher on responsiveness) than their male counterparts. Khasi males in the study reported more rejection as compared to females; females reported more emotional warmth from fathers. A recent study by Shalini and Balakrishna Acharya (2013) on influence of perceived paternal parenting styles on emotional intelligence of adolescents show; that girls in comparison to boys perceive their fathers to be more authoritative towards them. But contemporary Indian studies hardly show the consideration of gender of adolescent as a significant moderator influencing the association of perceived paternal parenting style and child outcomes. Hence the present study attempts at including gender of adolescent as a moderator between perceived paternal parenting style coping strategies.

Although researches has been conducted to explore the association between parenting style and coping. Very few researches in India focused on investigating parenting styles and their impact on specific coping strategies. The present research attempted to investigate the influence of parenting styles of fathers on proactive coping strategies. Proactive coping refers to efforts taken prior to a stressful event in order to prevent it or to modify its form so as to deter its occurrence (Aspinwall & Taylor, 1997). Proactive coping comprise of goal setting and tenaciously pursuing the said goal (Kadhiravan & Kumar, 2012). Schwarzer (2000) points out four types of coping namely; reactive, anticipatory, preventive and proactive coping. The distinction among these four types of coping lies in the concept as how much different the coping types are in terms of creating opportunities, and positive experience instead of mere responses to negative events (Schwarzer & Taubert, 2002; Schwarzer & Knoll, 2003). The main purpose of the study was to examine the effect of perceived paternal parenting styles on proactive coping strategies. The second purpose of this study was to examine the moderating role of income of fathers, gender of adolescents and family structure between perceived paternal parenting style and proactive coping strategies.

2. Method

2.1 Sample

The sample of the study consisted of 204 adolescents initially (16-18 years of age) from three English medium schools from Kharagpur. The study is quasi experimental in nature. The demography of the sample included male (45.6%) and female (54.4 %) adolescents from standard X-XI, of which adolescents from joint family (22.8%) and nuclear family (77.2%). On the basis of income of parents, adolescents were again divided in two categories; parent's income of above 15 thousand per month to 25 thousand per month (53.3%) and below 15 thousand per month to 8 thousand per month (46.7%). The sample of the study unintentionally included adolescents with only father as the sole earner of the family. A random sampling technique was conducted to extract data. Out of 204 adolescents 180 were extracted (98 female and 82 males) with both parents alive and used for final analysis.

2.2 Measures

Proactive Coping Inventory (PCI) was used to measure coping. It consists of 7 subscales (with 55 items. This scale possesses good reliability and validity; the internal consistency of the scale range from .71 to .85 for all 7 scales (Greenglass, Schwarzer, & Taubert, 1999). Only 3 subscales namely, proactive, preventive, and instrumental coping were used for this present study. Each item is rated on a 4-point Likert scale ranging from 1 to 4, which is based on the frequency with which individuals agrees with the statements. Here 1 signifies "not all true", 2 ("barely true"), 3 ("somewhat true") and 4 is signified as "completely true".

Parenting Style Inventory II (PSI-II) by Nancy Darling and Teru Toyokawa (1997) was used to measure parenting style. It consists of three subscales showing reliability of demandingness, $=.72$; responsiveness, $=.74$; autonomy-granting, $=.75$ as reported by Darling and Toyokawa (1997). Both father and mother form of the scale is available. Only the father form was used in the present study. Each form has 15 items which is rated on a 5-point Likert scale that ranges from 1 (strongly disagree) to 5 (strongly agree).

Both of the scales were self administered and were filled in by adolescents themselves.

2.3 Procedure

Participation in the study was voluntary. For the purposes of this study, only intact or two-parent families were selected. Prior permission was taken from the school authority to conduct the survey. A questionnaire survey was conducted by the researcher in the said schools. Questionnaires in English were distributed in standards X-XI during free periods. The survey took approximately one hour. As a token of appreciation small food items were distributed to the students. SPSS 20 was used for statistical analysis in the present study.

3. Results

3.1 Preliminary Analysis

Table 1 provides a descriptive analysis such as mean, standard deviation, skewness and kurtosis for paternal parenting style, income of father, family structure, gender of adolescent, and proactive coping strategies (proactive, preventive, and instrumental). For data to be normally distributed skewness and kurtosis both should fall in the range from $+2$ to -2 if data are normally distributed (Lewis, Bryman, & Liao, 2004). The univariate skewness and kurtosis of the variables in the study falls in range for normally distributed data.

Table 1. Means, Standard Deviations, skewness and kurtosis of scores for gender of adolescent, income of father, family structure, proactive coping, preventive coping, instrumental coping, paternal responsiveness, paternal autonomy granting, and paternal demandingness

| | Mean | Std. Deviation | Skewness | Kurtosis |
|----------------------|---------|----------------|----------|----------|
| Gender of adolescent | .4556 | .49941 | .180 | -1.990 |
| Family structure | .7722 | .42057 | -1.309 | -.290 |
| Income of father | .0667 | 1.00056 | -.135 | -2.004 |
| Proactive coping | 42.7556 | 4.49782 | -.293 | -.074 |
| Preventive coping | 31.4444 | 4.41205 | -.233 | -.832 |
| Instrumental coping | 23.7556 | 4.37951 | -.119 | -.672 |
| Responsiveness | 15.7000 | 3.13371 | .165 | -.520 |
| Autonomy granting | 14.6333 | 3.11224 | .077 | -.347 |
| Demandingness | 18.7667 | 3.42534 | -.512 | -.019 |

A review of the descriptive statistics show demandingness style in parenting as perceived by adolescents to leading followed by responsiveness, and autonomy granting style respectively.

Table 2. Zero-order correlations of variables (N = 180)

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------------------------|---------|---------|--------|---------|-------|------|---------|---|
| 1.Responsiveness | - | | | | | | | |
| 2.Demandingness | .094 | - | | | | | | |
| 3.Autonomy Granting | .291*** | -.140** | - | | | | | |
| 4.Income of father | .031 | .197** | .019 | - | | | | |
| 6.Gender of adolescent | -.205** | .046 | -.111 | .051 | - | | | |
| 7.Proactive coping | .143* | .031 | -.095* | -.145 | .013 | - | | |
| 8. Instrumental coping | .174 | .164 | .249 | .136** | -.010 | .054 | - | |
| 9. Preventive coping | .118 | .193** | .201 | -.098** | -.070 | .157 | .540*** | - |

Note. * $p < .05$; ** $p < .005$; *** $p < .001$

Zero order correlation presented in Table 2, show significant positive correlation between paternal responsiveness and proactive coping, demandingness and preventive coping, income of father and instrumental coping. Significant negative correlation is seen between paternal responsiveness and gender of adolescent, paternal autonomy granting and gender of adolescent, proactive coping; and between income of father and preventive coping.

A multivariate analysis of variance (MANOVA) was also conducted to examine whether three paternal parenting styles (responsiveness, autonomy granting, and demandingness) varied as a function of income father, gender of adolescent and family structure. Results revealed no significant main effect. But the factorial MANOVA revealed a significant multivariate two way interaction effect for family structure x gender of adolescent, Wilks' $\lambda = .914$, $F(3, 170) = 5.3$, $p < .01$, partial eta squared = .086. Power to detect the effect was .928. Given the significance of the overall test, the univariate main effects were examined. Significant univariate interaction effects for family structure x gender of adolescent were obtained for paternal responsiveness, $F(3,170) = 13.10$, $p < .001$, partial eta square = .071, power = .949.

Also a significant multivariate two way interaction effect for gender of adolescent x income of father was revealed; where Wilks' $\lambda = .948$, $F(3, 170) = 3.08$, $p < .05$, partial eta squared= .052. Power to detect the effect was .713. Given the significance of the overall test, the univariate main effects were examined. Significant univariate interaction effects for gender of adolescent x income of father were obtained for paternal responsiveness, $F(3,170) = 6.7$, $p < .01$, partial eta square = .037, power = .730. A Significant univariate interaction effects for gender of adolescent income of father were obtained for paternal autonomy granting, $F(3,170) = 4.7$, $p < .05$, partial eta square = .027, power = .577.

A third a significant multivariate three way interaction effect for family structure x gender of adolescent x income of father was obtained; where Wilks' $\lambda = .922$, $F(3, 170) = 4.8$, $p < .01$, partial eta squared = .078. Power to detect the effect was .713. Given the significance of the overall test, the univariate main effects were examined. Significant univariate interaction effects for family structure x gender of adolescent x income of father were obtained for paternal autonomy granting, $F(3,170) = 9.2$, $p < .01$, partial eta square = .051, power = .856.

3.2 Analyses of Moderator Variables in the Study

Prior analyses were conducted to ensure no violation of the assumptions of normality, linearity, and homoscedasticity was graphically tested using a plot of standardized residuals against standardized predicted values (Field, 2013). Multicollinearity was checked with tolerance and VIF; Durbin-Watson test was conducted to check independence of errors (Field, 2013). For interaction testing, variables were centered in order to avoid multicollinearity (Aiken & West, 1991). Centered score was obtained by subtracting the mean from the original independent variable score (Afshartous & Richard, 2011). Demographic factors were dummy coded in the following way: family structure (joint = 0, nuclear family = 1), gender of adolescent (male = 1, female = 0), Income of father (Above 15 thousand = 1, below 15 thousand = -1).

Each moderator had five parallel hierarchical multiple regression analyses, one for each coping strategies namely (proactive, reflective, strategic, preventive and instrumental) as dependent variable. Income of father, gender of adolescent and family structure was tested for moderation. For each hierarchical regression, perceived parenting styles were entered as a covariate in Step 1; the moderator was entered in step 2 to test the main effect (Keshavarz & Baharudin, 2012). Two way interaction term of each parenting style parenting style x the moderator was created in step 3. Further the p value criterion of the present study was set at .01 to evaluate the contribution of interaction effect. Wei et al. (2008) state that the contribution of an interaction effect in a hierarchical regression is generally quite small, hence a liberal criterion is recommended.

The first step of hierarchical multiple regression for every subsequent regression conducted in the present study yielded similar results. In Step 1, three predictors were entered: paternal responsiveness, paternal demandingness, and paternal autonomy granting parenting style were entered. In Table 3, the step 1, of hierarchical multiple regressions for proactive coping indicate that paternal responsiveness accounted for 4% of the variance in proactive coping strategy. Perceived paternal responsiveness and proactive coping strategy was found to associate at a low level of significance ($\beta = .202$, $p < .05$). The step 1, of hierarchical multiple regression for preventive coping indicate that paternal demandingness and autonomy granting accounted for 9% of the variance in preventive coping strategy. Results presented in Table 3, Paternal demandingness was found to positively predict preventive coping strategy ($\beta = .221$, $p < .01$); besides paternal autonomy granting too was found to positively predict preventive coping strategy ($\beta = .222$, $p < .01$). A little further as indicated in Table 3, step 1 of the hierarchical multiple regression for instrumental coping show; paternal demandingness and autonomy

granting accounted for 11% of the variance in instrumental coping strategy. As presented in Table 3, Paternal demandingness was found to positively predict instrumental coping strategy ($\beta = .191$, $p < .01$); in addition paternal autonomy granting too was found to positively predict instrumental coping strategy ($\beta = .252$, $p < .001$). The first purpose of the study to examine the effect of perceived paternal parenting style on proactive coping strategies was achieved with this step. In a nut shell, results of regression point out that; adolescents' perception of paternal demandingness and autonomy granting predicts preventive and instrumental strategies in adolescents, and paternal responsiveness was found to predict proactive coping strategy in adolescents.

3.2.1 Income of Father

Results provided in Table 3, presents the moderator effect of income of father for three coping strategies (proactive, preventive, and instrumental) respectively. The interaction effect entered at step 3, of each the separate hierarchical multiple regressions for three coping strategies show the moderator effect.

In step 2, of hierarchical regression for proactive coping shows that, income of father accounted for 6% of the variance in proactive coping. Step 3, shows that the interaction of income of father with three parenting styles (responsiveness, demandingness, and autonomy granting) respectively accounted for 11% of variance in proactive coping strategy. No significant interaction effect of income of father with each of the three paternal parenting styles (responsiveness, demandingness, and autonomy granting) was observed in the analysis.

In step 2, of hierarchical regression for preventive coping shows that, income of father accounted for 11% of the variance in preventive coping. Income of father negatively predicted preventive coping strategy ($\beta = -.153$, $p < .05$). The results of step 2, reveals that with every one unit increase in income of father above 15 thousand there is a 1.21 unit decrease in preventive coping strategy. Step 3, shows that the interaction effect of income of father with three parenting styles (responsiveness demandingness, and autonomy granting) respectively accounted for 17% of variance in preventive coping strategy. A significant interaction effect of parental demandingness x income of father was noticed ($\beta = -.213$, $p < .01$). The contribution of income of father is most in the second step as revealed from the $sr^2 = .216$. Two explore the interaction effect more interaction plot was formed with the help of Modgraph-I (Jose, 2013). The interaction effect in Figure 1, conveys, that high paternal demandingness is moderately associated with preventive coping strategy for adolescents with income of father below 15 thousand than income of father above 15 thousand (Simple Slopes for the comparison group: Below 15 = 0.248, $p < .05$; Simple Slope for the dummy coded group: Above 15 = -0.027, $p > .05$).

In step 2, of hierarchical regression for instrumental coping shows that, income of father accounted for 11% of the variance in instrumental coping. Step 3, shows that the interaction of income of father with three parenting styles (responsiveness demandingness, and autonomy granting) respectively accounted for 15% of variance in instrumental coping strategy. No significant interaction effect of income of father with each of the three paternal parenting styles (responsiveness, demandingness, and autonomy granting) was observed in the analysis.

3.2.2 Gender of Adolescent

Results provided in Table 5, presents the moderator effect of gender of adolescent for three coping strategies (proactive, preventive, and instrumental) respectively. The interaction effect entered at step 3, of each the separate hierarchical multiple regressions for three coping strategies show the moderator effect.

In step 2, of hierarchical regression for proactive coping shows that, gender of adolescent accounted for 4% of the variance in proactive coping. Step 3, shows that the interaction of gender of adolescent with three parenting styles (responsiveness demandingness, and autonomy granting) respectively accounted for 9% of variance in proactive coping strategy. No significant interaction effect of with gender of adolescent each of the three paternal parenting styles (responsiveness, demandingness, and autonomy granting) was observed in the analysis.

In step 2, of hierarchical regression for preventive coping shows that, gender of adolescent accounted for 9% of the variance in preventive coping. Step 3, shows that the interaction of gender of adolescent with three parenting styles (responsiveness, demandingness, and autonomy granting) respectively accounted for 13% of variance in preventive coping strategy. No significant interaction effect of with gender of adolescent each of the three paternal parenting styles (responsiveness, demandingness, and autonomy granting) was observed in the analysis.

In step 2, of hierarchical regression for instrumental coping shows that, gender of adolescent accounted for 10% of the variance in instrumental coping. Step 3, shows that the interaction of gender of adolescent with three parenting styles (responsiveness, demandingness, and autonomy granting) respectively accounted for 19% of variance in instrumental coping strategy. A significant interaction effect of parental demandingness x gender of adolescent was noticed ($\beta = -.263$, $p < .001$). The contribution of is parental demandingness x gender of adolescent is most in the second step as revealed from the $sr^2 = .271$. Two explore the interaction effect more

interaction plot was formed with the help of Modgraph-I, (Jose, 2013). The interaction effect in Figure 2, conveys, that high paternal demandingness is moderately associated with instrumental coping strategy for females than male adolescents (Simple Slopes for the comparison group: Female = 0.344, $p < .05$; Simple Slope for the dummy coded group: Male = -0.342, $p > .05$).

3.2.3 Family Structure

For each hierarchical multiple regression for three coping strategies shows no main effect of the moderator, or significant interaction effect of each of the three paternal parenting styles (responsiveness, demandingness, and autonomy granting) with family structure for separate regressions for coping strategies (Table. 4).

Table 3. A hierarchical multiple regression analysis predicting proactive, preventive, instrumental coping strategy from perceived paternal styles (responsiveness, demandingness, and autonomy granting), income of father and their interactions (N = 180)

| Variable | B | SE | β | sr^2 | R | R^2 | ΔR^2 | $\Delta F(df)$ |
|-----------------------|-------|------|---------|--------|------|-------|--------------|------------------|
| Proactive coping | | | | | | | | |
| Step 1 | | | | | .207 | .043 | .026 | 2.622 (3, 176)* |
| Responsiveness (R) | .277 | .107 | .202** | .192 | | | | |
| Demandingness (D) | .005 | .094 | .004 | .004 | | | | |
| Autonomy Granting (A) | -.179 | .108 | -.130 | -.072 | | | | |
| Step 2 | | | | | .249 | .062 | .019 | 3.552 (1, 175) |
| Income of father | -.604 | .321 | -.141 | -.130 | | | | |
| Step 3 | | | | | .328 | .108 | .046 | 2.948(3, 172) |
| R x Income of father | .194 | .104 | .142 | .141 | | | | |
| D x Income of father | -.172 | .096 | -.132 | -.135 | | | | |
| A x Income of father | -.258 | .107 | -.186 | -.181 | | | | |
| Preventive coping | | | | | | | | |
| Step 1 | | | | | .302 | .091 | .076 | 5.887(3,176)*** |
| Responsiveness (R) | .046 | .107 | .032 | .032 | | | | |
| Demandingness (D) | .285 | .094 | .221** | .222 | | | | |
| Autonomy Granting (A) | .315 | .108 | .222** | .214 | | | | |
| Step 2 | | | | | .337 | .114 | .139 | 4.425 (1, 175)* |
| Income of father | -.674 | .320 | -.153* | -.157 | | | | |
| Step 3 | | | | | .416 | .173 | .139 | 4.110(3, 172)** |
| R x Income of father | -.137 | .103 | -.097 | -.100 | | | | |
| D x Income of father | -.275 | .095 | -.213** | -.216 | | | | |
| A x Income of father | -.098 | .106 | -.068 | -.070 | | | | |
| Instrumental coping | | | | | | | | |
| Step 1 | | | | | .329 | .108 | .093 | 7.133(3, 176)*** |
| Responsiveness (R) | .115 | .105 | .082 | .082 | | | | |
| Demandingness (D) | .245 | .093 | .191** | .195 | | | | |
| Autonomy Granting (A) | .355 | .106 | .252*** | .244 | | | | |
| Step 2 | | | | | .342 | .117 | .097 | 1.726 (1, 175) |
| Income of father | .417 | .317 | .095 | .099 | | | | |
| Step 3 | | | | | .389 | .151 | .117 | 2.311(3, 172) |
| R x Income of father | -.182 | .104 | -.130 | -.123 | | | | |
| D x Income of father | .002 | .096 | .002 | .002 | | | | |
| A x Income of father | -.145 | .106 | -.102 | -.096 | | | | |

Note. * $p < .05$; ** $p < .005$; *** $p < .001$

Table 4. A Hierarchical Multiple Regression Analysis Predicting Proactive, Preventive, Instrumental coping strategy from Perceived Paternal Styles (Responsiveness, Demandingness, and Autonomy granting), Family Structure and Their Interactions (N = 180)

| Variable | B | SE | β | sr ² | R | R ² | ΔR^2 | $\Delta F(dfs)$ |
|-----------------------|-------|------|---------|-----------------|------|----------------|--------------|-------------------|
| Proactive coping | | | | | | | | |
| Step 1 | | | | | .207 | .043 | .026 | 2.622 (3, 176)* |
| Responsiveness (R) | .277 | .107 | .202** | .192 | | | | |
| Demandingness (D) | .005 | .094 | .004 | .004 | | | | |
| Autonomy Granting (A) | -.179 | .108 | -.130 | -.124 | | | | |
| Step 2 | | | | | .211 | .045 | .023 | .336 (1, 175) |
| Family structure | .444 | .766 | .044 | .044 | | | | |
| Step 3 | | | | | .238 | .057 | .018 | .742 (3, 172) |
| R x Family structure | -.053 | .269 | -.016 | -.015 | | | | |
| D x Family structure | -.354 | .280 | -.103 | -.096 | | | | |
| A x Family structure | -.243 | .264 | -.072 | -.070 | | | | |
| Preventive coping | | | | | | | | |
| Step 1 | | | | | .302 | .091 | .076 | 5.887 (3, 176)*** |
| Responsiveness (R) | .046 | .107 | .032 | .032 | | | | |
| Demandingness (D) | .285 | .094 | .221** | .222 | | | | |
| Autonomy Granting (A) | .315 | .108 | .222** | .214 | | | | |
| Step 2 | | | | | .327 | .107 | .087 | 3.117 (1, 175) |
| Family structure | 1.345 | .762 | .128 | .132 | | | | |
| Step 3 | | | | | .350 | .123 | .087 | 1.015 (3, 172) |
| R x Family structure | .179 | .267 | .051 | .051 | | | | |
| D x Family structure | -.123 | .278 | .035 | -.034 | | | | |
| A x Family structure | -.451 | .262 | -.130 | -.130 | | | | |
| Instrumental coping | | | | | | | | |
| Step 1 | | | | | .329 | .108 | .093 | 7.133 (3, 176)*** |
| Responsiveness (R) | .115 | .105 | .082 | .082 | | | | |
| Demandingness (D) | .245 | .093 | .191** | .195 | | | | |
| Autonomy Granting (A) | .355 | .106 | .252** | .244 | | | | |
| Step 2 | | | | | .335 | .112 | .092 | .803 (1, 175) |
| Family structure | .675 | .754 | .065 | .068 | | | | |
| Step 3 | | | | | .357 | .127 | .092 | .981 (3, 172) |
| R x Family structure | .224 | .264 | .064 | .064 | | | | |
| D x Family structure | -.347 | .275 | -.099 | -.096 | | | | |
| A x Family structure | .031 | .260 | .009 | .009 | | | | |

Note. *p < .05; **p < .005; ***p < .001

Table 5. A Hierarchical Multiple Regression Analysis Predicting Proactive, Preventive, Instrumental coping strategy from Perceived Paternal Styles (Responsiveness, Demandingness, and Autonomy granting), Gender of Adolescent and Their Interactions (N = 180)

| Variable | B | SE | β | sr ² | R | R ² | ΔR^2 | $\Delta F(df)$ |
|----------------------------|-------|------|----------|-----------------|------|----------------|--------------|-------------------|
| Proactive coping | | | | | | | | |
| Step 1 | | | | | .207 | .043 | .026 | 2.622 (3, 176)* |
| Responsiveness (R) | .277 | .107 | .202** | .192 | | | | |
| Demandingness (D) | .005 | .094 | .004 | .004 | | | | |
| Autonomy Granting (A) | -.179 | .108 | -.130 | -.124 | | | | |
| Step 2 | | | | | .208 | .043 | .021 | .066(1, 175) |
| Gender of adolescent | .167 | .651 | -.019 | .019 | | | | |
| Step 3 | | | | | .306 | .094 | .057 | .025 (3, 172) |
| R x Gender of adolescent | -.492 | .227 | -.174 | -.163 | | | | |
| D x Gender of adolescent | .181 | .194 | .071 | .071 | | | | |
| A x Gender of adolescent | -.376 | .226 | -.133 | -.126 | | | | |
| Preventive coping | | | | | | | | |
| Step 1 | | | | | .302 | .091 | .076 | 5.887 (3, 176)*** |
| Responsiveness (R) | .046 | .107 | .032 | .032 | | | | |
| Demandingness (D) | .285 | .094 | .221** | .222 | | | | |
| Autonomy Granting (A) | .315 | .108 | .222** | .214 | | | | |
| Step 2 | | | | | .306 | .094 | .073 | .476 (1, 175) |
| Gender of adolescent | -.450 | .652 | -.051 | -.052 | | | | |
| Step 3 | | | | | .362 | .131 | .096 | 2.472(3, 172) |
| R x Gender of adolescent | -.280 | .229 | -.096 | -.093 | | | | |
| D x Gender of adolescent | -.399 | .195 | -.152 | -.154 | | | | |
| A x Gender of adolescent | -.128 | .228 | -.044 | -.043 | | | | |
| Instrumental coping | | | | | | | | |
| Step 1 | | | | | .329 | .108 | .093 | 7.133 (3, 176)*** |
| Responsiveness (R) | .115 | .105 | .082 | .082 | | | | |
| Demandingness (D) | .245 | .093 | .191** | .195 | | | | |
| Autonomy Granting (A) | .355 | .106 | .252*** | .244 | | | | |
| Step 2 | | | | | .330 | .109 | .089 | .139 (1, 175) |
| Gender of adolescent | .239 | .641 | .027 | .028 | | | | |
| Step 3 | | | | | .445 | .198 | .166 | 6.370 (3, 172)*** |
| R x Gender of adolescent | -.061 | .218 | -.021 | -.022 | | | | |
| D x Gender of adolescent | -.686 | .186 | -.263*** | -.271 | | | | |
| A x Gender of adolescent | -.485 | .217 | -.168 | -.168 | | | | |

Note. *p < .05; **p < .005; ***p < .001

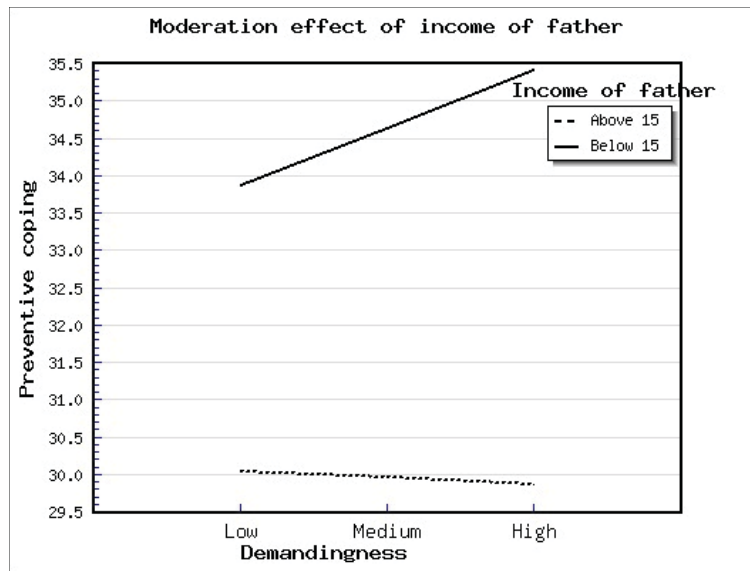


Figure 1. Moderation of the effect of paternal demandingness on preventive coping by income of father

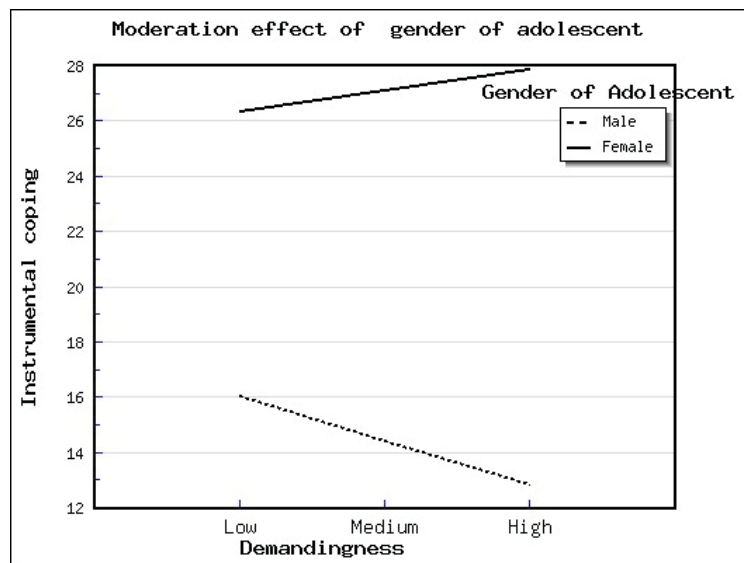


Figure 2. Moderation of the effect of paternal demandingness on instrumental coping by gender of adolescent

4. Discussion

Adolescents' perception of paternal demandingness was found to positively predict preventive and instrumental coping strategy in adolescents. Lin and Lian (2011), remark about Asian fathers that strict disciplinarian fathers as well can show receptiveness and understanding towards their children. Thus it is no surprise to find Indian children of demanding fathers healthy to use healthy coping strategies. Several studies from all over the world specifically from China (Chao, 2001; Leung, Lau, & Lam, 1998), Korea (Rohner & Pettengill, 1985), Turkey (Kagitcibasi, 2005), Pakistan (Stewart, Bond, Kennard, Ho, & Zaman, 2002), Algeria, Saudi Arabia (Dwairi & Achoui, 2010) and on African American community (McWayne, Owsianik, Green, & Fantuzzo, 2008; Randolph, 1995); suggests that parenting styles which delimits autonomy of children were found to have no negative influence on psychological adjustment of children's (Manzi, Regalia, Pelucchi, & Fincham, 2012).

Adolescents' perception of paternal responsiveness again was found to significantly predict strategic coping in adolescents. Recent investigation suggests that middle class fathers in urban areas of India are turning out to be more affectionate, and nurturing towards their children, pointing to a cultural shift (Roopnarine, Talukder, Jain,

Joshi, & Srivastav, 1990). Moreover, previous studies support the fact that autonomy granting parenting style leads to healthier outcomes in adolescents. A striking feature of the study was the finding that, adolescents' perception of paternal autonomy granting predicts preventive and instrumental coping strategy in adolescents. In support of our findings, it can be reported that autonomy granting parenting has a wide spectrum of healthier child outcomes, as academic achievement, psychological wellbeing and health socially adaptive behaviour (Gray & Steinberg, 1999). Parental autonomy is also found to lead to better adjustment and higher levels of psychosocial functioning (Deci & Ryan, 2000). Hence our study finding of paternal autonomy predicting two important proactive coping strategies is not out of context.

Income of father was found to moderate the relationship between paternal demandingness and preventive coping strategy. Higher level of perceived paternal demandingness by adolescents of low income fathers reported higher preventive coping strategy in the study. On the other hand, gender of adolescent found to moderate significantly the relationship between paternal demandingness and instrumental coping strategy than male adolescents. Li et al. (2002) indicate in their study findings that parents from lower socio-economic status were more restrictive, emphasized more dominance and conformity in comparison to higher socio-economic status parents; which determines the concept of parental demandingness in case of lower income level in the present study. One explanation behind lower level of income moderating the relationship between responsiveness of father and preventive coping may be that lesser availability of resource make people cautious instead of being indulgent (Seymour, 1999). On the other hand, paternal demandingness on the wake of recent perpetrations against women's safety can be a probable reason, why female adolescents report higher paternal demandingness. Besides, recent studies also support the concept of Indian paternal demandingness on the grounds that, Indian fathers are habitually more protective towards girl child than their male children (Manhas & Kour, 2014). Adolescents' perception of Indian paternal demandingness is rationalized further as a function of fewer verbal transactions between father and child. Lesser frequency of verbalization by fathers and more emphasis on imposing consequences rather than verbal reconciliation are stated in a new study as the probable reasons behind adolescents' perception of their fathers as demanding (D'souza & Mendes, 2014). On the whole, perpetual notion of collectivism and authority in Indian tradition fosters an environment to thrive which clarifies the significant relationship between perceived paternal demandingness and instrumental coping moderated by gender of adolescent.

5. Conclusion and Limitation of the Study

Quite a significant number of studies have been conducted in South Asian regions to explore more about the intricacies of parenting practices. The present study shows that Indian fathers are increasingly sharing an important equation in parenting. More of Indian fathers are opting traditional demandingness with autonomy as parenting practice, instead of the strict disciplinarian attitude commonly seen. Thomas Kulanjiyil (2012) in support of traditional Indian parenting remarks that despite the emphasis on control is asserted more, traditional Indian parenting has several positive aspects as well. Interdependence of culture in terms of community living, positive personality development in terms of modesty and chastity are not only significant positive aspects, these also promise unique identity among immigrating Indians abroad (Kulanjiyil, 2012). The present study provides a glimpse in to the transforming face of parenting practices in India and its impact on development positive coping ability among adolescents. The study provides a new appeal in terms of new emergence of parenting style out of assimilation of new and old traditions in parenting practices. Indian parents are increasingly encouraging autonomy and adopting individualistic orientation parent-child transaction thereby contributing to greater self-reliance and adaptation among their children in the new globalized cultural interface (Saraswath & Ganapathy, 2002). Saraswath and Ganapathy (2002) rightly noted that the traditional nuclear urbanized families are giving way to parents who are less authoritarian, more autonomy granting, and responsive to their children's need. The changing face of Indian parenting with its unique assimilation of traditional and new appears promising when it comes to children's capacity development.

Owing to insufficient sample size structural equation modelling could not be conducted for model testing. Certain important variable likes, birth order of adolescents, mother tongue, parent's education and employment status of parents could not be used in the study to analyse their probable impact.

Future research could explore more how to develop effective ways of child rearing; an instance might "competent parenting" suggested by Belsky, Robins, and Gamble (1984). Parent education program could be developed for both urban as well as rural population in India to bring about the best in children.

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Psychometric Properties and Overlap of the GSQ and AQ among Japanese University Students

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Abstract

Individuals with Autism Spectrum Disorders (ASD) have sensory processing problems, and this has recently been included as a core symptom of ASD in DSM-5. The Glasgow Sensory Questionnaire (GSQ), which is based on a dimensional model of ASD, measures the experience of sensory difficulties in daily life. However, the psychometric properties of the GSQ have not been studied in the general population. In this study, we investigated the psychometric properties of the GSQ, including reliability, score distribution, item analysis, gender differences, and the correlation between the Autism Quotient (AQ) and GSQ in a sample of 417 (206 males and 211 females) university students. We also examined the overlap between the AQ and GSQ using a joint factor analysis. The results revealed that the Japanese version of the GSQ has relatively poor psychometric properties compared to the AQ. Gender differences were found in both scales. Individuals with high AQ scores reported experiencing abnormal sensory events more frequently than those with low AQ scores. The overlap between the scales was small; therefore, it might be possible to investigate abnormal sensory processing independently of other symptoms of ASD in the general population.

Keywords: Glasgow sensory questionnaire, Autism spectrum quotient, join factor analysis

1. Introduction

Autism Spectrum Disorder (ASD) has been largely defined in terms of difficulties in social interaction and communication, patterns of repetitive behavior, narrow interests, and difficulties with sensory processing (Diagnostic and Statistical Manual of Mental Disorders-5: DSM-5; American Psychiatric Association, 2013). These symptoms have been investigated in a number of studies, and the investigation of sensory processing in ASD has gained increasing interest recently. Behavioral and neuropsychological data have suggested that individuals with ASD show atypical input in the visual (Simmons et al., 2009), auditory (Haesen, Boets, & Wagemans, 2011; O'Connor, 2012), tactile (Foss-Feig, Heacock, & Cascio, 2012), and vestibular (Baker, Lane, Angley, & Young, 2008) domains. Some studies have found that more than 90% of individuals with ASD have a sensory problem, described in terms of either hyper- or hyposensitivity in at least one domain (Crane, Goddard, & Pring, 2009; Tomchek & Dunn, 2007).

From a dimensional approach, the degree of autistic-like traits is assumed to be distributed on a continuum over the general population, not only in clinical groups (Baron-Cohen, 1995; Frith, 1991). Based on the dimensional ASD model, Baron-Cohen, Wheelwright, Skinner, Martin, and Clubley (2001) developed the Autism spectrum Quotient (AQ), which is a self-report questionnaire used to assess autistic traits. Its validity to distinguish between clinical and control groups and its test reliability were confirmed in the original (UK) sample (Baron-Cohen et al., 2001), and these findings were replicated in the Netherlands (Hoekstra, Bartels, Cath, & Boomsma, 2008), Australia (Lau, Kelly, & Peterson, 2013), and Japan (Wakabayashi, Baron-Cohen, Wheelwright, & Tojo, 2006). The AQ was designed to assess autistic traits in five domains: social skills, communication, attention to details, attention switching, and imagination. However, this measure does not assess sensory processing problems because it was developed before this feature was included as a core symptom of ASD (Baron-Cohen et al., 2001).

As a tool to assess sensory problems, the Sensory Profile (SP) (Dunn & Westman, 1996) has been widely used. This measure was designed to represent children's difficulties with sensory processing, and it is completed by the caregiver. For adults, the Adult/Adolescent Sensory Profile (AASP) (Brown & Dunn, 2002), which was based on the SP, is typically used. This scale is a 60-item self-report questionnaire that was designed to assess four sensory quadrants: low registration, sensation seeking, sensory sensitivity, and sensation avoidance. There was some evidence that individuals with ASD score higher than controls on the SP (Tomchek & Dunn, 2007) and AASP (Crane et al., 2009); however, these scales are not well able to assess the degree of hyper- or hyposensitivity in each sensory domain separately.

To address this issue, Robertson and Simmons (2013) developed the Glasgow Sensory Questionnaire (GSQ), which is a self-report questionnaire to assess the frequency of experiencing hyper- or hypo-sensitivity in seven sensory domains: visual, auditory, gustatory, olfactory, tactile, vestibular, and proprioceptive. The original study of the GSQ showed a significant positive correlation between GSQ and AQ scores in the general population (Robertson & Simmons, 2013). In addition, a score difference between individuals with ASD and those without ASD was found (Horder, Wilson, Mendez, & Murphy, 2014). Furthermore, Horder et al. (2014) compared the correlation between scores of the AQ, GSQ, and AASP, and revealed that the correlation between the AQ and GSQ was the strongest. These results provided evidence that the GSQ is a more adequate measure of sensory processing problems in ASD.

Although the Japanese version of the GSQ (Takayama et al., 2014) has been developed, its psychometric properties have not been studied adequately, compared to the Japanese version of the AQ (Wakabayashi et al., 2006). For the Japanese version of the AQ, in addition to assessing its validity as a screening tool, item analysis and an examination of its overlap with other scales have been reported (Wakabayashi, Baron-Cohen, & Ashwin, 2012; Wakabayashi, Baron-Cohen, & Wheelwright, 2006; Wakabayashi et al., 2006). For the Japanese version of the GSQ, such analyses have not been reported, except for the score difference between a clinical ASD group and controls and a significant positive correlation between the GSQ and AQ (Takayama et al., 2014). Thus, the first aim of this study was to analyze the psychometric properties of the Japanese version of the GSQ, including item analysis and reliability tests of its subscales (seven sensory domains).

In addition, we investigated the overlap between the AQ and the GSQ. The core symptoms of ASD, which were defined in the DSM-5 (American Psychiatric Association, 2013), have been shown in other clinical groups besides those with ASD. For instance, repetitive behavior is seen in both obsessive-compulsive disorder (OCD) and ASD (Russell, Mataix-Cols, Anson, & Murphy, 2005). Wakabayashi, Baron-Cohen, and Ashwin (2012) reported that, although autistic traits were related to obsessive-compulsive traits as measured by questionnaires, the overlap between the traits was small among the general population. Likewise, sensory processing difficulties have been seen in other disorders, not only in ASD. Some studies showed that those with Sensory Modulation Disorder (SMD) have difficulty responding to sensory input, in the absence of an ASD diagnosis (Miller, Anzalone, Lane, Cermak, & Osten, 2007; Schoen, Miller, Brett-Green, & Nielsen, 2009). Furthermore, Pollock, Metz, and Barabash (2014) reported that difficulties with sensory processing have been seen in dysfunctional elimination syndrome (DES). Indeed, although sensory processing difficulties were included as one of the core symptoms of ASD in the DSM-5 (American Psychiatric Association, 2013), these difficulties are not always needed in order to diagnose ASD. The GSQ consists of items measuring "sensory difficulties in daily life", not the "social behaviors" that are assessed by the AQ. We, therefore, hypothesize that the overlap between the AQ and the GSQ will be small, although there will be a relationship between both scales.

In this study, we first investigated the psychometric properties of the Japanese versions of the GSQ and AQ, including reliability, score distribution, item analysis, gender differences, and the correlation with both scales, among Japanese university students. Next, we examined the overlap in the AQ and GSQ scores using multiple regression and joint factor analysis.

2. Methods

2.1 Participants

Participants were recruited from an introductory psychology class at Chiba University. The sample consisted of 417 students (206 males and 211 females), all of whom were native Japanese speakers. The mean age was 19.6 years ($SD = 1.09$). All participants provided informed consent and took part in the study voluntarily.

2.2 Instruments

2.2.1 Japanese Version of the Glasgow Sensory Questionnaire

We used the Japanese version of the GSQ (Takayama et al., 2014). This questionnaire contains 42 items on a 5-point Likert-scale: “never”, “rarely”, “sometimes”, “often” and “always.” Each response is scored from 0 to 4 points; for example, an item was given 4 points if a participant responded “always” to it. The total possible GSQ scores ranged from 0 to 168.

2.2.2 Measures and Covariates

We used the Japanese version of the AQ (Wakabayashi et al., 2006). This questionnaire consists of 50 items on a 4-point Likert-scale: “definitely disagree”, “slightly disagree”, “slightly agree” and “definitely agree.” According to Austin’s scoring method (Austin, 2005), each item was scored from 1 (“definitely disagree”) to 4 (“definitely agree”) points, and reverse scoring was completed as necessary. The total possible scores ranged from 50 to 200.

2.3 Procedure

Participants completed questionnaires in a group setting during their introductory psychology class. First, 504 university students took the AQ; one month later, 446 students took the GSQ. The results from the students who did not complete both the AQ and GSQ were excluded. In addition, the data from the questionnaires with no responses to multiple items or multiple responses to the same item were excluded. In total, the data from 417 students were analyzed.

2.4 Data analysis

Statistical analysis was conducted using R version 2.15.2 for Windows (R Foundation for Statistical Computing, Vienna, Austria). Item analysis of the GSQ was performed using Item-total correlation analysis and Good-Poor analysis for each item. The relationship between the GSQ and AQ was analyzed using Pearson’s correlation coefficient. In addition, to examine the overlap between autistic traits and the frequency of abnormal sensory experiences, a multiple regression analysis and joint factor analysis of the GSQ and AQ were conducted. Gender differences and group differences in the AQ sub-groups (high AQ \geq mean AQ + 1 SD; low AQ \leq mean AQ – 1 SD) were analyzed using independent sample t-tests.

3. Results

3.1 Psychometric Properties of the GSQ and AQ

3.1.1 Reliability

The participants’ mean GSQ and AQ scores are shown in Table 1. The GSQ kurtosis and skewness were 1.196 and .351, respectively, and the kurtosis and skewness of the AQ were .275 and .198, respectively. The Kolmogorov-Smirnov test revealed that both the GSQ and AQ scores were normally distributed ($p > .05$).

The internal consistency (Cronbach’s alpha) of the GSQ was .84, which was an acceptable level of reliability. Similarly, the scores of the AQ indicated acceptable reliability (Cronbach’s alpha was .84). The Cronbach’s alphas for the subscales of the GSQ and AQ are shown in Table 1.

Table 1. Mean, SD, Cronbach’s α , and gender differences for each subscale of the AQ and GSQ

| | | All (N = 417) | | Males (n = 206) | | Females (n = 211) | | Gender differences |
|----------------------|---------------------|------------------|-------|--------------------|-------|----------------------|-------|-----------------------|
| | Cronbach’s α | Mean | SD | Mean | SD | Mean | SD | t |
| AQ total | .84 | 118.0 | 13.43 | 120.1 | 13.81 | 115.7 | 12.71 | 3.34** |
| Social skills | .80 | 23.1 | 5.18 | 23.7 | 5.47 | 22.4 | 4.81 | 2.54** |
| Attention switching | .50 | 26.1 | 3.69 | 26.3 | 3.62 | 25.8 | 3.76 | 1.24 |
| Attention to details | .61 | 24.6 | 4.31 | 24.6 | 4.35 | 24.5 | 4.27 | .18 |
| Communication | .66 | 22.4 | 4.15 | 23.0 | 4.17 | 21.9 | 4.06 | 2.72** |
| Imagination | .59 | 21.7 | 3.87 | 22.5 | 3.99 | 21.0 | 3.63 | 3.86** |
| GSQ total | .84 | 57.6 | 15.29 | 59.8 | 16.32 | 55.5 | 13.91 | 2.92** |
| Visual | .51 | 10.2 | 3.91 | 10.4 | 4.13 | 10.0 | 3.68 | .97 |
| Auditory | .56 | 13.6 | 3.37 | 13.9 | 3.39 | 13.3 | 3.33 | 1.90 |

| | | | | | | | | |
|----------------|-----|-----|------|-----|------|-----|------|--------|
| Gustatory | .43 | 6.3 | 2.84 | 6.6 | 3.06 | 6.0 | 2.58 | 2.22* |
| Olfactory | .42 | 6.9 | 2.73 | 7.3 | 2.94 | 6.5 | 2.44 | 3.11** |
| Tactile | .31 | 6.6 | 2.85 | 7.2 | 2.98 | 6.0 | 2.59 | 4.41** |
| Vestibular | .52 | 7.0 | 3.37 | 7.1 | 3.52 | 6.9 | 3.22 | .77 |
| Proprioceptive | .49 | 7.0 | 3.05 | 7.3 | 3.27 | 6.8 | 2.81 | 1.48 |

Note. * $p < .05$, ** $p < .01$

3.1.2 Item Analysis of the GSQ

The results of the item-total correlation and good-poor analysis for each item of the GSQ are shown in Table 2. Item-total correlation analysis revealed that all 42 items had significant positive correlations with the total GSQ ($p < .05$), although the results on two items (Items 17 and 36) were slightly lower ($r < .20$). Good-poor analysis showed that high scorers on the total GSQ scored significantly higher ($p < .05$) than did low scorers on all items except one (Item 22). These results suggest that Items 17, 22, and 36 were not adequate to assess the frequency of abnormal sensory experiences among the general population. However, these items might possibly reflect abnormal sensory experiences found only in high-scoring individuals on the AQ and individuals with ASD; therefore, these items were retained in the following analysis.

Table 2. Results of good-poor analysis and item-total correlations

| Items | Mean | SD | <i>t</i> | Item-total correlations |
|-----------|------|------|----------|-------------------------|
| Visual | | | | |
| 4 | 1.7 | 1.16 | 7.63*** | .41 |
| 8 | 1.8 | 1.09 | 5.80*** | .31 |
| 11 | .7 | .90 | 5.21*** | .26 |
| 18 | 1.2 | .95 | 6.23*** | .41 |
| 19 | 2.0 | 1.17 | 6.39*** | .42 |
| 42 | 1.0 | 1.09 | 8.21*** | .46 |
| Auditory | | | | |
| 6 | 2.2 | .96 | 6.38*** | .38 |
| 9 | 2.3 | 1.05 | 5.32*** | .38 |
| 14 | 2.3 | .91 | 7.94*** | .39 |
| 25 | 2.7 | 1.03 | 4.93*** | .29 |
| 31 | 2.6 | .96 | 7.06*** | .40 |
| 33 | 1.5 | 1.13 | 6.65*** | .47 |
| Gustatory | | | | |
| 2 | 1.5 | 1.00 | 4.44*** | .26 |
| 23 | 1.7 | 1.02 | 6.56*** | .38 |
| 25 | 2.7 | 1.03 | 4.93*** | .29 |
| 28 | .7 | .82 | 4.54*** | .38 |
| 35 | .6 | .90 | 6.80*** | .41 |
| 39 | 1.1 | .98 | 7.19*** | .39 |
| Olfactory | | | | |
| 7 | 1.8 | .94 | 5.13*** | .35 |

| | | | | |
|----------------|-----|------|---------|-----|
| 13 | 1.9 | 1.02 | 8.85*** | .43 |
| 17 | .2 | .57 | 2.22* | .17 |
| 21 | 1.9 | 1.27 | 6.55*** | .32 |
| 24 | .7 | .93 | 6.90*** | .42 |
| 36 | .5 | .81 | 2.12* | .16 |
| Tactile | | | | |
| 1 | 1.2 | 1.12 | 4.15*** | .20 |
| 15 | .7 | 1.00 | 4.84*** | .34 |
| 16 | 1.3 | .92 | 5.95*** | .33 |
| 22 | .7 | 1.04 | 1.73† | .21 |
| 27 | .7 | .88 | 5.44*** | .41 |
| 40 | 2.0 | 1.05 | 6.02*** | .37 |
| Vestibular | | | | |
| 10 | 1.4 | 1.12 | 5.08*** | .35 |
| 12 | 1.1 | 1.07 | 7.11*** | .38 |
| 20 | 1.4 | 1.02 | 7.40*** | .41 |
| 30 | .7 | .97 | 6.95*** | .45 |
| 32 | 1.4 | 1.15 | 4.65*** | .29 |
| 34 | 1.0 | .92 | 7.10*** | .45 |
| Proprioceptive | | | | |
| 3 | 1.3 | .99 | 4.94*** | .28 |
| 5 | 1.4 | 1.04 | 3.54*** | .25 |
| 29 | 1.1 | .84 | 5.70*** | .37 |
| 36 | .5 | .81 | 2.12* | .16 |
| 37 | 1.6 | 1.01 | 8.45*** | .48 |
| 41 | .8 | .90 | 7.01*** | .41 |

Note. $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

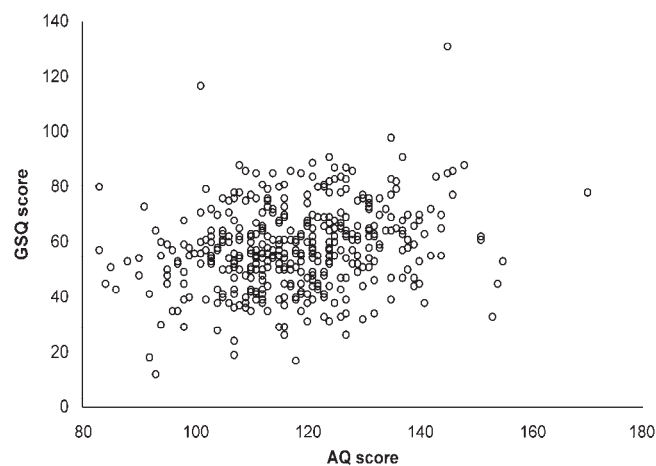


Figure 1. The relationship between GSQ and AQ scores

3.1.3 Gender Differences

As shown in Table 1, the mean total GSQ score was higher for males than for females [$t(415) = 2.92, p < .01$]. On the subscales of the GSQ, males scored significantly higher than did females in three sensory domains: gustatory [$t(415) = 2.22, p < .05$], olfactory [$t(415) = 3.11, p < .01$], and tactile [$t(415) = 4.41, p < .01$]. The total AQ score for males was significantly higher than that for the females [$t(415) = 3.34, p < .01$], and three subscales of the AQ were higher for males than for females: social skills [$t(415) = 2.54, p < .01$], communication [$t(415) = 2.72, p < .01$], and imagination [$t(415) = 3.86, p < .01$].

3.2 The Relationship Between the GSQ and AQ

3.2.1 Correlations Between the GSQ and AQ

The relationship between the total GSQ and AQ scores is shown in Figure 1. Pearson's correlation coefficients between total scores on the GSQ and AQ and between their subscales are summarized in Table 3. The total AQ score was positively and significantly correlated with the total GSQ score and all of its subscales. Additionally, there were significant positive correlations between all of the subscales of AQ combined and the total GSQ score. However, only some of the AQ subscales and GSQ were significantly correlated (Table 3).

Table 3. Correlations between the subscales of the GSQ and AQ

| | AQ total | Social skills | Attention switching | Attention to details | Communication | Imagination |
|----------------|----------|---------------|---------------------|----------------------|------------------|-------------|
| GSQ total | .25** | .11* | .22** | .17** | .20** | .11* |
| Visual | .13** | .03 | .10* | .22** | .09 [†] | -.03 |
| Auditory | .19** | .14** | .22** | .09 [†] | .12* | .03 |
| Gustatory | .12* | .04 | .13** | .05 | .12* | .05 |
| Olfactory | .12* | -.02 | .07 | .13** | .10* | .11* |
| Tactile | .32** | .21** | .23** | .09 [†] | .22** | .26** |
| Vestibular | .14** | .02 | .11* | .15** | .15** | .02 |
| Proprioceptive | .21** | .10* | .19** | .07 | .19** | .14** |

Note. $p < .10$, * $p < .05$, ** $p < .01$

3.2.2 Group Differences Between Low and High AQ

To examine whether individuals with high autistic traits report a higher frequency of abnormal sensory experiences, from participants, we picked sixty participants with scoring 132 or more (mean AQ+1 SD), and another sixty participants with scoring 104 or less (mean AQ-1 SD). We regarded the former as a high AQ group and the latter as a low AQ group. The results of the GSQ and AQ for each group are shown in Table 4. The total GSQ score for the high AQ group was significantly higher than for the low AQ [$t(118) = 3.94, p < .01$]. On the subscales of the GSQ, visual [$t(118) = 2.36, p < .05$], auditory [$t(118) = 3.38, p < .01$], tactile [$t(118) = 6.11, p < .01$], and proprioceptive [$t(118) = 3.50, p < .01$] domain scores were significantly higher for the high than for the low AQ group.

Table 4. Group differences between low and high AQ participants

| | Low AQ (n = 60) | | High AQ (n = 60) | | Low AQ vs. High AQ | |
|---------------------|-----------------|------|------------------|------|--------------------|----------|
| | Mean | SD | Mean | SD | <i>t</i> | <i>p</i> |
| AQ total | 97.4 | 5.82 | 139.7 | 7.04 | 35.82 | .00 |
| Social skills | 16.7 | 2.98 | 29.6 | 3.76 | 20.78 | .00 |
| Attention switching | 22.5 | 3.62 | 29.9 | 3.16 | 11.87 | .00 |

| | | | | | | |
|----------------------|------|------|------|-------|-------|-----|
| Attention to details | 23.2 | 4.28 | 26.5 | 3.89 | 4.33 | .00 |
| Communication | 16.9 | 2.95 | 27.5 | 2.93 | 19.59 | .00 |
| Imagination | 18.0 | 3.29 | 26.3 | 3.31 | 13.75 | .00 |
| GSQ total | 52.9 | 15.8 | 64.6 | 16.77 | 3.94 | .00 |
| Visual | 9.5 | 4.19 | 11.3 | 4.02 | 2.36 | .02 |
| Auditory | 12.7 | 3.63 | 14.8 | 3.22 | 3.38 | .00 |
| Gustatory | 6.1 | 2.96 | 7.0 | 3.36 | 1.50 | .14 |
| Olfactory | 6.6 | 2.85 | 7.3 | 2.86 | 1.37 | .17 |
| Tactile | 5.4 | 2.52 | 8.5 | 2.99 | 6.11 | .00 |
| Vestibular | 6.8 | 3.68 | 7.9 | 3.53 | 1.59 | .11 |
| Proprioceptive | 5.8 | 2.93 | 7.9 | 3.70 | 3.50 | .00 |

3.3 The Overlap between Items of the GSQ and AQ

3.3.1 Multiple Regression Analysis

To examine whether AQ scores could be accounted for by GSQ scores, we conducted a multiple regression analysis with the subscales of the AQ as predictor variables and total GSQ score as the objective variable. The subscales of the AQ predicted 8.3% of the variance in the total GSQ score. Similarly, multiple regression analyses were performed with the subscales of the AQ as predictor variables and each sensory domain of the GSQ as objective variables. The results also showed small R^2 values ranging from 1.4% to 9.8% (visual = 6.1%, auditory = 5.8%, gustatory = 1.4%, olfactory = 3.2%, tactile = 9.8%, vestibular = 4.4%, and proprioceptive = 4.6%).

3.3.2 Joint Factor Analysis of the GSQ and AQ

To examine the degree of overlap between the GSQ and AQ, we conducted a joint factor analysis among their subscales. Similar to the procedure used by Wakabayashi et al. (2006), a principal factor analysis was carried out on the inter-subscale correlation matrix of the GSQ and AQ. As shown in Fig. 2, the eigenvalues of the first two factors were greater than one. Table 5 summarizes the results of the factor pattern matrix by an oblimin-rotated two-factor solution. All of the subscales of the GSQ were loaded onto Factor 1, while four subscales of the AQ were loaded onto Factor 2. Therefore, we interpreted Factor 1 as the frequency of abnormal sensory experiences and Factor 2 as autistic traits. However, “attention to details” did not load on either factor. This finding, that “attention to details” was slightly different from the other four AQ subscales, was in agreement with the results of previous studies [the results of a structural factor model of AQ (Hoekstra et al., 2008) and the results of a joint factor analysis among the AQ and NEO-PI-R (Wakabayashi et al., 2006)].

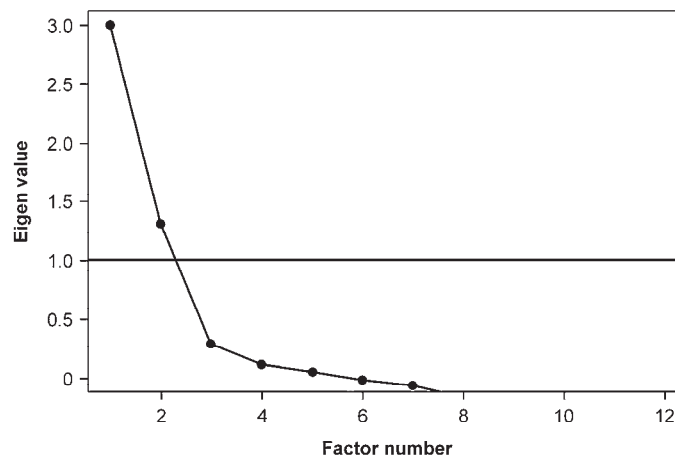


Figure 2. Scree plot of the GSQ and AQ joint factor analysis

Table 5. Oblimin-rotated two-factor solution for each subscale of the AQ and GSQ

| | Factor 1 | Factor 2 | h^2 | u^2 |
|----------------------|------------|------------|-------|-------|
| AQ | | | | |
| Social skills | -.07 | .74 | .52 | .48 |
| Attention switching | .10 | .54 | .33 | .67 |
| Attention to details | .21 | -.13 | .05 | .95 |
| Communication | .04 | .79 | .64 | .36 |
| Imagination | -.03 | .63 | .40 | .61 |
| GSQ | | | | |
| Visual | .61 | -.07 | .35 | .65 |
| Auditory | .59 | .03 | .35 | .65 |
| Gustatory | .68 | -.03 | .45 | .55 |
| Olfactory | .62 | -.06 | .37 | .63 |
| Tactile | .55 | .19 | .38 | .62 |
| Vestibular | .65 | -.04 | .42 | .58 |
| Proprioceptive | .67 | .07 | .47 | .53 |
| Variance | .23 | .16 | | |

Note. Items with loadings above .40 are shown in bold

4. Discussion

This study examined the psychometric properties and overlap of the Japanese versions of the GSQ and AQ among Japanese university students. The results showed that both scales have good psychometric properties concerning test reliability and score distribution. In the examination of gender differences, males scored higher than did females on both the GSQ and AQ. For the AQ, such gender differences are expected, based on the sex ratio in diagnosing ASD (Baron-Cohen et al., 2001). The gender difference in the total AQ score was consistent with the result of previous studies (Austin, 2005; Baron-Cohen et al., 2001; Hoekstra et al., 2008; Horder et al., 2014; Robertson & Simmons, 2013; Stewart & Austin, 2009; Wakabayashi et al., 2006). For the GSQ, this study is the first to report gender differences. This indicates that the sex ratio in diagnosing ASD reflects on the dimensional model of the GSQ, as well as the AQ.

However, for the psychometric properties of the GSQ, the results of the item analysis revealed that some items were not at an acceptable level. This suggests that some items might be not adequate for measuring sensory difficulties in the general sample, although these items could reflect sensory difficulties in the clinical ASD sample. Furthermore, we were unable to obtain satisfactory reliabilities on the subscales of the GSQ compared to those of the AQ. This suggests that there is not enough reliability to assess the “experience of abnormal events” for each sensory domain independently, at least in the general population. Indeed, the original study of the GSQ (Robertson & Simmons, 2013) showed that the single-factor GSQ model was appropriate from the result of a principal components analysis. In clinical studies of ASD, although individuals with ASD presented processing difficulty in one or more sensory domains (Baker et al., 2008; Foss-Feig et al., 2012; Simmons et al., 2009; Tomchek & Dunn, 2007), the symptom of hyper- or hyposensitivity are seen to be common to some extent, regardless of sensory domains. Therefore, the GSQ subscales might be adequately divided into the symptoms (hyper- and hypo-sensitivity), but not into the sensory domains, when necessary.

With regard to the relationship between the AQ and GSQ, as we hypothesized, our results showed a significant correlation but a small overlap between both scales. A significant positive correlation was found, although the size of the correlation in this study was small (Horder et al., 2014; Robertson & Simmons, 2013; Takayama et al., 2014). We also found differences between the high and low AQ individuals in terms of the total GSQ. These results are partially consistent with a previous study (Robertson & Simmons, 2013) and suggest that individuals with high autistic traits tend to experience hyper- or hyposensitivity sensory events in their daily lives. On the degree of the overlap between the GSQ and the AQ, however, the result of the multiple regression showed that

AQ subscales predicted only 8.3% of the variance in the total GSQ score. Furthermore, the result of joint factor analysis of the GSQ and the AQ revealed a two-factor solution, which suggests that those factors correspond with the GSQ and AQ. Factor 1 consisted of all the GSQ subscales, and Factor 2 consisted of four AQ subscales (with the exception of “attention to details”). This result indicates that the frequency of abnormal sensory experiences on the GSQ can be assessed independently. Thus, we found that, although individuals with high AQ experience more abnormal sensory events in their daily lives than those with low AQ, the overlap between GSQ and AQ items would be small among the general population.

This finding might have important implications for an analog design to study difficulties in sensory processing in a typically developing sample. Early research reported differences in sympathetic nervous system functioning between children with ASD and those with SMD, although both groups of children showed more sensory processing difficulties than controls (Schoen et al., 2009). Such a comparison would be useful in understanding difficulties with sensory processing in ASD. However, further research into such comparisons may be difficult in clinical studies, because it would be difficult to control the severity of symptoms and IQ within or between clinical groups. Given the small overlap between the AQ and GSQ in this study, it is possible that difficulties in sensory processing might be studied by comparing sensory profiles between individuals with high GSQ and high AQ and those with high GSQ but low AQ within the general population. To do this, more research, such as that investigating relationships between the GSQ and sensory performance on experimental tasks, is needed.

4.1 Limitations and Conclusion

There are some limitations to our study. First, because we used only AQ and GSQ, the effect of other traits on the GSQ was not clear. Several studies have shown a relationship between anxiety and sensory processing difficulties in ASD (Horder et al., 2014; Mazurek, Keefer, Shui, & Vasa, 2014). Van Steensel, Bögels, and Perrin (2011) reviewed 31 studies of ASD and revealed that 39.6% of children with ASD have at least one DSM-IV anxiety disorder. Mizurek et al. (2014) suggested a relationship between anxiety and sensory over-responsivity in children with ASD. In an analog study of ASD, Horder et al. (2014) found a positive correlation between the self-report Spielberger State/Trait Anxiety Inventory and GSQ. Furthermore, a similar relationship was found in the study of other clinical domains, such as children with selective eating (Farrow & Cloulthard, 2012). In this study, the GSQ scores might possibly reflect the traits of anxiety found among the general population. Therefore, further study is needed to clarify the relationships and overlaps between the AQ, GSQ, and anxiety traits.

Second, the results of the current study might depend on the homogeneity of our sample, which consisted of students recruited from a single university. As it has been shown that the factor structure of the AQ (Austin, 2005; Hoekstra et al., 2008; Stewart & Austin, 2008) and the correlation between the AQ and the GSQ (Horder et al., 2014; Robertson & Simmons, 2013; Takayama et al., 2014) varied slightly between a clinical and neurotypical sample, the results of the current study might have been different had the sample reflected a more diverse general population. Further studies are required to investigate these issues.

In conclusion, the Japanese version of the GSQ has relatively poor psychometric properties, compared to the AQ. Gender differences were found for both scales. With regard to the relationship between the AQ and GSQ, individuals with high autistic traits experienced abnormal sensory events with higher frequency than those with low autistic traits in their daily lives. However, the overlap between the scales was small; therefore, it might be possible to investigate abnormal sensory processing independently of other symptoms of ASD (difficulties in social interactions, patterns of repetitive behaviors, and narrow interests) in the general population.

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The authors declare no conflict of interest.

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Perioperative Anxiety, Pain, and Salivary Amylase in Patients Undergoing Pancreatic Surgery

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Abstract

Although many reports on perioperative anxiety and stress in patients have been published, very few have longitudinally focused on the acute phase immediately after surgery. We aimed to investigate the actual levels of perioperative stress experienced by patients undergoing pancreatic surgery in the acute phase. We conducted a survey of 29 patients undergoing pancreatic surgery. These patients were assessed five times: once preoperatively and on postoperative days 1, 3, 5, and 7. The measurement indices used were the State-Trait Anxiety Inventory (STAI), the Visual Analog Scale (VAS) for pain, and salivary amylase activity. No significant difference in the STAI scores was observed throughout the survey period. In other words, the patients did suffer persistent, moderate anxiety. The VAS scores clearly peaked on postoperative day 1 and dropped thereafter. Salivary amylase activity peaked on postoperative day 3 and then decreased. On postoperative day 7, the VAS scores of patients who underwent open surgery were significantly higher than those of patients who underwent laparoscopic surgery; the patients undergoing open surgery also complained of prolonged pain. Significantly higher salivary amylase activity on postoperative day 3 indicated that the open surgery patients experienced greater stress levels. The laparoscopic group experienced less stress than the open group. The results of the present evaluation of anxiety, pain, and stress experienced by patients may provide a very good reference for perioperative care in pancreatic surgery.

Keywords: anxiety, perioperative, pain, pancreatic surgery, salivary amylase, State-Trait Anxiety Inventory

1. Introduction

Anxiety is a form of stress that can affect the sympathetic and parasympathetic nervous systems (Jawaid, Mushtaq, Mukhtar, & Khan, 2007). Previous studies have long focused on the stress of surgical patients (Corman, Hornick, Kritchman, & Terestman, 1958; Caumo et al., 2001; Janis, 1958; Johnson & Carpenter, 1980; Vingerhoets, 1998). Pick, Molloy, Hinds, Pearce, and Salmon (1994) measured the catecholamine levels of patients undergoing coronary artery bypass graft surgery and determined that fatigue at 30 postoperative days was the greatest in patients with highest perioperative noradrenaline levels. Schubart et al. (2010) focused on the quality of life in postoperative patients undergoing abdominal surgery and reported that the social/family well-being was strongly associated with the quality of life. Aybala, Haluk, Ahmet, and Mustafa (2014) examined the relationship between anxiety levels and social background in patients undergoing gallbladder surgery and reported that a low level of education, female gender, and the relationship status influenced the levels of anxiety.

The prevalence of pancreatic cancer, the early detection of which is difficult, is on the rise worldwide (World Cancer Research Fond International, 2015), particularly in Japan (Matsuda et al., 2013). Japan ranks seventh in the world for age-adjusted prevalence of this disease (8.5 in 100,000 in 2012) (World Cancer Research Fund International, 2015) and is ranked relatively high among Asian countries, where the prevalence of pancreatic cancer is generally low. Surgery is the only radical therapy for pancreatic cancer. However, even with surgical

intervention, the prognosis is not necessarily good with a 3-year survival rate of Stage 1a (UICC-Stage: International Common Classification), which is the earliest stage, of approximately 50% in Japan (Egawa et al., 2008). Furthermore, those who undergo surgery suffer through a fairly invasive procedure with a considerable number of postoperative complications (Egawa et al., 2008). Despite various reports on the anxiety of patients undergoing surgery, to the best of our knowledge, there are no reports on anxiety of patients undergoing pancreatic surgery, a procedure which places a large burden on the patient. The aim of this study was therefore to longitudinally examine the stress experienced by patients undergoing pancreatic surgery both subjectively and objectively using the State-Trait Anxiety Inventory (STAI), Visual Analog Scale (VAS) for pain, and salivary amylase activity, with a focus on the acute period before the operation to 1 week after the operation.

2. Method

2.1 Participants

Adult patients aged ≥ 20 years undergoing pancreaticoduodenectomy or distal pancreatectomy at Osaka University Hospital who consented to participate in this study were chosen as participants. The patients with metastasis to organs other than the pancreas were excluded. The patients with metastasis to organs other than the pancreas were excluded. Those deemed by the attending physician or ward nurse to be incapable of completing a survey because of their postoperative state were excluded.

2.2 Survey Method

2.2.1 Survey Content

The Japanese version of the new STAI-Y (STAI-JYZ; hereinafter, STAI), an improved version of the STAI developed by Spielberger, was used (Hidano, Fukuhara, Iwawaki, Soga, & Spielberger, 2009; Spielberger, 1983). The STAI is a metric for anxiety and can measure state and trait anxiety. In this study, state anxiety, which assesses how individuals currently feel (i.e., fear, tension, nervousness, and concern) (Hidano et al., 2009), was measured. The survey comprised a 20-item questionnaire with a 4-point rating scale that could be answered in approximately five minutes. The total score ranged from 20 to 80 points, with a higher score indicating greater anxiety.

The VAS for pain comprised a linear 100-mm scale with marks at every 10 mm. The left end of the scale indicated “absolutely no pain” and the right end indicated “the strongest pain imaginable.” Participants were asked to indicate an “x” on the scale denoting their current pain. Marking of “x” further away from the left end of the scale indicated that the patient felt greater levels of pain.

Salivary amylase activity was measured using a salivary amylase activity monitor (NIPRO, Tokyo, Japan), a portable enzyme analyzer developed by Yamaguchi et al. (Shetty, Zigler, Robles, Elashoff, & Yamaguchi, 2011; Yamaguchi et al., 2006). Saliva was collected by holding a salivary amylase monitor chip beneath the tongue for 20 seconds. The amount of saliva required for this test was 28 μL . This device allowed amylase activity to be measured at the bedside for approximately 1 minute after saliva collection (Shetty et al., 2011). Salivary amylase activity measurement has been used in studies as a stress marker because it avoids the stress caused by the invasiveness of blood collection. The measured value reportedly rises when a patient experiences stress (Takai et al., 2004; Takeda, Watanabe, Onishi, & Yamaguchi, 2008; Yamaguchi et al., 2006).

2.2.2 Survey Period and Schedule

Table 1. Content of each measurement time

| | Preoperatively | Postoperative day 1 | Postoperative day 3 | Postoperative day 5 | Postoperative day 7 |
|---------------------------|----------------|---------------------|---------------------|---------------------|---------------------|
| STAI | ○ | × ^a | ○ | ○ | ○ |
| VAS | ○ | ○ | ○ | ○ | ○ |
| Salivary amylase activity | ○ | ○ | ○ | ○ | ○ |

Note. ^aThe STAI was not administered on postoperative day 1

○ shows that it is an investigation item performed.

× shows that it is the investigation item not performed.

The survey was conducted from October 2012 to March 2014. Each participant was surveyed five times. The first survey was conducted between the time of hospitalization and the day before the surgery. The second, third, fourth, and fifth surveys were conducted at postoperative days 1, 3, 5, and 7, respectively. Table 1 shows the results of the measurements obtained during each survey. The reason for not administering the STAI on postoperative day 1 was to reduce the pressure on the patient of having to complete the inventory in approximately 5 minutes. The surveys were conducted at the same time of the day with each patient (within 2 hours), with consideration of the diurnal variations in the salivary components. Moreover, because of the effect of diet on the secretion of salivary amylase, there were checks to ensure that participants had not ingested anything within 1 hour of the measurement. Because the surveys were conducted from the period before surgery to the postoperative acute phase, during which the physical and mental burden of patients was predictably large, a ward nurse or the attending physician first determined whether the patients were in a state to participate in the survey.

2.2.3 Analysis Method

Because 10 of 20 state anxiety items in the STAI were reverse items, the results from all items were calculated after they were incorporated into the score for each survey following the score adjustment. The score of the VAS for pain was calculated as the actual measured value from the left end of the scale to the "x" mark. Because the baseline of salivary amylase activity varied greatly between the participants, the level of salivary amylase activity at the time of each survey was calculated as the ratio of the postoperative amylase activity level to the preoperative amylase activity level in each participant. The three different measurements were statistically processed using one-way analysis of variance with repeated measures. An independent *t*-test was used to compare the laparoscopic surgery group (hereinafter, laparoscopic group) and open surgery group (hereinafter, open group) at the time of each survey. The level of significance was set at $P < 0.05$. The analysis software used was SPSS ver.19.0 (IBM Japan, Tokyo, Japan).

2.2.4 Ethical Considerations

Participation in the study was voluntary and participants were free to drop out at any time. Participants were given sufficient written and verbal explanations that they would suffer no disadvantages to their subsequent treatment or hospitalization if they did not participate, that their physical condition would be prioritized particularly after surgery, that they would not be forced to take the survey, that the data obtained would be carefully managed to prevent participants from being personally identifiable, and that the data would be disclosed at any time upon request. Written informed consent was obtained from all participants. The Ethical Review Board of Osaka University Hospital approved this study.

3. Results

3.1 Participant Backgrounds

Twenty-nine participants (16 males and 13 females) were included in the study. The diseases were pancreatic cancer ($n=14$), pancreatic endocrine tumor ($n=8$), pancreatic cystic tumor ($n=6$), and distal bile duct cancer ($n=1$). Nine participants underwent pancreaticoduodenectomy and 20 underwent distal pancreatectomy (11 cases of open surgery and nine cases of laparoscopic surgery).

3.2 STAI

Cronbach's alpha showed that the internal consistency of the inventory was 0.912, indicating that this inventory was valid for use in this study.

As shown by the mean values in Table 2, there was no significant difference between the results for the surveys conducted at each time point. Furthermore, no significant differences were observed between the laparoscopic and open groups at any survey time point.

Table 2. Changes in the STAI score

| | Preoperatively | Postoperative day 3 | Postoperative day 5 | Postoperative day 7 |
|---------------------------|----------------|---------------------|---------------------|---------------------|
| All patients (N=29) | 48.7 ± 9.4 | 48.6 ± 8.0 | 45.2 ± 10.1 | 45.6 ± 10.5 |
| Laparoscopic group (N=9) | 50.6 ± 7.2 | 47.6 ± 7.6 | 45.9 ± 7.8 | 43.4 ± 8.9 |
| Open surgery group (N=20) | 47.8 ± 10.3 | 49.0 ± 8.4 | 45.0 ± 11.1 | 46.6 ± 11.2 |

Note. Mean±SD. At the four measurement points, there was no significant difference in “All patients”, “Laparoscopic group” and “Open group” by one-way analysis of variance with repeated measures. In each measurement time, there was no significant difference between the “Laparoscopic group” and “Open group” (t-test).

3.3 Visual Analog Scale

As shown in Figure 1, VAS scores were very high at postoperative day 1 and decreased gradually, thereafter. Significant differences were observed between the preoperative scores and the scores at postoperative days 1, 3, 5, and 7. Compared with postoperative day 1, significant differences were observed for all scores. A significant difference was also noted between postoperative days 3 and 7. Almost no variation in scores was seen between the laparoscopic and open groups on postoperative day 1. Scores tended to be higher for the open group than for the laparoscopic group in all surveys from postoperative day 3, and a significant difference was observed in the scores from postoperative day 7 (Table 3).

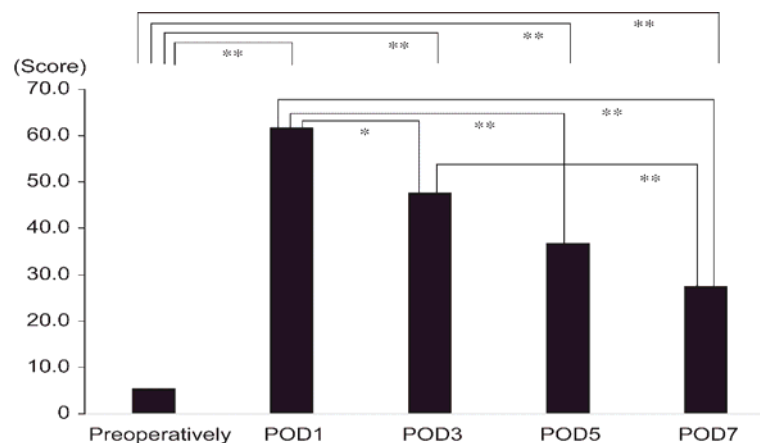


Figure 1. Bar graph of VAS scores of all patients from postoperative days 1 to 7

Note. Each measurement underwent one-way analysis of variance with repeated measures. The level of significance was set at * $p < 0.05$, ** $p < 0.01$. In this graph, POD refers to postoperative day. Mean, (N = 29)

Table 3. Changes in the VAS score for pain

| | Preoperatively | Postoperative day 1 | Postoperative day 3 | Postoperative day 5 | Postoperative day 7 |
|--------------------------|----------------|---------------------|---------------------|---------------------|---------------------|
| Laparoscopic group (N=9) | 7.5 ± 17.53 | 59.8 ± 29.6 | 40.3 ± 29.9 | 27.1 ± 20.5 | 10.9 ± 15.1 |
| Open group (N=20) | 4.8 ± 12.3 | 62.8 ± 25.4 | 50.8 ± 24.6 | 41.1 ± 25.1 | 34.3 ± 24.4 |

Note. Mean±SD. At the point of each postoperative measurement, the values of the Laparoscopic group tended to be lower than those of the Open group. *t-test between the Laparoscopic and Open groups. The level of significance was set at * $p < 0.05$

3.4 Salivary Amylase Activity

The actual values for preoperative amylase activity of each subject were expressed in ratios equivalent to 1. As shown in Table 4, the mean values for salivary amylase activity were the highest at postoperative day 3, although there was no significant difference between the preoperative values. In all the surveys, the open group tended to have higher values than the laparoscopic group (with a significant difference only at postoperative day 3).

Table 4. Changes in salivary amylase activity levels

| | Preoperatively | Postoperative day 1 | Postoperative day 3 | Postoperative day 5 | Postoperative day 7 |
|--------------------------|----------------|---------------------|---------------------|---------------------|---------------------|
| All patients (N=29) | 1.00 | 2.98 ± 4.56 | 4.19 ± 6.16 | 2.74 ± 4.88 | 2.88 ± 5.39 |
| Laparoscopic group (N=9) | 1.00 | 1.57 ± 1.4 | 1.62 ± 1.68 * | 1.16 ± 0.72 | 1.07 ± 0.75 |
| Open group (N=20) | 1.00 | 3.57 ± 5.30 | 5.27 ± 7.04 | 3.40 ± 5.71 | 3.64 ± 6.30 |

Note. Mean ± SD. The level of salivary amylase activity at the time of each survey was shown as the ratio of the postoperative amylase activity level to the preoperative amylase activity level in each subject. The value was highest on the third day after surgery. At each measurement point, the Laparoscopic group tended to be lower in value than the Open group. *t-test between the laparoscopic group and open group. The level of significance was set at * $p < 0.05$.

4. Discussion

Till date, many reports of studies on perioperative anxiety and stress in patients have been published both in Japan and abroad (Bodley, Jones, & Mather, 1974; Corman et al., 1958; Caumo et al., 2001; Edell-Gustafsson & Hetta, 1999; Janis, 1958; Johnson et al., 1980; Karanci & Dirik, 2003; Nagasawa, Kitai, & Nakamura, 2002; Shiromaru et al., 2007; Vingerhoets, 1998). However, most of these studies have compared scores before surgery with those from 1 to 2 weeks after surgery, and very few have focused on the acute phase immediately after surgery longitudinally. Moreover, an investigation using both indices of the subject-object is rare.

The results of the present study showed that STAI scores remained unchanged without any significant difference from the time before surgery to the time after surgery. Patients therefore had a moderate level of anxiety (Edell-Gustafsson & Hetta, 1999). The preoperative STAI score of 48.7 in the present study was almost the same as that (46.4) obtained by Edell-Gustafsson *et al* in a study of patients undergoing coronary artery bypass graft surgery (Edell-Gustafsson & Hetta, 1999). Before surgery, patients experience concern regarding the surgery and anesthesia (Bodley et al., 1974) as well as regarding postoperative treatment and physical pain (Shiromaru et al., 2007). Preoperative explanations regarding the possibility of severe postoperative complications specific to pancreatic surgery and the short life expectancy following successful surgery also may have some effect (Egawa et al., 2008). In this study, there were no major differences between the STAI scores before surgery and seven days after surgery (48.7 vs. 45.6). Different results were obtained in the present study compared with those in previous reports, wherein the anxiety level clearly decreased in three to five days or one week after the surgery compared with the levels before surgery (Karanci & Dirik, 2003; Nagasawa et al., 2002). This may be because of the long fasting period and drain placement period often observed following pancreatic surgery and concerns about serious complications such as anastomotic failure and pancreatic juice leakage during the postoperative period. Concern regarding the fact that their disease was a neoplastic disease also had an effect on patients. Further studies on the specific factors of stress faced by individual patients will be required.

The VAS for pain was primarily used to evaluate postoperative wound pain. A mean preoperative score of 5.5 was obtained. Abdominal pain and lower back pain are known symptoms of pancreatic cancer and these may have had an impact on the scores (Egawa et al., 2008). However, no questions in the present survey were related to the site of the pain. Subjects aged ≥ 65 years accounted for 58.6% of all participants; therefore, symptoms such as lower back pain and knee and shoulder joint pain suffered by the elderly may have influenced the findings (Hirase et al., 2014). When dealing with patients, information regarding the cause of each individual patient's pain will need to be broadly collected, keeping in mind the presence of preoperative pain.

The VAS scores at postoperative day 1 were significantly higher in all surveys, revealing that the most pain was felt at this point of time. Wound pain is considered the main cause of postoperative pain and is the most intense at 24-72 hours after surgery, after which it decreases with time (Avidan, Harvey, Ponte, Wendon, & Ginsburg, 2003). The results of the present study supported this assertion. Through excitement of the sympathetic nervous system, postoperative pain can affect the cardiovascular system, causing elevated blood pressure and tachycardia, and can lead to respiratory complications, muscle weakness, and delay in ambulation (Avidan et al., 2003). Postoperative pain thus needs to be sufficiently controlled on the assumption that the strongest pain is felt one day after surgery. VAS scores dropped significantly three days after surgery, after which the scores remained on a downward trend. However, pain was found to persist even seven days after surgery. At postoperative day 2, the physical pain from the recovery of intestinal peristalsis and increased ambulation were also involved in the

overall feelings of pain in addition to wound pain (Shiga & Takeuchi, 2012). Therefore, it needs to be understood that the degree and factors of pain transform following surgery as time passes. Explaining the predicted course of pain to patients in specific numerical values may also aid in supporting them during the acute postoperative phase.

Meanwhile, salivary amylase activity increased from before surgery to after surgery and then decreased after peaking at postoperative day 3. There were no significant differences throughout the survey period. Amylase activity is a real-time biomarker of reactions during stress (Rohleder & Nater, 2009; Uesato et al., 2010). Changes in amylase activity levels can sometimes effectively indicate the presence of stress in a timely manner as opposed to reflecting past stressful events. Salivary amylase activity reflects both mental and physical stress; therefore, it is difficult to selectively evaluate either type of stress. After surgery, salivary amylase activity may reflect the effects of surgical invasiveness on the body as well as stress that patients are aware of, such as stress from the presence of pain, from limited mobility, and from the discrepancy between the imagined and actual postoperative courses. The results of this study demonstrated that patients experienced greater mental and physical stress three days after surgery than at one day after surgery; these findings may serve as a reference in future perioperative management.

In this study, the results of each measurement were compared between the laparoscopic and open groups. No difference was observed between the two groups throughout the study period for STAI scores, and VAS scores in both groups were almost the same at postoperative day 1. These results were different than expected. From three to five days after surgery, the laparoscopic group had lower VAS scores than the open group and there was a significant difference at 7 days after surgery, which was as expected. An examination of salivary amylase activity revealed that activity levels remained lower in the laparoscopic group than in the open group throughout the study period. The difference was significant during the peak postoperative day 3, at which time the level was 1.62 times that of the preoperative level in the laparoscopic group and 5.27 times that of the preoperative level in the open group. Laparoscopic surgery is considered to have some advantages because it is minimally invasive (Jacobone, Citton, & Nitti, 2012; Liag, Hameed, & Jayaraman, 2014), and the results of the VAS and salivary amylase activity supported this conclusion.

Our study had several limitations. First, it consisted of a survey of patients undergoing pancreatic surgery performed at a single facility, which limited the utility of the results. Second, this study surveyed only a small sample of patients, and because of this, we were able to demonstrate an overall tendency rather than draw definite conclusions. We intend to perform further investigation including larger number of patients and different types of diseases in the future. Third, only salivary amylase activity was measured because small quantities of saliva were obtained from the postoperative patients. Measurement of other salivary stress markers such as cortisol and secretory IgA would give us more information. The development of a device that can measure multiple biomarkers from small quantities of saliva for these biomarkers could be beneficial.

5. Conclusion

The stress experienced by patients undergoing pancreatic surgery was evaluated by measuring the STAI, the VAS for pain, and salivary amylase activity at five points in time before surgery up to seven days after surgery. The results revealed no changes in STAI scores before and after surgery. VAS scores for pain clearly peaked at postoperative day 1 and decreased thereafter. Salivary amylase activity peaked at postoperative day 3 and subsequently decreased. Significant differences between the laparoscopic and open groups were noted at postoperative day 7 for VAS and at postoperative day 3 for salivary amylase activity. These findings suggested that the laparoscopic group experienced less stress than the open group. We were able to determine an overall tendency using concrete numerical values for pain and stress in patients who underwent pancreatic surgery. We believe that these findings could lead to improvement in the active recovery of such patients postoperatively through the medical staff explaining to patients preoperatively that pain and stress are to be expected and by providing physical and moral support.

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