

ISSN 1918-7211 (Print)
ISSN 1918-722X (Online)

International Journal of Psychological Studies

Vol. 5, No. 2 June 2013



CANADIAN CENTER OF SCIENCE AND EDUCATION

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Student Leadership Perceptions in South Africa and the United States

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Received: January 28, 2013

Accepted: March 19, 2013

Online Published: May 14, 2013

doi:10.5539/ijps.v5n2p1

URL: <http://dx.doi.org/10.5539/ijps.v5n2p1>

Abstract

The present study examined high school and college students' perceptions of leadership traits necessary for outstanding leaders to possess in South Africa and the United States. Students ($N=124$) indicated traits that both inhibited and facilitated outstanding leadership using modified Project GLOBE (House et al., 2004, *Culture, leadership, and organizations: The GLOBE study of 62 societies*, SAGE Publications) questionnaires. Results showed that: 1) Overall valence of trait dimensions remained constant across cultures and developmental stages; 2) South African students rated traits less strongly than American students overall, showing a less distinct definition of outstanding leadership; 3) College students' ratings of positive versus negative leadership traits were more differentiated than their high school counterparts' ratings; 4) The ratings of students in this study mirrored those of business people from Project GLOBE, although college students tended to have an even more distinct definition of what makes a good leader. Overall, our findings highlight the importance of considering cultural and developmental contexts when studying leadership traits.

Keywords: adolescents, leadership perceptions, outstanding leadership, Project GLOBE, South Africa, United States

1. Introduction

1.1 Leadership Challenges

According to former South African President F. W. de Klerk, one of the main dilemmas in leadership today is the ability to manage diversity effectively (personal communication, April 8, 2008); this is especially true in a large, multicultural country such as South Africa. Booysen and van Wyk (2007) contend that diversity management and communication skills are of fundamental importance for leaders as well as followers in South Africa's diverse workforce. A number of studies indicate that a lack of leadership contributes to many problems in South Africa, including violence (Seedat et al., 2009) and the HIV/AIDS epidemic (Chersich and Rees, 2008; Chopra et al., 2009; Coovadia et al., 2009; Wood & Webb, 2008). In contrast, successful leadership was one of the key factors in achievements such as improved responsiveness in hospitals (Puone et al., 2008) and resiliency in schools (Christie & Potterton, 1999; Davidoff & Lazarus, 1999; Davidoff et al., 1999).

Given the importance of leadership in South Africa to address social issues, we examined the attitudes of high school and college students, who are the country's future leaders and followers (Note 1). There has been a call to expand leadership development training not only to the businesses of South Africa, but also to schools and universities (Coates et al., 2007). South Africa is currently in a transitional phase; while past leadership research has focused on White males, equality programs mean that more women and people of color are now in leadership positions (Booyesen & van Wyk, 2007). Madi (1995) adds that researchers should be aware that the average South African is 15 years old and Black, and it is their values and perceptions that will shape tomorrow's workforce. The present study therefore examined the perception of outstanding leadership traits among Black and South Asian students in South Africa.

In order to contextualize students' perceptions, we compared them to beliefs held by high school and college students in the United States. Given that there are multiple types and definitions of leadership (Yukl, 1981), the impact of culture on leadership development is not fully understood; it is not apparent whether traits important in

defining leaders are universal or more culturally determined (Elenkov & Manev, 2005; House, Hanges et al., 2004; Zagorsek et al., 2004).

We chose to compare South African students to American students because of differences in the education systems in the two countries. Within the school context, the values of a society are fostered through an emphasis on developing the characteristics and abilities that are thought to enable children's future success as citizens and workers (Wentzel & Looney, 2007). Research shows that American students learn a particular definition of leaders as "heroes" (someone acting alone to bring about significant, positive change) from an early age (Hoppe & Bhagat, 2007), and are thus likely to have a fairly narrow understanding of leadership. In contrast, as South African schools have experienced a dramatic cultural shift in the years since Apartheid (Department of Education, 1999), schools feature a mix of Eurocentric/Western and Afrocentric cultural norms. While Western approaches to leadership have proven to be effective in improving work performance in South Africa (Booyesen & Beaty, 1997), Bolden and Kirk (2009) argue that an Afrocentric view of leadership, with an emphasis on dialogue and shared understandings, can enhance a sense of community (Avolio, 1995; Mbigi, 1999). Therefore, it may be that Black and South Asian students from South Africa, in comparison to American students, are less likely to rate any specific style of leadership as being either very important or not very important. A number of different styles might be more equally endorsed.

In addition to cultural implications, it is not known how perceptions of leadership change over the course of the lifespan. Past studies show that "emerging adulthood" (Arnett, 2004) is a period of rapid maturation and identity conflict that may lead to changes in beliefs and personality (Erikson, 1964; Roberts et al., 2001; Roberts et al., 2003). In fact, Roberts et al. (2006) note that "personality traits change more often in young adulthood [ages 18-22] than any other period of the life course" (p. 14). This period of young adulthood is also the time when individuals enter college, and it has been found that during college, "individuals become more independent, explore new opportunities, and reconsider their values, goals, and beliefs about themselves" (Robins et al., 2005, p. 489). As a result, students tend to become less narcissistic (Roberts et al., 2010) and more open to experience (Robins et al., 2001) during their college years. To understand differences in traits seen as important for successful leaders during this period of emerging adulthood, we assessed leadership perceptions of both high school and upper-level college students. It may be that a shift in values and greater independence causes ideas about what might make an effective leader to also shift during this period, with college students more likely to endorse participative and collaborative leadership styles than would high school students.

1.2 Present Study

The purpose of the current study was twofold: to assess cultural differences in leadership perceptions between South African and American students, and to assess developmental differences in leadership perceptions between high school and college students compared to adult business leaders. The present study extends previous research to high school and college students of Black and South Asian descent in South Africa and White high school and college students in the United States. Students were given a modified questionnaire from the Global Leadership and Organization Behavior Effectiveness (GLOBE) Project (GLOBE Foundation, 2006) in order to evaluate their perceptions of leadership traits. In Project GLOBE, researchers examined the impact of culture on leadership and organizational practices by assessing the perceptions of adult business leaders in 62 cultures. House et al. (2004) found six Culturally-Endorsed Leadership Theory (CLT) dimensions that were viewed in a similar manner universally—Charismatic/Value-Based, Team-Oriented, Participative, Humane-Oriented, Autonomous, and Self-Protective leadership. Because Project GLOBE included adults in South Africa and the United States, we were able to compare current students' views about leadership with those of adult business leaders.

1.3 Hypotheses

First, given that American students are more likely to be taught a narrow definition of leadership (Hoppe & Bhagat, 2007), whereas South African students likely endorse both Western and Afrocentric approaches to leadership (Avolio, 1995; Mbigi, 1999), we hypothesized that South African students may endorse a larger range of traits as necessary for a successful leader to possess than do American students. Although the valence of leadership traits may be similar between the two cultures, we predicted that American students would rate a small number of traits with high importance while South African students would rate a larger number of traits as being at least moderately important to leaders.

Findings from the GLOBE study support this hypothesis, demonstrating the existence of multiple models of leadership within South Africa, as Black and White South Africans reported different understandings of leadership (House et al., 2004). For example, White South Africans were more likely to endorse charismatic and

participative over autonomous and self-protective leadership styles than were Black South Africans. Further, White South Africans were more similar to participants from the United States in their ratings of important leadership traits than they were to Black South Africans. Similarly, we predicted that Black and South Asian students from South Africa, in comparison to American students, would be less likely to rate any specific style of leadership as being either very important or not very important; a number of different styles might be more equally endorsed.

Second, we hypothesized that South African *and* American college students would likely rate helpful traits higher and harmful leadership traits lower than do high school students. Involvement with formal schooling shapes the ways in which students interact with one another, attend to events occurring in their environment, and attempt to solve problems (Mejia-Arauz et al., 2007; Rogoff & Lave, 1984; Rogoff & Toma, 1997). Additionally, emerging adulthood is a period of personal transformation as individuals become more independent and explore new opportunities during their college years (Robins et al., 2005). The re-evaluation of personal beliefs and goals that happens during the college years (Roberts et al., 2001, 2003), as well as increased first-hand interaction with leaders, was predicted to cause college students to embrace more interactive and collaborative leadership styles than their high school counterparts. This would lead college students to possess a more narrow definition of successful leadership overall, whereas high school students may have a less clear understanding of traits necessary for successful leaders, rating many traits as moderately important.

Finally, we hypothesized that current high school and college students would rate traits with a similar valence as adults included in Project GLOBE. Further, we predicted that our participants' ratings would be more moderate overall than the GLOBE adults, continuing a developmental trend. However, it may also be that the importance placed on traits may be different between students and adults, especially in South Africa, as a function of historical timing (Note 2). Specifically, as Apartheid has now ended more than 15 years ago, and because Black South Africans have been steadily gaining more leadership opportunities in the past decade, perceptions about the traits needed to be a successful leader may have shifted during this time, emphasizing a broader range of necessary traits now than in the past.

Overall, the current study expands upon past research by examining students' attitudes about necessary leadership traits for outstanding leaders to possess. We were interested in comparing students from South Africa and the United States to determine the impact of cultural differences on leadership styles as the world becomes more of a "global village" (Zagorsek et al., 2004). We were also interested in possible developmental differences in beliefs about leadership during the period of "emerging adulthood" (Arnett, 2004) to better understand the role of age and education on leadership perceptions. We believe that the current study highlights the importance of considering cultural and developmental contexts when studying leadership traits.

2. Method

2.1 Participants

Participants included 32 high school students (11 males; average age 17.8) and 30 Education majors (15 males; average age 24) from the KwaZulu-Natal province in South Africa who were Black or of South Asian descent. Although these ethnic groups have obvious differences, the two groups are often categorized together as non-Whites. Both groups have been historically oppressed and thus share a similar place in South African society. In fact, a recent issue of *South African Journal of Psychology* focused on how the "vestiges of the old order continue to intrude on the daily lived experiences of ordinary South African citizens in the post-apartheid period" (Bowman et al., 2010, p. 365). Therefore, we felt it was acceptable to combine them for the present study.

To establish a comparison, 29 high school students (15 males; average age 18) and 33 Education majors (4 males; average age 20.5) from Pennsylvania also participated in this study; all participants from the United States were White. Education majors were chosen by means of convenience sampling (Note 3) in South Africa; therefore, we used Education majors in the United States as well. However, the leadership views of education majors are particularly relevant to the goals of this study because these students will become leaders in their classrooms (Davidoff & Lazarus, 1999), and therefore, will model leadership skills for the next generation of students.

2.2 Measure

We utilized a modified version of the two Project GLOBE leadership sections, which each included 56 characteristics or behavioral descriptions (GLOBE Foundation, 2006). Answering on a 7-point Likert-type scale (1-3 = inhibits, 4 = no effect, 5-7 = contributes to), participants rated how important they believed each characteristic to be in describing an outstanding leader. The wording was changed on several items to help students relate to the characteristics outside of a business/organizational context; namely, *subordinates* was

changed to *others* and the words “in your organization or industry” were left out of the instructions (Hanges & Dickson, 2004, p. 127). Additionally, as English is not the first language for many of the South African participants, the researchers went through each definition with a South African professor to ensure the meanings would likely be understood without translating the surveys (Note 4). The revised version was given to all students so that all participants received identical surveys (Note 5).

2.3 Procedure

Prior to participation, students filled out a consent form (Note 6). The GLOBE surveys were administered to participants in a classroom setting; they were asked to write their gender and age on the first page, but no other identifying factors were present on the surveys. Participants were told that they could ask the researchers to further explain traits that were unclear; however, no one asked for clarification. All participants completed the survey in about 20 minutes though they were given unlimited time.

2.4 Data Analysis

As in Project GLOBE, 75 of the 112 questionnaire items were combined into six CLT dimensions (see House et al., 2004, Table 8.4), ensuring the structural equivalence between our sample and the GLOBE sample (van de Vijver & Leung, 2011). We then computed Cronbach's alpha scores for each CLT dimension with the South African and United States samples. Although not as high as Project GLOBE (where all internal consistency ratings exceeded 0.85), most alphas reached an acceptable level (see Table 1).

Table 1. Cronbach's alphas for CLT dimensions by country

	Attribute items	First-order factors	S. Af. alpha	U.S. alpha
Team-Oriented Leadership	20	5	0.85	0.67
Charismatic Leadership	22	6	0.84	0.57
Participative Leadership	8	2	0.63	0.75
Humane-Oriented Leadership	5	2	0.66	0.48
Autonomous Leadership	4	1	0.15	0.52
Self-Protective Leadership	16	5	0.61	0.57

Notes. The 75 attribute items were taken from the GLOBE questionnaire behaviors/characteristics. These attribute items were combined to make 21 first-order factors. The first-order factor items were used to calculate South Africa and United States alpha scores and were combined to make scores for the 6 CLT dimensions (which were subsequently used in all Results section analyses).

3. Results

Two (South Africa vs. United States) by two (high school vs. college) ANOVAs were performed for each of the six CLT dimensions. Descriptive statistics for our samples and Project GLOBE (House et al., 2004) are reported in Table 3. To address the threat of alpha inflation, we computed an omnibus MANOVA considering the six CLT dimensions jointly; Wilks' Lambda for both country, $F(6, 104) = 5.70, p < .001, \eta_p^2 = .25$, and school, $F(6, 104) = 3.76, p = .002, \eta_p^2 = .18$, was significant, indicating that there was an overall difference between South Africa and the United States and between high school and college students on the CLT dimensions (the overall interaction was not significant, $F(6, 104) = .33, p = .92, \eta_p^2 = .02$).

3.1 Cultural Differences

To compare cultural differences, we divided the CLT dimensions into two categories. Four dimensions (hereafter: *Top 4*) were rated as facilitating outstanding leadership in both countries (i.e., had an overall average rating greater than 4): Charismatic/Value-Based, Team-Oriented, Participative, and Humane-Oriented leadership. Two dimensions (hereafter: *Bottom 2*) were rated as inhibiting outstanding leadership (i.e., had an overall average rating less than 4): Autonomous and Self-Protective leadership.

Although the overall valence of the six CLT dimensions was the same for students in South Africa and the United States, the relative importance placed on the dimensions differed significantly for five of the six dimensions across cultures (see Table 3). As predicted, South African students rated a larger number of traits as contributing *somewhat* to outstanding leadership, whereas American students showed more of a distinction in

their rating of contributing and inhibiting traits. South African students rated three of the Top 4 dimensions significantly lower than did American students, seeing these traits as contributing less to outstanding leadership: Team-Oriented leadership, $F(1,115) = 4.02$ (Note 7), $p = .047$, $\eta_p^2 = .03$, Charismatic/Value-Based leadership, $F(1,115) = 4.43$, $p = .037$, $\eta_p^2 = .04$, and Participative leadership, $F(1,119) = 17.88$, $p < .001$, $\eta_p^2 = .13$. In contrast, South Africans students viewed the Bottom 2 dimensions as less harmful for successful leaders, rating them significantly higher than did American students: Self-Protective leadership, $F(1,115) = 17.39$, $p < .001$, $\eta_p^2 = .13$ and Autonomous leadership, $F(1,117) = 11.51$, $p = .001$, $\eta_p^2 = .09$. There was no significant difference in Humane-Oriented leadership across cultures, $F(1,118) = .55$, $p = .46$, $\eta_p^2 = .005$.

3.2 Developmental Differences

Although the valence of the six CLT dimensions remained the same, the relative importance of three CLT dimensions showed significant differences between high school and college students collapsed across culture (see Table 3). College students rated two of the Top 4 dimensions, Team-Oriented leadership, $F(1,115) = 6.70$, $p = .011$, $\eta_p^2 = .06$, and Participative leadership, $F(1,119) = 7.40$, $p = .008$, $\eta_p^2 = .06$, as being more beneficial to outstanding leaders than did high school students. In contrast, college students rated the Bottom 2 dimension of Autonomous leadership as more harmful to leaders than did high school students, $F(1,117) = 21.92$, $p < .001$, $\eta_p^2 = .16$. Charismatic/Value-Based leadership, $F(1,115) = 2.82$, $p = .10$, $\eta_p^2 = .02$, Humane-Oriented leadership, $F(1,118) = 1.96$, $p = .16$, $\eta_p^2 = .02$, and Self-Protective leadership, $F(1,115) = 1.17$, $p = .28$, $\eta_p^2 = .01$, showed no significant differences between high school and college students, although trends were all in the predicted direction. Additionally, there were no significant interactions between culture and age.

3.3 Comparison to Project GLOBE

The pattern of results for our participants was similar to the GLOBE study: there were no differences in the valence of the Top 4 and Bottom 2 in either country. However, contrary to our expectations, there was a tendency for our participants to assign greater leadership contribution to the Top 4 dimensions and greater leadership detriment to the Bottom 2 dimensions than the GLOBE participants, with some of the ratings from the GLOBE sample falling outside of the 95% confidence intervals of the present results (see Table 3). South African college students rated the Top 4 dimensions as more important than did the Black GLOBE Sample. South African high school students had higher ratings for Team-Oriented and Charismatic leadership than the Black GLOBE sample. However, these ratings did *not* differ significantly from the White South African sample's ratings. American college students rated Team-Oriented and Participative Leadership as more important and the Bottom 2 dimensions as more detrimental than did the United States GLOBE sample. American high school students had higher ratings for Team-Oriented and lower ratings for Self-Protective leadership than the GLOBE sample.

Table 2. Means (*M*) and 95% confidence intervals (*CI*) for CLT dimensions

	South Africa					
					GLOBE	GLOBE
	High School		College		Blacks	Whites
	<i>M</i>	95% <i>CI</i>	<i>M</i>	95% <i>CI</i>	(<i>M</i>)	(<i>M</i>)
Team-Oriented Leadership	5.61	[5.24-5.96]	6.13	[5.86-6.40]	5.23	5.8
Charismatic Leadership	5.6	[5.24-5.99]	5.95	[5.70-6.20]	5.16	5.99
Participative Leadership	5.13	[4.70-5.55]	5.72	[5.25-6.19]	5.04	5.62
Humane-Oriented Leadership	4.81	[4.09-5.53]	5.57	[4.91-6.22]	4.79	5.33
Autonomous Leadership	4.66	[4.01-5.30]	4.03	[3.25-4.82]	3.94	3.74
Self-Protective Leadership	3.59	[3.27-3.92]	3.34	[2.99-3.69]	3.62	3.19
	United States					
	High School		College		GLOBE	
	<i>M</i>	95% <i>CI</i>	<i>M</i>	95% <i>CI</i>	(<i>M</i>)	
Team-Oriented Leadership	6.15	[6.00-6.30]	6.23	[6.16-6.45]	5.8	
Charismatic Leadership	6.02	[5.89-6.14]	6.17	[6.01-6.32]	6.12	

Participative Leadership	6.08	[5.76-6.40]	6.28	[6.05-6.52]	5.93
Humane-Oriented Leadership	5.24	[4.80-5.68]	5.42	[5.01-5.84]	5.21
Autonomous Leadership	4.07	[3.37-4.77]	2.67	[2.14-3.20]	3.75
Self-Protective Leadership	2.87	[2.68-3.07]	2.8	[2.59-3.01]	3.15

4. Discussion

In the present study, we examined leadership perceptions of South African high school and college students. To contextualize their views, we compared their perceptions to those of students in the United States. We also compared perceptions between high school and college students in relation to adult business leaders from both countries to determine a developmental progression of leadership perceptions.

Before discussing cultural and developmental differences, it is important to emphasize the commonalities in views of leadership worldwide; people from many countries rate the six CLT dimensions with a similar valence in defining outstanding leaders (House et al., 2004). In our sample of students from the United States and South Africa, Charismatic/Value-Based, Team-Oriented, Participative, and Humane-Oriented leadership were seen as traits contributing to outstanding leadership, while Autonomous and Self-Protective leadership were viewed as detracting from outstanding leadership. However, despite the global appeal of these traits, notable differences were still found between South African and American students as well as between high school and college students. Scores from the six CLT traits in South Africa implied a less firm distinction between helpful and harmful leadership traits; three of the Top 4 dimensions were rated significantly lower (less beneficial) and the Bottom 2 dimensions were rated significantly higher (less harmful) in South Africa than in the United States.

This cultural variation in leadership ratings may be due to differences in the understanding of leadership in South Africa and the United States. The literature on leadership in the United States points to a particular type of hero leader as effective (Hoppe & Bhagat, 2007); students may have used this single image to inform their ratings of an outstanding leader. In contrast, students from South Africa may have incorporated Western and Afrocentric views of leadership into their definition of a successful leader (Avolio, 1995; Bolden & Kirk, 2009; Booyesen & Beaty, 1997; Mbigi, 1999; Nsamenang, 2011; van Eeden et al., 2008), causing a broader definition overall. Another possible reason for the cultural differences could be that overall conditions in each country reinforce different concepts of leadership. Following the framework proposed by Maslow (1954), it is possible that because South Africans are more likely to deal with safety and survival issues such as poverty, crime, and AIDS on a daily basis, less attention may be given to other social or self-actualization issues, such as the attributes that make a good leader.

Second, the present study found that college students' perceptions of outstanding leadership were more distinct than those of high school students. Two of the Top 4 dimensions were rated higher by college than high school students, while Autonomous leadership (one of the Bottom 2) was rated significantly lower among college students than among high school students. College students may have a stronger sense of what traits are beneficial versus harmful for successful leaders, while high school students rate traits more equally.

This shift may be due to the period of personal transformation that comes during the college years (Erikson, 1964; Robins et al., 2005). Re-evaluating personal beliefs and values, and becoming more open to new experiences (Robins et al., 2001), may lead college students to value Team-Oriented and Participative leadership more and Autonomous leadership less. In general, attending college may provide students with more personal examples of leadership upon which to base their ratings, leading them to have more distinctive view of helpful and harmful leadership practices. However, it is also true that, on average, college attendees, as compared to their peers who do not attend college, are more academically successful in secondary school and come from families with higher socioeconomic status (Arnett, 2004). Differences between high school and college students' leadership perceptions may consequently relate to these demographic characteristics rather than to changes in experience. Either way, it is clear that the college-educated population in South Africa and the United States—those who will most likely be future leaders—show a similar pattern of distinctly defined leadership perceptions.

Third, high school and college students' scores in the present study were similar to the adult sample included in Project GLOBE (House et al., 2004); the valence of the Top 4 and Bottom 2 dimensions was constant, indicating that traits viewed as necessary for successful leadership remain relatively stable throughout the lifespan. However, our participants, especially the college students, tended to place higher importance on contributing

traits and lower importance on inhibitory traits than did the adult sample. It may be that college students are particularly focused on a Team-Oriented and Participative approach to leadership that diminishes with age and experience. Alternatively, differences might be specific to our sample of college students; Education majors may be more likely to ascribe to a specific brand of leadership that may not generalize to a business context.

Several limitations of the present study should be addressed. First, in order to eliminate the possibility of between-subject variability and better establish a developmental pattern, future research should include longitudinal, rather than cross-sectional, measures of leadership perceptions. Second, the current study used a rather small sample from each country that differed in both gender and age constitutions, raising the possibility that the differences we found were due to sampling-related issues. However, the fact that the results closely replicated those from a much larger sample of Project GLOBE and the omnibus MANOVA test was significant (addressing the concern of alpha-inflation) helps to validate the present results. Further, while there were age differences in our two college samples, we were not precisely interested in *age*, but rather experience differences between high school and college students. Regardless, future research would be well served by having age more closely matched across cultural contexts. Third, although steps were taken to make the survey equally accessible to all students, it is possible that South African and American students did not have the same understanding of the characteristics. South African students' classes are taught in English starting in third grade, yet English is still a second language for many of the South African students included in this study. Therefore, in the future, it may be advisable to administer surveys in the students' native language. Finally, inevitable cultural differences, such as socioeconomic status, government structure, crime rates, etc., could not be sufficiently controlled in this study. As with any cross-cultural research (see van de Vijver & Leung, 2011), these differences should be remembered when evaluating the results and implications of the study.

Overall, the leadership traits seen to facilitate and inhibit outstanding leadership were similar in both cultures. South African students showed less of a distinction between positive and negative traits in defining successful leaders, giving lower ratings to positive traits and higher ratings to negative traits. American students, on the other hand, assigned particularly high importance to positive traits, possibly following a narrow view of leaders as heroes. Moreover, college students across both cultures had more distinctly defined ideas about what constitutes an outstanding leader, with positive traits increasing and negative traits decreasing in importance. Ratings were similar to adults surveyed in Project GLOBE, although college students rated several traits as being more important than did adults. The results demonstrate the importance of considering culture and life-stage in the study of perceived outstanding leadership practices.

References

- Arnett, J. J. (2004). *Emerging adulthood: The winding road from the late teens to the early twenties*. New York: Oxford University Press.
- Avolio, B. J. (1995). Integrating transformational leadership and Afro-centric management. *Human Resource Management, 11*, 17-21.
- Bolden, R., & Kirk, P. (2009). African leadership: Surfacing new understandings through leadership development. *International Journal of Cross-Cultural Management, 9*, 69-86. <http://dx.doi.org/10.1177/1470595808101156>
- Booyesen, A. E., & van Wyk, M. W. (2007). Culture and leadership in South Africa. In J. S. Chhokar, F. C. Brodbeck, & R. J. House (Eds.), *Culture and leadership across the world: The GLOBE book of in-depth studies of 25 societies* (pp. 433-474). Mahwah, NJ: Lawrence Erlbaum Associates.
- Booyesen, A. E., & Beaty, D. T. (1997). Linking transformation and change leadership in South Africa: A review of principles and practices. *SBL Research Review, 1*, 9-18.
- Bowman, B., Duncan, N., & Sonn, C. (2010). Editorial: Towards a psychology of South Africa's histories—living with and through the apartheid archive. *South African Journal of Psychology, 40*, 365-369.
- Chersich, M. F., & Rees, H. V. (2008). Vulnerability of women in southern Africa to infection with HIV: Biological determinants and priority health sector interventions. *AIDS, 22*, S27-S40. <http://dx.doi.org/10.1097/01.aids.0000341775.94123.75>
- Chopra, M., Lawn, J. E., Sanders, D., Barron, P., Abdool Karim, S. S., Bradshaw, D., ... Coovadia, H. (2009). Achieving the health millennium development goals for South Africa: Challenges and priorities. *The Lancet, 374*, 1023-1031. [http://dx.doi.org/10.1016/S0140-6736\(09\)61122-3](http://dx.doi.org/10.1016/S0140-6736(09)61122-3)
- Christie, P., & Potterton, M. (1999). Resilient schools: A South African study. In J. Gultig, T. Ndhlovu, & C.

- Bertram (Eds.), *Creating people-centred schools: School organization and change in South Africa* (pp. 93-99). Capetown: Oxford University Press Southern Africa.
- Coates, T. J., Fiamma, A., Szekeres, G., Dworkin, S., Remien, R. H., Hanson, B. W., & Rudatsikira, J. (2007). Business' role in exercising leadership, promoting equity, embracing accountability, and developing partnerships. *AIDS*, 21, S3-S9. <http://dx.doi.org/10.1097/01.aids.0000279688.23535.04>
- Coovadia, H., Jewkes, R., Barron, P., Sanders, D., & McIntyre, D. (2009). The health and health system of South Africa: Historical roots of current public health challenges. *The Lancet*, 374, 817-834. [http://dx.doi.org/10.1016/S0140-6736\(09\)60951-X](http://dx.doi.org/10.1016/S0140-6736(09)60951-X)
- Davidoff, S., Kaplan, A., & Lazarus, S. (1999). Organizational development: An argument for South African schools. In J. Gultig, T. Ndhlovu, & C. Bertram (Eds.), *Creating people-centred schools: School organization and change in South Africa* (pp. 100-109). Capetown: Oxford University Press Southern Africa.
- Davidoff, S., & Lazarus, S. (1999). Leadership and management in building 'learning' schools. In J. Gultig, T. Ndhlovu, and C. Bertram (Eds.), *Creating people-centred schools: School organization and change in South Africa* (pp. 64-73). Capetown: Oxford University Press Southern Africa.
- Department of Education. (1999). Changing management to manage change: A new plan for South African schools. In J. Gultig, T. Ndhlovu, & C. Bertram (Eds.), *Creating people-centred schools: School organization and change in South Africa* (pp. 3-8). Capetown: Oxford University Press Southern Africa.
- Erikson, E. (1964). *Childhood and society* (2nd ed.). Oxford, W. W. Norton.
- Elenkov, D. S., & Manev, I. M. (2005). Top management leadership and influence on innovation: The role of socio-cultural context. *Journal of Management*, 31, 381-402. <http://dx.doi.org/10.1177/0149206304272151>
- GLOBE Foundation. (2006). Research survey: GLOBE project (form alpha). Available at: http://www.bsos.umd.edu/psyc/hanges/index_files/GLOBE_Phase_2_Alpha_Questionnaire.pdf (accessed 4 June 2012).
- Hanges, P. J., & Dickson, M. W. (2004). The development and validation of the GLOBE culture and leadership scales. In I. R. J. House, P. J. Hanges, M. Javidan, P. W. Dorfman, & V. Gupta (Eds.), *Leadership, culture, and organizations: The GLOBE study of 62 societies* (pp. 121-151). Thousand Oaks, CA: SAGE.
- Hoppe, M. H., & Bhagat, R. S. (2007). Leadership in the United States of America: The leader a cultural hero. In J. S. Chhokar, F. C. Brodbeck, & R. J. House (Eds.), *Culture and leadership across the world: The GLOBE book of in-depth studies of 25 societies* (pp. 475-535). Mahwah, NJ: Lawrence Erlbaum Associates.
- House, R. J., Hanges, P., Javidan, M., Dorfman, P., & Gupta, V. (Eds.). (2004). *Culture, leadership, and organizations: The GLOBE study of 62 societies*. Thousand Oaks, CA: SAGE.
- Madi, P. (1995). Moving the centre. *People Dynamics*, 13, 12-16.
- Maslow, A. H. (1954). *Motivation and personality*. New York: Harper.
- Mbigi, L. (1999). The spirit of African management. In J. Gultig, T. Ndhlovu, & C. Bertram (Eds.), *Creating people-centred schools: School organization and change in South Africa* (pp. 39-47). Capetown: Oxford University Press Southern Africa.
- Mejia-Arauz, R., Rogoff, B., Dexter, A., & Najafi, B. (2007). Cultural variation in children's social organization. *Child Development*, 78, 1001-1014. <http://dx.doi.org/10.1111/j.1467-8624.2007.01046.x>
- Nsamenang, A. B. (2011). The culturalization of developmental trajectories: A perspective on African childhoods and adolescences. In L. A. Jensen (Ed.), *Bridging cultural and developmental approaches to psychology: New syntheses in theory, research, and policy* (pp. 235-254). New York: Oxford University Press.
- Puone, T., Cuming K., Sanders, D., & Ashworth, A. (2008). Why do some hospitals achieve better care of severely malnourished children than others? Five-year follow-up of rural hospitals in Eastern Cape, South Africa. *Health Policy and Planning*, 23, 428-437. <http://dx.doi.org/10.1093/heapol/czn036>
- Roberts, B. W., Caspi, A., & Moffitt, T. (2001). The kids are alright: Growth and stability in personality development from adolescence to adulthood. *Journal of Personality and Social Psychology*, 81, 670-683. <http://dx.doi.org/10.1037/0022-3514.81.4.670>
- Roberts, B. W., Edmonds, G., & Grijalva, E. (2010). It is developmental me, not generation me: Developmental changes are more important than generational changes in narcissism—commentary on Trzesniewski and

- Donnellan (2010). *Perspectives on Psychological Science*, 5, 97-102. <http://dx.doi.org/10.1177/1745691609357019>
- Roberts, B. W., Robins, R. W., Trzesniewski, K. H., & Caspi, A. (2003). Personality trait development in adulthood. In J. T. Mortimerand, & M. J. Shanahan (Eds.), *Handbook of the life course* (pp. 579-595). New York: Plenum.
- Robins, R. W., Fraley, R. C., Roberts, B. W., & Trzesniewski, K. H. (2001). A longitudinal study of personality in young adulthood. *Journal of Personality*, 69, 617-640. <http://dx.doi.org/10.1111/1467-6494.694157>
- Robins, R. W., Nofle, E. E., Trzesniewski, K. H., & Roberts, B. W. (2005). Do people know how their personality has changed? Correlates of perceived and actual personality change in young adulthood. *Journal of Personality*, 73, 489-522. <http://dx.doi.org/10.1111/j.1467-6494.2005.00317.x>
- Roberts, B. W., Walton, K. E., & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. *Psychological Bulletin*, 132, 1-25. <http://dx.doi.org/10.1037/0033-2909.132.1.1>
- Rogoff, B., & Lave, J. (Eds.). (1984). *Everyday cognition: Its development in social context*. Cambridge: Harvard University Press.
- Rogoff, B., & Toma, C. (1997). Shared thinking: Community and institutional variations. *Discourse Processes*, 23, 471-497. <http://dx.doi.org/10.1080/01638539709545000>
- Seedat, M., Van Niekerk, A., Jewkes, R., Suffla, S., & Ratele, K. (2009). Violence and injuries in South Africa: Prioritising an agenda for prevention. *The Lancet*, 374, 1011-1022. [http://dx.doi.org/10.1016/S0140-6736\(09\)60948-X](http://dx.doi.org/10.1016/S0140-6736(09)60948-X)
- van Eeden, R., Cilliers, F., & van Deventer, V. (2008). Leadership styles and associated personality traits: Support for a conceptualisation of transactional and transformational leadership. *South African Journal of Psychology*, 38, 253-267.
- van de Vijver, F. J. R., & Leung, K. (2011). Equivalence and bias: A review of concepts, models, and data analytic procedures. In D. Matsumoto, & F. J. R. van de Vijver (Eds.), *Cross-cultural research methods in psychology, Culture and psychology* (pp. 17-45). New York: Cambridge University Press.
- Wentzel, K. R., & Looney, L. (2007). Socialization in school settings. In J. E. Grusec & P. D. Hastings (Eds.), *Handbook of socialization theory and research* (pp. 382-403). New York: Guilford Press.
- Wood, L., & Webb, P. (2008). The perceptions and responses of South African school principals regarding HIV and AIDS in their schools. *Vulnerable Children and Youth Studies*, 3, 143-149. <http://dx.doi.org/10.1080/17450120701867520>
- Yukl, G. A. (1981). *Leadership in organizations*. Englewood Cliffs, NJ, Prentice Hall.
- Zagorsek, H., Jaklic, M., & Stough, S. J. (2004). Comparing leadership practices between the United States, Nigeria, and Slovenia: Does culture matter? *Cross Cultural Management*, 11, 16-34. <http://dx.doi.org/10.1108/13527600410797774>
- Zhu, W., Avolio, B. J., & Walumbwa, F. O. (2009). Moderating role characteristics with transformational leadership and follower work engagement. *Group and Organization Management*, 34, 590-619. <http://dx.doi.org/10.1177/1059601108331242>

Notes

Note 1. Followers' attitudes about what makes a good leader appear to have an important part in determining a leader's effectiveness; a study of South African industries found that more positive attitudes in followers led to higher work engagement and increased effectiveness of leaders (Zhu, Avolio, and Walumbwa, 2009).

Note 2. Data from Project GLOBE were collected between 1994 and 1997, shortly after the end of Apartheid in South Africa.

Note 3. Convenience sampling in South Africa included students of our colleague Praveen Jugmohan, Professor of Education at University of Kwa-Zulu Natal. We thank him for his help in recruiting students for this project. Participants in both countries volunteered to complete this survey, and did not receive any extra credit or payment for their participation.

Note 4. Thanks to Karendera Devroop, University of South Africa, Pretoria, for his help with the surveys.

Note 5. Because we made very few modifications to the original Project GLOBE leadership questionnaires (i.e., only made the language more simple and in reference to a school environment rather than business setting), we did not feel it was necessary to perform a validity test on our modified questionnaires.

Note 6. With several other collaborators, the authors established an instrumental band program at a public high school in South Africa. Although some high school participants were under age 18, parental consent was not necessary because school administrators gave permission for their students to complete a number of non-invasive psychological surveys throughout the week of our music intervention. High school students in the US were chosen from a nearby high school; all students selected were over 18 so that parental consent would not be required.

Note 7. Degrees of freedom differ by CLT trait because of incomplete data from several participants.

Does Violent Movie Exposure Affect Aggressive Cognition of Chinese Adolescents? Evidences from a Modified STROOP Task

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Received: February 28, 2013

Accepted: April 8, 2013

Online Published: May 14, 2013

doi:10.5539/ijps.v5n2p11

URL: <http://dx.doi.org/10.5539/ijps.v5n2p11>

Abstract

The main purpose of the study was to examine the impact of violent movies on aggressive cognition of Chinese adolescents. A modified STROOP word-color naming task was used to examine whether aggressive words could prime Chinese adolescents' aggressive cognition. The result showed no significant differences in aggressively activated score (AAS) for violent movie and non-violent movies, and that no significant differences were found in main affect of movie type (violent movie vs. non-violent movie). However, it did reveal significant Movie Type $\times$ Gender interaction, and that aggressive cognition was significantly affected by violent movie for boys, but was not for girls. Additionally, significant Movie Type $\times$ Aggressive Level interaction was found, and that aggressive cognition was significantly influenced by violent movie only for high-aggressive level (HL) participants, not for low-aggressive level (LL) and mid-aggressive level (ML) participants, which partly supported General Aggressive Model (GAM). Limitations of the present study were also discussed.

Keywords: violent movies, aggressive cognition, Chinese adolescents, modified STROOP task

1. Introduction

Aggressive cognition was a type of implicit aggression (e.g., affect, emotion, thought, plan) hidden in human brain, which intended to harm others who were motivated to avoid that harm. Based on this, we attempted to regard aggressive cognition as a cognitive process of aggressive stimuli, which could be explained from perspective of information processing. Although aggressive behavior (e.g., physical assault, murder) provoked was on the premise of aggressive cognition activation, aggressive cognition was not bound to aggressive behavior.

Currently, considerable researches reported that media violence (e.g., TV, movie, video games) affected individuals' aggression (Anderson, Gentile, & Buckley, 2007; Wood et al, 1991; Bushman, 1997; Bushman & Anderson, 2007; Zeng et al, 1997). Furthermore, it confirmed that exposure to violent media could increase aggressive behavior (Wendy et al, 1991; Anderson & Bushman, 2001; Carnagey & Anderson, 2005; Hyde, 1984; Lagerspetz et al, 1988). More importantly, men were reported to be more susceptible to aggression relative to females (Crick & Grotpeter, 1995; Lindeman et al, 1997; Paquette & Underwood, 1999; Estefani'a Este'vez Lo'peza, et al, 2008; Anderson, 1997). In particular, it was found that subjects watching violent movies thought more aggressive words by using lexical decision and word association task (Bushman, 1995). Researchers also found that subjects playing violent sports video games have higher aggression than others by using word naming task (Anderson & Carnagey, 2009).

With the rapid advancement of network technology, numerous adolescents had more and more opportunities to view violent movies online, and they were prone to form aggressive cognition, imitate aggressive behavior. Meanwhile, China was undergoing social transition and transformation, which may make adolescents show aggressive behavior when they confronted setbacks. Currently, a great amount of violent movies poured into

Chinese adolescents' daily life, and their aggressive cognition may be affected by short-term or long-term violent movie exposures. It was reported that aggressive kids may be at risk for serious adjustment difficulties (e.g., loneliness, depression, isolation) relative to their non-aggressive peers after viewing violent movies (Huesmann et al, 2003). It seemed that a causal correlation existed between media violence and aggressive cognition, but little empirical research touched in this aspect. In reality, most young offenders who convicted crimes had once watched violent movies, and that approximately 75 percent criminals watched Chinese violent movie GU HUO GUY (see <http://www.news.sina.com.cn>). Adolescents' aggression caused by violent movies, however, did not attract attention from school, family, and society. Therefore, it was of necessity for us to conduct empirical researches on this area, so as to effectively control aggressive behavior. What's more, most previous research only focused on differences between high- and low-aggressive individuals, not touching mid-aggressive ones. In fact, individuals ranking at mid-aggressive level accounted for a great part of our society, whereas few people ranking at high- or low-aggressive level. Thus, mid-aggressive level adolescents should be further explored.

The present study aimed to examine the effects of violent movie exposure on Chinese adolescents' aggressive cognition by employing modified STROOP word-color naming task across different genders and aggressive levels. Thus, two following hypotheses were proposed.

Hypothesis 1. Boys may have higher aggressive cognition than girls after watching violent movies.

Hypothesis 2. High-aggressive adolescents may have higher aggressive cognition than mid- and low-aggressive adolescents after watching violent movies.

2. Method

2.1 Participants

74 Chinese adolescents (38 boys, 36 girls) were randomly selected from a high school in China. Participants ranged in age from 15 to 19 years ($M=16.46$, $SD=1.23$), with no color blindness and normal vision correction. 37 participants watching STREET FIGHTER were regarded as the experimental group (violent movie group), and 37 participants watching AIR CRISIS were regarded as the control group (non-violent movie group). 2 participants watching AIR CRISIS were deleted as their accuracy rate below 80 percent in statistics, and thus the final participants involved in statistics were 72 (the control group=35, the experimental group=37), please see table 1.

Table 1. Participants in the study

Movie Type	Gender		Aggressive Level			Overall
	Boys	Girls	HL	ML	LL	
The Experimental Group	19	18	12	12	13	37
The Control Group	19	16	12	12	11	35
Overall	38	34	24	24	24	72

Discription: HL=High-aggressive level; ML= Mid-aggressive level; LL=Low-aggressive level.

2.2 Materials

2.1.1 Computer & Earphone

The computer resolution rate was 1024×576 , and the refresh rate was 60Hz. The distance between participants and screen was around 60cm, the face of participants was parallel with screen, and the eyes of participants were kept at the same level with the center of the screen.

2.2.2 Street Fighter & Air Crisis

STREET FIGHTER told a former special military officer who sneaked into the most dangerous underground fight clubs to look for avenge the enemy for his brother. His brother was forced to participate in the fighting game because of a gambling debt, so that he was now in a coma situation. Fragment selected was a wrestling scene. AIR CRISIS told a flight travels from Berlin to New York, and the heroine has endured the grief of unexpected death of her husband. She was eager to get back home with a young daughter as soon as possible. The lovely 6-year-old daughter was missing after the airplane shortly takes off and the strong mother began to look for her on the plane. The fragment selected told about the looking process. The time of each movie clip

lasted for 15 minutes. The content of violent movie (STREET FIGHTER) was body-fighting between two males following with language attack, whereas the content of non-violent movie (AIR CRISIS) had no body-fighting and language attack.

2.2.3 Goal Words

50 aggressive words and non-aggressive words were randomly matched. Words were presented on a gray background in green and blue color, and they were presented in the center of computer screen. The presented order of words was counterbalanced.

2.2.4 Measures. Buss-Perry Aggression Questionnaire (BPAQ)

A 5-point scale, was used to measure aggressive levels (high-aggressive, mid-aggressive and low-aggressive level). BPAQ consists of four dimensions: physical aggression (PA), verbal aggression (VA), anger (A), and hostility (H). Internal consistent reliability (Cronbach-alfa coefficient) for the Scale was 0.94. Test and re-test reliability yielded a correlation coefficient of 0.89. Cronbach-alfa coefficients of physical aggression, verbal aggression, anger, and hostility were 0.85, 0.72, 0.83 and 0.77, respectively. The questionnaire supports the convergent validity as a measure of aggression (Buss & Perry, 1992).

2.3 Research Design

The multi-factorial design was used, with movie type, gender and aggressive level as the independent variables and aggression cognition as the dependent variable. 2(Movie Type: Violent vs. Non-violent) $\times$ 2 (Goal Word: Aggressive vs. Non-aggressive) $\times$ 3 (Aggressive Level: High-aggressive, Mid-aggressive, Low-aggressive) $\times$ 2 (Gender: Boy vs. Girl) repeated four measures analysis of variance (ANOVA) was used to examine main effect and interaction of variables. The between-group factors were movie types, aggressive level, and gender, and goal word was the within-group factor. According to related studies (Li et al, 2008), the participants at the top one third of BPAQ were defined as high-aggressive level (HL), the last one third of BPAQ were deemed as low-aggressive level (LL), and others were mid-aggressive level (ML) in terms of score distribution. All participants were treated according to the ethical guidelines of the *American Psychological Association* (American Psychological Association, 1972).

2.4 Procedure

First of all, we signed an inform consent with participants to make them know the experiment cautions. After that, they were told to watch a 15-minute movie clip and fill BPAQ, and then finished an experiment task on computer. They could terminate at any time if they felt uncomfortable. Secondly, participants were randomly distributed to watch violent movie clips or non-violent movie clips. Thirdly, each participant finished STROOP color-word naming task. Last, participants were debriefed about their feelings, and participants received a nice gift after experiment.

2.4.1 Practical Session

When an instruction was presented, 5 aggressive and 5 non-aggressive words were presented in two colors (green, blue). There were totally 30 trials in practical session and they will not appear in formal session. The program will return to practical session if the accuracy rate was below 80 percent. The goal of the session was to familiar participants with key pressing, and to exclude the color blindness constantly. The experimenter watched beside the participants, getting ready to answer their questions.

2.4.2 Formal Session

All trials will be divided into 3 blocks, in which 40 trials and totally 120 trials were presented on average. 20 aggressive and 20 non-aggressive words were randomly presented in two kinds of colors (green, blue), and each word appeared only once in each block. Participants had a short rest among blocks, after that the program entered into the next block automatically. When the session was over, concluding remarks appeared on screen and participants were debriefed.

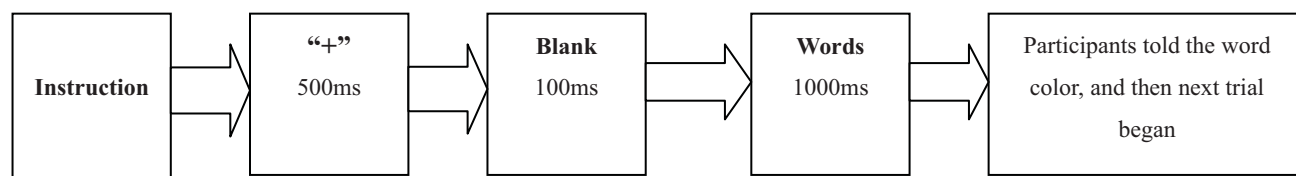


Figure 1. Modified STROOP word-color naming presentation procedure

Description: The procedure was programmed by E-prime psychology software, and it was divided into two stages: practical session and formal session. Instructions were first presented on screen with guidance: "The experiment is to test your speed and accuracy of reading, and the following words will be presented in two colors one by one. If word color is green, press "1" on keyboard, if word color is blue, press "2". You should react as quickly and accurately as possible to determine the word color regardless of its meaning, and then the next trial began." When instructions appeared, a sign "+" emerged on the center of the screen with the time of 500ms, and the blank gray screen lasted for 100ms, then the words appeared in the center of the screen, the time lasted for 1000ms. The target words were used in NO. 48 black italics, each word was presented randomly with two colors (green, blue). After participants reported the word color, the program entered the next trial. Above all, the program would also enter into the next trial automatically if participants did not respond in 1000ms. Meanwhile, accuracy rate and reaction time (RT) were recorded. The inter-stimulus-interval (ISI) was from 200 to 400ms.

3. Results

3.1 The Main Effect of Goal Word

Using one-way repeated measure analysis of variance (ANOVA), a significant main effect of goal word was found in reaction time (RT) for aggressive words ($M=540$, $SD=52.08$) and non-aggressive words ($M=535$, $SD=52.17$). The RT of aggressive words was significantly longer than that of non-aggressive words ($F=4.56$, $p<0.05$) (see Table 2).

Table 2. RT differences between aggressive and nonaggressive words

Goal Words					
Aggressive words			Non-aggressive words		<i>F</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
RT	540	52.08	535	52.17	4.56*

Description: * $p<0.05$; ** $p<0.01$; *** $p<0.001$.

3.2 The Main Effect of Movie Type, Movie Type $\times$ Gender, Movie Type $\times$ Aggressive Level Interaction

STROOP task was based on this assumption: If subjects showed characteristics of delay when naming the color of semantic words, explaining that they consumed lots of cognitive resources, which could infer the existence of cognitive processing. In this study, we thought the time participants named the color of aggressive words after watching violent movie clips was longer than that of nonaggressive words (compared to participants who watched non-violent movie clips). Based on this, we hypothesize every participant had an aggressively activated score (AAS), which meant the RT differences of aggressive words minus non-aggressive words, and examined whether significant differences of AAS were found in violent and non-violent movie groups (see Table 3).

Table 3. Means of RT of word-color naming for aggressive and non-aggressive words

	Goal Words				Means of AAS (ms)
	Aggressive Words		Non-aggressive Words		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Violent movie	542	49.17	536	48.11	+6
Non-violent Movie	537	55.60	534	56.83	+3
Effect of violent movie					+3

Description: AAS= aggressively activated score.

Multi-factor analysis of variance (ANOVA) was used to examine whether significant differences were found in AAS among independent variables. There were no significant differences in each level ($P>0.05$), and the results were comparable (see Table 4).

Table 4. Multi-factor ANOVA for independent variables

Variables	Mean Square	<i>F</i>	<i>P</i>
Movie type	237.07	0.74	0.39
Movie type× <i>Gender</i>	1596.21	5.42**	0.01
Movie type× <i>Aggressive level</i>	1716.68	5.39**	0.01
Movie type× <i>Gender</i> × <i>Aggressive level</i>	21.35	0.07	0.94

Discription: * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

3.3 The Main Effects of Movie Type

The AAS of the experimental group was significantly higher than that of the control group if aggressive cognition was affected by violent movie clips. As we could see, the average AAS of violent movie was higher than that of non-violent movie (6ms>3ms), but no significant differences were found ($F=0.74$, $p>0.05$). Therefore, no significant differences were found in main effect of movie type on aggressive cognition (see Table 3).

3.4 Movie Type × Gender Interaction

There were significant Movie Type × Gender interaction ($F=5.42$, $P<0.01$) (see Table. 4). Further simple effect analysis showed the average AAS of girls watching violent and non-violent movie clips was 4.76 and 11.53, respectively, and no significant differences were found. The average AAS of boys watching violent and non-violent movie clips was 7.48 and -5.43, respectively. The average AAS of boys watching violent movie clips, however, was significantly higher than non-violent movies ($F=3.82$, $p<0.05$). Therefore, aggressive cognition significantly affected by violent movies was only for boys, but not for girls (see Table 5).

Table 5. Comparison of AAS for boys and girls after watching movie clips

Gender	Violent Movie Clips	Non-violent Movie Clips	<i>F</i>
Boys	7.48	-5.43	3.82 *
Girls	4.76	11.53	1.19

Discription: * $p<0.05$, ** $p<0.01$, *** $p<0.001$

3.5 Movie Type × Aggressive Level Interaction

There were significant differences in *Movie Type × Aggressive Level interaction* ($F=5.39$, $p<0.01$). Simple effect analysis showed the average AAS of HL subjects watching violent and non-violent movies were 17.89 and -2.99, respectively, and particularly aggressive cognition of HL adolescents was significantly affected by violent movie clips ($F=9.84$, $p<0.05$). The average AAS of ML adolescents watching violent and non-violent movies were 10.61 and 16.51, respectively, and aggressive cognition of ML participants was not significantly affected by violent movies ($F=2.83$, $p>0.05$). The average AAS of LL participants watching violent and non-violent movies were -0.67 and -2.75, respectively, and aggressive cognition of LL participants was not significantly affected by violent movies ($F=0.06$, $p>0.05$). (see Table 6).

Table 6. Comparison of AAS for aggressive levels after watching movie clips

Aggressive Level	Violent Movie Clip	Non-violent Movie Clip	<i>F</i>
HL	17.89	-2.99	9.84*
ML	10.61	16.51	2.83
LL	-0.67	-2.75	0.06

Discription: HL=High-aggressive level; ML= Mid-aggressive level; LL=Low-aggressive level; * $p<0.05$, ** $p<0.01$, *** $p<0.001$

4. Discussion

The primary goal of the study was to examine the impact of violent movie on Chinese adolescents' aggressive cognition. In agreement with our hypothesis, the study demonstrated that violent movie positively activated the aggressive cognition of adolescents. Both situational variables (Movie Types) and individual variables (Aggressive Levels, Gender) affected adolescents' aggressive cognition, partly supporting General Aggressive Model (GAM) and Cognitive-neoassociation Model (CNM). Additionally, we found aggressive cognition of boys was more likely to be affected than that of girls, which was correspondent with hypothesis 2, and also replicated previous researches (Christina & Kaukiainen, 2004; Boutwell, et al, 2011; Lansford et al., 2012). Besides, the aggressive cognition of HL adolescents was positively affected by violent movie clips at significant level, which was in parallel with prior studies (Cross & Campbell, 2012; Bushman, 1996; Khoury, 2012; Wallace et al, 2012). It should be noticed that, however, aggressive cognition of ML and LL adolescents was not significantly influenced by violent movie clips, which supported hypothesis 3. Perhaps HL adolescents have stronger aggressively cognitive association networks than ML and LL adolescents, and thus their aggressive behavior was more likely to appear. Therefore, repeated exposure to violent media will form aggressively cognitive schema for adolescents, and finally led to aggression.

There were some differences in research methods compared with previous research, which used undergraduate psychology students as main participants. In the present study, Chinese adolescents were used as participants, and STROOP word-color naming paradigm was used to explore the impact of situational and individual variables on aggressive cognition, which extended previous researches. Some different results, however, also existed between previous study and this one. For instance, previous studies showed viewers' aggressive cognition was primed by violent movies, and the main effect of movie type was significant. The study, however, demonstrated no significant main effect of movie types, and that no significant differences were found in aggressive cognition between the experimental group and the control group. Perhaps differences among the factors were averaged and offset, making no significant main effect, which was obvious in main effect of movie type and gender $\times$ aggressive level interaction. Significant movie type $\times$ aggressive level interaction were also found, simple effect analysis showed aggressive cognition was significantly affected by violent movies for HL adolescents, but not for LL and ML adolescents. It was worth noticing that the gender of perpetrators in violent movies may affect aggressive cognition of participants with different genders. In other words, could aggressive cognition of boys be more easily influenced by violent movies when the perpetrators were males? If the perpetrators of the movies were females, would boys' aggressive cognition be affected at the same level? Perhaps the gender of perpetrators was really a factor associated with aggression, which need us further to be answered in future.

In the present study, we've examined the effects of violent movie on aggressive cognition of Chinese adolescents by employing STROOP word-color naming task. There were no significant differences in AAS for violent movie and non-violent movies, but significant Movie Type $\times$ Gender interaction was found, and that aggressive cognition was significantly affected by violent movie for boys, but not for girls. Significant interaction was also found between movie type and aggressive level, and that aggressive cognition was significantly influenced by violent movie for high-aggressive adolescents, but not for mid-aggressive and low-aggressive adolescents. Thus, this result should not be interpreted to generalize that watching violent movies surely elicit all adolescents' aggressive cognition.

5. Limitations

The study may be one of the first to explore the effects of violent movies on aggressive cognition of adolescents in China. Also this was one of the first to find the impact of aggressive level and gender on aggressive cognition for Chinese adolescents. The results, nevertheless, should be noticed in light of some limitations. First, the sample selected in the study was a relatively small and homogeneous group at a middle school. As a result, cautions should be made when the conclusions were generalized to another population (e.g., cross-cultures, multi-nation). Second, the data obtained from a cross-sectional design prevented the final determination of casual relationships. Third, all participants were asked to complete BPAQ, which was use to assess aggressive trait in the U.S. Perhaps some items in the scale were not suitable for Chinese adolescents under eastern cultural background. In future study, researchers should consider using a revised edition of BPAQ to survey and obtain data, to scientifically and exactly classify aggressive levels of adolescents. Additionally, longitudinal studies should be developed to provide pronounced evidence on the relationship among variables explored in the study. Last, we should cautiously draw conclusions that watching violent movies surely led to aggressive cognition. Upon this study, it only showed that violent movie exposure may provoke aggressive cognition for high-aggressive adolescents, not on all adolescents who viewed violent movies. Presumably, this was the reason

why so many prior researchers had fierce debates on this issue for a long time.

Acknowledgements

The study was funded by Research Grant of Humanities and Social Sciences of the Ministry of Education in China (Grant Number: 13YJC190030), and supported by the Fundamental Research Funds for the Central Universities (Grant Number: SWU1309408), and the Scientific Research Grant of Southwest University (Grant Number: SWU1209504). We sincerely thank Dr. Zhu Yi who gave the proof of reading the article, and gratitude to Dr. Cheng Gang (e.g., language help, writing assistance) when writing the manuscript.

References

- American Psychological Association. (1972). *Ethical standards of psychologists*. Washington, DC: American Psychological Association.
- Anderson, C. A., Gentile, D. A., & Buckley, K. E. (2007). *Violent video game effects on children and adolescents: Theory, research and public policy*.
- Anderson, C. A. (1997). Effects of violent movies and trait hostility on hostile feelings and aggressive thoughts. *Aggressive Behavior*, 23, 161-178. [http://dx.doi.org/10.1002/\(SICI\)1098-2337\(1997\)23:3<161::AID-AB2>3.0.CO;2-P](http://dx.doi.org/10.1002/(SICI)1098-2337(1997)23:3<161::AID-AB2>3.0.CO;2-P)
- Anderson, C. A., & Bushman, B. J. (2001). Effects of violent video games on aggressive behavior, aggressive cognition, aggressive affect, physiological arousal, and pro-social behavior: A meta-analytic review of the scientific literature. *Psychological Science*, 5, 353-359. <http://dx.doi.org/10.1111/1467-9280.00366>
- Anderson, C. A., & Carnagey, N. L. (2009). Causal effects of violent sports video games on aggression: Is it competitiveness or violent content? *Journal of Experimental Social Psychology*, 45, 731-739. <http://dx.doi.org/10.1016/j.jesp.2009.04.019>
- American Psychological Association. (2001). *Publication manual of the American Psychological Association* (5th ed.). Washington, D.C: Author.
- Boutwell, B. B., Franklin, C. A., Barnes, J. C., & Beaver, K. M. (2011). Physical punishment and childhood aggression: The role of gender and gene-environment interplay. *Aggressive Behavior*, 37, 559-568. <http://dx.doi.org/10.1002/ab.20409>
- Bushman, B. J. (1995). Moderating role of trait aggressiveness in the effects of violent media on aggression. *Journal of Personality and Social Psychology*, 69, 950-960. <http://dx.doi.org/10.1037/0022-3514.69.5.950>
- Bushman, B. J. (1996). Individual difference in the extent and development of aggressive cognitive-associative networks. *Personality and Social Psychology Bulletin*, 22, 811-819. <http://dx.doi.org/10.1177/0146167296228004>
- Bushman, B. J. (1997). Priming effects of media violence on the accessibility of aggressive constructs in memory. *Personality and Social Psychology Bulletin*, 24, 537-545. <http://dx.doi.org/10.1177/0146167298245009>
- Bushman, B. J., & Anderson, C. A. (2007). Measuring the strength of the effect of violent media on aggression. *American Psychologist*, 62, 253-254. <http://dx.doi.org/10.1037/0003-066X.62.3.253>
- Buss, A. H., & Perry, M. P. (1992). The aggression questionnaire. *Journal of Personality and Social Psychology*, 63, 452-459. <http://dx.doi.org/10.1037/0022-3514.63.3.452>
- Carnagey, N. L., & Anderson, C. A. (2005). The effects of reward and punishment in violent video games on aggressive affect, cognition, and behavior. *Psychological Science*, 11, 882-889. <http://dx.doi.org/10.1111/j.1467-9280.2005.01632.x>
- Christina, S., & Ari, K. (2004). Female aggression revisited: Variable- and person-centered approaches to studying gender differences in different types of aggression. *Aggressive Behavior*, 30, 158-163. <http://dx.doi.org/10.1002/ab.20012>
- Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development*, 66, 710-722. <http://dx.doi.org/10.2307/1131945>
- Cross, C. P., & Campbell, A. (2012). The effects of intimacy and target sex on direct aggression: Further evidence. *Aggressive Behavior*, 38, 272-280. <http://dx.doi.org/10.1002/ab.21430>
- Estefanía Estevez López, Sergio Murgui Pérez, Gonzalo Musitu Ochoa & David Moreno Ruiz. (2008). Adolescent aggression: Effects of gender and family and school environments. *Journal of Adolescence*, 31, 433-450. <http://dx.doi.org/10.1016/j.adolescence.2007.09.007>

- Hyde, J. S. (1984). How large are gender differences in aggression? A developmental meta-analysis. *Developmental Psychology*, 4, 722-736. <http://dx.doi.org/10.1037/0012-1649.20.4.722>
- Lagerspetz, K. M., Björkqvist, K., & Peltonen, T. (1988). Is indirect aggression typical of females? gender differences in aggressiveness in 11- to 12-year-old children. *Aggressive Behavior*, 14, 403-414. [http://dx.doi.org/10.1002/1098-2337\(1988\)14:6<403::AID-AB2480140602>3.0.CO;2-D](http://dx.doi.org/10.1002/1098-2337(1988)14:6<403::AID-AB2480140602>3.0.CO;2-D)
- Lansford, J. E., et al. (2012). Boys' and girls' relational and physical aggression in nine countries. *Aggressive Behavior*, 38, 298-308. <http://dx.doi.org/10.1002/ab.21433>
- Li, J. J., Zhang, W., Zeng, S. J., Liang, J., & Zang, C. (2008). Effect of violent computer games on individuals' aggression. *Psychological Development and Education (Chinese Journal)*, 2, 108-112.
- Marjaana L., Tuija H., & Liisa Keltikangas-Jarvinen. (1997). Age and gender differences in adolescents' reactions to conflict situations: Aggression, pro-sociality, and withdrawal. *Journal of Youth and Adolescence*, 3, 339-351.
- Paquette, J. A., & Underwood, M. K. (1999). Gender differences in young adolescents' experiences of peer victimization: Social and physical aggression. *Merrill-Palmer Quarterly*, 2, 242-266.
- Huesmann, L. R., Moise-Titus, J., Podolski, C., & Eron, L. D. (2003). Longitudinal relations between children's exposure to TV violence and their aggressive and violent behavior in young adulthood: 1977-1992. *Developmental Psychology*, 39, 201-221. <http://dx.doi.org/10.1037/0012-1649.39.2.201>
- Khoury, K. M. (2012). Perpetration of aggressive behaviors against peers and teachers as predicted by student and contextual factors. *Aggressive Behavior*, 38, 253-262. <http://dx.doi.org/10.1002/ab.21424>
- Wallace, M. T., Barry, C. T., Zeigler, H. V., & Green, B. A. (2012). Locus of control as a contributing factor in the relation between self-perception and adolescent aggression. *Aggressive Behavior*, 38, 213-221. <http://dx.doi.org/10.1002/ab.21419>
- Wendy, W., Wong, F. Y., & Gregory, C. J. (1991). Effects of media violence on viewers' aggression in unconstrained social interaction. *Psychological Bulletin*, 3, 371-383.
- Wood, W., Wong, F. Y., & Chachere, J. G. (1991). Effects of media violence on viewers' aggression in unconstrained social interaction. *Psychological Bulletin*, 109, 371-383. <http://dx.doi.org/10.1037/0033-2909.109.3.371>
- Zeng, F. L., Dai, Q. Y., Tang, S. Q., & Zhang, W. Y. (2004). Effect of watching violent TV on aggressive behavior of adolescents. *Journal of Chinese clinical psychology*, 1, 35-37.

Informal Social Support: A Collaborative Stress Management Initiative for Mothers of Cancer Children

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Received: March 24, 2013

Accepted: April 16, 2013

Online Published: May 14, 2013

doi:10.5539/ijps.v5n2p19

URL: <http://dx.doi.org/10.5539/ijps.v5n2p19>

Abstract

Diagnosis of childhood cancer represents one of the most severe stressors for the children's mothers. There is limited evidence of research directed toward assisting mothers of cancer children to develop strategies to cope with the complex experiences associated with the diagnosis of their children at the time of the diagnosis, and before their reaction to stress recognized. The current study is a pilot project sought to investigate the potential of a new type of initiative based on the idea of providing the mothers of cancer children with informal social support, where the support initiated in collaboration between the academic and clinical staffs. The informal social support initiative program started at the time of child diagnosis before the patient and patient families requested or even the physician ordered.

Survey results, along with discussion of the potential implications for reducing stress and anticipatory stress among mothers of cancer children by informal social support are presented.

Keywords: social support, informal social support, collaborative, initiative, stress, stress reactions, stress management, mothers of cancer children

1. Introduction

Even with the improvement in cancer treatment, and three out of four children diagnosed with a malignancy will survive their disease and treatment. Although, overall cancer death rates have declined 20% from their peak in 1991 (Greenlee et al, 2000., Siegel et al, 2013), still the diagnosis and treatment of child with cancer represents the start of a stressful and long-term process especially for the children's mothers (Kazak, 1998., Barrera et al, 2004). Lindahl-Norberg et al (2005b) titled this stressful process as a process of psychological stress. Different psychologists have given different definitions to stress and stressors. Stressors broadly defined by Barling (1990) as situations or events that have the potential to affect the person health outcomes. Stress has been viewed by Chiang and Hunter (2004) as a complex and dynamic transaction between individuals and their environments. In the Wikipedia (2009) stress defined as a biological term for the consequences of the failure of a human or animal to respond appropriately to emotional or physical threats to the organism, whether actual or imagined. It includes a state of alarm and adrenaline production, short-term resistance as a coping mechanism, and exhaustion. Common stress symptoms include irritability, muscular tension, inability to concentrate and a variety of physical reactions, such as headaches and elevated heart rate (Wikipedia, 2009).

The diagnosis of childhood cancer represents the start of a stressful and long-term process especially for the children's mothers and it has been viewed as one of the most severe stressors that a parent can experience (Kazak, 1997). A period of substantial distress for parents, who report shock, emotional pain, and difficulty coping with the necessary procedures performed on their child, rumination, and high levels of information seeking accompanied by a sense of lack of control. The damage inflicted by stress is frequently mentioned in the literature. Barrera et al (2004) found that both mothers and fathers of children undergoing cancer treatment reported traumatic stress symptoms (PTSD) such as intrusive thoughts, physiologic arousal, and avoidance. When parents are confronted with a diagnosis of cancer in their child a process starts, referred to as psychological stress (Lindahl-Norberg, et al 2005b)

Studies of parental stress and stress reaction related to diagnosis and treatment of childhood cancer indicated that the stress reactions including uncertainty, anxiety, depressive symptoms, and the posttraumatic stress symptoms

occur most frequently around the time of diagnosis and decrease over time (Santacroce, 2002; Yeh, 2002; Barrera et al., 2004; Chushieh S, SinTung H, & YuanLiang S., 2012; Lindahl-Norberg, Lindblad, & Boman, 2005b; Alderfer, M. A., et al, 2005; Phipps, Long, Hudson, & Rai, 2005; Tatjana K et al, 2012; Jantien Vrijmoet-Wiersma, C.M., et al, 2008). All what was mentioned from the signs of stress we recognized it from the mothers of cancer children who was admitted to the pediatric department, most of the mothers were crying, refused eating, nervous even with routine interpersonal communication, which was reflected on their admitted children, child starts crying when his/her mother's cry. Also some mothers have verbalized difficulties in meeting their family's requirements as looking after their other children who stayed at home alone. Funding the cancer children treatment it was another challenge for some families.

Although health care workers including nurses are aware of stress associated with diagnosis and treatment of child with cancer especially for the children's mothers and several research findings emphasized the importance of social support on the individual's adjustment, and the importance of providing content in advance for the development of coping strategies (Best et al, 2001; Bruce, 2006; Chiquelho et al, 2011; Cobb, 1976; Cohen, Sherrod & Clark, 1986; Cutrona, Russell, & Rose, 1986; Dockerty et al, 2000; Holahan & Moos, 1985; Lindahl et al, 2006; O'Reilly, 1988; Salovey, 2000; Sarason et al., 1987; & ChuShieh, S et al, 2012). There is limited evidence of research directed toward assisting mothers of cancer children to develop strategies to cope with the complex experiences associated with the diagnosis of their children at the time of the diagnosis, and before their reaction to stress recognized. This motivates us to start our social support initiative the concern of this study. Because, we found that there is a need to evaluate methodologies within the aggregate of mothers of cancer children to delimit the effects of informal social support in managing the stress experienced by the mothers of cancer children. Such methodologies can continue to be utilized in the health field practice at the national or even international level. So the current study is a pilot project sought to investigate the potential of a new type of initiative based on the idea of providing the mothers of cancer children with informal social support, were the support initiated in collaboration between the academic and clinical staffs. The informal social support initiative program started at the time of diagnosis, aimed to manage the stress and stress reactions among the mothers of cancer children, does not require additional time, staff, or costs compared with the potential risk of psychological problems the mothers of cancer children are exposed to, and it will be started before the patient and patient families requested or even the physician ordered.

2. Theoretical Framework

Cox (1978) transactional model of stress was used to guide this initiative in which stress is viewed as imbalance between the individual's perception of the demands of environment and the perception of his capability to meet the demands. The emphasis of the model is on the individual's cognitive appraisal of the potentially stressful situation and his perception of his ability to cope. If there is an imbalance between the perceived demands of the environment and the perception of the individual's capacity to meet the demands, stress occurs and physiological and psychological resources are mobilized to meet the environmental demands. The fulfillment of physiological and psychological needs is important in determining the individual's behavior (Cox, 1978). Having help and support from friends and family to mothers of cancer children has been shown to fulfill the physiological and psychological needs and improve mothers of cancer children adjustment to their children diagnosis and treatment (Speechley & Noh, 1992).

Consistent with the transactional model, the ultimate goal of the initiative was to offer a comprehensive informal social support program involving many players, including peers, nursing students, educators, and clinical staff all providing support in advance to mothers of cancer children, in order to fulfill the physiological and psychological needs of the mothers of cancer children which would manage the stress and stress reactions of them.

Social support defined by (Dalgard, 1998; Wilsey & Shear, 2007) as the potential of the network to provide help in situations when needed. House (1981) described four main categories of social support: emotional, appraisal, informational and instrumental. Emotional support generally comes from family and close friends and is the most commonly recognized form of social support. It includes empathy, concern, caring, love, and trust. Appraisal support involves transmission of information in the form of affirmation, feedback and social comparison. This information is often evaluative and can come from family, friends, co-workers, or community sources. Informational support includes advice, suggestions, or directives that assist the person to respond to personal or situational demands. Instrumental support is the most concrete direct form of social support, encompassing help in the form of money, time, in-kind assistance, and other explicit interventions on the person's behalf. Social support is closely related to the concept of a social network, or the ties to family, friends, neighbors, colleagues, and others of significance to the person (House, 1981). The operational definition of these

four categories is shown in Table 1.

Table 1. Four general categories of social support provided to the participants (Operational definitions)

Social Support		
Category	Form	Resources Persons
Emotional Support	- Empathy	- Peers (Mothers of cancer children)
	- Concern	- Researcher (Faculty member)
	- Caring	- Nursing staff (Preceptors)
	- Love	- Nursing students
	- Trust	- Co-workers (Each up to professional rules and responsibilities.
Appraisal Support	Transmission of Information in the form of	
	- Affirmation	
	- Feedback	
Informational Support	- Advice	
	- Suggestions	
	- Directives that assist the person to respond to personal or situational demands	
Instrumental Support	- Money	
	- Time	
	- In-kind assistance	

Derived from (House, 1981)

Consistent with the social support framework, the ultimate goal of our initiative program was to relieve the cancer children mothers' stress and improving their adjustment to diagnosis and treatment of their children through providing them with a multidimensional collaborative informal social support were the support provided at the time of diagnosis even before the stress reactions recognized.

3. Method

3.1 Study Hypotheses

Although the main purpose of the informal social support initiative was to manage the stress among mothers of cancer children, the specific objectives of this study was to determine the degree to which the informal social support initiative program has on the stress response of mothers of cancer children, as well as the degree to which the program would meet with positive reactions from the participants mothers, therefore, this study hypothesized that:

- 1) Mothers had positive reactions toward the informal support initiative program as indicated by a survey data completed by them in order to determine their satisfaction of the initiative program components.
- 2) Mothers stress and stress reactions had been controlled or relieved after their participation in the informal social support initiative program as measured by Arabic-Language Modified Version of Beck Depression Inventory-1.

3.2 Study Design

To evaluate the initiative effectiveness a pre-test/post-test experimental and control group design (Polit, Beck & Hungler, 2005) were utilized, a stress level assessment survey using Arabic – Language Modified Version of Beck Depression Inventory – 1 (BDI-1) carried out to assess the level of stress experienced by the mothers before the mothers participated in the initiative program, and giving the same survey at any time the child being for discharge or transferred. Mothers enrolled in the initiative program were also asked to complete the Participants Reaction Index (Appendix A) at the time of discharge.

3.3 Population

The eligible population for this study was all the mothers of cancer children, able to read and write in Arabic language, and their children had been admitted to the hospital and diagnosed as a case of cancer, with no more than 24 hours of time elapsed since diagnosis.

3.4 Sample

Convenience sampling procedure was used to obtain the larger number of mothers, anticipated that all the participants would be mothers, because this is one of the hospital policies which permit only for the child mother to stay with the child during the child admission, and in case that the mother's has any excuses and could not stay with the child another female of the child family members allowed to stay with the child. Each mother who participated in the initiative program within the first 24 hours of her child diagnosis, and her child admitted to the hospital pediatric unit at the time the initiative implemented and completely committed to the initiative program was assigned to the experimental group. Mother agreed to participate but did not committed to the initiative program was assigned to the control group. Participants were recruited to obtain an equal number in each group. A total of 120 mothers were approached, and 80 (67%) agreed to participate. Exclusion criteria for participation include data which permitted to be reached, and could be gathered from the child medical file either from the demographic or family history information included (a) mothers who had been referred previously for formal psychosocial support, (b) mother working in the health care professionals, and (c) illiterate or non-Arabic-speaking mothers. Subsequent to exclusion of mothers based on the mentioned exclusion criteria's. The sample includes forty mothers in the control group and forty mothers in the experimental group. The demographic and medical variables of the groups are presented in Table 2.

Table 2. Demographic and medical variables

Variable	Experimental group (N=40)		Control group (N=40)	
	Mean	SD	Mean	SD
Mothers				
Age	28	± 4.2	30	± 6.3
Annual household income	6000 JDs=7800\$	± 1000	6000 JDs=7800\$	± 1000
Education	n	%	n	%
Postsecondary	10	25%	12	30%
College graduates	15	37.5%	10	25%
University graduates	15	37.5%	18	45%
Occupation				
House wife	25	62.5%	22	55%
School teacher	15	37.5%	18	45%
Living				
With or near to an Extended family	25	62.5%	30	75%
Away from their families	15	37.5%	10	25%
Children				
Age	5 yrs	± 3.5	5yrs	± 4
Gender				
Male	19	47.5%	15	37.5%
Female	21	52.5%	25	62.5%
Medical insurance	40	100%	40	100%
Time from diagnosis	Recent 1day-2 wks		1-12 months	
Type of cancer				

Leukemia	27	67.5%	30	75%
Lymphoma	5	12.5%	4	10%
Solid tumor	8	20%	6	15%
Treatment status	All on active treatment (< 2 Wks)		All on active treatment (1-12 months)	

3.5 Setting

Pediatric unit located in a general teaching hospital with an 85 – bed inpatient. The unit receives the child who is less than 10 years old during the phase of diagnosis and starting the course of cancer treatment, and then the child has to be transferred to a specialized cancer treatment hospital the waiting for transfer varies between two days-to-two weeks or more periods after the diagnosis of the case, which depend on the availability of beds in the specialized cancer center, medical insurance system and fund, regardless of the conditions treatment started as early as the time of the diagnosis.

3.6 Instruments

3.6.1 Demographic Questionnaire

Mothers indicated their age, educational status, marital status, occupation, living condition (living separately or with their extended families), and total income of the family, number of family members and age of each family member, medical insurance, and their child's age, gender, order of the child among other children of the family. The questionnaire included three items to be filled by the researcher these are length of time since diagnosis, type of cancer, and treatment status. The socio-demographic and disease related characteristics of the mothers and their children are presented in Table 2.

3.6.2 Arabic – Language Modified Version of Beck Depression Inventory – 1(BDI-1)

The original Beck Depression Inventory-1(BDI-1), developed by Beck et al (1961) is a valid and reliable, 21-item self-report measure of depressive symptoms (Beck, et al 1961). Respondents rated on a four point scale ranging from 0 to 3 the intensity of symptoms. Sum scores 0-9 indicates minimal depression, 10-18 indicates mild depression, 19-29 indicates moderate depression, and 30-63 indicates severe depression. Taking into account the social and cultural characteristics of the Arabic population, the BDI-1 was revised and modified by (Abohejleh, N., & Hamdi, N, presented in Sarhan, W. et al 2001). The Arabic-Language Modified Version of Depression Inventory is an 18- item self-report measure of depressive symptoms. Respondents rated on a 3-point scale ranging from 0 to 2 the severity of symptoms? Sum scores <9 = normal status, 10-18=mild level, 19-27=moderate level, and >28 =sever level of depression. The validity and reliability of the modified Arabic version of the scale has been confirmed (Sarhan, W. et al 2001).In this study, internal reliability for the total scale was .86. The alpha coefficient was .84 by control group report and .88 by experimental group report.

3.6.3 Participants Satisfaction Index

The participants' satisfaction index is a 13 – items survey derived from the work of (Kirkpatrick, 1978). The index developed by the researcher to determine the participant reaction to and satisfaction of the informal social support initiative. Each question evaluates the participant satisfaction of one of the initiative program components which were planned to cover one of the four types of social support (Emotional, Appraisal, Informational and Instrumental). Participant's mother was asked to put on a continuum varies from 0-100% her opinion and view on the value of each component of the program to her during the period of her child admission. At the end of the survey participants were asked to write their comments on the program. Index was pilot-tested for clarity of presentation and content among a random population of non-hospitalized persons (See Appendix A for a copy of the Participants Satisfaction Index).

3.7 Procedure

After the initiative program reviewed and approved by the Institutional Review Board, six steps were followed in implementing the initiative program:

- A. The mother of newly diagnosed child was visited by the researcher within the first 24 hours of the child diagnosis. Importance of informal social support at this time period discussed with the mother.
- B. Mother's received the initiative program plan and were asked to participate in the program.
- C. Mothers who agreed to participate signed a consent form insure the anonymity and the liability of continue or

stop the procedures according to the mother's preference, and received the survey questionnaire which include the Demographic Questionnaire and Arabic – Language Modified Version of Beck Depression Inventory – 1(BDI-1) to be returned within two hours.

D. Mothers who returned the survey questionnaire received the initiative brochure. On the first part of the brochure definition of stress, possible sources of stress, normative and adaptive character of stress and the importance of fulfilling the physiological and psychological needs in determining the individual's behavior as viewed by Cox (1978) were mentioned. The second part of the brochure includes definition of social support derived from (Wilsey & Shear, 2007) and the four types of social support as identified by (House, 1981). On the third part four stress management and relieving methods which include: Breathing exercises, Balanced diet, Time management and Power naps (Scott, E., 2009) were explained. The fourth part of the brochure referral process of the child to specialized cancer center was outlined. Finally community resources that can help cancer children and their families were listed. Brochure was pilot-tested for clarity of presentation and content among a random population of non-hospitalized persons.

E. Mothers invited to attend the planned meeting. Meeting scheduled for one hour daily 1-2 pm (During this time period the child expected to have a nap sleep after they received their treatment and lunch). The researcher, who was an educator and experienced in the teaching learning strategies, conducted all of the meeting. Meeting has a simple format (See Appendix B).

F. Mothers enrolled in the initiative program were asked to complete the Participants Satisfaction Index two weeks of their enrollments or at the time of being discharged. Subjects should attend at least five planned meeting before being permitted to fill the participants' reaction index.

All mothers of cancer children regardless of their agreement to participate in the initiative program or not were provided with stress management education brochure, permitted to attend the meeting scheduled for mothers of cancer children and shared the planned support group discussion.

3.7.1 Support Group Discussion

In the discussions which were facilitated by the researcher, participants were guided to focus on the challenges which faced them during their recent experience of being a mother of a child diagnosed with cancer. Krueger & Casey (2000) emphasized the use of group interaction in a relatively naturalistic peer setting to generate data. Encouraging participants to articulate, clarify, challenge and respond to each other's accounts of their experiences, has the potential to reveal a shared language and a common frame of reference. At the end of each discussion key ideas derived from the discussion were identified and verified by participants as a reasonable summary of the group discussion (Krueger & Casey, 2000). To ensure group size was manageable in terms of group participation and help the nurse preceptors and associate nursing students collaboration nurse preceptors and associate nursing students were allowed to attend the meeting as observers.

3.7.2 Health Care Workers Collaboration

The chairman of the department and the nurse manager were informed of the initiative program. The unit manager identified the senior preceptor to be our liaison with the patients, preceptors, and staff. Collaboration with the initiative program was one means of fulfilling the preceptors and staff roles, which served as an incentive for participation. Also participation of the nursing students in the initiative program was one means of fulfilling the advanced nursing course objectives - a required last-semester nursing program requirement, and served as an incentive for participation. All nurse preceptors and associate nursing students were informed, oriented, and received the initiative plan at a pre planned meeting, and were asked to facilitate the initiative program through their day-to-day assigned work and practice.

3.8 Data Collection/Analysis

Participants' mothers' satisfaction of the initiative program was determined by completion of a Participant Satisfaction Index two weeks of their enrollments and/or at the time of being discharged, subjects should attend at least five planned meeting before completing the participants' satisfaction index. Level of stress experienced by mothers was evaluated using Arabic – Language Modified Version of Beck Depression Inventory – 1(BDI-1). Pre-intervention a covering letter explain the purpose of the assessment followed by the demographic questionnaire and Arabic-Language Modified Version of Beck Depression Inventory –I (BDI-I) was attached together to be filled at the same time in the baseline assessment. The pre-intervention (baseline) reading for experimental and control group was within the first 24 hours of the child diagnosis, and before the mother enrolled with the initiative program. Follow-up visits to keep in contact with the children and their mothers, and to arrange for post-intervention (follow-up) reading for experimental and control group during their out patients

clinic appointments at least one month from (baseline) reading were made. Participating mothers both from the experimental and control group were revisited and asked to fill the Arabic – Language Modified Version of Beck Depression Inventory – 1 (BDI-1). The justification for these time frames came from the diagnostic criteria for PTSD which required that individuals be at least 1 month past the traumatic event (American Psychiatric Association, 1994), and the time constraints on the academic course completion. The data were analyzed with SPSS statistical package. Descriptive statistics were also examined. An alpha level of 0.05 was used for all statistical tests.

4. Results

The first hypothesis of this study was “Mothers had positive reactions toward the informal support initiative program as indicated by a survey data completed by them in order to determine their satisfaction of the initiative program components”. This hypothesis was addressed by reviewing and summarizing participant responses to participants’ reaction index survey. Overall, participants’ ratings of the initiative program components were 88%. On average, 90% of the respondents provided rating of 85-95% across all items. Means were calculated for each item. Results presented in Table 3 show that the help provided by the nursing students (Taking care of the child while mother’s leave to her home) was rated as the highest favorable part of the social support program with a rate of 100% by all of the respondents. The other most favorable components as rated by respondents’ were first phase stress assessment survey using Arabic-Language Modified Version of Beck Depression Inventory –I (BDI-I), brochure specially the parts which cover the Stress management strategies, Referral process outline, and the Community resources list. Meeting specially the part of discussing challenges, demonstrating stress management strategies, and the program coordinator approach was highly rated by respondents with a mean rate of 90%. The least favorable component of the program as rated by respondents with a mean of 70% was the second phase stress assessment survey using Arabic-Language Modified Version of Beck Depression Inventory. The Participant Satisfaction Index also elicited participant’s comments on the program. A content analysis of 202 comments provided by the respondents revealed eight categories (five positive and three negative). Table 4 shows the comments and their associated number of responses. The second hypothesis of this study was “Mothers stress and stress reactions had been controlled or relieved after their participation in the informal social support initiative program as measured by Arabic-Language Modified Version of Beck Depression Inventory-1”. Data collected were analyzed using SPSS to ascertain significant differences within each group and between the experimental and control groups. The SPSS values were not statistically significant, independently of the type of comparison made. None of the demographic/ child illness variables were significantly correlated to mother’s stress symptoms. Table 5 shows both groups result in the two surveys. The experimental group mean Modified BDI-1 in phase one and phase two ($M=7.97$, $SD\ 4.19$, and $M=7.70$, $SD\ 4.21$) respectively. More than 67.5% in the first and second surveys scored in the normal level; while the rest 33% scored in the mild level of stress. The control group mean Modified BDI-1 in phase one ($M=8.87$, $SD\ 6.42$), and ($M=7.85$, $SD\ 5.02$) in phase two. 60% scored in the normal range of stress in the two surveys; 32.5% scored in the mild level, and 7.5% in the moderate level of stress in the first survey. 35% of the control group scored in the mild level and 5% in the moderate level of stress in the second survey.

Table 3. Participants’ opinion and view on the value of each of the initiative program component

Participant’s Reaction Index (N = 40)		Mean (%)
1	Pre-Program Survey Questionnaire	90%
2	Brochure	
	- Introduction	89%
	- Stress management strategies	90%
	- Social Support and it’s types	88%
	- Referral process outline	90%
	- Community resources list	90%
3	Meeting	
	- Introduction	88%
	- Discussing challenges	90%

	- Demonstrating stress management strategies	90%
4	Help provided by the nursing students (Taking care of your child while you leave to your home) as an example	100%
5	Post-Program Survey Questionnaire	70%
6	Reaction index (The survey you are filling now)	88%
7	Program Coordinator Approach	90%

Table 4. Summary of participants mothers comments about the social support program and their associated number of responses

No#	Type of Comments	Number of responses
Category	Positive	
1	The program was very important and beneficial	40
2	Information gained were helpful	35
3	Demonstrating the stress management strategies Were beneficial	30
4	Information and skills gained could be used in the future	30
5	Comfortable discussing the challenges	40
Category	Negative	
1	Still my child is ill	5
2	More information needed	10
3	Time not enough	12

Table 5. Stress level among the experimental and control group

Phase 1				Phase 2		
	N#	Mean	SD	N#	Mean	SD
Experimental group	40	7.97	4.19	40	7.70	4.21
Control group	40	8.87	6.42	40	7.85	5.02
Severity of stress symptoms	Normal	Mild level	Moderate level	Sever level		
No# of cases	<9	10-18	19-27	>28		
Experimental Group	Phase 1	27	13	0	0	
Experimental Group	Phase 2	27	13	0	0	
Control Group	Phase 1	24	13	3	0	
Control Group	Phase 2	24	14	2	0	

Note. Number appears in each cell present the number of cases mach the level of stress at that column.

5. Discussion

The results of this study were evaluated using the first and fourth levels of Kirkpatrick, S. Kirkpatrick, S. (1994) evaluating training programs: the four levels include reactions, learning, behavior, and results. Reactions, the

first level of evaluating training program, relates to learner's satisfaction of the training program. Participants, ratings of the initiative program components and positive comments provide evidence to the potential value of the initiative program components. The study found as clarified from the mothers' comments and reactions to the initiative program components that the initiative was beneficial for the mothers of the cancer children. The study findings support the findings and recommendations provided by Baron, Cutrona, Hicklin, Russell, & Lubaroff (1990), when they conclude that if the immediate family members or relatives are not available to help during caring for cancer patients outside help by health care workers as nurses, counselors, or social workers should be immediately given. Also, rating the help provided by the nursing students (Taking care of the child while mother's leave to her home) as the highest favorable part of the social support program with a rate of 100% by all of the respondents support the work of House (1981) when he identified the Instrumental support encompassing help in the form of in-kind assistance, and other explicit interventions on the person's behalf as the most concrete direct form of social support. The data provided important information about the most important components of the program as perceived by the participants. Kirkpatrick, S. (1994) fourth level of training programs evaluation consists of the result, this had been evaluated through the quasi-experimental and control group pre-post evaluation. Although, if we look to the individual cases of experimental and control group we found experimental group reported the lowest level of stress, they did not differ significantly from the control group. This finding supports the findings of (Barakat et al., 1997 & Brown, Madan-Swain, & Lambert, 2003) who confirm that the level of posttraumatic stress in the parents of cancer children, particularly their mothers was relatively low. Also, the findings of this study provide evidence to the potential value of the informal social support if the support provided immediately at the time of diagnosis, which support the findings of (Barrera, M. et al., 2004) and the recent work of (ChuShieh, S., SinTung, H., & YuanLiang, S., 2012), and the potential value of the social support on promoting the mothers perceived ability of them selves and their diseased children which might inflect positively on their motivation and indirectly they will communicate these to their children, which support the work of (Archambault, I., Eccles, J. S., & Vida, M. N., 2010). According to Archambault & Vida (2010) early childhood professionals promote high expectations with parents, families and other professionals, and encourage families to communicate these to their children, as we accept the health team members especially the initiative team are directly involved with the children motivation and achievements during their hospitalization.

6. Conclusion

The work of this study was based on the assumption that "providing mothers of cancer children with informal social support at the time of their children diagnosis will help in managing their stress and stress reactions". This initiative was evaluated using Kirkpatrick's first and fourth levels of evaluating training programs. Reaction of the participants and their positive comments indicate that the program provide a sensible benefit to the participants. Findings of this study can potentially provide valuable initial evidence about issues related informal social support which should be provided to parents especially mothers of cancer children, and all mothers of hospitalized children.

Recognizing that the program does not represent any increase in the demands on the resources, In fact the program can have a beneficial effect for the staff as a part for achieving the incentives requirements, and for the nursing students through their practicing in order to achieve their learning objective in working as a change agent which is one of their curriculum objectives. Therefore, continuo in implementing the program as a continuous part of the collaborative activities of the nursing staff and the college faculty after filling the prerequisites administrative agreement, and to include all the admitted patient families at the practice area of the nursing students. Further longitudinal follow up study for the experimental group to measure the sustainable benefit of the program on the mothers could be done. Respecting the nursing students' facilitation of the program a study to evaluate the nursing students perception of the program could be carried out.

The limitations of the study include the small sample, the purposive convenience sample selection, and the self report surveys which could prohibit the generalization of the study findings. Validity and reliability of the results could be higher if a mixed method for evaluation of the mothers' stress reaction pr and post implementing the informal social support as assessment of the mothers' through observational tool was used.

The result of this study illustrates the need to examine carefully the sources of stress for mothers of cancer children and all parents of hospitalized children. Hospital related stressors need to be addressed by nursing professionals from the perspective that there may be ways of reducing the hospitalized child mother's stress through emotional support and giving specific information about the diagnostic procedures has to be done for her child. Lastly, faculty members in nursing colleges need to consider way in which they might contribute to affect positive evidence based change in clinical settings.

Acknowledgements

The author wishes to thanks the sample both experimental and control group, health care workers, and the nursing students for their participation and collaboration in the initiative program.

References

- Alderfer, M. A., Cnaan, A., Annunziato, R. A., & Kazak, A. E. (2005). Patterns of Posttraumatic Stress Symptoms in Parents of Childhood Cancer Survivors. *Journal of Family Psychology*, 19(3), 430-440. <http://dx.doi.org/10.1037/0893-3200.19.3.430>
- American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., p. 828). Washington, DC: American Psychiatric Association.
- Archambault, I., Eccles, J. S., & Vida, M. N. (2010). Ability self-concepts and subjective value in literacy: Joint trajectories from grades 1 through 12. *Journal of Educational Psychology*, 102(4), 804-816. <http://dx.doi.org/10.1037/a0021075>
- Barakat, L. P., Kazak, A. E., Meadows, A. T., Casey, R., Meeske, K., & Stuber, M. L. (1997). Families surviving childhood cancer: A comparison of posttraumatic stress symptoms with families of healthy children. *Journal of Pediatric Psychology*, 22, 843-859. <http://dx.doi.org/10.1093/jpepsy/22.6.843>
- Barling, J. (1990). *Employment, stress and family functioning*. New York: John Wiley & Sons.
- Baron, R. S., Cutrona, C. E., Hicklin, D., Russell, D. W., & Lubaroff, D. M. (1990). Social support and immune function among spouses of cancer patients. *Journal of Personality and Social Psychology*, 59, 344-352. <http://dx.doi.org/10.1037/0022-3514.59.2.344>
- Barrera, M., D'Agostino, N. M., & Gibson, J. Gilbert, T., Weksberg, R., & Malkin, D. (2004). Predictors and mediators of psychological adjustment in mothers of children diagnosed with cancer. *Journal of Psycho-oncology*, 13(9), 630-641. <http://dx.doi.org/10.1002/pon.765>
- Best, M., Streisand, R., Catania, L., & Kazak, A. E. (2001). Parental distress during pediatric leukemia and parental posttraumatic stress symptoms after treatment ends. *Journal of Pediatric Psychology*, 26(5), 299-307. <http://dx.doi.org/10.1093/jpepsy/26.3.155>
- Bourne, L. E., & Ekstrand, B. R. (1982). *Psychology: Its principles and meanings* (4th ed.). New York: Rinehart and Winston, ISBN 0030596882.
- Brown, R. T., Madan-Swain, A., & Lambert, R. (2003). Posttraumatic stress symptoms in adolescent survivors of childhood cancer and their mothers. *Journal of Traumatic Stress*, 16, 309-318. <http://dx.doi.org/10.1023/A:1024465415620>
- Bruce, M. (2006). A Systematic and conceptual review of posttraumatic stress in childhood cancer survivors and their parents. *Clinical Psychology Review*, 26(3), 233-256. <http://dx.doi.org/10.1016/j.cpr.2005.10.002>
- Chiang, L., Hunter, C. D., & Yeh, C. J. (2004). Coping attitudes, sources, and practices among Black and Latino college students. *Adolescence*, 39(156), 793-815.
- Chiquelinho, R., Neves, S., Mendes, A., Relvas, A. P., & Sousa, L. (2011). ProFamilies: A psycho-educational multi-family group intervention for cancer patients and their families. *Journal of Cancer Care*, 20(3), 337-344. <http://dx.doi.org/10.1111/j.1365-2354.2009.01154.x>
- ChuShieh, S., SinTung, H., & YuanLiang, S. (2012). Social Support as Influencing Primary Family Caregiver Burden in Taiwanese Patients with Colorectal cancer. *Journal of Nursing Scholarship*. <http://dx.doi.org/10.1111/1547-5069.2012.01453>
- Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine*, 38(5), 300-313.
- Cox, T. (1978). *Stress* (p. 18). Baltimore: University Park Press.
- Cutrona, C. E. (1986). Behavioral manifestations of social support: A micro analytic investigation. *Journal of Personality and Social Psychology*, 51(1), 201-208. <http://dx.doi.org/10.1037/0022-3514.51.1.201>
- Dalgard, O. S. (1998). Clarifying the social support theory-research linkage. *Journal of Advanced Nursing*, 27(6), 1231-1241. <http://dx.doi.org/10.1046/j.1365-2648.1998.01231.x>
- Dockerty, J. D., Williams, S. M., McGee, R., & Skegg, D. C. G. (2000). Impact of childhood cancer on the mental health of parents. *Journal of Medical and Pediatric Oncology*, 35(5), 475-483. [http://dx.doi.org/10.1002/1096-911X\(20001101\)35:5<475::AID-MPO6>3.0.CO;2-U](http://dx.doi.org/10.1002/1096-911X(20001101)35:5<475::AID-MPO6>3.0.CO;2-U)

- Greenlee, R. T., Murray, T., Bolden, S., & Wingo, P. A. (2000). Cancer Statistics. *Journal for Clinicians*, 50, 7-33.
- Holahan, C. J., & Moos, R. H. (1985). Life stress and health: Personality, coping and family support in stress resistance. *Journal of Personality and Social Psychology*, 49(3), 739-747. <http://dx.doi.org/10.1037/0022-3514.49.3.739>
- House, J. S. (1981). *Work: Stress and Social Support*. Addison Wesley.
- Jantien Vrijmoet-Wiersma C, M., van Klink, J. M., Kolk, A. M., Koopman, H. M., et al. (2008). Assessment of parental psychological stress in pediatric cancer: A review. *Journal of Pediatric Psychology*, 33(7), 694-706. <http://dx.doi.org/10.1093/jpepsy/jsn007>
- Kazak, A. E., & Barakat, L. P. (1997). Brief report: Parenting stress and quality of life during treatment for childhood leukemia predicts child and parent adjustment after treatment ends. *Journal of Pediatric Psychology*, 22(5), 749-758. <http://dx.doi.org/10.1093/jpepsy/22.5.749>
- Kazak, A., Alderfer, M., Rourke, M. T., Simms, S., Streisand, R., & Grossman, J. R. (2004). Posttraumatic stress disorder (PTSD) and posttraumatic stress symptoms (PTSS) in families of adolescent childhood cancer survivors. *Journal of Pediatric Psychology*, 29, 211-219. <http://dx.doi.org/10.1093/jpepsy/jsh022>
- Kazak, A. E., Boevig, C. A., & Alderfer, M. A. (2005). Posttraumatic stress symptoms during treatment in parents of children with cancer. *Journal of Clinical Oncology*, 23(30), 7405-7410. <http://dx.doi.org/10.1200/JCO.2005.09.110>
- Kirkpatrick, D. L. (1978, September). EVALUATING IN-HOUSE TRAINING PROGRAMS: HOW TO PLAN AND IMPLEMENT A SUPERVISORY TRAINING PROGRAM-PART 5. *Training and Development Journal*, 6-9.
- Kirkpatrick, D. L. (1994). *Evaluating training programs: The four levels*. San Francisco: Berrett-Koehler.
- Krueger R., & Casey M. A. (2000). *Focus groups. A Practical Guide for Applied Research*. London: London Sage Publication.
- Manne, S. L., Miller, D. L., & Meyers P. (1996). Depressive symptoms among parents of diagnosed children with cancer: A 6-month follow-up study. *Journal of Child Health Care*, 25, 191-209. http://dx.doi.org/10.1207/s15326888chc2503_3
- Manne, S., DuHamel, K., & Ostroff, J. (2004). Anxiety, depressive, and posttraumatic stress disorders among mothers of pediatric hematopoietic stem cell transplantation. *Journal of Pediatrics*, 113, 1700-1708. <http://dx.doi.org/10.1542/peds.113.6.1700>
- Lindahl-Norberg, A., Lindblad, F., & Boman, K. K. (2005b). Parental traumatic stress during and after paediatric cancer treatment. *Acta Oncologica*, 44(4), 382-388. <http://dx.doi.org/10.1080/02841860510029789>
- Lindahl-Norberg, A., Lindblad, F., & Boman, K. K. (2006). Support seeking, perceived support, and anxiety in mothers and fathers after children,s cancer treatment. *Psycho-Oncology*, 15(4), 335-343. <http://dx.doi.org/10.1002/pon.960>
- O'Reilly, P. (1988). Methodological issues in social support and social network research. *Journal of Social Science and Medicine*, 26, 861-873. [http://dx.doi.org/10.1016/0277-9536\(88\)90179-7](http://dx.doi.org/10.1016/0277-9536(88)90179-7)
- Phipps, S., Larson, S., Long, A., & Rai, S. N. (2006). Adaptive Style and Symptoms of Posttraumatic Stress in Children with Cancer and Their Parents. *Journal of Pediatric Psychology*, 31(3), 298-309. <http://dx.doi.org/10.1093/jpepsy/jsj033>
- Polit, D. F., Beck, C. T., & Hungler, B. P. (2005). *Essentials of Nursing Research* (5th ed.). Lippincott: Williams & Wilkins.
- Salovey, P., Detweiler, J. B., Steward, W. T., & Rothman, A. J. (2000). Emotional states and physical health. *Journal of American Psychologist*, 55, 110-121. <http://dx.doi.org/10.1037/0003-066X.55.1.110>
- Santacroce, S. (2002). Uncertainty, anxiety and symptoms of posttraumatic stress in parents of children recently diagnosed with cancer. *Journal of Pediatric Oncology Nursing*, 19(3), 104-111. <http://dx.doi.org/10.1053/jpon.2002.123451>
- Sarason, B. R., Shearin, E. N., Pierce, G. R., & Sarason, I. G. (1987). Interrelations of social support measures: Theoretical and practical implications. *Journal of Personality and Social Psychology*, 52(4), 813-312. <http://dx.doi.org/10.1037/0022-3514.52.4.813>

- Sarhan, W., Khateeb, J., & Habashneh, M. (2001). *Behaviors Depression* (1st ed.). Majdalawi.
- Scott, E. (2009). Stress relievers for all types of people. Retrieved from <http://www.managingstress.com>
- Siegel, R., Naishadham, D., & Jemal, A. (2013). Cancer Statistics. *Journal for Clinicians*, 63(1), 11-30. <http://dx.doi.org/10.3322/caac.21166>
- Sloper, P. (2000). Predictors of distress in parents of children with cancer: A prospective study. *Journal of Pediatric Psychology*, 25, 79-91. <http://dx.doi.org/10.1093/jpepsy/25.2.79>
- Speechley, K. N., & Noh, S. (1992). Surviving childhood cancer, social support, and parents' psychological adjustment. *Journal of Pediatric Psychology*, 17(1), 15-31.
- Tatjana, K., Nada, K., Jovanka, K., & Natasa, K. (2012). Importance of Psychological Support for Families of Children with Cancer. *Medical review*, 65(5/6), 223-227. <http://dx.doi.org/10.2298/MPNSI206223K>
- Wikipedia, the free encyclopedia. (2009). Stress. Internet. Retrieved from [http://en.wikipedia.org/wiki/Stress_\(biological\)](http://en.wikipedia.org/wiki/Stress_(biological))

Appendix

Appendix A. Participant's Reaction Index.

Please answer the following questions that relate to your experience with each component of the social support program which you chose to participate with it. When answering the questions please select and write down out of 100% the response that best reflects your opinion and view on the value of the program component to you during the period of your child admission.

	How do you rate the?	
1	Stress assessment survey using Arabic-Language Modified Version of Beck Depression Inventory. Phase 1 (Pre program)	0.....100%
2	Brochure	
	- Introduction	0.....100%
	- Stress management strategies	0.....100%
	- Social Support and it's types	0.....100%
	- Referral process outline	0.....100%
	- Community resources list	0.....100%
3	Meeting	
	- Introduction	0.....100%
	- Discussing challenges	0.....100%
	- Demonstrating stress management strategies	0.....100%
4	Help provided by the nursing students (Taking care of your child while you leave to your home) as an example	0.....100%
5	Stress assessment survey using Arabic-Language Modified Version of Beck Depression Inventory. Phase 2 (Post program)	0.....100%
6	Reaction index (The survey you are filling now)	0.....100%
7	Program Coordinator Approach	0.....100%
8	Please add your comments on the program	0.....100%

Appendix B. Meeting format

Time/ minutes		Content	Coordinator and facilitators
0-10	Introduction	Introduction of the group coordinator, participants, and the program objectives and format.	Researcher (faculty member)
10-20	Discussing challenge	One of the participant mothers choose a significant situation associated with negative emotions. Participants as a group discuss alternative about the situation and how it could be handled.	Researcher
20-40	Discussing and practicing stress Management strategies	Mothers asked to identify the most functional strategies that they have used to manage the discussed challenge(s). Stress management strategies mentioned in the initiative brochure introduced and practiced as additional suggested strategies, followed by summary of the meeting.	Researcher
40-60	Individual plan	Instrumental type of support in term of money, time and in-kind assistance were discussed and provided individually.	Researcher supported by the assigned nurse preceptor's and the assigned nursing student's.

Is there a Gay Advantage in Creativity?

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Received: February 5, 2013

Accepted: April 16, 2013

Online Published: May 14, 2013

doi:10.5539/ijps.v5n2p32

URL: <http://dx.doi.org/10.5539/ijps.v5n2p32>

Abstract

Common speculations hold that homosexual individuals can be more creative, considering the overrepresentation of homosexuals in the artistic and creative pursuits. The few past studies available did not find evidence to support this contention. However, research has found gender differences in creativity indicating girls being more creative. If gay males share more female-typical personality traits, it would be interesting to ask if this would be reflected in any difference in creativity between homosexuals and heterosexuals. The present study thus aimed to disentangle the association between creativity and sexual orientation. A total of 38 homosexual males (mean age = 31.6 years, S.D. = 9.7 years) and 34 heterosexual males (mean age = 21.8 years, S.D. = 4.3 years) participated. All participants completed an online survey on creativity (using Khatena-Torrance Creative Perception Inventory) and sexual orientation (using the adapted Klein Sexual Orientation Grid). A one-way between –groups multivariate analysis of variance was conducted to examine differences in creative perception as a function of sexual orientation. The results indicated that there was no significant difference for each of the dimensions of creativity perception between homosexual and heterosexual males. The present findings were compatible with previous studies that homosexuals are no more or less creative. A distinction between actual and self-perceived creativity however, should also be noted.

Keywords: creativity, homosexuality, sexual orientation

1. Introduction

Studies on creativity have received considerable interest in various interdisciplinary fields. Scholars have attempted to define creativity based on theoretical framework or the context of study conducted. Creativity is a natural process (Torrance, 1993) that arises from an individual (Amabile, 1998) in response to something missing or incomplete. Creativity may not be fully captured or defined in words, but one can perhaps at least begin to indicate what it is albeit in an indirect way (Bohm, 1968). Gedo (1996) describes creativity as major, original accomplishments in difficult endeavors which cannot be correlated to any specific personality attributes. According to Kaufman and Baer (2010), the various definitions of creativity primarily center on two core elements i.e., novelty and appropriateness to the task or problem being addressed. In essence, creativity requires both originality and effectiveness of its application.

As the definitions of creativity evolve to become more multi-faceted, much studies have been conducted on the subject of creativity in relation to gender (Ai, 1999; Baer, 1997; Charyton, Basham, & Elliot, 2008; Gedo, 1996; Kaufman, Baer, Agars, & Loomis, 2010; Kaufman, 2006; Stoltzfus, Nibbelink, Vredenburg, & Thyrum, 2011), personality (Lippa, 2005; Norlander, Erixon, & Archer, 2000), academic achievement (Ai, 1999; Habibollah, Abdullah, Tengku, Sharir, & Kumar, 2010; Palaniappan, 2007; Palaniappan, 1994), extrinsic rewards (Baer, Oldham, & Cummings, 2003), ethnicity (Kaufman et al., 2010; Kaufman, 2006), social identity (Adarves-Yorno, Postmes, & Haslam, 2006) as well as environmental impact (Hennessey, 1995; 2003).

Nonetheless, research focusing on sexual orientation and its relation to creativity has been limited. One of the first few studies that examined this came from Ellis (1959) which reported that heterosexuals were more creative than homosexuals. Nonetheless, this study has been criticized on its generalizability as the samples consisted of clinical patients undergoing psychopathological treatment. A later study by Domino (1977) however, did not find any support for the contention that homosexuals are more creative. Other studies (e.g., Gautam, 2001; Konik &

Crawford, 2004; Lippa, 2005) have measured creativity in gay men and lesbian women but looking at gender differences.

Other studies focusing on perceptions toward homosexuality (Anderssen, 2002; Çirakoğlu, 2006, Chao, Wang, & Gao, 2010; Whitley, 1990) reported a more rejecting and negative attitude toward homosexuality. Such stigma can be long-lasting and is likely to persist in the future (Cadwell, 1991 in Hart, 2004). There needs to be a shift in paradigm from the disease model of homosexuality to studying the positive functioning of sexual minority. This would be a more balanced approach in the studies regarding homosexual individuals (Brown, 1989) and by addressing the missing gaps in other related aspects of homosexuals (Singh & Shelton, 2011; Voorhis & Wagner, 2002; Yarhouse, 2012).

Homosexuality has been considered as a unique fusion of masculine and feminine traits (Fassler, 1979) and common stereotypes hold that gay males are more feminine than heterosexual males (Lippa, 2005). It follows that there exists the speculation that homosexuals can be more artistic and creative than heterosexuals (Brown, 1989; Ellis, 1959; Konik & Crawford, 2004). It is not unreasonable to speculate that there could be a link between homosexuality and creativity (Stokinger, 1974) which also tends to be enhanced with nurturing, understanding, respect, opportunities, and freedom.

Consider the overrepresentation of homosexuals in the artistic and creative pursuits such as in the field of writing, acting, music, painting, and the like, it is not unreasonable as to speculate that gay people could be more artistically inclined (Gautam, 2001). Nonetheless, the dearth of research on creativity and homosexuality has not established a link between the two (Domino, 1977; Gautam, 2001). On the other hand, research has found gender differences in creativity with girls being more creative than boys (Cheung & Lau, 2010). If gay men share a more female-typical personality traits (e.g., Lippa, 2008), will this also be similarly reflected as in the previous finding on the gender differences in creativity? It is also important to note that creativity is multifaceted (e.g., Fishkin & Johnson, 1998) and that different measures could have tapped into the different elements of creativity, hence the inconsistent findings.

In light of the lack of empirical studies that are still needed to clarify differences in creativity based on sexual orientation, this study thus aimed to explore and examine the possible differences of creativity as a function of sexual orientation. We hypothesized that homosexual males would score higher than heterosexuals on creativity.

1.1 Research Question

Is there a difference in perceived creativity based on sexual orientation?

1.2 Hypothesis

There is a higher level of perceived creativity in homosexual males compared to heterosexual males.

2. Method

2.1 Participants

Participants consisted of 72 males who participated voluntarily by completing a set of questionnaire hosted online. Of all participants, 38 were homosexual males (mean age = 31.6, S.D. = 9.7 years) and 34 were heterosexual males (mean age = 21.8, S.D. = 4.3 years).

2.2 Procedures

This study involved completing a set of self-reported measures and questionnaire hosted online. Participants read the explanatory statement about the study before proceeding to complete the questionnaire. This research did not require any identification information and participants of this research would remain anonymous.

2.3 Stimuli

The Klein Sexual Orientation Grid (American Institute of Bisexuality, 2007). A simplified item was used to indicate a person's sexual orientation based on a 6-point Likert scale (i.e., 1 – exclusively homosexual, 2 – mainly homosexual, 3 – little more sexual, 4 – little more heterosexual, 5 – mainly heterosexual, 6 – exclusively heterosexual). This is further regrouped into homosexual (scale 1-3) and heterosexual (scale 4-6) groups.

Khatena-Torrance Creative Perception Inventory (KTCPI) (Khatena & Torrance, 1976). KTCPI consists of two separate tests of creative self-perceptions i.e., What Kind of Person Are You (WKOPAY?) and Something About Myself (SAM) measuring different dimensions of the creative personality (Khatena & Torrance, 1998). The KTCPI has been reported to have good reliabilities and validity (Palaniappan, 1994). Habibollah et al. (2010) found that it showed a good reliability in assessment of creativity both for WKOPAY ($\alpha = 0.775$) and SAM ($\alpha = 0.779$).

What Kind of Person Are You (WKOPAY?). WKOPAY is a creative personality measure based on the rationale that an individual has a psychological self whose structures have incorporated both creative and non-creative ways of behaving (Torrance, 1993; Palaniappan, 2010). The WKOPAY has 50 items. Two choices are served as *a* and *b* in each item and they are forced-choice. In some cases, an item calls for a choice between two socially desirable characteristics, and in others, two socially undesirable characteristics. Similarly, there are items that call for choices between two characteristics that differentiate between creative and relatively noncreative people. Responses to each item are scored 1 or 0. Total scores range from 0 to 50 on the complete scale of 50 items. All blank responses are scored zero. According to Khatena and Torrance (1998), the score can be interpreted based on five factors as below.

Acceptance of Authority (Factor I). It relates to being obedient, respectful and polite, and to following rules and accepting others in power.

Self-Confidence (Factor II). It relates to being sure of one-self and full of energy, getting along well with others, wanting to learn or know, finishing the task at hand, and remembering well.

Inquisitiveness (Factor III). It relates to always asking questions, feeling strong emotions, talking a lot, demanding recognition and insisting on rights, and being obedient.

Awareness of Others (Factor IV). It relates to being respectful and polite, popular or well-liked and caring, getting along well with others, and preferring to work in a group.

Disciplined Imagination (Factor V). It relates to being full of energy, imaginative and never bored, trying difficult tasks, preferring task that are challenging, not giving up easily, finishing the task at hand, working hard, and seeking adventure.

Something About Myself (SAM). SAM measures creative perception based on the rationale that creative behavior is reflected in an individual's personal creative characteristics possessed and in engaging in creative thinking and creative productions (Khatena, 1976; Palaniappan, 2010). SAM has 50 items. Each of the check-marked responses is awarded with one point and zero for each blank response. Thus, the more the score, the higher the level of perceived creativity indicated. The total score ranges from 0 to 50 based on six factors as described below (Palaniappan, 2010).

Environmental Sensitivity (Factor I). It relates to being open to ideas of others, relating ideas to what can be seen, touched, or heard; interest in beautiful and humorous aspects of experiences and sensitivity to meaningful relations.

Initiative (Factor II). It relates to directing, producing and/or playing leads in dramatic and musical productions; producing new formulas or new products; and bringing about changes in procedures or organization.

Self-Strength (Factor III). It relates to self-confidence in matching talents against others, resourcefulness, versatility, willingness to take risks, desire to excel, and organizational ability.

Intellectuality (Factor IV). It relates to intellectual curiosity, enjoyment of challenging tasks, imagination, and preference for adventure over routine, liking for reconstruction of things and ideas to form something different, and dislike for doing things in a prescribed routine.

Individuality (Factor V). It relates to preference for working by oneself rather than in a group, seeing oneself as a self-starter and somewhat eccentric, critical of others' work, thinking for oneself, working for long periods without getting tired.

Artistry (Factor VI). It relates to production of objects, models, paintings, carving, musical composition, receiving awards or prizes or having exhibits, production of stories, play, poems and other literary pieces.

2.4 Data Analysis

A one-way between-groups multivariate analysis of variance was performed to investigate differences in creative perception as a function of sexual orientation.

3. Results

Table 1. Educational level of participants

Highest Level of Education	Sexual Orientation	
	Homosexuals	Heterosexuals
No formal qualification	0	1
Primary	1	1
Secondary	7	3
Tertiary	30	29
Total	38	34

It can be seen from Table 1 that the educational level of homosexual participants closely matched the heterosexual participants, with the majority having a tertiary education in this sample.

Table 2. Mean and standard deviation on creativity according to sexual orientation

KTCPI	Homosexuals		Heterosexuals	
	Mean	SD	Mean	SD
What Kind of Person Are You (WKOPAY)				
Acceptance of Authority	2.79	2.00	2.65	2.19
Self-Confidence	5.34	2.02	5.94	1.69
Inquisitiveness	2.97	1.55	2.71	1.82
Awareness of Others	6.18	1.56	6.26	1.80
Disciplined Imagination	4.63	2.26	4.88	2.25
Something About Myself (SAM)				
Environmental Sensitivity	5.40	0.97	5.38	0.70
Initiative	3.39	1.39	3.44	1.64
Self-Strength	7.45	1.70	7.56	1.65
Intellectuality	7.45	2.13	8.03	1.34
Individuality	4.66	1.02	4.59	1.05
Artistry	2.26	1.61	1.82	1.53

A one-way between –groups multivariate analysis of variance was conducted to examine differences in creative perception as a function of sexual orientation. Preliminary assumption on normality was tested with no serious violations noted. There was no significant effect of sexual orientation on the combined dependent variables of creative perception, $F(11, 60) = 1.20, p > .05$; Wilk's Lambda = .84; partial $\eta^2 = .16$.

4. Discussion

In the present study, we examined the differences of creative perception comparing between homosexual and heterosexual males. Our results indicated that there was no significant difference between both groups for each of the dimensions of creativity perception. Hence, the hypothesis of this study was not supported. The findings are compatible with Domino's (1977) that homosexuals are no more or less creative than heterosexuals. This was also consistent with Konik and Crawford's study (2004) on the cognitive flexibility (a domain of normative creativity) of homosexual and heterosexual participants, which found that there was no significant difference between the two groups. According to Kaufman (2006), it is unclear if people conceive of creativity as the same constructs across all domains which may result in some degree of variability.

The perceptions of creativity depend not just on intrinsic properties, but also on features of the context and the perceiver (Csikszentmihalyi, 1998 in Adarvers-Yorno et al., 2006). Lippa (2005) posited that many gay men, like most heterosexual men, do not like to be labeled as 'feminine' or 'effeminate'. Thus, there could be a possibility that homosexual male participants did not rate themselves in objective way, shifting their self-reported creative perception in the more socially desirable direction, consciously or unconsciously. This might result in the more average level of creativity. In addition, Lippa (2005) found that older gay men samples, on average, rated themselves as less feminine and more masculine than younger gay men did. The homosexual participants in this study were somewhat older than the heterosexual participants which might also be taken into account in the interpretation of the non-significant findings.

Moreover, Gedo (1996) argued that assessments of creative success involve social judgments. It can be said that creativity is a talent taken from the complex interaction of heritage and environment (Ghafourian, 2012). Whatever an individual's particular talents, skills and creative thinking abilities, the conditions under which they work and live in can significantly impact on the level of creativity produced (Hennessey, 2003). In other words, the impact of environment on creativity is significant and highly complex. Due to this social-environmental influence, like heterosexual males in general, gay males are similarly socialized throughout much of their lives to adopt the ideal of masculinity (Lippa, 2005). In our present context, people tend to group together more by their professionalism than by sexual orientation. This means that homosexual and heterosexual males are more likely to work or live together in one social setting. Therefore, there are greater opportunities for them to facilitate creative exchanges with each other in order to accomplish their shared task or common goals. One's homosexual orientation does not seem to confer any advantage nor disadvantage when it comes to creativity. Both homosexual and heterosexual males are non-differentiable in creativity.

Overall, the result of this study showed that neither homosexual participants nor heterosexual participants scored higher on creativity, including creative to non-creative ways of behaving and their self-characteristics. However, it is important to note that self-perceptions of creativity do not equal the actual creativity (Kaufman, 2006). Future research will benefit from the use of a battery of measures which will be more objective to capture creativity and a larger sample size. It will also be interesting to extend the current research to studying creativity in other sexual minorities including lesbian, bisexual, and transgender individuals to give a richer understanding.

Acknowledgements

This study was funded by a university grant (code: 2011-0127-106-01) from Research Management Centre, Sultan Idris Education University, Malaysia. We would like to thank Song Yee Yew, Maggie Yeo Wan Yin, and Cham Chin Hong for assistance with data collection. We are grateful for all participants who took part in this study.

References

- Adarves-Yorno, I., Postmes, T., & Haslam, S. A. (2006). Social identity and the recognition of creativity in groups. *British Journal of Social Psychology*, 45, 479-497. <http://dx.doi.org/10.1348/014466605X50184>
- Ai, X. (1999). Creativity and academic achievement: An investigation of gender differences. *Creativity Research Journal*, 12(4), 329-337. http://dx.doi.org/10.1207/s15326934crj1204_11
- Amabile, T. (1998). How to kill creativity. *Harvard Business Review*, 77-87.
- American Institute of Bisexuality. (2007). *The Klein Sexual Orientation Grid*. Retrieved August 11, 2011, from <http://www.bisexual.org/kleingrid.html>
- Anderssen, N. (2002). Does contact with lesbian and gays lead to friendlier attitudes? A two year longitudinal study. *Journal of Community and Applied Social Psychology*, 12, 124-136. <http://dx.doi.org/10.1002/casp.665>
- Baer, J. (1997). Gender differences in the effects of anticipated evaluation on creativity. *Creativity Research Journal*, 10(1), 25-31. http://dx.doi.org/10.1207/s15326934crj1001_3
- Baer, M., Oldham, G. R., & Cummings, A. (2003). Rewarding creativity: When does it really matter? *The Leadership Quarterly*, 14, 569-586. [http://dx.doi.org/10.1016/S1048-9843\(03\)00052-3](http://dx.doi.org/10.1016/S1048-9843(03)00052-3)
- Bohm, D. (1968). On creativity. *Leonardo*, 1(2), 137-149. <http://dx.doi.org/10.2307/1571951>
- Brown, L. S. (1989). New voices, new visions: Toward a lesbian/gay paradigm for psychology. *Psychology of Women Quarterly*, 13, 445-458. <http://dx.doi.org/10.1111/j.1471-6402.1989.tb01013.x>
- Chao, H., Wang, P., & Gao, Y. (2010). A survey of Chinese university students' perceptions of and attitudes

- towards homosexuality. *Social Behavior and Personality*, 38(6), 721-728. <http://dx.doi.org/10.2224/sbp.2010.38.6.721>
- Charyton, C., Basham, K. M., & Elliot, J. O. (2008). Examining gender with general creativity and preferences for creative persons in college students within the science and the arts. *Journal of Creative Behavior*, 42(3), 216-222. <http://dx.doi.org/10.1002/j.2162-6057.2008.tb01296.x>
- Cheung, P. C., & Lau, S. (2010). Gender differences in the creativity of Hong Kong school children: Comparison by using the new electronic Wallach-Kogan Creativity Tests. *Creativity Research Journal*, 22, 194-199. <http://dx.doi.org/10.1080/10400419.2010.481522>
- Çirakoğlu, O. C. (2006). Perception of homosexuality among Turkish university students: The roles of labels, gender, and prior contact. *The Journal of Social Psychology*, 146(3), 293-305. <http://dx.doi.org/10.3200/SOCP.146.3.293-305>
- Domino, G. (1977). Homosexuality and creativity. *Journal of Homosexuality*, 2(3), 261-267. http://dx.doi.org/10.1300/J082v02n03_09
- Ellis, A. (1959). Homosexuality and creativity. *Journal of Clinical Psychology*, 15, 376-379. [http://dx.doi.org/10.1002/1097-4679\(195910\)15:4<376::AID-JCLP2270150405>3.0.CO;2-T](http://dx.doi.org/10.1002/1097-4679(195910)15:4<376::AID-JCLP2270150405>3.0.CO;2-T)
- Fassler, B. (1979). Theories of homosexualities as sources of Bloomsbury's androgyny. *Signs*, 5(2), 237-251. <http://dx.doi.org/10.1086/493706>
- Fishkin, A. S., & Johnson, A. S. (1998). Who is creative? Identifying children's creative abilities. *Roeper Review*, 21, 40-46. <http://dx.doi.org/10.1080/02783199809553925>
- Gautam, M. (2001). Going the Wilde way. Homosexuality: Its impact on creativity and inclination towards creative pursuits. *Creative Strategies*, 2, 1-25.
- Gedo, J. E. (1996). *The artist and the emotional world*. Columbia University Press.
- Habibollah, N., Abdullah, R., Tengku Aiza, H., Sharir, J., & Kumar, V. (2010). Relationship between creativity and academic achievement: A study of gender differences. *Journal of American Science*, 6(1), 181-190.
- Hart, K. R. (2004). We're here, we're queer – and we're better than you: The representational superiority of gay men to heterosexuals on queer eye for the straight guy. *The Journal of Men's Studies*, 12(3), 241-253. <http://dx.doi.org/10.3149/jms.1203.241>
- Hennessey, B. A. (1995). Social, environmental, and developmental issues and creativity. *Educational Psychology Review*, 7(2), 163-183. <http://dx.doi.org/10.1007/BF02212492>
- Hennessey, B. A. (2003). The social psychology of creativity. *Scandinavian Journal of Educational Research*, 47(3), 253-271. <http://dx.doi.org/10.1080/00313830308601>
- Kaufman, J. C. (2006). Self-reported differences in creativity by ethnicity and gender. *Applied Cognitive Psychology*, 20, 1065-1082. <http://dx.doi.org/10.1002/acp.1255>
- Kaufman, J. C., Baer, J., Agars, M. D., & Loomis, D. (2010). Creativity stereotype and the consensual assessment technique. *Creativity Research Journal*, 22(2), 200-205. <http://dx.doi.org/10.1080/10400419.2010.481529>
- Khatena, J., & Torrance, E. P. (1976). *Manual for Khatena-Torrance Creative Perception Inventory*. Chicago, IL: Stoelting
- Khatena, J., & Torrance, E. P. (1998). *Khatena-Torrance Creative Perception Inventory: Instruction Manual*. USA: Scholastic Tecting Service, Inc.
- Konik, J., & Crawford, M. (2004). Exploring normative creativity: Testing the relationship between cognitive flexibility and sexual identity. *Sex Roles*, 51(3/4), 249-253. <http://dx.doi.org/10.1023/B:SERS.0000037885.22789.83>
- Lippa, R. A. (2005). Sexual orientation and personality. *Annual Review of Sex Research*, 16, 119-153.
- Lippa, R. A. (2008). Sex differences and sexual orientation differences in personality: Findings from the BBC internet survey. *Archives of Sexual Behavior*, 37, 173-187. <http://dx.doi.org/10.1007/s10508-007-9267-z>
- Norlander, T., Erixon, A., & Archer, T. (2003). Psychological androgyny and creativity: Dynamics of gender-role and personality trait. *Social Behavior and Personality*, 28(5), 423-436. <http://dx.doi.org/10.2224/sbp.2000.28.5.423>

- Palaniappan, A. K. (1994). *A study of creativity and achievement among Form Four Malaysian students*. Unpublished Doctoral Dissertation. University of Malaya, Malaysia.
- Palaniappan, A. K. (2007). *Academic achievement of groups formed based on creativity and intelligence*. Paper presented at the 13th International Conference on Thinking.
- Palaniappan, A. K. (2010). *Creativity dimensions: Self and multi-talent perceptions across culture*. In Dimension of Education. New Delhi: Gyan Publishing House.
- Singh, A. A., & Shelton, K. (2011). A content analysis of LGBTQ qualitative research in counseling: A ten-year review. *Journal of Counseling and Development*, 89, 217-226. <http://dx.doi.org/10.1002/j.1556-6678.2011.tb00080.x>
- Stokinger, J. (1974). Toward a gay criticism. *College English*, 36(3), 303-311. <http://dx.doi.org/10.2307/374841>
- Stolfus, G., Nibbelink, B. L., Vredenburg, D., & Thyrum, E. (2011). Gender, gender role, and creativity. *Social Behavior and Personality*, 39(3), 425-432. <http://dx.doi.org/10.2224/sbp.2011.39.3.425>
- Torrance, E. P. (1993). Understanding creativity: Where to start? *Psychological Inquiry*, 4(3), 232-234. http://dx.doi.org/10.1207/s15327965pli0403_17
- Voorhis, R. V., & Wagner, M. (2002). Among the missing: Content on lesbian and gay people in social work journals. *Social Work*, 47(4), 345-354. <http://dx.doi.org/10.1093/sw/47.4.345>
- Whitley, B. E. (1990). The relationship of heterosexual's attributions for the causes of homosexuality to attitudes toward lesbian and gay men. *Personality and Social Psychology Bulletin*, 16, 369-377. <http://dx.doi.org/10.1177/0146167290162016>
- Yarhouse, M. A. (2012). Integration in the study of homosexuality, GLBT issues, and sexual identity. *Journal of Psychology and Theology*, 40(2), 107-111.

The Racial/Ethnic Group Disadvantage Scale: A Scale for Use with Multiple Groups in Diverse Geographical Contexts

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Received: April 10, 2013

Accepted: April 26, 2013

Online Published: May 14, 2013

doi:10.5539/ijps.v5n2p39

URL: <http://dx.doi.org/10.5539/ijps.v5n2p39>

Abstract

The Racial-Ethnic Group Disadvantage Scale (REGDS) is a new brief (7-item) measure of general perceptions of racial/ethnic group disadvantage, designed for use with multiple racial/ethnic groups in diverse geographical contexts. The scale measures the extent to which individuals believe that their racial/ethnic group has lower social status, fewer economic resources, and less political power than other racial/ethnic groups in society, combined with collective experiences of discrimination, social exclusion, and negative stereotyping. We report the results of several studies conducted with international and American college students (White, Asian-, Latino-, and African-American students), and present evidence establishing the reliability and validity of the REGDS, including internal consistency, test-retest reliability, criterion (known-groups) validity, and concurrent validity.

Keywords: minority groups, prejudice, racial discrimination, cross-cultural differences, racial/ethnic populations, psychometrics, test construction

1. Introduction

Minority groups exist in almost every country in the world, including the Maoris in New Zealand, the Kurds in Iraq, the Zhuang in China, the Harijans in India, the Basque in Spain, and Blacks in South Africa (Bornman, 1999; Hutnik, 1991; McCool, Du Toit, & Petty, 2006; Tajfel, 1978; Verkuyten & Yildiz, 2006). Majority/minority group distinctions are likely to become increasingly important as international migration patterns and globalization bring more and more racial/ethnic groups into contact (Hutnik, 1991; Sidanius & Pratto, 1999; Spencer-Rodgers, Tong, & Liao, 2012). These sociological trends also highlight the importance of examining the construct of *racial/ethnic group disadvantage* from a cross-cultural and international perspective. Within social, counseling, and other branches of psychology, there has been burgeoning interest in the correlates of racial/ethnic group disadvantage among individuals in diverse societies (Atkinson, Morten, & Sue, 1983; Crocker, Major, & Steele, 1998; Kaiser & Wilkins, 2010; Major, Gramzow, McCoy, Levin, Schmader, & Sidanius, 2002; Phinney, 1996). Scholars have examined the psychosocial antecedents and outcomes associated with racial/ethnic group discrimination in various countries (Cross & Vandiver, 2001; Hutnik, 1991; Spencer-Rodgers et al., 2012), and have proposed numerous theoretical models of racial/ethnic minority identity development (e.g., Atkinson et al., 1983; Cross, 1991; Sellers, Smith, Shelton, Rowley, & Chavous, 1998). However, most of these theoretical models are limited to one racial/ethnic group and cannot be used in a variety of geographical contexts.

The purpose of the present research was to develop a brief measure of racial/ethnic group disadvantage for use with multiple groups in diverse geographical contexts. In the next section, we summarize previous research on the construct of racial/ethnic group disadvantage. Then, we present data on the reliability and validity of the Racial/Ethnic Group Disadvantage Scale (REGDS).

1.1 Racial/Ethnic Group Disadvantage

A number of definitions of *racial/ethnic group disadvantage* have been proposed by psychologists, sociologists, and other social scientists (Allport, 1954; Greene, Way, & Pahl, 2006; Hutnik, 1991; Phinney, 1991; Spencer-Rodgers et al., 2012; Tajfel, 1978). A central component of the construct concerns the political and economic position of one's group with respect to other groups in society: racial/ethnic minorities are allocated a smaller share of the political power and material resources in society, per capita, than are racial/ethnic majorities (Phinney, 1996; Sidanius & Pratto, 1999; Tajfel, 1978). A second component pertains to the many social consequences of belonging to a group that is devalued by the majority community. Racial/ethnic minorities experience significant prejudice and discrimination at the hands of a majority group (Allport, 1954; Angel & Angel, 2006; Sidanius & Pratto, 1999; Tajfel, 1978). According to Hutnik (1991), minority group members are individuals who are connected to similar others by a common history, culture, and fate, and by collective experiences of exploitation and oppression.

1.2 Group Disadvantage and Racial/Ethnic Identity Scales

There exists in the literature a multitude of theoretical models, scales, and assessment tools tailored to the examination of perceptions of prejudice and racial/ethnic identity. These scales assess the multiple facets of the construct under investigation, but many are limited in that they focus on only one racial/ethnic group in one context. For example, a scale based on Nigrescence Theory, now known as Cross's Revised Racial Identity Model (CRIS; Cross & Vandiver, 2001), has been shown to be both valid and reliable (Vandiver, Cross Jr., Worrel, & Fhagon-Smith, 2002; Vandiver, Fhagen-Smith, Cokley, Cross Jr., & Worrel, 2001). Furthermore, the CRIS is related to "internalized racism" and perceptions of prejudice (Cokley, 2002). However, the CRIS is limited in its generalizability because the theoretical model on which it was built focuses exclusively on the African American population within the United States. Several measures, such as the Scale of Ethnic Experiences (SEE; Malcarne, Chavira, Fernandez, & Liu, 2006) and the Perceived Ethnic Discrimination Questionnaire-Community Version (PEDQ-CF; Brondolo, Kelly, Coakley, Gordon, Thompson, et al., 2005), were designed for use with multiple racial/ethnic groups. However, these instruments also are limited in that they focus on participants' experiences in the United States or modern Western societies. For example, factors 2 and 3 of the SEE assess Perceived Discrimination and Mainstream Comfort. Thus, the SEE is psychometrically sound when assessing the perceptions of a variety of racial/ethnic group members, but only when used with American minority groups.

Some scales originally developed for specific racial/ethnic groups have been adapted for use with other groups and cultures. For example, based on their rejection-identification model, Branscombe, Schmitt and Harvey (1999) designed a scale to examine the effects of perceived discrimination on psychological well-being. Their instrument, originally developed for use with an African American population, was later used by Schmitt, Spears and Branscombe (2003) to investigate the effects of perceived discrimination on psychological well-being in an international student population. Another study investigated the same effects among immigrants in Finland (Jasinskaja-Lahti, Liebkind, & Perhoniemi, 2006). However, in both cases, the measures are limited by their focus on one aspect of discrimination: the perception of rejection and psychological exclusion by the majority group. They do not measure other facets of group disadvantage, including perceptions of reduced political power and material resources in society, and collective experiences of exploitation and oppression.

Thus, the principal goal of this research was to develop a brief measure of perceived racial/ethnic group disadvantage for use across racial/ethnic groups in diverse geographical contexts. Specifically, the REGDS was designed to measure the extent to which individuals believe that their racial/ethnic group has lower social status, fewer economic resources, and less political power than other racial/ethnic groups in society, combined with collective experiences of discrimination, social exclusion, and negative stereotyping.

1.3 Preliminary Studies

1.3.1 Item Development

Items for the REGDS were developed based on our theoretical conceptualization of the construct, consultation with international experts, and a comprehensive review of the minority identity, racial prejudice, and social stigma literatures. From an initial pool of 14 items, 7 were selected for inclusion in the scale based on exploratory factor analyses with multiple participant samples recruited at the University of California, Berkeley. The students completed the scale items as part of the Dept. of Psychology's prescreening mass-testing sessions and received course credit for their participation. The largest sample ($N = 326$) consisted of: 54% Asian American, 21% European American, 12% Latino American, 3% African American, and 10% Other (<1% unreported). Fifty-eight percent of the sample was female. Exploratory factor analysis (maximum likelihood with

promax rotation) was conducted. A scree test (Cattell, 1966) indicated one strong factor. The item loadings ranged from .70 to .81, and the factor explained 62% of the variance. The 7 items are presented in Appendix 1.

1.3.2 Test-Retest Reliability

The REGDS was administered twice over a 4-week interval to a separate sample of Asian and White undergraduate students ($N = 43$) at UC Berkeley and the University of Victoria. The students volunteered to complete the scale at the end of their regularly scheduled classroom periods. The test-retest reliability was .77 for those who identified as Asian and .79 for those who identified as White.

1.4 Study 1

1.4.1 Overview

In Study 1, racial/ethnic group disadvantage was examined among individuals from a total of 57 countries. Two participant groups were compared and contrasted: a large group of American college students and a smaller group of international students residing in the United States. International students enable us to examine racial/ethnic group disadvantage among individuals from diverse national and cultural backgrounds. International students also share similar challenges and difficulties in adjusting to American society (Spencer-Rodgers, 2001). For example, international students of color report experiencing substantial prejudice and discrimination on the basis of race/ethnicity in the United States (Paige, 1990; Pedersen, 1991; Schmitt, Spears, & Branscombe, 2003).

To examine the factor structure of the scale, confirmatory factor analyses were conducted across the various groups. To investigate the criterion (know-groups) validity of the scale, we examined group-level differences in racial/ethnic group disadvantage. Because African Americans and Latinos experience greater discrimination and possess lower socioeconomic status (SES) than do Asian and European Americans (Kaiser & Wilkins, 2010; Phinney, 1996; Vega & Rumbaut, 1991), we predicted that the former two groups would report higher scores on the REGDS than would the latter two groups. We expected to find parallel differences among international students (i.e., those who self-identified as *Latino* would report higher scores than those who self-identified as *Asian*). Although international students of color are likely to identify as majority group members in their home country, as a result of experiences with discrimination in the United States, they may come to identify as members of a minority group in the host country (Schmitt, Spears, & Branscombe, 2003). We hypothesized that international students of color would report higher scores on the scale the longer they had lived in the United States.

To investigate the concurrent validity of the scale, we examined the intercorrelations between the REGDS and conceptually similar constructs. We predicted that the REGDS would be correlated (but not too highly correlated) with lower public regard (i.e., the perception that others value one's racial/ethnic group; Luhtanen & Crocker, 1992), lower socioeconomic status, and stronger racial/ethnic identity (i.e., racial/ethnic centrality, group attachment, and private regard). Given the longstanding interest in minority self-worth (for a review, see Spencer-Rodgers et al., 2012), we also examined whether the REGDS predicted lower self-esteem across the various racial/ethnic groups.

2. Method

2.1 Participant Characteristics

2.1.1 International Students

The international participants were undergraduate and graduate students (132 women; 124 men; 4 unreported) at two West coast universities. They were citizens of 56 countries (e.g., China, Japan, Mexico, France, Brazil, Nigeria, etc.). The students ranged in age from 18 to 52 ($M = 22.7$), and 162 self-identified as Asian, 64 as White, 34 as Latino, 11 as Black, 8 as Other (e.g., East Indian, Asian/Caucasian, etc.), and 5 unreported (note 1). The participants' fathers' highest level of education served as an approximate indicator of socioeconomic status: 12% (some high school or less), 21% (high school graduate), 38% (college graduate), and 29% (advanced degree).

2.1.2 American Students

The American participants ($N = 1036$) were undergraduate and graduate students (655 women; 371 men; 10 unreported) enrolled at two West coast universities. The participants ranged in age from 18 to 47 ($M = 20.3$), and 409 self-identified as Asian, 267 as White, 180 as Latino, 113 as Black, 67 as Other (14 unreported). The participants' fathers' educational attainment was as follows: 14% (some high school or less), 28% (high school graduate), 29% (college graduate) and 29% (advanced degree).

2.2 Procedures

Most of the international (84%) and American students (93%) participated for psychology course credit. A number of (mostly Latino) students also were recruited from Spanish language and literature classes. Latino and African American students were over-sampled in order to increase their representation in the sample. The study was described as concerning the “psychology of group membership.” When completing the group measures, the international participants were instructed to think about their racial group “within the context of the United States.” Testing sessions were conducted over 3 semesters and were administered by a multiracial group of research assistants.

2.3 Measures

All of the items on the following scales were rated on a 7-point scale, ranging from 1 (*not at all*) to 7 (*very much*) (note 2).

Racial/ethnic group disadvantage. Participants rated the 7 items that appear in Appendix 1. Cronbach’s alphas were reasonably high in all of the groups. In the international sample, Cronbach’s alphas were as follows: Asians, .78, Whites, .78, and Latinos, .83. In the American sample, Cronbach’s alphas were: Asians, .84, Whites, .83, Latinos, .89, and Blacks, .79.

Racial centrality. Importance of race to the self-concept (Luhtanen & Crocker, 1992) was assessed with 4 items. Sample items include: (a) “Being a member of my racial group is an important part of my self-image” and (b) “Being a member of my racial group has very little to do with how I feel about myself” (reverse-scored). In the international sample, Cronbach’s alphas were: Asians, .80, Whites, .78, and Latinos, .68. In the American sample, Cronbach’s alphas were: Asians, .78, Whites, .77, Latinos, .81, and Blacks, .73.

Private regard. Personal attitudes towards one’s racial group (Luhtanen & Crocker, 1992) were measured with 4 items, including: (a) “I feel good about the racial group I belong to” and (b) “I often regret that I belong to my racial group” (reverse-scored). In the international sample, Cronbach’s alphas were: Asians, .78, Whites, .71, and Latinos, .74. In the American sample, Cronbach’s alphas were: Asians, .80, Whites, .74, Latinos, .69, and Blacks, .72.

Group attachment. Attachment to one’s racial group (Spencer-Rodgers & Collins, 2006) was assessed with 4 items: (a) “I feel a common bond or connection with other members of my racial group,” (b) “I feel emotionally attached to other members of my racial group,” (c) “I feel separate or independent from other members of my racial group” (reverse-scored), and (d) “I identify with other members of my racial group.” In the international sample, Cronbach’s alphas were: Asians, .81, Whites, .72, and Latinos, .56. In the American sample, Cronbach’s alphas were: Asians, .84, Whites, .72, Latinos, .83, and Blacks, .83.

Public regard. Perceived public attitudes towards one’s racial group (Luhtanen & Crocker, 1992) was assessed with 4 items. A sample item includes: “My racial group is considered to be good by other people.” In the international sample, Cronbach’s alphas were: Asians, .71, Whites, .69, and Latinos, .51. In the American sample, Cronbach’s alphas were: Asians, .70, Whites, .69, Latinos, .76, and Blacks, .79.

Self-esteem. Self-esteem was assessed with the 10-item Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1979). In the international sample, Cronbach’s alphas were: Asians, .85, Whites, .82, and Latinos, .80. In the American sample, Cronbach’s alphas were: Asians, .87, Whites, .87, Latinos, .84, and Blacks, .83.

3. Results

3.1 Confirmatory Factor Analyses

As indicated in Table 1, confirmatory factor analyses were conducted among the international and American participants, separately. Analyses also were conducted among each of the 4 racial/ethnic groups, separately (note 3).

Table 1. Confirmatory factor analyses of the racial/ethnic group disadvantage scale (regds) by type of participant and racial/ethnic category membership

	N	χ^2	df	p	GFI	CFI	NFI	TLI
International students	260	27.0	11	.001	.97	.98	.96	.96
American students	1036	294.5	11	.001	.92	.95	.95	.90
Asians	571	46.4	11	.001	.98	.98	.97	.96
Latinos	214	29.6	11	.001	.96	.98	.96	.95
Blacks	113	48.7	11	.001	.88	.87	.85	.75
Whites	331	147.8	11	.001	.89	.85	.84	.71

Note. χ^2 = Chi-square goodness-of-fit index, df = Degrees of freedom, GFI = Goodness-of-fit index, CFI = Comparative-fit-index, NFI = Normed fit index, TLI = Tucker Lewis coefficient.

The models were tested using the Amos structural equation modeling program (Arbuckle & Wothke, 1999). Assessment of model fit was based on 5 indices: the chi-square goodness-of-fit index, the Comparative-Fit Index (CFI, Bentler, 1990), the Goodness-of-Fit Index (GFI, Jöreskog & Sörbom, 1984), the Normed-Fit Index (NFI, Bentler & Bonett, 1980), and the Tucker-Lewis Coefficient (TLI, Bentler & Bonnett, 1980). A non-significant chi-square goodness-of-fit is considered desirable. However, when samples sizes are large, a trivial discrepancy between the observed and estimated variance-covariance matrices can result in a significant chi-square statistic. Values of about .90 are considered acceptable, and .95 (or higher) are considered very good, for the other indices (Arbuckle & Wothke, 1999; Bentler & Bonnett, 1980; Marsh, Hau, & Wen, 2004). With the exception of Whites (N = 331) and Blacks (N = 113) (note 4), the fit-indices suggest that a one-factor model yielded adequate fit to the data. Following Byrne (2001), the model we tested included 3 correlated error terms (between items 1 and 2, 3 and 4, and 5 and 6) (note 5). Table 2 presents the factor loadings and uniquenesses (error terms) by type of participant and racial/ethnic category membership.

Table 2. Factor loadings (standardized regression weights) and uniquenesses (unstandardized variances) by type of participant and racial/ethnic category membership

	International (N=260)		American (N=1036)		Asians (N=571)		Latinos (N=214)		Blacks (N=113)		Whites (N=331)	
	FL	Uni	FL	Uni	FL	Uni	FL	Uni	FL	Uni	FL	Uni
Item 1	.63	2.2	.81	1.4	.56	1.5	.67	1.1	.45	0.4	.62	1.9
Item 2	.66	1.7	.72	1.5	.66	1.3	.65	1.0	.49	0.6	.71	1.8
Item 3	.75	1.0	.69	1.5	.76	0.9	.74	1.1	.55	2.0	.72	1.3
Item 4	.81	0.8	.81	1.1	.78	0.7	.78	1.1	.73	0.6	.80	0.9
Item 5	.54	2.3	.81	1.5	.51	1.8	.65	1.5	.59	0.9	.36	1.0
Item 6	.63	1.5	.84	1.2	.56	1.5	.79	1.0	.67	0.9	.49	0.8
Item 7	.43	2.9	.79	1.6	.45	2.1	.70	1.4	.71	0.9	.39	1.8

Note. FL = factor loading, Uni = uniqueness, unstandardized variance.

3.2 Criterion (Known-Groups) Validity

A three-way ANOVA was performed on the REGDS using gender, type of participant (international vs. American), and racial/ethnic category membership as the factors. There was no main effect of gender and no

interactions involving gender. Hence, all further analyses combined women and men.

There was a main effect of type of participant, $F(1, 1288) = 22.80, p < .001$, a main effect of racial/ethnic category membership, $F(4, 1288) = 210.53, p < .001$, and a type of participant x racial/ethnic category membership interaction, $F(2, 1288) = 10.13, p < .001$.

To explore the interaction, we examined the simple effect of racial/ethnic category membership within the international and American samples, separately. This effect was significant in the international sample, $F(2, 257) = 43.61, p < .001$. Post-hoc multiple comparisons (using the Games Howell statistic for unequal cell sizes) revealed that Latinos ($M = 4.31$) reported higher scores on the REGDS than did Asians ($M = 3.68$), who in turn, reported higher scores than did Whites ($M = 2.46$) (note 6). The simple effect of racial/ethnic category membership was also significant in the American sample, $F(4, 1031) = 333.80, p < .001$. Blacks ($M = 5.96$) reported higher scores than did Latinos ($M = 5.31$), who in turn, reported higher scores than did Asians ($M = 4.04$) and others ($M = 3.76$). The latter two groups reported higher scores than did Whites ($M = 2.36$).

In addition, we examined the simple effect of type of participant (international vs. American) among each of the racial/ethnic groups. Asian Americans reported higher scores on the REGDS than did Asian internationals, $F(1, 569) = 13.92, p < .001$. Likewise, Latino Americans possessed higher scores than did Latino internationals, $F(1, 212) = 21.93, p < .001$. White Americans and White internationals did not differ significantly, $F < 1$.

3.3 Concurrent Validity

The intercorrelations between the REGDS, various demographic variables, racial/ethnic identity (racial centrality, group attachment, and private regard), socioeconomic status, public regard, and self-esteem are presented in Table 3.

As hypothesized, international students of color tended to report higher scores on the REGDS the longer they had lived in the United States. The correlation between the REGDS and percentage of life spent in the US was $r = .26, p < .001$ among Asian international participants and $r = .17, ns$ among Latino international participants.

Table 3. Correlations with racial/ethnic group disadvantage scale (regds) by type of participant and racial/ethnic category membership

	American students				International students		
	Asians (N=409)	Latinos (N=180)	Whites (N=267)	Blacks (N=113)	Asians (N=162)	Latinos (N=34)	Whites (N=64)
<i>Demographics</i>							
Current age	.04	.06	.00	.01	-.01	-.39*	-.13
Age of immigration	-.05	.06	.16	-.11	-.16*	-.35*	-.07
Percentage of life living in the US	.06	-.17**	-.06	.11	.26***	-.03	.17
<i>Racial/ethnic identity</i>							
Racial centrality	.12*	.23**	.24***	.30**	-.11	.05	.24
Group attachment	.09	-.03	.07	.13	-.12	-.11	.15
Private regard	-.05	.08	-.07	-.04	-.21**	.00	-.07
Socioeconomic status	-.13**	-.13	.12	-.03	-.13	-.42*	-.10
Public regard	-.49***	-.50***	-.50***	-.54***	-.44***	-.71***	-.52***
Self-esteem	-.18***	.00	-.17**	.02	-.11	-.41*	-.24

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

4. Discussion

The REGDS was designed to measure the belief that the racial/ethnic group to which one belongs is devalued and disadvantaged in society, and was developed to assess the experiences of racial/ethnic group members in a variety of countries and cultural contexts. The exploratory factor analyses indicated that the factor structure and percentages of variance explained by the factor were similar across the various subgroups. Cronbach's alphas

were reasonably high and consistent across the international and American participants and different racial/ethnic groups. The confirmatory factor analyses further showed that a one-factor model yielded adequate fit to the data in most of the subgroups. Taken together, these findings suggest that the REGDS is consistent and reliable across a variety of groups.

To investigate the criterion (known-groups) validity of the scale, we examined group-level differences on the measure. In accordance with well-documented status differences found among racial/ethnic groups in the United States (Major et al., 2002; Kaiser & Wilkins, 2010; Vega & Rumbaut, 1991), African Americans reported higher scores than did Latinos, who in turn, reported higher scores than did Asian Americans. Asian Americans and individuals of mixed racial/ethnic heritage possessed higher scores than did European Americans. Among international students, group-level differences in perceived group disadvantage paralleled those in the US sample. It is noteworthy that societal differences in levels of prejudice and political/socioeconomic disadvantage were perceived by the American and international participants themselves. Although some scholars have argued that minority group members minimize or deny discrimination and disadvantage (for reviews, see Crocker et al., 1998; Kaiser & Wilkins, 2010), consistent with Major et al. (2002), we found that perceptions of group disadvantage corresponded with objective group-level differences in society.

When we compared international and American participants, we found that international students of color reported lower scores on the REGDS than did American students of color, although they tended to report higher scores on the scale the longer they had lived in the United States. International students who study in the US are likely to arrive to the host country as majority-identified individuals. As a result of cross-cultural transition, acculturation, and experiences with negative stereotyping and discrimination (Paige, 1990; Pedersen, 1991; Spencer-Rodgers & McGovern, 2002), many international students of color experience a shift from majority to minority identity along racial/ethnic lines. Eventually, they come to identify as members of a minority group in the United States (Schmitt et al., 2003). A number of factors influence cross-cultural minority identity development, including one's length of residence in the host country, one's residency plans (e.g., to remain in the US vs. return to the home country), and personal experiences with prejudice and discrimination, among others. The development of a minority identity through cross-cultural transition may have important implications for the psychosocial adjustment of international students.

To examine the concurrent validity of the scale, we compared participants' responses on the REGDS with conceptually similar constructs (note 7). The pattern of correlations presented in Table 3 shows that the REGDS was correlated (but not too highly) with public regard and socioeconomic status. For example, the correlations between the REGDS and SES were generally negative, with higher SES participants perceiving somewhat less racial/ethnic group disadvantage. For three of the racial/ethnic groups, perceptions of group disadvantage were related to lower self-esteem, a point that we return to later in the General Discussion.

5. Study 2

To further examine the concurrent validity of the REGDS, we conducted a second study with an American minority group. Perceptions of discrimination, assessed with scales designed specifically for use with Asian Americans, generally are correlated with lower wellbeing (Lee & Ahn, 2011). A recent meta-analysis of 24 studies with Asian Americans revealed an effect size of $r = .23$ ($SE = .03$, $Z = 9.40$, $p < .01$) between perceived discrimination and psychological distress (Lee & Ahn, 2011). Hence, we predicted that the REGDS would be significantly correlated with lower life satisfaction, less positive affect, and greater negative affect in a sample of Asian American college students.

5.1 Method

5.1.1 Participants and Procedures

Asian American participants ($N = 88$; $M_{age} = 19.8$, $SD_{age} = 1.5$) at UC Berkeley completed the REGDS as part of a larger study on culture and well-being. (Participants in Study 2 were independent of those in Study 1). Sixty-five percent of the participants were women. The participants' father's education attainment served as an approximate indicator of socioeconomic status. The frequency distribution of this variable was as follows: 17% (*some high school or less*), 34% (*high school graduate*), 22% (*college graduate*), and 27% (*advanced degree*). Forty-eight percent of the sample was foreign-born (Mean age of immigration = 5.2, $SD = 6.6$ years). The students received course credit in a psychology course for taking part in the study. The study sessions were conducted by a multiracial group of research assistants.

5.1.2 Measures

All of the items on the following scales were rated on a 7-point scale, ranging from 1 (*not at all*) to 7 (*very*

much).

Racial/ethnic group disadvantage. Participants rated the 7 items that appear in Appendix 1. A principal components analysis (with varimax rotation) was conducted. All 7 items had adequate factor loadings ($> .44$) and formed a unidimensional scale that explained 45% of the variance. Cronbach's alpha was .78.

Life satisfaction. Satisfaction with one's life was assessed with the 5-item Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985). Cronbach's alpha was .80.

Positive and negative affect. Participants completed a modified version of the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988). They indicated the extent to which they felt 11 positive emotions (e.g., happy, proud) and 11 negative emotions (e.g., angry, distressed). Cronbach's alpha for positive affect was .92 and for negative affect .93.

5.2 Results and Discussion

Socioeconomic status was negatively correlated with scores on the REGDS ($r = -.25, p < .05$), such that Asian American participants with higher socioeconomic status perceived less racial/ethnic group disadvantage. However, the REGDS was not significantly correlated with gender, current age, age of immigration, or nativity status (0 = United States born, 1 = foreign born). These findings are consistent with the results of Study 1, in which socioeconomic status was negatively related to perceived racial/ethnic group disadvantage, but no other demographic variables, among Asian Americans.

As hypothesized, the REGDS was associated with lower life satisfaction ($r = -.26, p < .05$), less positive affect ($r = -.23, p < .05$), and greater negative affect ($r = .23, p < .05$). Likewise, in Study 1, we found that the REGDS was associated with lower self-esteem ($r = -.18, p < .001$) among Asian Americans. Taken together, these results are similar to those obtained with ethnic-group specific instruments designed to assess Asian Americans' experiences with racism (Lee & Ahn, 2011) and provide further evidence of the concurrent validity of the REGDS.

6. General Discussion

The central purpose of this research was to present a conceptual and empirical analysis of racial/ethnic group disadvantage. We developed a brief 7-item scale that assesses group disadvantage for use with multiple groups in different contexts. The REGDS measures the extent to which individuals believe that their racial/ethnic group has lower social status, fewer economic resources, and less political power than other racial/ethnic groups in society, combined with collective experiences of discrimination, social exclusion, and negative stereotyping. The preliminary and main studies indicate that the REGDS is reliable and valid (i.e., with respect to internal consistency, test-retest reliability, criterion validity, and concurrent validity).

6.1 Perceptions of Racial/Ethnic Group Disadvantage

Despite the traditional emphasis placed on group size as the principal determinant of majority/minority status, numerical factors alone do not account for the minority group experience (Angel & Angel, 2006; Phinney, 1996; Smith, 1991; Wagley & Harris, 1958; Way & Pahl, 2006). Rather, majority/minority distinctions are largely determined by group differences in social status, political power, and economic resources. Minority group members are individuals who possess one or more distinctive physical, cultural, or behavioral attributes (such as race, language, religious and cultural practices, etc.) that differentiate them from the majority community. These distinguishing attributes are generally held in low regard by the dominant segments of society, and become the basis for unfair treatment, social derogation, and marginalization.

Racial/ethnic group disadvantage can be distinguished from similar constructs, such as social stigma (Crocker et al., 1998; Major, 2006; Pines & Paulin, 2005) however, in that racial/ethnic group disadvantage is associated with an explicit *group* identity. Minority groups are "self-conscious units" that are of relatively long duration (Tajfel, 1978); they possess well-defined intergroup boundaries and distinctive group norms, values, and customs. Minority group membership also implies significant differences in political power and access to societal resources, such as education, health care, and housing (Hutnik, 1991; Major et al., 2002; Smith, 1991). Due to past or present economic exploitation, minority group members are socioeconomically disadvantaged relative to the majority community. Racial/ethnic minority group members also confront cultural deprivation and must struggle to preserve those cultural values, norms, and customs that differ from those of the dominant segments of society (Verkuyten & Lay, 1998).

Research on racial/ethnic group disadvantage, racial/ethnic identity, socioeconomic status, culture, and acculturation are sometimes confounded in the literature (Betancourt & Lopez, 1993). Studies that focus on

perceived group disadvantage, separate from related constructs, might provide insight into a number of psychological phenomena. For instance, East Asian minority group members in the United States, Canada, and several Western European nations sometimes report lower levels of self-esteem and psychological well-being than do majority group members in those countries (for a review, see Spencer-Rodgers et al., 2012). Although scholars frequently attribute these group-level differences to perceptions of prejudice and minority status, they may be due to a host of other factors, including cultural variables (e.g., interdependent self-construals; Markus & Kityama, 1991) and acculturative stress (e.g., Betancourt & Lopez, 1993; Phinney, 1996). Measures that differentiate racial/ethnic group disadvantage from related constructs are needed in order to examine their independent effects, and possible interaction, on various psychological variables. The REGDS may be a useful tool for this purpose. Furthermore, existing scales are limited with respect to the groups and/or contexts in which they can be used (see Vandiver et al., 2001; Vandiver et al., 2002). The REGDS can be used not only to measure perceptions of group disadvantage among a variety of racial/ethnic groups in one country/context, but in various countries and geographical contexts.

6.2 Limitations and Future Directions

The present research examined perceptions of group disadvantage among a broad range of racial/ethnic groups. Although we included a diverse sample of international students in Study 1 (from 56 countries), the perceptions of all of these students were based on their experiences in the United States. Studies with racial/ethnic minority groups in other countries would be beneficial. In addition, the REGDS was administered in English in both studies. Further research is needed on the measurement invariance of translated versions of the scale.

Although the present research focused on the perceptions of racial/ethnic group members, group-based disadvantage may derive from a number of other demographic factors. Scholars have long argued that race is critical to majority/minority distinctions (Allport, 1954; Tajfel, 1978; Wagley & Harris, 1958). For example, social dominance theory (Sidanius & Pratto, 1999) posits that group-based hierarchies have existed throughout history in all human civilizations and that social differentiation occurs primarily and pervasively along racial lines. As a result of international migration, most countries today are characterized by the presence of racial/ethnic minority groups (Spencer-Rodgers et al., 2012). Nevertheless, in some nations and geographical regions (e.g., Northern Ireland), social status, political power, and economic resources may be structurally distributed according to other demographic factors, such as religion or language, and race may not figure as prominently in majority/minority societal divisions (Cairns, 1989; Hutnik, 1991).

Less theoretical and empirical research has examined perceived group disadvantage as a general psychological construct, distinct from race/ethnicity. Group disadvantage may derive from one's religion (e.g., Catholics in Northern Ireland) or language (e.g., the French-Quebecois in Canada), among others. Moreover, within a given context, an individual may hold several compatible and even competing identities. For example, a Caucasian Jewish woman in the United States might feel that she belongs to a majority group by virtue of her race and a minority group on the basis of her religion. Psychology would benefit from more general models of minority identity, its development, and its antecedents and consequences.

Acknowledgments

Preparation of this manuscript was supported by a Cher Wang and Wenchi Chen grant and the American Association of University Women (AAUW American Fellowship awarded to the first author). We wish to thank Antonio Cortijo, Adelaida Cortijo, Tammy English, and Jim Gibson for their assistance with the data collection and Susannah B. Paletz for her valuable comments on an earlier draft of this paper.

References

- Allport, G. (1954). *The nature of prejudice*. Cambridge, MA: Addison-Wesley.
- Angel, J., & Angel, R. (2006). Minority group status and healthful aging: Social structure still matters. *American Journal of Public Health, 96*(7), 1152-1159. <http://dx.doi.org/10.2105/AJPH.2006.085530>
- Arbuckle, J., & Wothke, W. (1999). *AMOS 4.0 User's guide*. Chicago: SmallWaters.
- Atkinson, D., Morten, G., & Sue, D. (1983). A minority identity development model. In D. Atkinson, G. Morten, & D. Sue (Eds.), *Counseling American minorities* (pp. 35-52). Dubuque: William Brown.
- Bentler, P. (1990). Comparative fit indices in structural models. *Psychological Bulletin, 107*, 238-246. <http://dx.doi.org/10.1037/0033-2909.107.2.238>
- Bentler, P., & Bonett, D. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88*, 588-606. <http://dx.doi.org/10.1037/0033-2909.88.3.588>

- Betancourt, H., & Lopez, S. (1993). The study of culture, ethnicity, and race in American psychology. *American Psychologist*, 48, 629-637. <http://dx.doi.org/10.1037/0003-066X.48.6.629>
- Bornman, E. (1999). Self-image and ethnic identification in South Africa. *Journal of Social Psychology*, 139, 411-425. <http://dx.doi.org/10.1080/00224549909598401>
- Branscombe, N., Schmitt, M., & Harvey, R. (1999). Perceiving pervasive discrimination among African Americans: Implications for group identification and well-being. *Journal of Personality & Social Psychology*, 77, 135-149. <http://dx.doi.org/10.1037/0022-3514.77.1.135>
- Brondolo, E., Kelly, K. P., Coakley, V., Gordon, T., Thompson, S., Levy, E., Cassells, A., & Tobin, J. N. (2005). The Perceived Ethnic Discrimination Questionnaire: Development and preliminary validation of a community version. *Journal of Applied Social Psychology*, 35(2), 335-365. <http://dx.doi.org/10.1111/j.1559-1816.2005.tb02124.x>
- Byrne, B. M. (2001). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. Mahwah, NJ: Erlbaum.
- Cairns, E. (1989). Social class, psychological well-being and minority status in Northern Ireland. *International Journal of Social Psychiatry*, 35, 231-236. <http://dx.doi.org/10.1177/002076408903500303>
- Cattell, R. (1966). The scree test for the number of factors. *Multivariate Behavioral Research*, 1, 246-276. http://dx.doi.org/10.1207/s15327906mbr0102_10
- Cokley, K. (2002). Testing Cross's Revised Racial Identity Model: An examination of the relationship between racial identity and internalized racism. *Journal of Counseling Psychology*, 49(4), 476-483. <http://dx.doi.org/10.1037/0022-0167.49.4.476>
- Crocker, J., & Major, B. (1989). Social stigma and self-esteem: The self-protective properties of stigma. *Psychological Review*, 96, 608-630. <http://dx.doi.org/10.1037/0033-295X.96.4.608>
- Crocker, J., Major, B., & Steele, C. (1998). Social stigma. In D. T. Gilbert, & S. T. Fiske (Eds.), *The handbook of social psychology: Vol. 2* (4th ed., pp. 504-553). Boston: McGraw-Hill.
- Cross, W. (1991). *Shades of Black: Diversity in African-American identity*. Philadelphia: Temple University Press.
- Cross, W., & Vandiver, B. J. (2001). Nigrescence theory and measurement: Introducing the Cross Racial Identity Scale (CRIS). In J. G. Ponterotto, J. M. Casas, L. A. Suzuki, & C. M. Alexander (Eds.), *Handbook of multicultural counseling* (2nd ed., pp. 371-393). Thousand Oaks, CA: Sage.
- Diener, E., Emmons, R., Larsen, J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71-75. http://dx.doi.org/10.1207/s15327752jpa4901_13
- Greene, M., Way, N., & Pahl, K. (2006). Trajectories of perceived adult and peer discrimination among Black, Latino, and Asian American adolescents: Patterns and psychological correlates. *Developmental Psychology*, 42(2), 218-238. <http://dx.doi.org/10.1037/0012-1649.42.2.218>
- Hutnik, N. (1991). *Ethnic minority identity: A social psychological perspective*. Oxford University Press.
- Jasinskaja-Lahti, I., Liebkind, K., & Perhoniemi, R. (2006). Perceived discrimination and well-being: A victim study of different immigrant groups. *Journal of Community and Applied Social Psychology*, 16, 267-284. <http://dx.doi.org/10.1002/casp.865>
- Jöreskog, D., & Sörbom, D. (1984). *LISREL VI*. Mooresville, IN: Scientific Software.
- Kaiser, C. R., & Wilkins, C. (2010). Group identification and prejudice: Theoretical and empirical advances and implications. *Journal of Social Issues*, 66, 461-476. <http://dx.doi.org/10.1111/j.1540-4560.2010.01656.x>
- Lee, D. L., & Ahn, S. (2011). Racial discrimination and Asian mental health: A meta-analysis. *The counseling psychologist*, 39(3), 463-489. <http://dx.doi.org/10.1177/0011000010381791>
- Luhtanen, R., & Crocker, J. (1992). A collective self-esteem scale: Self-evaluation of one's social identity. *Personality and Social Psychology Bulletin*, 18, 302-318. <http://dx.doi.org/10.1177/0146167292183006>
- Malcarne, V. L., Chavira, D. A., Fernandez, S., & Liu, P. (2006). The Scale of Ethnic Experience: Development and psychometric properties. *Journal of Personality Assessment*, 86(2), 150-161. http://dx.doi.org/10.1207/s15327752jpa8602_04
- Major, B. (2006). New perspectives on social stigma and psychological well-being. In S. Levin, & C. van Laar

- (Eds.), *Stigma and group inequality: Social psychological perspectives* (pp. 193-210). Mahwah, NJ: Lawrence Erlbaum.
- Major, B., Gramzow, R., McCoy, S., Levin, S., Schmader, T., & Sidanius, J. (2002). Perceiving personal discrimination: The role of group status and legitimizing ideologies. *Journal of Personality and Social Psychology*, 82, 269-282. <http://dx.doi.org/10.1037/0022-3514.82.3.269>
- Major, B., Quinton, W., McCoy, S., & Schmader, T. (2000). Reducing prejudice: The target's perspective. In S. Oskamp (Ed.), *Reducing prejudice and discrimination* (pp. 211-237). New Jersey: Erlbaum.
- Marsh, H. W., Hau, K. T., & Wen, Z. (2004). In search of golden rules: Comment on hypothesis-testing approaches to setting cutoff values for fit indexes and dangers in overgeneralizing Hu and Bentler's (1999) findings. *Structural Equation Modeling*, 11, 320-341. http://dx.doi.org/10.1207/s15328007sem1103_2
- McCool, A., Du Toit, F., & Petty, C. (2006). The impact of a program of prejudice-reduction seminars in South Africa. *Journal of Applied Social Psychology*, 36(3), 586-613. <http://dx.doi.org/10.1111/j.0021-9029.2006.00020.x>
- McGuire, W. J., McGuire, C. V., Child, P., & Fujioka, T. (1978). Salience of ethnicity in the spontaneous self-concept as a function of one's ethnic distinctiveness in the social environment. *Journal of Personality and Social Psychology*, 36, 511-520. <http://dx.doi.org/10.1037/0022-3514.36.5.511>
- Paige, R. M. (1990). International students: Cross-cultural psychological perspectives. In R. W. Brislin (Ed.), *Applied cross-cultural psychology: Cross-cultural research and methodology series: Vol. 14* (pp. 367-382). Newbury Park: Sage.
- Pedersen, P. B. (1991). Counseling international students. *Counseling Psychologist*, 19, 10-58. <http://dx.doi.org/10.1177/0011000091191002>
- Phinney, J. (1991). Ethnic identity and self-esteem: A review and integration. *Hispanic Journal of Behavioral Science*, 13, 193-208. <http://dx.doi.org/10.1177/07399863910132005>
- Phinney, J. (1996). When we talk about American ethnic groups, what do we mean? *American Psychologist*, 51, 918-927. <http://dx.doi.org/10.1037/0003-066X.51.9.918>
- Pinel, E., & Paulin, N. (2005). Stigma consciousness at work. *Basic and Applied Social Psychology*, 27(4), 345-352. http://dx.doi.org/10.1207/s15324834basp2704_7
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton University Press.
- Rowley, S., Sellers, R., Chavous, T. M., & Smith, M. A. (1998). The relationship between racial identity and self-esteem in African American college and high school students. *Journal of Personality and Social Psychology*, 74, 715-724. <http://dx.doi.org/10.1037/0022-3514.74.3.715>
- Schmitt, M. T., Spears, R., & Branscombe, N. R. (2003). Constructing a minority identity out of shared rejection: The case of international students. *European Journal of Social Psychology*, 33, 1-12. <http://dx.doi.org/10.1002/ejsp.131>
- Sellers, R., Smith, M. A., Shelton, J., Rowley, S., & Chavous, T. M. (1998). Multidimensional model of racial identity: A reconceptualization of African American racial identity. *Personality and Social Psychology Review*, 2, 18-39. http://dx.doi.org/10.1207/s15327957pspr0201_2
- Sidanius, J., & Pratto, F. (1999). *Social dominance: An intergroup theory of social hierarchy and oppression*. Cambridge University Press. <http://dx.doi.org/10.1017/CBO9781139175043>
- Smith, E. J. (1991). Ethnic identity development: Toward the development of a theory within the context of majority/minority status. *Journal of Counseling & Development*, 70, 181-187. <http://dx.doi.org/10.1002/j.1556-6676.1991.tb01581.x>
- Spencer-Rodgers, J. (2000). The vocational situation and country of orientation of international students. *Journal of Multicultural Counseling and Development*, 21, 63-72.
- Spencer-Rodgers, J., & Collins, N. L. (2006). Risk and resilience: Dual effects of perceptions of group disadvantage among Latinos. *Journal of Experimental Social Psychology*, 42, 729-737. <http://dx.doi.org/10.1016/j.jesp.2005.10.009>
- Spencer-Rodgers, J., & McGovern, T. (2002). Attitudes toward the culturally different: The role of intercultural communication barriers, consensual stereotyping, affective responses, and perceived threat. *International Journal of Intercultural Relations*, 26, 608-630. [http://dx.doi.org/10.1016/S0147-1767\(02\)00038-X](http://dx.doi.org/10.1016/S0147-1767(02)00038-X)

- Spencer-Rodgers, J., Tong, J., & Liao, J. (2012). Perceptions of discrimination and the self-concept: Psychological and physiological evidence. In K. Gana (Ed.), *Psychology of self-concept*. Hauppauge, NY: Nova Science Publishers.
- Tajfel, H. (1978). *The social psychology of minorities*. London: Minority Rights Group.
- Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup behavior. In W. Austin, & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 7-24). Monterey: Brooks/Cole.
- Taylor, D. M., Wright, S. C., Moghaddam, F. M., & Lalonde, R. N. (1990). The personal/group discrimination discrepancy: Perceiving my group, but not myself, to be a target for discrimination. *Personality and Social Psychology Bulletin*, 16, 254-262. <http://dx.doi.org/10.1177/0146167290162006>
- Turner, J. C. (1987). *Rediscovering the social group: A self-categorization theory*. New York: Blackwell.
- Vandiver, B. J., Cross, W. E. Jr., Worrell, F. C., & Fhagen-Smith, P. E. (2002). Validating the Cross Racial Identity Scale. *Journal of Counseling Psychology*, 49(1), 71-85. <http://dx.doi.org/10.1037/0022-0167.49.1.71>
- Vandiver, B. J., Fhagen-Smith, P. E., Cokley, K. O., Cross, W. E. Jr., & Worrell, F. C. (2001). Cross's Nigrescence Model: From Theory to Scale to Theory. *Journal of Multicultural Counseling and Development*, 29, 174-200. <http://dx.doi.org/10.1002/j.2161-1912.2001.tb00516.x>
- Vega, W., & Rumbaut, R. (1991). Ethnic minorities and mental health. *Annual Review of Sociology*, 17, 351-383. <http://dx.doi.org/10.1146/annurev.so.17.080191.002031>
- Verkuyten, M., & Lay, C. (1998). Ethnic minority identity and psychological well-being: The mediating role of collective self-esteem. *Journal of Applied Social Psychology*, 28, 1969-1986. <http://dx.doi.org/10.1111/j.1559-1816.1998.tb01356.x>
- Verkuyten, M., & Yildiz, A. (2006). The endorsement of minority rights: The role of group position, national context, and ideological beliefs. *Political Psychology*, 27(4), 527-548. <http://dx.doi.org/10.1111/j.1467-9221.2006.00525.x>
- Wagley, C., & Harris, M. (1958). *Minorities in the new world: Six case studies*. Columbia University Press.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063-1070. <http://dx.doi.org/10.1037/0022-3514.54.6.1063>

Notes

Note 1. Racial/ethnic category membership was assessed using an open-ended and a forced-choice item. Although it is problematic to employ American group labels with international students (Paige, 1990), it was necessary to include this item for purposes of comparison. The categories *Asian*, *White*, *Latino*, and *Black* were used to maintain consistency across the international and US samples. Pretesting indicated that the international participants had some prior knowledge of these labels or had gained familiarity with them in the US.

Note 2. All of the measures were pretested with a small group of international students (total N = 16) who provided written and verbal feedback on the scales. Pretesting indicated that a unipolar response format (e.g., *not at all – very much*) was simpler to use than a bipolar format (e.g., *strongly disagree – strongly agree*).

Note 3. For the racial/ethnic group analyses, we collapsed across type of participant. Otherwise, the samples sizes would have been too small (e.g., Latino internationals N = 34).

Note 4. The lack of model fit among Whites is not all that surprising given that Whites are majority group members in the United States, and the scale was designed for use with minority group members.

Note 5. Three correlated errors were hypothesized, a priori, as the item pairs were strongly conceptually related and/or very similar in phraseology (items 5 and 6).

Note 6. Because their numbers were so few, *Blacks* and *others* were not included in these analyses.

Note 7. As discussed previously, the REGDS was not compared to a number of other scales, such as the CRIS and SEE, because the target populations and reference groups are not compatible. For example, we could not compare the REGDS with the CRIS because the target population (African Americans) is different. We could not, for similar reasons, compare the REGDS to the SEE, as the latter focuses exclusively on the experiences of people in the United States.

Appendix 1

Racial/Ethnic Group Disadvantage Scale (REGDS)

1. Historically, my racial/ethnic group has been discriminated against by other racial/ethnic groups.
2. Members of my racial/ethnic group are negatively stereotyped by other racial/ethnic groups.
3. My racial/ethnic group is socially excluded (rejected or left out) by other racial/ethnic groups.
4. My racial/ethnic group is treated unfairly by other racial/ethnic groups.
5. My racial/ethnic group has fewer economic resources than other racial/ethnic groups.
6. My racial/ethnic group has lower social status than other racial/ethnic groups.
7. My racial/ethnic group has fewer political resources than other racial/ethnic groups

Note. The scale may be modified by using the terms *racial* group or *ethnic* group.

The Emotional Content of Faces Interferes with Inhibitory Processing: An Event Related Potential Study

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Received: March 21, 2013

Accepted: April 18, 2013

Online Published: May 14, 2013

doi:10.5539/ijps.v5n2p52

URL: <http://dx.doi.org/10.5539/ijps.v5n2p52>

Abstract

Emotional stimuli interfere with other kinds of stimuli processing because they capture attentional resources in accordance with their adaptive importance. This suggests that it would be more difficult to inhibit emotional faces than neutral ones or objects. The present study evaluates the effects of facial emotional expressions on inhibitory processing using event-related brain potentials in a Go/NoGo paradigm. Event-related potentials were obtained in healthy subjects during emotional inhibition tasks involving anger and happiness, compared to non-emotional tasks based on simple objects and gender. Emotional tasks exhibited poorer performance than non-emotional ones. P3 latencies were longer during response inhibition to emotional faces than those obtained while inhibiting non-emotional stimuli. This study provides evidence that facial emotional content interferes with response inhibition since it may elicit additional neural resource demands.

Keywords: emotion, inhibition, N2-P3, ERP, Go/NoGo

1. Introduction

Every day, people are embedded in social relationships where recognizing facial emotional expressions is crucial for understanding the reactions and intentions of others. In this context, the human brain has developed mechanisms to identify emotional faces more quickly and accurately than other types of objects (Ro, Russell, & Lavie, 2001). However, emotional recognition is not the only important factor, as cognitive regulation of the response to others' emotional expressions is also necessary to generate appropriate decisions that lead to adaptive behavior.

Several studies have dealt with the influence of affective stimuli on cognitive processes such as attention, memory, executive functions and creative thinking (e.g., Banich, Mackiewicz et al., 2009; Delplanque, Lavoie, et al., 2004; Fenske & Eastwood, 2003; Finucane, 2011; Jaeger & Rugg, 2012; Lindström & Bohlin, 2012; Hoffstetter, Achaibou, & Vuilleumier, 2012; Pessoa, 2009; Pessoa, Padmala, et al., 2012; Phelps, 2006; Pourtois, Schettino, & Vuilleumier, in press; Sakaki & Niki, 2011; Sakaki, Niki, & Mather, 2012; Steidl, Razik, & Anderson, 2011; Vanlessen, Rossi, et al., 2013). Emotional stimuli interfere with other kinds of stimuli processing because they divert attentional resources due to their adaptive importance (Ledoux, 1996; Vuilleumier, Armony, et al., 2001).

Inhibition is a primary cognitive ability of executive functions and behavioral regulation that is relevant to both cognitive and emotional issues (Barkley, 2001; Bjorklund & Kipp, 2002; Ochsner & Gross, 2005). Using a stop-signal paradigm, Verbruggen and De Houwer (2007) found that the level of arousal portrayed in emotional pictures is more important in inhibitory processing than their valence. They suggest that emotional stimuli interrupt ongoing cognitively-controlled activities by diverting attention from them. Some studies examining the effect of emotional valence using emotional pictures have reported that negative images produce more interference than positive ones (e.g., Delplanque et al., 2004; Hartikainen, Ogawa & Knight, 2000; Tipples & Sharma, 2000). Thus, it is clear that emotions have an important effect on cognitive processes, including inhibition which is the main focus of the present study.

One of the most common strategies used to evaluate inhibitory processes involves inhibiting the prepotent response in a Go/NoGo paradigm. A high rate of presentation of a frequent stimulus (Go) to which the subject

must respond induces the establishment of a prepotent response, while a low rate of an infrequent stimulus (NoGo) in which subjects must withhold their responses, makes it possible to evaluate inhibitory abilities (Aron, Robbins, & Poldrack, 2004).

Temporal activation of the neural substrates involved in inhibiting prepotent responses during Go/NoGo tasks have been studied using the brain event related potentials (ERP) technique, due to its high temporal resolution. The main ERP components associated with inhibition seem to be N2 and P3. N2 is a frontocentral negative deflection that commonly peaks between 200 and 400 ms after the stimulus. Its amplitude is higher in NoGo than in Go trials, and it has been suggested that it reflects inhibition processes related to frontal cortex functioning (Bokura, Yamaguchi, & Kobayashi, 2001). P3 is a positive deflection with a maximum peak between 300 and 600 ms after the stimulus. It also shows higher amplitudes in NoGo than Go trials in the frontocentral regions; whereas in centroparietal areas a reverse pattern occurs that has also been implicated in inhibitory processes (Smith, Johnston, & Barry, 2008).

A study conducted by Yu, Yuan and Luo (2009) using auditory emotional stimuli in a Go/NoGo design found an interferent effect of emotional stimuli on ERP components associated with inhibition. Specifically, the N2 component showed reduced amplitudes in NoGo trials only when emotional sounds were processed. In a visual Go/NoGo paradigm, Albert, López-Martin and Carretié (2010) examined the effect of neutral, positive and negative emotional contexts on a response inhibition task that used letters as stimuli. They found that the NoGo-P3 frontocentral amplitude was larger in the positive context than in the negative one, and was related to ACC activation. These results support the idea of an emotional valence effect on cognition.

On the other hand, the emotional valence effect could be enhanced when it occurs in a setting of naturally significant stimuli, such as faces. Emotion expressed in a face captures attention even when it is irrelevant to the task (Hodsoll, Viding, & Lavie 2011). It is widely accepted that enhanced attention to emotional faces allows people to adapt their behavior so as to produce a more suitable response. Logically, then, it would be more difficult to inhibit responses to an emotional face than a non-emotional one, and emotions might exert a modulating effect on inhibitory processes. In particular, emotional expressions that have greater relevance for adaptation, such as anger depicts attentional superiority (Calvo, Averó, & Lundqvist, 2006; Pinkham, Griffin, Baron, Sasson, & Gur, 2010), and even not being consciously perceived can cause an affective reaction leading to a more negative evaluations of neutral novel objects (Almeida, Pajtas, et al., 2013). Therefore, threat related emotions could be more difficult to inhibit than happy or neutral expressions. In this regard, Schupp et al. (2004) found a facilitation effect in perceptual processing of threatening faces compared with nonthreatening neutral or friendly expressions, both in ERPs associated to early perceptual stimulus processing (early posterior negativity) and to later processing stages (late positive potentials). In the case of ERP the modulating effect of emotions could also be observed on late components traditionally linked to inhibitory mechanisms (N2-P3) or even on earlier waveforms associated with face recognition (vertex positive potential, VPP). VPP is recorded primarily at frontocentral sites between 140 and 180 ms after face presentation in relation to the face structural encoding stage that precedes the processing of emotional recognition (Jeffreys, 1996; Joyce & Rossion, 2005; Rossion et al., 1999; Yuan, Guan, et al., 2011). Differences between emotions and neutral faces (Luo, Feng, et al., 2010), and among different emotions (Williams, Palmer, et al., 2006) have been found in VPP amplitudes.

Recently, Zhang & Lu (2012) performed a Go/NoGo paradigm with facial emotional stimuli. In this study, subjects had to respond to gender in faces with a neutral expression or that depicted happy or fearful expressions, but not to the emotion itself. They found an increment in NoGo-P3 amplitudes in the emotional tasks, which they related to the attentional resources allocated to emotional faces.

Imaging studies have revealed the participation of different cortical regions in inhibitory processes specifically to facial emotional stimuli, using a Go/NoGo paradigm. Shafritz, Collins and Blumberg (2006) found greater activation in the VLPFC/anterior insula, posterior parietal cortex, ACC and left DLPFC during inhibition of happy and sad emotional faces. Similar results have been described by Hare et al. (2008) and Schulz et al. (2009) during inhibitory processes involving facial emotional expressions. In another fMRI study performed with happy and sad faces (Vanderhasselt, Kühn & De Raedt, 2011), it has been found that high clinically healthy brooders, who frequently think about negative events, compensate for their difficulty in inhibiting negative information by recruiting more attentional control. This disengaging from the negative faces was correlated with more right DLPFC activation. Authors suggest that this mechanism might be based on an increased use of emotion regulation strategies.

Some studies have addressed the effects of emotional stimuli on inhibition processes using ERP in a Go/NoGo paradigm, regarding auditory emotional stimuli (Yu et al., 2009), visual letters within an emotional context

(Albert et al., 2010), and gender in facial expressions (Zhang & Lu, 2012). Also, the effects of emotions expressed by human faces on the inhibition of a prepotent response have been explored by imaging studies (Shafritz et al., 2006; Hare et al., 2008; Schulz et al., 2009); however, to the best of our knowledge, such effects have not been studied using ERP recordings that, as stated above, may explain the temporal occurrence of cognitive processes, and might serve as an index of the modulating effect of emotional stimuli on these processes, specifically inhibition. Therefore, the objective of the present study was to evaluate the effects of facial emotional expressions on inhibitory processing by evaluating ERPs in a Go/NoGo paradigm.

Based on the empirical evidence mentioned above we hypothesized that facial emotional expressions would impair the response inhibition to faces with emotional content –when compared to objects or neutral faces– because they divert additional attentional resources due to their adaptive importance. This interference might be stronger when the faces shown express anger instead of happiness, due to the former's adaptive significance. Any such effect would be observable in both behavioral performance and the amplitude and latency of N2 and P3 ERP components while performing a Go/NoGo task.

2. Method

2.1 Participants

Sixteen healthy, young, right-handed males ($n = 10$) and females, with ages ranging from 21 to 35 years ($M = 25.43$, $SD = 4.35$) volunteered to participate in the study. All had attended regular schools for 16 to 19 years ($M = 17.31$, $SD = 1.25$). Potential subjects with neurological or psychiatric antecedents, or who were undergoing medical treatment, or who were taking drugs were excluded from the sample. All subjects gave prior written consent to participate in the study after receiving a full explanation of the experimental procedures. The study was approved by the ethics committee of the Institute of Neuroscience.

2.2 Stimuli and Experimental Procedures

Subjects were seated in front of a computer screen at a distance of 60 cm and asked to perform four tasks that required them to inhibit the following: (1) non-facial stimuli (a specific object); (2) facial gender without emotional content (male faces); and, (3) two other facial emotional stimuli (anger, happiness) using a Go/NoGo task design. Two neutral emotional stimuli from the International Affective Picture System (IAPS, Lang, Bradley, & Cuthbert, 1997: numbers 7009 and 7233) were used for the non-facial task. Facial emotional expressions of 10 models (5 males and 5 females) with neutral expressions taken from Ekman and Friesen (1986) were used for the gender task, while 5 male faces were used for the happiness and anger tasks. The stimuli size was 12 x 18 cm and the images appeared in the center of the screen against a black background.

All stimuli were presented sequentially in the center of the screen for 500 ms with an interstimulus interval of 1000 ms. Each task consisted of 250 trials (70% Go, 30% NoGo). Task presentation was counterbalanced across subjects and each trial block lasted approximately 6 min. Participants were asked to respond as quickly and accurately as possible by pressing a key only during performance of the Go trials.

Figure 1 shows an example of the four tasks. In the case of the object task, subjects had to respond to the presentation of a cup (Go) but withhold responses when a plate appeared (NoGo). In the gender task, subjects had to respond to female faces but withhold responses to male ones. During the anger inhibition task, subjects responded to happy facial expressions, whereas during the happiness inhibition task, they were to respond only when a male portraying an angry expression appeared on the screen. All participants were trained before each task to assure that they had fully understood the instructions and were sufficiently well familiarized with the operations required.

The following behavioral variables were all recorded automatically by software for later analysis: number of correct responses; reaction times when Go trials were responded to correctly; and correct inhibitions.

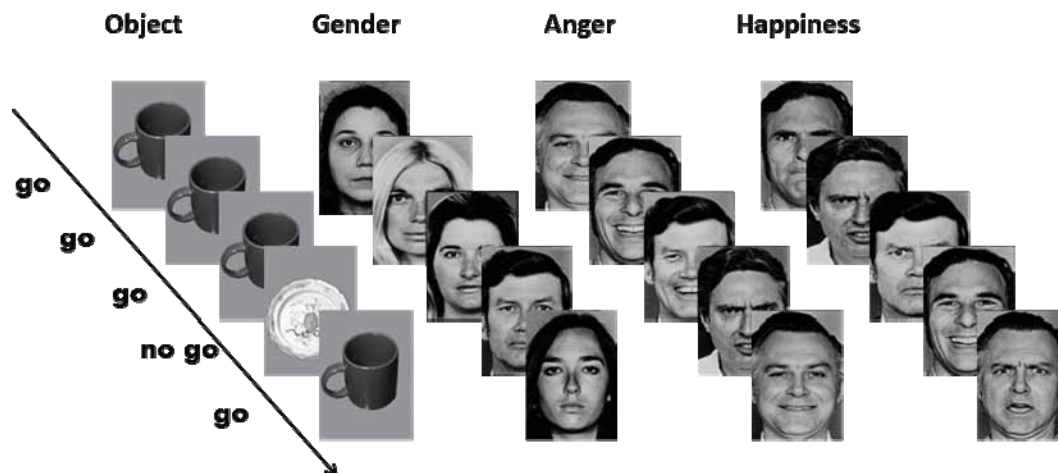


Figure 1. Go/NoGo task paradigm: Example of each task

2.3 Electrophysiological Recording

EEG was recorded continuously at Fp1, Fp2, F3, F4, F7, F8, T3, T4, T5, T6, P3, P4, O1, O2, Fz, Cz and Pz during task performance, according to the 10/20 International System, using linked earlobes as references with a digital Mediciid 5 device (cut-off filters .5-50 Hz) at a sample rate of 250 Hz. Electrode impedances were kept below 5 KOhms. Electro-oculogram (EOG) was also recorded bipolarly from electrodes placed bilaterally on the supraorbital and infraorbital eye regions in order to eliminate segments contaminated by eye movement artifacts. Twenty artifact-free epochs time-locked with the stimulus onset from the Go and NoGo signal trials were averaged independently to obtain the ERP components. These epochs corresponded exclusively to correct responses and were equal on the 4 tasks (object, gender, anger and happiness). Each epoch lasted 900 ms including the pre-stimulus time of 100 ms used to determine the baseline. The amplitude and latency values of each component peak were measured individually.

2.4 Statistical Analysis

Repeated-measure ANOVAs were performed to analyze behavioral performance using a one-factor design (Tasks: object, gender, anger and happiness) for each behavioral measure (correct responses, correct inhibitions and reaction times).

ERPs were first analyzed using 3 way RM-ANOVAs (Conditions: Go/NoGo; Tasks: object, gender, anger and happiness and; Electrode site: Fz, Cz, Pz). Significance levels were established at $p < 0.05$ and adjusted using the Greenhouse-Geisser epsilon correction. Therefore, corrected p values are reported. Finally, post-hoc Tukey's t tests and Bonferroni corrections for pairwise comparisons were conducted to adjust significance levels.

3. Results

3.1 Behavioral Results

Table 1 shows the behavioral values for each task. The percentage of correct inhibitions was significantly different among tasks ($F(3,45) = 9.81, p < 0.001$) as it was higher for the objects than for anger and happiness ($p < 0.01$) and higher for gender than both anger ($p < 0.01$) and happiness ($p < 0.03$). The reaction time analysis for correct responses also demonstrated a significant effect for tasks ($F(3,45) = 4.40, p < 0.01$), with faster responses for gender than happiness ($p < 0.004$) in the Go trials. No differences were seen for correct responses during the Go trials.

Table 1. Behavioral performance: Mean and standard deviation of the percentage of correct responses and correct inhibitions, as well as reaction times (ms) in each task

	Go Correct Responses	NoGo Correct Inhibitions	Go Reaction Times
Object	95.27 (7.47)	88.20 (7.89)	321.57 (53.91)
Gender	96.04 (8.92)	87.39 (9.47)	309.57 (35.06)
Anger	89.82 (10.45)	80.14 (10.26)	330.62 (49.01)
Happiness	92.44 (10.08)	77.87 (13.44)	356.52 (45.52)

3.2 ERP Result

Figure 2 illustrates the grand average ERP waveforms obtained during the tasks in every electrode site recorded. In Figure 3 the components obtained in the midline are labeled as follows: 1) N1 (90-150 ms) and 2) VPP (150-250 ms) mainly in the frontal and central regions; and, 3) N2 and P3 (200-350 ms and 350-550 ms, respectively) in the frontal, central and parietal regions. The latter two components were analyzed in relation to inhibitory mechanisms and the VPP to face-configuration processing. Time windows were determined on the basis of visual inspection of the main peaks in the group-averaged ERPs. Table 2 shows the amplitude and latency values obtained for each component during the four tasks for both the Go and NoGo conditions in the midline electrodes.

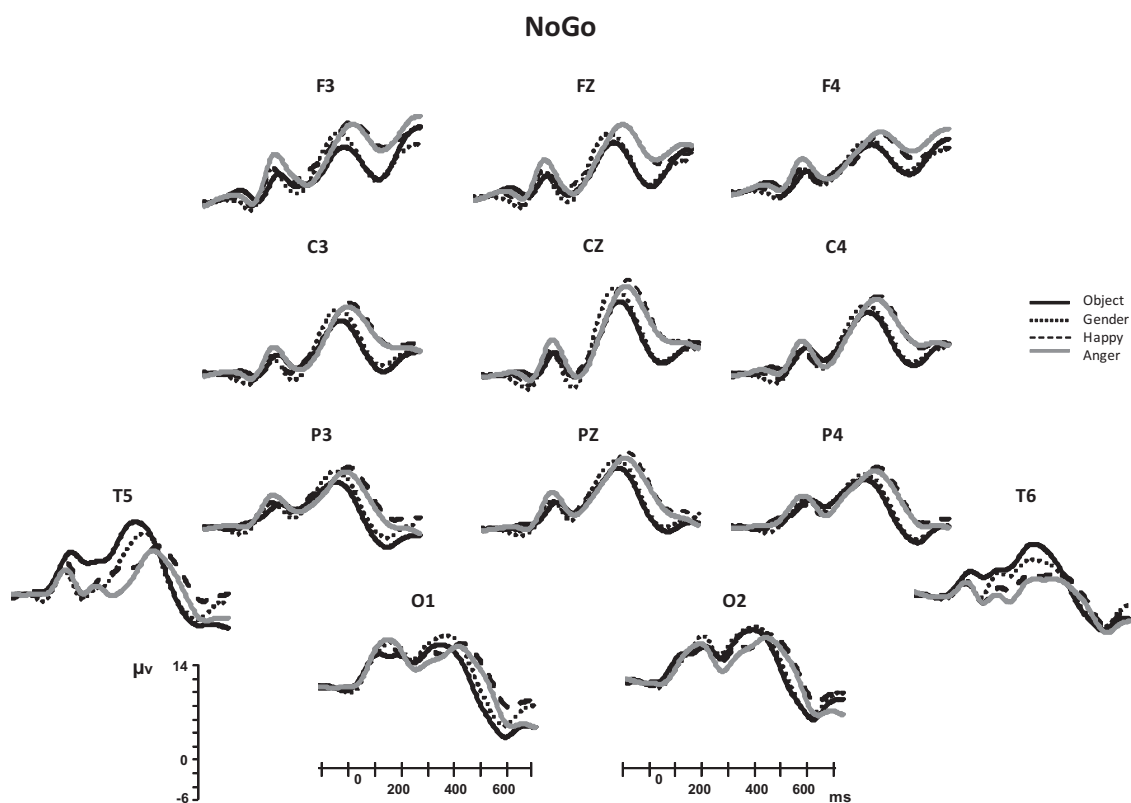


Figure 2. Grand averages of event-related potentials comparing the four tasks in the NoGo trials

3.2.1 Go/NoGo Differences

Go and NoGo trials showed significant differences in VPP amplitude ($F(1, 15) = 6.16, p = 0.025$), with larger measures in the NoGo than the Go trials. Also, N2 and P3 amplitudes also showed higher values while processing the NoGo than the Go trials ($F(1, 15) = 24.25, p = 0.001$, and $F(1, 15) = 35.23, p = 0.001$, respectively). In addition, the NoGo condition revealed longer N2 and P3 latencies than the Go one ($F(1, 15) = 19.70, p = 0.001$, and $F(1, 15) = 82.49, p = 0.001$, respectively). Figure 3 represents the waveform distributions in the Go and NoGo conditions in each of the experimental tasks.

3.2.2 Topographic Distribution

N2 and P3 amplitudes showed significant interactions of Conditions x Electrode sites ($F(1, 15) = 4.41, p = 0.04$ and $F(1, 15) = 22.97, p = 0.001$), respectively). N2 amplitude was larger in Fz than Pz ($p < 0.03$) and in Cz than Pz ($p < 0.01$) in the Go condition and; in Cz than Fz ($p < 0.03$) and Pz ($p < 0.009$) in the NoGo condition. P3 amplitudes were larger in Cz and Pz ($p < 0.002, p < 0.01$, respectively) than Fz in the Go condition and; in Cz larger than Fz ($p < 0.001$) and Pz ($p < 0.002$) in the NoGo condition.

P3 latency also showed a significant interaction of Conditions x Electrode sites ($F(2, 30) = 5.50, p = 0.01$) where shorter latency was seen in Pz than Fz ($p < 0.03$) and Cz ($p < 0.01$) only in the Go condition.

3.2.3 Tasks Differences

VPP component. The ANOVAs revealed significant differences among tasks in VPP amplitude ($F(3, 45) = 9.22, p < 0.001$) denoting that objects showed smaller amplitudes than anger ($p = 0.02$) and happiness ($p = 0.001$). In relation to VPP latency, significant differences were seen ($F(3, 45) = 56.29, p = 0.001$), where objects showed longer latencies than the facial tasks ($p = 0.001$).

N2 component. No significant differences were observed in N2 amplitude among tasks. Regarding to N2 latency, there were significant effects among tasks ($F(3, 45) = 7.50, p = 0.001$), as it was shorter for happiness than for objects ($p = 0.01$).

P3 component. Although P3 amplitude differences among tasks did not reach significant values, a tendency was observed ($F(3, 45) = 2.41, p = 0.09$). On the other hand, the ANOVAs that tested latency differences yielded significant effects for tasks ($F(3, 45) = 16.83, p < 0.001$), where P3 latency in the object task was shorter than in the anger ($p = 0.004$) and happiness tasks ($p = .006$) and; in the gender task than in the anger ($p = 0.001$) and happiness tasks ($p = 0.001$). There were no significant interactions.

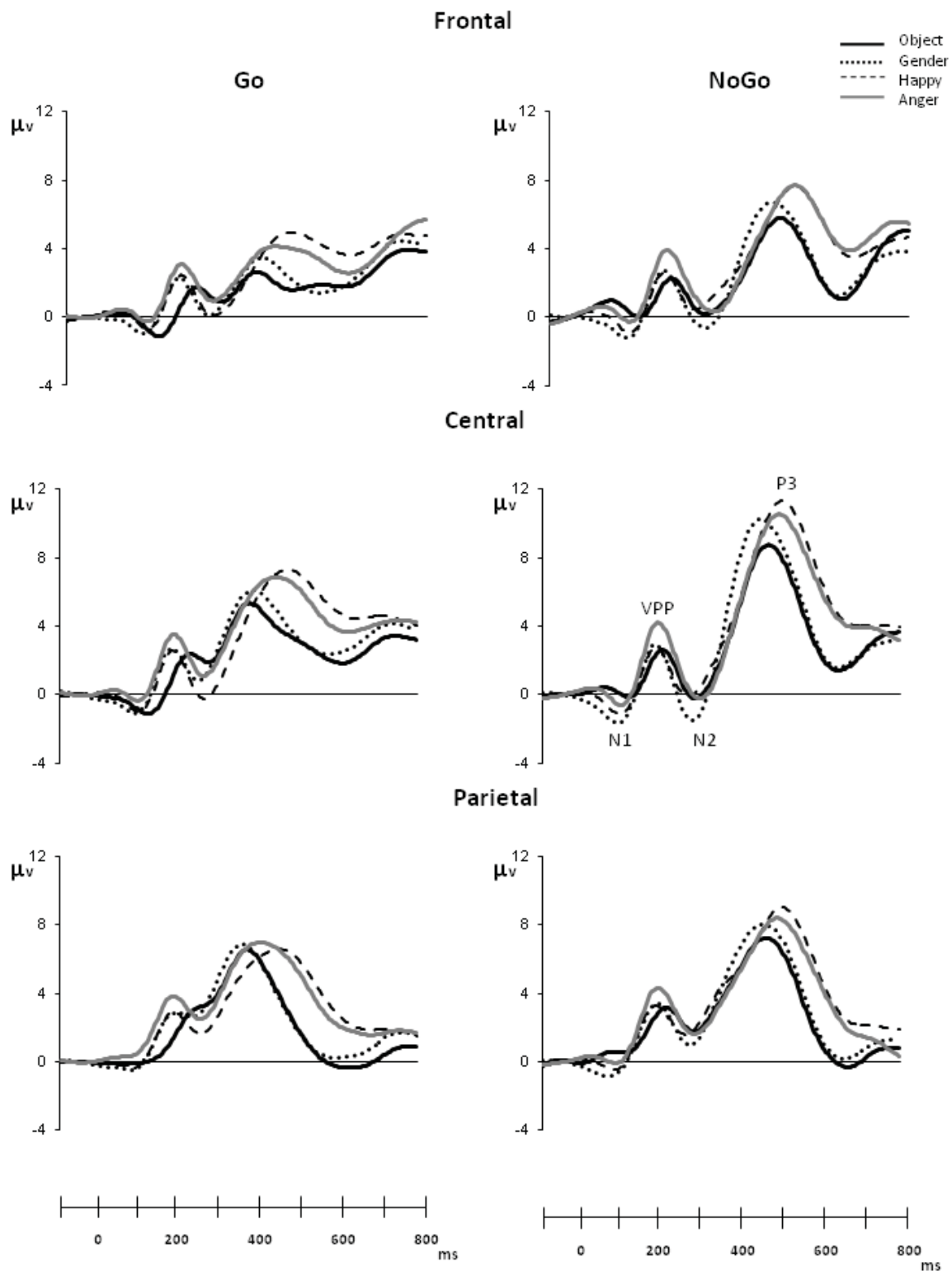


Figure 3. Grand averages of event-related potentials in the frontal (FZ), central (Cz) and parietal (Pz) regions, in Go and NoGo trials during the four tasks

Table 2. Amplitude and latency values of ERP components for the trials in each task: Mean and standard deviation

	Amplitude							
	Go				NoGo			
	Object	Gender	Happiness	Anger	Object	Gender	Happiness	Anger
VPP								
Fz	3.38(2.6)	6.66(2.1)	7.40(3.0)	6.63(2.4)	4.01(4.0)	6.91(2.9)	6.91(3.3)	7.95(2.8)
Cz	3.93(3.1)	7.15(2.6)	8.08(3.6)	6.93(2.6)	4.91(4.7)	7.39(3.3)	7.31(4.2)	8.55(3.8)
Pz	4.78(2.8)	5.62(2.4)	6.96(3.2)	6.10(2.4)	6.33(4.8)	6.58(2.5)	7.01(3.8)	7.48(3.1)
N2								
Fz	-1.25 (2.3)	-1.60(3.2)	-1.16(2.4)	-1.92(3.6)	-2.52(4.1)	-2.36(3.9)	-1.77(3.4)	-2.19(3.9)
Cz	-.75 (3.1)	-1.02(3.9)	-.99(2.7)	-1.94(3.8)	-3.78(4.7)	-3.94(4.1)	-2.11(4.4)	-2.40(4.4)
Pz	1.25 (3.2)	.44(3.6)	.25(3.5)	.18(3.1)	-1.96(4.2)	-1.90(2.9)	-.38(3.9)	-.31(3.6)
P3								
Fz	5.24(3.0)	5.63(3.8)	8.87(2.0)	6.18(3.9)	8.37(4.2)	9.99(4.1)	9.95(3.2)	10.75(3.9)
Cz	7.82(5.2)	8.58(5.1)	8.98(3.7)	8.92(4.5)	12.09(5.4)	13.49(5.8)	13.64(5.3)	13.82(6.5)
Pz	8.46(4.8)	8.87(5.6)	9.06(3.6)	8.22(4.3)	10.09(4.8)	10.57(4.6)	11.21(4.7)	11.18(5.1)
	Latency							
	Go				NoGo			
	Object	Gender	Happiness	Anger	Object	Gender	Happiness	Anger
VPP								
Fz	223(15.1)	181(19.1)	185(21.6)	184(18.5)	209(20.4)	187(23.1)	184(19.4)	186(18.2)
Cz	226(11.3)	181(19.0)	184(20.1)	184(17.1)	209(16.6)	189(23.9)	183(18.4)	185(17.7)
Pz	229(24.6)	174(19.0)	176(16.9)	184(17.4)	221(15.3)	178(22.4)	187(36.3)	188(22.1)
N2								
Fz	285(21.1)	267(39.8)	255(31.5)	270(40.6)	292(48.3)	287(44.6)	273(55.0)	307(44.9)
Cz	281(16.4)	257(39.8)	259(29.1)	272(43.5)	295(37.7)	287(37.9)	267(45.2)	293(43.1)
Pz	269(31.1)	241(40.4)	245(30.0)	256(35.2)	297(38.5)	273(40.2)	270(52.9)	302(51.6)
P3								
Fz	423(74.0)	415(49.0)	430(51.7)	453(38.8)	478(33.7)	461(44.8)	508(51.2)	502(41.0)
Cz	413(67.0)	406(45.6)	437(47.9)	468(42.4)	466(36.3)	462(39.7)	504(53.4)	489(37.3)
Pz	382(34.5)	380(50.4)	423(45.9)	448(57.5)	457(40.5)	472(39.0)	505(43.9)	500(48.5)

4. Discussion

The aim of the present study was to evaluate the effects of facial emotional expressions on the inhibition of the prepotent response in a Go/NoGo paradigm. As was expected, faces portraying an emotion –anger or happiness– resulted in poorer inhibition performance than images of objects, or faces with no emotional expression. Similarly, P3 latencies were longer during response inhibition to emotional faces (anger and happiness) than those obtained while inhibiting non-emotional stimuli (objects and gender).

ERP amplitudes showed clear differences between the Go and NoGo conditions. VPP, N2 and P3 amplitudes were larger during the inhibitory condition, while N2 and P3 latencies were longer in this condition. For N2 and P3, however, this difference depended upon regional distribution. During the Go conditions, N2 showed a frontocentral predominance while in the NoGo trials the larger amplitude was more evident in central regions.

In general, the magnitude of P3 amplitudes has been observed as larger and latency as longer in the NoGo compared to the Go condition over the frontocentral areas (Fallgrater & Strik, 1999; Albert, et al., 2010; Chiu,

Holmes, & Pizzagalli, 2008; Gajewski & Falkenstein, in press). The present results coincide with previous reports in which N2 has been related to cognitive control or response conflict (see Folstein & Van Petten, 2008 for an extensive review) or the inhibition of a premature response plan (Gajewski & Falkenstein, in press). Géczy, Czigler and Balázs (1999) point out that the increased N2 to NoGo stimuli following Go cues might be related to increased efforts to activate the response inhibition system thereby interrupting preparations to respond.

Also, the NoGo-P3 component has been interpreted as most likely linked to the inhibition of overt responses (Bruin & Wijers, 2002) and to the efficiency of inhibitory control or the evaluation of the inhibition process (Liotti, Pliszka, et al., 2005; Schmajuk, Liotti, et al., 2006). In this regard, Bokura et al. (2001) found different generator sources for Go and NoGo P3, which may suggest distinct functional roles. While Go-P3 sources were found in the parietal lobe and the left superior prefrontal cortex, the main source of NoGo-P3 was located in the left lateral orbitofrontal cortex. This finding seems to reinforce the abovementioned notion that Go and NoGo-P3 may reflect distinct processes. Regarding the typical centroparietal distribution of P3, and in accordance with the nature of the present experimental tasks in the Go trials, the distribution expected -and found- for P3 in the Go trials matched that reported previously for P3b component related to the attentional processing of target stimulus events (see Polich, 2007 for review). Furthermore, during NoGo trials, P3 appeared enhanced mainly in central leads with longer latencies than in Go-P3, and thus corresponded to what it was expected for inhibitory related mechanisms in a Go/NoGo paradigm (Bokura et al., 2001).

The VPP has been related to a low-level stimulus stage of processing that responds preferentially to images of faces presented and to some common objects, though the latter only to a lesser extent. In addition, the VPP component is thought to be related to configurational face detection that precedes the processing stages of emotional recognition (Joyce & Rossion, 2005; Rossion et al., 1999; Yuan et al., 2011). Although the VPP is largest over the midline frontocentral areas, its origin is probably located in bilateral sites of the inferotemporal cortex (for a review see Jeffreys, 1996). In the present work, we observed that those conditions which included facial stimuli showed significantly larger VPP amplitudes and shorter latencies than simple objects, both when subjects had to respond to targets (Go) and when they were instructed to withhold their responses (NoGo). This effect might depict the stimulus-driven recruitment of additional cognitive resources due to the intrinsic relevance of the facial stimuli, as has been suggested previously (Westerhausen et al., 2010). In contrast to other studies in which differences between emotions and neutral faces (Luo et al., 2010), or between different emotions (Williams et al., 2006), were observed with respect to VPP amplitudes, we found no relevant differences between neutral and emotional faces or between angry and happy ones; results that would seem to suggest a VPP association with configurational information processing more than with facial emotional processing. However, VPP also showed smaller amplitudes and longer latencies in non-facial than facial stimuli proving to be sensitive to the inhibitory demands of the task. This could open the possibility that VPP reveals more than just a simple stage in facial configuration encoding but actually reflects the cognitive resources engaged in this process, mainly attentional ones. In this case, VPP might increase its magnitudes with additional cognitive effort such as that required to deal with more complex and attractive stimuli including faces, especially emotional ones. Furthermore, the changes observed in VPP, together with other early face-sensitive components, could be used as markers to track the time course of face processing (Yuan et al., 2011), as well as the effects of emotional content within this time course.

On the other hand, facial emotional expressions also modulated late stimuli processing; given that behavioral results revealed that emotional stimuli interfered with inhibitory mechanisms, as demonstrated by the inhibition accuracy and longer reaction times. In addition, P3 amplitude showed a tendency to be higher and P3 latencies were longer during emotional tasks compared to non-emotional ones. An increase in latency was present in both the Go and NoGo trials; findings which may indicate that emotional stimuli require more time and additional processing resources in order to be recognized and categorized. In this regard, Mikhailova and Bogomolova (2000) found that the latencies of the N3 and P3 waves, which are associated with the later stages of information processing, increased when subjects were asked to recognize emotional facial expressions compared to those recorded during passive observation.

Although, P3 amplitude did not reach significant values between emotional stimuli and non-emotional ones a tendency can be observed, that may suggest that the emotional content of a face interferes with inhibitory processing and thus concord with those of Schulz et al. (2007) in Go/NoGo facial emotional tasks compared to non-emotional ones.

Similar results were reported by Yu et al. (2009), who found an interfering effect of emotional stimuli on ERP components associated with inhibition using auditory emotional stimuli, though the main effect they found was a reduction of N2 amplitude. Zhang and Lu (2012) performed a similar Go/NoGo paradigm to the one used in the

present study; the only difference being that the emotional task was implicit; i.e., subjects had to respond to gender in faces with a neutral expression or ones that depicted happy or fearful expressions, but not to the emotion itself. They also found an increment in NoGo-P3 amplitudes in the emotional tasks, which they related to an automatic response inhibition in which the more attentional resources that were allocated to emotional faces, the greater the inhibition of the emotional response.

There is evidence to suggest that emotion naturally facilitates attention, mediated primarily by an arousal effect in which the main structure involved is the amygdala (for a review, see Phelps, 2006). However, other studies have found that emotion attracts attention, and thus impairs cognitive processing (Fenske & Eastwood, 2003). Regarding the P3 latencies and the tendency of P3 amplitude to increase, our results may concord with the notion that affective stimuli capture attentional resources, and thus could affect not only the recognition and categorization of such phenomena, but also the inhibitory processing required to withhold responses.

It has been reported that facial emotional content acts not only as a recruiter of attentional resources but also promotes neural activity in additional areas to those related to the inhibition of letters, and that this can be modulated by emotional valence (Shafritz et al., 2006). This may indicate that P3 reflects those inhibitory processes influenced by the emotional significance of the stimuli and, therefore, reaches higher amplitudes in experimental tasks involving greater relevance; i.e., faces with emotional content. Also, P3 latencies were longer during inhibition of emotional faces than non-emotional and objects that may be related to a certain difficulty in the stimuli processing of this emotion. Therefore, these results could be related more to differences in the stimulus complexity, than to emotional content. This would mean that decisions based on facial emotions might require additional processing resources when compared to neutral faces; thus the comparison of non-emotional and emotional tasks could be biased by the physical complexity of differences among the stimuli. However, Gajewski and Falkenstein (in press) found that the amplitude of the NoGo-P3 decreased with rising task difficulty, instead of increasing, in a Go/NoGo task. In addition, it has been stated that the processing of anger expressions is more complex than that of happy faces (Kirouac & Doré, 1984) though the present study found no behavioral differences nor electrophysiological differences between these two tasks, and thus casts doubt on the theoretical statement that higher complexity of facial emotions could be responsible for the differences in inhibition observed in non-emotional vs. emotional tasks.

Turning to stimuli relevance, one would expect that the effects of emotional content on inhibition would be greater for angry faces than for happy ones, due to the adaptive value of threats. An angry face can activate neural systems related to fear, especially the amygdala (Habel et al., 2007). Indeed, anger and fear may represent threatening events that must be identified and analyzed rapidly. As a result, one might expect that it would be more difficult to disentangle attention from anger than from happiness. However, observations have shown that happy faces are more efficiently detected than anger in visual search paradigms (Becker, Anderson, et al., 2011; Calvo & Nummenmaa, 2008) and that response inhibition is more difficult with happy stimuli than negative ones (Schulz et al., 2007). In the present study, these two emotions induced similar processing effects in terms of both processing time and the resources involved.

The neural structures that participated in this effect of emotional faces on inhibitory processes cannot be described, as we did not conduct a source analysis or fMRI study. However, these effects may be related to the interaction of the two networks proposed by Schulz et al. (2009) during inhibition of responses to emotional faces: on the one hand, the frontoparietal circuit that exerts inhibitory control; and, on the other, the frontostriatal circuit, which is engaged in the decodification of emotional signals. Another point to be taken into account is the participation of the ACC in emotional valence, as has been described in other studies (Albert et al., 2010; Elliot, Rubitszstein, et al., 2000). In this regard, Pessoa (2009) points out, hypothetically, that the anterior cingulate cortex is engaged in attentional/effortful control mechanisms and interaction with several other brain structures, including the amygdala and nucleus accumbens, in integrating affectively significant signals with control signals in the prefrontal cortex.

5. Conclusion

In conclusion, the current study provides evidence that face-emotional content interferes with response inhibition in a way that may be related to its social-adaptive importance. While an early face configurational component, VPP, is basically affected by facial informative complexity, P3 latency mainly in the No-Go trials were more sensitive to emotional significance than to gender or simple objects, thus making it more difficult to inhibit them. As present results suggest, the cognitive regulation of the response to others' emotional expressions goes beyond the simple perception, recognition and classification of affective stimuli to demand recruitment of additional neural resources; a finding that could explain the variations observed in both the ERP components and

behavioral performance.

It would be interesting to apply this facial emotional Go/NoGo approach to groups that manifest behavioral alterations such as anxiety, impulsiveness and aggression; as well as in psychopathological populations such as schizophrenia and depression patients, where executive functions and/or emotional processes are known to be affected.

References

- Albert, J., López-Martín, S., & Carretié, L. (2010). Emotional context modulates response inhibition: Neural and behavioral data. *Neuroimage*, 49(1), 914-921. <http://dx.doi.org/10.1016/j.neuroimage.2009.08.045>
- Almeida, J., Pajtas, P. E., Mahon, B. Z., Nakayama, K., & Caramazza, A. (2013). Affect of the unconscious: Visually suppressed angry faces modulate our decisions. *Cognitive, Affective, & Behavioral Neuroscience*, 13, 94-101. <http://dx.doi.org/10.3758/s13415-012-0133-7>
- Aron, A. R., Robbins, T. W., & Poldrack, R. A. (2004). Inhibition and the right inferior frontal cortex. *Trends in Cognitive Sciences*, 8(4), 171-177. <http://dx.doi.org/10.1016/j.tics.2004.02.010>
- Banich M. T., Mackiewicz, K. L., Depue, B. E., Whitmer, A. J., Miller, G. A., & Heller, W. (2009). Cognitive control mechanisms, emotion and memory: A neural perspective with implications for psychopathology. *Neuroscience & Biobehavioral Reviews*, 33, 613-630. <http://dx.doi.org/10.1016/j.neubiorev.2008.09.010>
- Barkley, R. A. (2001). The executive functions and self-regulation: An evolutionary neuropsychological perspective. *Neuropsychological Review*, 11(1), 1-29. <http://dx.doi.org/10.1023/a:10090854177776>
- Becker, D. V., Anderson, U. S., Mortensen, C. R., Neufeld, S. L., & Neel, R. (2011). The face in the crowd effect unconfounded: happy faces, not angry faces, are more efficiently detected in single- and multiple-target visual search tasks. *Journal of Experimental Psychology: General*. Advance online publication. <http://dx.doi.org/10.1037/a0024060>
- Bjorklund, D. F., & Kipp, K. (2002). Social cognition, inhibition, and theory of mind: The evolution of human intelligence. In R. J. Stenberg, & J. C. Kaufman (Eds.), *The evolution of intelligence* (pp. 27-53). Mahwah, NJ: Lawrence Erlbaum Associates.
- Bokura, H., Yamaguchi, S., & Kobayashi, S. (2001). Electrophysiological correlates for response inhibition in a Go/NoGo task. *Clinical Neurophysiology*, 112, 2224-2232. [http://dx.doi.org/10.1016/S1388-2457\(01\)00691-5](http://dx.doi.org/10.1016/S1388-2457(01)00691-5)
- Bruin, K. J., & Wijers, A. A. (2002). Inhibition, response mode, and stimulus probability: A comparative event-related potential study. *Clinical Neurophysiology*, 113, 1172-1182. [http://dx.doi.org/10.1016/S1388-2457\(02\)00141-4](http://dx.doi.org/10.1016/S1388-2457(02)00141-4)
- Calvo, M. G., Avero, P., & Lundqvist, D. (2006). Facilitated detection of angry faces: Initial orienting and processing efficiency. *Cognition and Emotion*, 20, 785-811. <http://dx.doi.org/10.1080/02699930500465224>
- Calvo, M. G., & Nummenmaa, L. (2008). Detection of emotional faces: Salient physical features guide effective visual search. *Journal of Experimental Psychology: General*, 137(3), 471-494. <http://dx.doi.org/10.1037/a0012771>
- Chiu, P. H., Holmes, A. J., & Pizzagalli, D. A. (2008). Dissociable recruitment of rostral anterior cingulate and inferior frontal cortex in emotional response inhibition. *NeuroImage*, 42, 988-997. <http://dx.doi.org/10.1016/j.neuroimage.2008.04.248>
- Delplanque, S., Lavoie, M. E., Hot, P., Silvert, L., & Sequeira, H. (2004). Modulation of cognitive processing by emotional valence studied through event-related potentials in humans. *Neuroscience Letters*, 356, 1-4. <http://dx.doi.org/10.1016/j.neulet.2003.10.014>
- Ekman, P., & Friesen, W. V. (1986). *Pictures of facial affect*. Palo Alto: Consulting Psychologists Press.
- Elliot, R., Rubitsztein, J. S., Sahakian, B. J., & Dolan, R. J. (2000). Selective attention to emotional stimuli attention to emotional stimuli in a verbal go/nogo task: An fMRI study. *NeuroReport*, 11, 1739-1744. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/10852235>
- Fallgatter, A. J., & Strik, W. K. (1999). The NoGo-anteriorization as a neurophysiological standard-index for cognitive response control. *International Journal of Psychophysiology*, 32, 233-238. <http://dx.doi.org/10.1093/cercor/bhs132>
- Fenske, M. J., & Eastwood, J. D. (2003). Modulation of focused attention by faces expressing emotion: Evidence

- from flanker tasks. *Emotion*, 3(4), 327-343. <http://dx.doi.org/10.1037/1528-3542.3.4.327>
- Finucane, A. M. (2011). The effect of fear and anger on selective attention. *Emotion*, 11(4), 970-974. <http://dx.doi.org/10.1037/a0022574>
- Folstein, J. R., & van Petten, C. (2008). Influence of cognitive control and mismatch on the N2 component of the ERP: a review. *Psychophysiology*, 45, 152-170. <http://dx.doi.org/10.1111/j.1469-8986.2007.00602.x>
- Gajewski, P. D., & Falkenstein, M. (2012). Effects of task complexity on ERP components in Go/Nogo tasks. *International Journal of Psychophysiology*, in press. <http://dx.doi.org/10.1016/j.ijpsycho.2012.08.007>
- Géczy, I., Czigler, I., & Balázs, L. (1999). Effects of cue information on response production and inhibition measured by event-related potentials. *Acta Physiologica Hungarica*, 86(1), 37-44. <http://www.ncbi.nlm.nih.gov/pubmed/10755168>
- Habel, U., Windischberger, C., Derntl, B., Robinson, S., Kryspin-Exner, I., Gur, R. C., & Moser, E. (2007). Amygdala activation and facial expressions: Explicit emotion discrimination versus implicit emotion processing. *Neuropsychologia*, 45, 2369-2377. <http://dx.doi.org/10.1016/j.neuropsychologia.2007.01.023>
- Hare, T. A., Tottenham, N., Galvan, A., Voss, H. U., Glover, G. H., & Casey, B. J. (2008). Biological substrates of emotional reactivity and regulation in adolescence during an emotional go-nogo task. *Biological Psychiatry*, 63(10), 927-934. <http://dx.doi.org/10.1016/j.biopsych.2008.03.015015>
- Hartikainen, K. M., Ogawa, K. H., & Knight, R. T. (2000). Transient interference of right hemispheric function due to automatic emotional processing. *Neuropsychologia*, 38(12), 1576-1580. [http://dx.doi.org/10.1016/S0028-3932\(00\)00072-5](http://dx.doi.org/10.1016/S0028-3932(00)00072-5)
- Hodsoll, S., Viding, E., & Lavie, N. (2011). Attentional capture by irrelevant emotional distractor faces. *Emotion*, 11(2), 346-353. <http://dx.doi.org/10.1037/a0022771>
- Hoffstetter, Ch., Achaibou, C., & Vuilleumier, P. (2012). Reactivation of visual cortex during memory retrieval: Content specificity and emotional modulation. *Neuroimage*, 60, 1734-1745. <http://dx.doi.org/10.1016/j.neuroimage.2012.01.110>
- Jaeger, A., & Rugg, M. D. (2012). Implicit effects of emotional contexts: An ERP study. *Cognitive, Affective, & Behavioral Neuroscience*, 12, 748-760. <http://dx.doi.org/10.3758/s13415-012-0110-1>
- Jeffreys, D. A. (1996). Evoked potential studies of face and object processing. *Visual Cognition*, 3(1), 1-38. <http://dx.doi.org/10.1080/713756729>
- Joyce, C., & Rossion, B. (2005). The face-sensitive N170 and VPP components manifest the same brain processes: The effect of reference electrode site. *Clinical Neurophysiology*, 116(11), 2613-2631. <http://dx.doi.org/10.1016/j.clinph.2005.07.005>
- Kirouac, G., & Doré, F. Y. (1984). Judgment of facial expressions of emotion as a function of exposure time. *Perceptual and Motor Skills*, 59, 147-150. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/6493929>
- Lang, P. J., Bradley, M. M., & Cuthbert, B. N. (1997). *International affective picture system (IAPS): Technical manual and affective ratings*. University of Florida, Gainesville, FL.
- LeDoux, J. E. (1996). *The Emotional Brain*. New York. Simon & Schuster.
- Lindström, B. R., & Bohlin, G. (2012). Threat-relevance impairs executive functions: Negative impact on working memory and response inhibition. *Emotion*, 12(2), 384-393. <http://dx.doi.org/10.1037/a0027305>
- Liotti, M., Pliszka, S. R., Perez, R., Kothmann, D., & Woldorff, M. G. (2005). Abnormal brain activity related to performance monitoring and error detection in children with ADHD. *Cortex*, 41, 377-388. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/15871602>
- Luo, W., Feng, W., He, W., Wang, N. Y., & Luo, Y. J. (2010). Three stages of facial expression processing: ERP study with rapid serial visual presentation. *NeuroImage*, 49, 1857-1867. <http://dx.doi.org/10.1016/j.neuroimage.2009.09.018>
- Mikhailova, E. S., & Bogomolova, I. V. (2000). Evoked cerebral cortex activity in the human brain in conditions of the active and passive perception of facial expressions. *Neuroscience Behavioral Physiology*, 30(6), 679-85. <http://dx.doi.org/10.1023/A:1026650816978>
- Ochsner, K. N., & Gross, J. J. (2005). The cognitive control of emotion. *Trends in Cognitive Sciences*, 9, 242-249. <http://dx.doi.org/10.1016/j.tics.2005.03.010>

- Pessoa, L. (2009). How do emotion and motivation direct executive control? *Trends in Cognitive Science*, 13, 160-166. <http://dx.doi.org/10.1016/j.tics.2009.01.006>
- Pessoa, L., Padmala, S., Kenzer, A., & Bauer, A. (2012). Interactions between cognition and emotion during response inhibition. *Emotion*, 12(1), 192-197. <http://dx.doi.org/10.1037/a0024109>
- Phelps, E. (2006). Emotion and cognition: Insights from studies of the human amygdala. *Annual Reviews of Psychology*, 57, 27-53. <http://dx.doi.org/10.1146/annurev.psych.56.091103.070234>
- Pinkham, A. E., Griffin, M., Baron, R. Sasson, N. J., & Gur, R. C. (2010). The Face in the Crowd Effect: Anger superiority when using real faces and multiple identities. *Emotion*, 10(1), 141-146. <http://dx.doi.org/10.1037/a0017387>
- Polich, J. (2007). Updating P300: An Integrative Theory of P3a and P3b. *Clinical Neurophysiology*, 118(10), 2128-2148. <http://dx.doi.org/10.1016/j.clinph.2007.04.019>
- Pourtois, G., Schettino, A., & Vuilleumier, P. (In press). Brain mechanisms for emotional influences on perception and attention: what is magic and what is not. *Biological Psychology*. <http://dx.doi.org/10.1016/j.biopsycho.2012.02.007>
- Ro, T., Russell, C., & Lavie, N. (2001). Changing faces: A detection advantage in the flicker paradigm. *Psychological Science*, 12, 94-99. <http://dx.doi.org/10.1186/1471-2202-7-44>
- Rossion, B., Delvenne, J. F., Debatisse, D., Goffaux, V., Bruyer, R., Crommelinck, M., & Guerit, J. M. (1999). Spatio-temporal localization of the face inversion effect: an event-related potentials study. *Biological Psychology*, 50(3), 173-189. [http://dx.doi.org/10.1016/S0301-0511\(99\)00013-7](http://dx.doi.org/10.1016/S0301-0511(99)00013-7)
- Sakaki, M., & Niki, K. (2011). Effects of the brief viewing of emotional stimuli on understanding of insight solutions. *Cognitive, Affective & Behavioral Neuroscience*, 11, 526-540. <http://dx.doi.org/10.3758/s13415-011-0051-0>
- Sakaki, M., Niki, K., & Mather, M. (2012). Beyond arousal and valence: The importance of the biological versus social relevance of emotional stimuli. *Cognitive, Affective & Behavioral Neuroscience*, 12, 115-139. <http://dx.doi.org/10.3758/s13415-011-0062-x>
- Schmajuk, M., Liotti, M., Busse, L., & Woldorff, M. G. (2006). Electrophysiological activity underlying inhibitory control processes in normal adults. *Neuropsychologia*, 44, 384-395. <http://dx.doi.org/10.1016/j.neuropsychologia.2005.06.005>
- Schulz, K. P., Fan, J., Magidina, O., Marks, D. J., Hahn, B., & Halperin, J. M. (2007). Does the emotional go/no-go task really measure behavioral inhibition? Convergence with measures on a non-emotional analog. *Archives of Clinical Neuropsychology*, 22, 151-160. <http://dx.doi.org/10.1016/j.acn.2006.12.001>
- Schulz, K. P., Clerkin, S. M., Halperin, J. M., Newcorn, J. H., Tang, C. H. Y., & Fan, J. (2009). Dissociable neural effects of stimulus valence and preceding context during the inhibition of responses to emotional faces. *Human Brain Mapping*, 30(9), 2821-2833. <http://dx.doi.org/10.1002/hbm.20706>
- Shafritz, K. M., Collins, S. H., & Blumberg H. P. (2006). The interaction of emotional and cognitive neural systems in emotionally guided response inhibition. *NeuroImage*, 31, 468-475. <http://dx.doi.org/10.1016/j.neuroimage.2005.11.053>
- Smith, J. L., Johnstone, S. J., & Barry, R. J. (2008). Movement-related potentials in the Go/NoGo task: The P3 reflects both cognitive and motor inhibition. *Clinical Neurophysiology*, 119, 704-714. <http://dx.doi.org/10.1016/j.clinph.2007.11.042>
- Schupp, H. T., Öhman, A., Junghöfer, M., Weike, A. I., Stockburger, J., & Hamm, A. O. (2004). The facilitated processing of threatening faces: An ERP analysis. *Emotion*, 4(2), 189-200. <http://dx.doi.org/10.1037/1528-3542.4.2.189>
- Steidl, S., Razik, F., & Anderson, A. K. (2011). Emotion enhanced retention of cognitive skill learning. *Emotion*, 11(1), 12-19. <http://dx.doi.org/10.1037/a0020288>
- Tipples, J., & Sharma, D. (2000). Orienting to exogenous cues and attentional bias to affective pictures reflect separate processes. *British Journal of Psychology*, 91, 87-97. <http://dx.doi.org/10.1348/000712600161691>
- Vanderhasselt, M. A., Kühn, S., & De Raedt, R. (2011). Healthy brooders employ more attentional resources when disengaging from the negative: an event-related fMRI study. *Cognitive, Affective, & Behavioral Neuroscience*, 11, 207-216. <http://dx.doi.org/10.3758/s13415-011-0022-5>

- Vanlessen, N., & Rossi, V., De Raedt, R., & Pourtois, G. (2013). Positive emotion broadens attention focus through decreased position-specific spatial encoding in early visual cortex: Evidence from ERPs. *Cognitive, Affective, & Behavioral Neuroscience*, 13, 60-79. <http://dx.doi.org/10.3758/s13415-012-0130-x>
- Verbruggen, F., & De Houwer, J. (2007). Do emotional stimuli interfere with response inhibition? Evidence from the stop signal paradigm. *Cognition & Emotion*, 21(2), 391-403. <http://dx.doi.org/10.1080/02699930600625081>
- Vuilleumier, P., Armony, J. L., Driver, J., & Dolan, R. J. (2001). Effects of attention and emotion on face processing in the human brain: An event-related fMRI study. *Neuron*, 30, 829-841. [http://dx.doi.org/10.1016/S0896-6273\(01\)00328-2](http://dx.doi.org/10.1016/S0896-6273(01)00328-2)
- Westerhausen, R., Moosmann, M., Alho, K., Belsby, S. O., Hämäläinen, H., Medvedev, S., Specht, K., & Hugdahl, K. (2010). Identification of attention and cognitive control networks in a parametric auditory fMRI study. *Neuropsychologia*, 48, 2075-2081. <http://dx.doi.org/10.1016/j.neuropsychologia.2010.03.028>
- Williams, L. M., Palmer, D., Liddell, B. J., Song, L., & Gordon, E. (2006). The when and where of perceiving signals of threat versus non-threat. *NeuroImage*, 31, 458-467. <http://dx.doi.org/10.1016/j.neuroimage.2005.12.009>
- Yu, F., Yuan, J., & Luo, Y. (2009). Auditory-induced emotion modulates processes of response inhibition: An event-related potential study. *NeuroReport*, 20, 25-30. <http://dx.doi.org/10.1097/WNR.0b013e32831ac9b1>
- Yuan, Y., Guan, G., Hong, G., & Yi-Hong, Q. (2011). Early event-related potential components in face perception reflect the sequential neural activities. *Acta Physiologica Sinica*, 63(2), 97-105. Retrieved from <http://www.actaps.com.cn/qikan/manage/wenzhang/2011-2-01.pdf>
- Zhang, W., & Lu, J. (2012). Time course of automatic emotion regulation during a facial Go/Nogo task. *Biological Psychology*, 89(2), 444-449. <http://dx.doi.org/10.1016/j.biopsycho.2011.12.011>

Self-Efficacy, Performance, Training and Well-Being of Industrial Workers in Lagos, Nigeria

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Received: April 3, 2013

Accepted: April 24, 2013

Online Published: May 14, 2013

doi:10.5539/ijps.v5n2p66

URL: <http://dx.doi.org/10.5539/ijps.v5n2p66>

Abstract

The main purpose of this study was to investigate whether Self-Efficacy (SE) has anything to do with industrial employees' training, performance and well-being in Nigeria industrial settings. Self-Efficacy (belief about one's ability to accomplish specific tasks) form a central role in the regulatory process through which an individual's motivation and performance are governed. It also affects employees' training and well-being. The descriptive survey research design of the ex-post facto type was adopted. The population for the study consisted of employees of SKG Lagos, Glaxo, Ikeja and Smithkline Beecham, Ogbia. The simple random sampling technique was used to select 274 respondents for the study. Four research instruments structured on a modified four point rating format of Strongly Agree (SA)=4, Agree (A)=3, Disagree (D)=2, Strongly Disagree (SD)=1 were used and having reliability coefficient of: Self-Efficacy Scale (SES)=0.85; Training Acquisition Scale (TAS)=0.80; Work Performance Scale (WPS)=0.82 and Well-being Scale (WBS)=0.87. Data were analyzed with t-test statistic. The finding revealed that workers with high self-efficacy are higher performers of assigned duties than those with low self – efficacy, workers with high level of self-efficacy are more amenable to training than those with low level of self – efficacy and workers with high self-efficacy are better in their well-being than those with low self – efficacy. It was recommended that industrial social worker should work on the psychic of the workers so that their self-efficacy can be developed or strengthen positively with the intent of promoting higher performance, adaptability to training and fostering of employees well-being.

Keywords: self-efficacy, training, performance, well-being, industrial employees

1. Introduction

Self-efficacy has been popular in Industrial-Organisational (I-O) psychology. Virtually every area in organisational research has made use of self-efficacy. The area of utilisation include performance evaluation (Bartol, Durham & Poon, 2001), stress (Jex, Bliese, Buzzell, & Primeau, 2001), training (Kozlowski, Gully, Brown, Salas, Smith, & Nason, 2001), career choice (Lent, Brown & Larkin, 1987), coping with difficult career-related tasks (Stumpf, Brief & Hartman, 1987). Given its successful application in many domains where individuals have autonomy, self-efficacy theory appears to be particularly well suited for industrial work organisations context (both profit and non-profit oriented).

Self-efficacy (SE), also called perceived ability; refers to the confidence people have in their abilities that they can successfully perform a particular task. It is also said to be a judgement of one's ability to execute a particular behaviour pattern (Bandura, 1978; 1997). Wood and Bandura (1989) expanded upon these definitions by suggesting that self-efficacy beliefs form a central role in the regulatory process through which an individual's motivation and performance are governed. Therefore, a person's self-efficacy is a strong determinant of his/her effectiveness, persistence, strategizing, as well as subsequent training and job performance (Bandura & Locke, 2003). Besides being highly predictive, self-efficacy can also be developed in order to harness its performance enhancing benefits (Heslin & Klehe, 2006). Self-efficacy is concerned not with the actual skills one has, but with judgements about what one can do with those skills. It arises from the gradual acquisition of complex cognitive, social, linguistic and/or physical skills through experience. Efficacious beliefs contribute to effective performance and promote well-being by encouraging goal setting and commitment, persistent effort, perseverance, resilience, reduction in stress and depression (Bandura, 2000; Bandura & Locke, 2003).

Self-efficacy has been confirmed to promote employees performance and reduction of emotional exhaustion. For

example, efficacious individuals seek, integrate and use information to increase role clarity and performance (Brown, Ganesan & Challagalla, 2001), contribute to unit performance (Pillai & Williams, 2004), have higher cognitive engagement and performance (Lent, Schmidt & Schmidt, 2006), higher self-set goals and higher individual performance (Phillips & Gully, 1997), more job focused and higher productivity (McDonald & Siegal, 1992) and less prone to emotional exhaustion (well-being) (Grau, Salanova & Peiro, 2001). In contrast, less efficacious individuals are more prone to burnout (Perrewe, Hochwarter, Rossi, Wallace, Maigan, Castro, Ralston, Westman, Vollmer, Tang, Wan, & Van Deusen, 2002), psychological strain (Jex, Bliese, Buzzell & Primeau, 2001) and engage in self-limiting behaviours (Dickerson & Taylor, 2000) with resultant effect on lowering performance at any facet of life. These review and citations on organisational behaviour based on self-efficacy showed that an improvement on self-efficacy will improve both individual and organisational performance.

The relationship between self-efficacy and performance is a cyclical one (Kreitner & Kinicki, 2004). Efficacy and performance cycles can spiral upward toward success or downward toward failure (Lindsley, Brass & Thomas, 1995). There exist strong linkages between high self-efficacy expectations and success in widely varied physical and mental tasks, anxiety reduction, addiction control pain, tolerance, illness recovery, avoidance of sea-sickness in naval cadets and stress avoidance (Gecas, 1989; Stevens, Bavetta & Gist, 1993; Eden & Zuk, 1995; Jex, Bliese, Buzzell & Primeau, 2001). Conversely, those with low self-efficacy expectations tend to have low success rates.

Robbins (2003) in describing self-efficacy as individual's belief that he or she is capable of performing a task, confirm that employees who believe in their abilities exhibit high levels of self-confidence and performance. During strenuous and challenging situations, employees who have high self-efficacy work very hard in order to overcome the obstacles and respond positively to negative feedback by increasing their effort and motivation (Stajkovic & Luthans, 1998).

Since self-efficacy is a science of one's capabilities to mobilise the motivation, cognitive resources, and course of action needed to meet given situational demands (Muchinsky, 2003), therefore, there is need to develop a sense of self-efficacy in employees especially through the use of training in both public and private work organisations. Goldstein and Ford (2002) define training as the systematic acquisition of skills, rules, concepts or attitudes that result in improved performance. Trainees with low self-efficacy will not be amenable to training hence low performance. Ford, Quinones, Sego and Speer (1991) confirmed the importance of developing a sense of self-efficacy in trainees by stating that trainees need to feel confident and positive about being able to learn the material. Colquitt, Lepine and Noe (2000) confirmed the use of meta-cognitive activities as the best form for training of trainees. They emphasise the importance of motivation to learn as an aspect for successful training. Colquitt et. al. (2000) established that general cognitive ability and motivation to learn correlated significantly with learnt declarative knowledge (knowledge about facts and things). Similarly, Eden and Aviram (1993) showed the positive effect of a workshop on trainee's self-efficacy and consequent effect on job performance.

People are likely to become anxious or depressed when they perceive themselves as unable to manage aversive events or gain what they value highly. Thus, self-efficacy is related to experiencing stress and occupational burnout (Helsin & Klehe, 2006). The implication of this statement is that low efficacy can readily lead to a sense of helplessness and hopelessness about one's capability to cope with the challenges and demand of one's job. When this occurs, distress and depression is likely to be noticed in the individual and poor performance will set in.

Low self efficacy leads to workers having burnout and distress. With low efficacy, a worker may not be able to remember information, make effective decisions and take appropriate action that might be necessary for his/her performance and productivity. It has also been established that workplace aggression is common among workers with low self-efficacy who are already experiencing stress, just as co-workers aggression is also noticed among workers with low self-efficacy (Berkowitz, 1993). Other effects of low self-efficacy among workers resulting from stress are emotional exhaustion, depersonalisation and reduced accomplishment (Lee & Ashforth, 1996).

From above review, there arose pertinent questions as to what level of self-efficacy will affect employees' performance? To what extent can training and well-being of employees be affected by self-efficacy? Various studies conducted on self-efficacy have been on unit-variate pattern, much has not been done on multi-variate factors combination on the levels of self-efficacy. It is against this gap that this study seeks to find out the effect of differences in the levels of self- efficacy of industrial workers in Nigeria on training, performance and well-being.

2. Hypotheses

Based on the review of related literature the following hypotheses were tested.

Ho1: There is no significant difference in the performance of workers with high and low self-efficacy in industrial settings.

Ho2: There is no significant difference in training adaptation of workers with high and low self-efficacy in industrial settings.

Ho3: There is no significant difference in well-being of workers with high and low self-efficacy in industrial settings.

3. Methodology

3.1 Research Design

The descriptive survey research design of the ex-post facto type was used for the study.

3.2 Population

The population for the study is made up of employees of SKG, Lagos; Glaxo, Ikeja and Smithkline Beecham, Ogba. These organisations are profit oriented driven, hence employees productivity are germane to the survival of both the workplace and the employees themselves.

3.3 Sampling Procedure

A total of 100 respondents were randomly selected from each company to make a total of 300 respondents. Of the 300 questionnaire administered, 274 were properly filled and used for data analysis.

3.4 Instrumentation

An instrument tagged 'Self-Efficacy, Performance, Training and Well-Being Questionnaire (SEPTWQ) with four sub-sections of: Self-Efficacy Scale (SES); Training Skill Acquisition (TSA); Work Performance Scale (WPS) and Well-Being Scale (WBS), was used for data collection. All the sub-scales used had the modified four-point rating format of Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2 and Strongly Disagree (SD) = 1. Higher score on the scale indicated high self-efficiency.

1) The SES is an adapted version of SES developed by Sherer, Maddux, Mercandante, Prentice-Dunn, Jacobs and Rogers (1982). The test retest reliability of the 15 itemized instrument administered within two weeks interval yielded 0.85.

2) WPS measured work performance using adapted format of World Health Organisation Health and Performance Questionnaire (PHQ) of WHO (2002). The reliability got after test-retest of the 10 itemised scale was 0.82.

3) The Well-Being Scale (WBS) of Fujishiro (2005) with 12 items was adapted for the study. The reliability coefficient got after test-retest was 0.87.

4) The Training Skill Scale (TSA) was self constructed and it contained 10 items. The reliability coefficient got for it was 0.80.

Data collected for the study was analysed using t-test at 0.05 level of significance.

4. Result of Findings

4.1 Respondents Profile

The average age of respondents in this study is 35.7 years, while the mean length of service in the organisations is 12 years. All the respondents have attended training since joining the organisations. All agreed to fair remunerations in terms of salaries. Therefore any decline noticed in performance was not due to poor salary. 25% of respondents are having above Masters Degree, 40% are having First Degree or its equivalent, 25% are having Secondary Schools or its equivalent and 10% Primary Level certificates.

4.2 Hypotheses

4.2.1 Hypothesis 1

There is no difference in the performance of workers with high and low self-efficacy in industrial settings.

Table 1. T-test analysis showing difference in performance of workers' with high and low self-efficacy

Variable	Level of self-efficacy	N	Mean	SD	t	df	P
Worker's performance	Low	128	20.96	7.07	2.612	272	<0.05
	High	146	22.96	6.90			

From Table 1 above, the null hypothesis was rejected ($t = 2.612$; $p < 0.05$). The implication is that workers with high self-efficacy are higher performers at assigned duties than those with low self – efficacy. The significant difference can be confirmed further from the means where workers with high self-efficacy ($\bar{X} = 22.96$) indicate higher performer than those with low self-efficacy ($\bar{X} = 20.96$).

4.2.2 Hypothesis 2

There is no significant difference in training adaptation of workers with high and low self-efficacy in industrial settings

Table 2. T-test analysis showing difference in training adaptation of workers' with high and low self-efficacy

Variable	Level of self-efficacy	N	Mean	SD	t	df	P
Adaptation to Training	Low	125	29.78	7.55	7.56	272	<0.05
	High	149	38.00	9.34			

From Table 2 above, the null hypothesis was rejected ($t = 7.56$; $p < 0.05$). The implication is that workers with high self-efficacy are more amenable to training than those with low self – efficacy. The significant difference can be confirmed further from the means where workers with high self-efficacy ($\bar{X} = 38.00$) imply higher adaptation to training than those with low self-efficacy ($\bar{X} = 29.78$).

4.2.3 Hypothesis 3

There is no significant difference in well-being of workers with high and low self-efficacy in industrial settings.

Table 3. T-test analysis showing difference in well-being of workers' with high and low self-efficacy

Variable	Level of self-efficacy	N	Mean	SD	t	df	P
Worker's well-being	Low	127	21.83	5.62	2.794	283	<0.05
	High	147	24.48	6.55			

From Table 3 above, the null hypothesis was rejected ($t = 2.794$; $p < 0.05$). The implication is that workers with high self-efficacy are better in their well-being than those with low self – efficacy. The significant difference can be confirmed further from the means where workers with high self-efficacy ($\bar{X} = 24.48$) indicate higher well-being than those with low self-efficacy ($\bar{X} = 21.83$).

5. Discussion of Findings

From the findings, the result of hypothesis one shows that workers with high self-efficacy are higher performer than those with low self-efficacy at assigned duties in the workplace. This is in line with the findings of Hackett (1995) that workers with low self-efficacy that are engaged in tasks in which their skills are required will quickly give up in the face of slightest difficulty thereby affecting their performance. It is also consistent with the findings of Bouffard-Bouchard, Parent, Lariv and Egrave (1991), that worker with high self-efficacy engages in more effective self-regulating strategies at each level of ability hence higher performance.

The result of hypothesis two shows that workers with high self-efficacy are more amenable to training than those with low self-efficacy. This is so because individuals with high self-efficacy can perform well in training and also have positive attitude towards training usefulness (Guthrie & Schwoerer, 1994). Such people are also likely to view themselves as capable of obtaining the extrinsic reward that may result from successful training performance (Latham, 1998). People with strong self-efficacy beliefs exert greater efforts to master a challenge (training) while those with weak self-efficacy beliefs are likely to reduce their efforts or even quit (Bandura &

Schunk, 1981; Brown & Inouyne, 1978; Schunk, 1981; Weinberg, Gould & Jackson, 1979). Since self-efficacy is belief of "I can do" (Bandura, 2000), trainees with high self-efficacy are subjectable to training. This is so because the trainee belief that he or she can successfully learn the training programmes contents. Furthermore, trainees with high self-efficacy are usually motivated to learn because they have the belief of "I will do" factor, hence, the combination of their motivation and self-efficacy propel them to quickly assimilate their training. Since training and development activities are usually directed at meeting organisational objectives (increased productivity of workers, maximum profitability, and so on), training of high self-efficacious trainees will lead to successful human resource development and sustainance of competitive advantage that ultimately enhance organizational performance.

The result of hypothesis three confirms that employee with low-self-efficacy possesses reduced personal accomplishment, that is, having decline in one's feelings of accomplishment and success. This is in line with the finding of McShane & Glinow (2003) that the feeling of low self-efficacy has impact on competence and performance of worker, through the development of depersonalisation and emotional exhaustion, hence, less productivity or performance. Employees with low self-efficacy develop a sense of learned helplessness as they no longer believe that their efforts make a difference. With this effect, employee with low self-efficacy became distress, job performance falls and workplace accidents are more common, whereas, the converse happens to high self-efficacious workers.

6. Implication for Managers and Industrial Social Workers

Different aspect of the workplace needs the interface of self-efficacy on both the managers (including industrial social workers) and the employees. Kreitner and Kinicki (2004) stated that self-efficacy requires constructive action in each of the major managerial areas of: recruitment/selection of workers, job design, training and development, goal setting, leadership and mentoring and rewards.

In the area of recruitment and promotion, organisation should administer a measure of self-efficacy during hiring and/or promotion process. Employees selected on the basis of high levels of self-efficacy will behave and perform well in the workplace (Lunenburg, 2011). Furthermore, interview questions should be designed to probe job applicants' general self-efficacy so as to determine their orientation and training needs as this have to do with either low or high self-efficacies. In the area of job design, managers should be aware that boring, tedious jobs, complex, challenging and autonomous jobs tend to enhance perceived self-efficacy (Parker, 1998). Therefore, to promote high self-efficacy, managers should know that goal difficulty should match the individual's perceived self-efficacy because as self-efficacy and performance improves, goals and quality standards are made more challenging and make organisation to achieve set goals and high productivity.

With low self-efficacy employees, managers and industrial social workers should review and applaud small successes so as to serve as stepping stone to a stronger self-image and greater achievements. Managers and industrial social workers should be aware that employees' self-efficacy expectations for key tasks can be improved through mentoring, role modelling and guided experiences, hence, careful application of the mentioned treatments.

In the same view and thought of Lunenburg (2011), industrial social worker in conjunction with the human resource manager should select employee with high level of self-efficacy for training (especially if the training budget is limited). The high level self-efficacious employees will learn more from the training and use such training to enhance their job performance. The implication is improved productivity and increase organisational efficiency.

Trainers at the workplace should not teach only knowledge and skills to trainees but also teach other learning traits that will facilitate the development of self-efficacy. This can be in form of giving explicit instructions on meta-cognitive activities that increases self-efficacy and confidence. Instructors and trainers must find appropriate ways to boost the confidence of trainees who are unsure of their learning abilities, for instance, low level self-efficacies persons can learn content of their job specifications better from one-on-one training module.

The industrial social worker should work on the psychic of the workers so that their self-efficacy can be developed or strengthen positively. Employees will become amenable to training, assist them in task-diagnostic that are commensurable to employees' level of self-efficacy and forestall relapse of the attained level. Social workers in industries should use the modelling method to strengthen the positive benefit of successes based on employees' experience. Furthermore, industrial social workers should use social persuasion and psychological information on employees so as to assist in the development of self-efficacy of employees to higher level and obtain the resultant effect of workers' well-being and increase performance at the workplace.

7. Conclusion

Since self-efficacy pertains to specific tasks, both the employers and employees must see to the development of high self-efficacy among them. The many benefits of high self-efficacy make it a worthwhile attribute to cultivate. Employers and employees should cultivate high self-efficacy through the simultaneous and systematic application of enactive self-mastery, role-modelling and verbal persuasion methods for the attainment of effective and efficient performance and well-being of workers thereby resulting in the achievement of organisational goals.

References

- Bandura, A. (1978). Reflections on Self-Efficacy. *Advances in Behavioural Research and Therapy*, 1(4), 237-269. [http://dx.doi.org/10.1016/0146-6402\(78\)90012-7](http://dx.doi.org/10.1016/0146-6402(78)90012-7)
- Bandura, A. (1997). *Self-efficacy: The Exercise of Control*. New York.
- Bandura, A. (2000). Cultivate Self-efficacy for Personal and Organisational Effectiveness. In E. A. Locke (Ed.), *Hard book of Principles of Organisational Behaviour*. UK: Blackwell.
- Bandura, A., & Locke, E. A. (2003). Negative Self-efficacy and Goal Effects Revisited. *Journal of Applied Psychology*, 88(1), 87-99. <http://dx.doi.org/10.1037/0021-9010.88.1.87>
- Bandura, A., & Schunk, D. H. (1981). Cultivating Competence, Self-Efficacy and Intrinsic Interest Through Proximal Self-Motivation. *Journal of Personality and Social Psychology*, 41(3), 586-598. <http://dx.doi.org/10.1037/0022-3514.41.3.586>
- Bartol, K. M., Durham, C. C., & Poon, J. M. L. (2001). Influence of Performance Evaluation Rating Segmentation on Motivation and Fairness Perceptions. *Journal of Applied Psychology*, 86, 1106-1119. <http://dx.doi.org/10.1037/0021-9010.86.6.1106>
- Berkowitz, L. (1993). *Aggression: Its Causes, Consequences and Control*. New York: McGraw Hill.
- Bouffard-Bouchard, T., Parent, S., Lariv, E., & Egrave, S. (1991). Influence of Self-Efficacy on Self-Regulation and Performance among Junior and Senior High-School Aged Students. *International Journal of Behavioural Development*, 14, 153-164. <http://dx.doi.org/10.1177/016502549101400203>
- Brown, S. P., Ganesan, S., & Challagalla, G. (2001). Self-efficacy As a Moderator of Information Seeking Effectiveness. *Journal of Applied Psychology*, 86(5), 1043-1051. <http://dx.doi.org/10.1037/0021-9010.86.5.1043>
- Brown, Jr. I., & Inouye, D. K. (1978). Learned Helplessness through Modelling: The Role of Perceived Similarity in Competence. *Journal of Personality and Social Psychology*, 36(8), 900-908. <http://dx.doi.org/10.1037/0022-3514.36.8.900>
- Chen, G., & Bliese, P. D. (2002). The Role of Different Levels of Leadership in Predicting Self - and Collective Efficacy: Evidence for Discontinuity. *Journal of Applied Psychology*, 87, 549-556. <http://dx.doi.org/10.1037/0021-9010.87.3.549>
- Colquitt, J. A., Lepine, J. A., & Noe, R. R. (2000). Toward An Integrative Theory of Training Motivation: A meta-Analytic Path Analysis of 20 years of Research. *Journal of Applied Psychology*, 85, 678-707. <http://dx.doi.org/10.1037/0021-9010.85.5.678>
- Dickerson, A., & Taylor, M. A. (2000). Self-limiting Behaviour in Women: Self-esteem and Self-efficacy as Predictors. *Group and Organisation Management*, 25(2), 191-210. <http://dx.doi.org/10.1177/1059601100252006>
- Eden, D., & Aviram, A. (1993). Self-efficacy Training to Speed Reemployment: Helping People to Help Themselves. *Journal of Applied Psychology*, 78, 352-360. <http://dx.doi.org/10.1037/0021-9010.78.3.352>
- Eden, D., & Zuk, V. (1995). Seasickness as a Self-fulfilling prophecy: Raising self-efficacy to Boost Performance at Sea. *Journal of Applied Psychology*, October, 628-635. <http://dx.doi.org/10.1037/0021-9010.80.5.628>
- Ford, J. K., Quinones, M., Sego, D., & Speer, J. (1991). *Factors Affecting the Opportunity to use Trained Skills on the Job*. Paper presented at the 6th Annual Conference of the Society for Industrial and Organisational Psychology, St. Louise.
- Fujishiro, K. (2005). Fairness at Work: Its Impacts on Employee Wellbeing. A Dissertation of P.h.d. Degree presented to the Graduate school of the Ohio State Univvrsity.

- Gecas, V. (1989). The Social Psychology of Self-Efficacy. In W. R. Scott, & J. Blake. (Eds.), *Annual Review of Sociology* (vol. 15, pp. 291-316). Palo Alto, CA: Annual Reviews, Inc.
- Goldstein, I. L., & Ford, J. K. (2002). *Training in Organisations* (4th ed.). Belmont, CA: Wadsworth.
- Grau, R., Salanova, M., & Peiro, J. M. (2001). Moderator Effects of Self-efficacy on Occupational Stress. *Psychology in Spain*, 5(1), 63-74.
- Guthrie, J. P., & Schwoever, C. E. (1994). Individual and Contextual Influences on Self-Assessed Training Needs. *Journal of Organisational Behaviour*, 15, 505-422.
- Hackett, G. (1995). Self-Efficacy in Career Choice and Development. In A. Bandura (Ed.), *Self-Efficacy in Changing Societies*. (pp. 232-258). New York: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511527692.010>
- Heslin P. A., & Klehe, U. C. (2006). Self-Efficacy. In S. G. Rogelberg (Ed.), *Encyclopedia of Industrial/Organizational Psychology* (Vol. 2, pp. 705-708). Thousand Oaks: Sage.
- Jamal, M. (1984). Job Stress and Job Performance Controversy: An Empirical Assessment. *Organisational Behaviour and Human Performance*, 33, 1-21. [http://dx.doi.org/10.1016/0030-5073\(84\)90009-6](http://dx.doi.org/10.1016/0030-5073(84)90009-6)
- Jex, S. M., Bliese, P. D., Buzzell, S., & Primeau, J. (2001). The Impact of Self-Efficacy on Stressor-strain Relations: Coping Style as an Explanatory Mechanism. *Journal of Applied Psychology*, 86(3), 401-409. <http://dx.doi.org/10.1037/0021-9010.86.3.401>
- Judge, T. A., Jackson, C. L., Shaw, J. C., Scott, B. A., & Rich, B. L. (2007). Self-Efficacy and Work-Related Performance: The Integrated Role of Individual Differences. *Journal of Applied Psychology*, 92(1), 107-127. <http://dx.doi.org/10.1037/0021-9010.92.1.107>
- Keinan, G. (1987). Decision Making under Stress: Scanning of Alternatives under Controllable and Uncontrollable Threats. *Journal of Personality and Social Psychology*, 52, 635-644. <http://dx.doi.org/10.1037/0022-3514.52.3.639>
- Kozlowski, S. W. J., Gully, S. M., Brown, K. G., Salas, E., Smith, E. M., & Nason, E. R. (2001). Effect of Training Goals and Goal Orientation Traits in Multidimensional Training Outcomes and Performance Adaptability. *Organizational Behavior and Human Decision Processes*, 85, 1-31. <http://dx.doi.org/10.1006/obhd.2000.2930>
- Kreitner, R., & Kinicki, A. (2004). *Organisational Behaviour* (6th ed.). New York: McGraw-Hill, Irwin.
- Latham, G. P. (1988). Human Resource Training and Development. *Annual Review of Psychology*, 39, 445-482. <http://dx.doi.org/10.1146/annurev.ps.39.020188.002553>
- Lee, R. T., & Ashforth, B. E. (1996). A Meta-Analytic Examination of the Correlates of the Three Dimensions A Job Burnout. *Journal of Applied Psychology*, 81, 123-133. <http://dx.doi.org/10.1037/0021-9010.81.2.123>
- Lent, R. W., Brown, S. D., & Larkin, K. C. (1987). Comparison of Three Theoretically Derived Variables in Predicting Career and Academic Behaviour: Self-Efficacy, Interest Congruence and Consequence Thinking. *Journal of Counselling Psychology*, 34(3), 293-298. <http://dx.doi.org/10.1037/0022-0167.34.3.293>
- Lent, R. W., Schmidt, J., & Schmidt, L. (2006). Collective Efficacy Beliefs in Student Work Teams: Relation to Self-Efficacy, Cohesion and Performance. *Journal of Vocational Behaviour*, 68, 73-84. <http://dx.doi.org/10.1016/j.jvb.2005.04.001>
- Lindsley, D. H., Brass, D. A., & Thomas, J. B. (1995). Efficacy-performance Spirals: A Multilevel Perspective. *Academy of Management Review*, July, 645-678.
- Lunenburg, F. C. (2011). Self-Efficacy in the Workplace: Implication for Motivation and Performance. *International Journal of Management*, 14, 1.
- McDonald, T., & Siegall, M. (1993). The Effects of Technological Self-Efficacy and Job Focus on Job Performance, Attitudes, and Withdrawal Behaviours. *Journal of Psychology*, 5, 465-475.
- McShane, S. L., & Glinow, M. A. V. (2003). *Organisational Behaviour: Emerging Realities for the Workplace Revolution*. New York: McGraw-Hill Companies Inc.
- Motowidlo, S. J., Packard, J. S., & Manning, M. R. (1986). Occupational Stress: Its Causes and Consequences for Job Performance. *Journal of Applied Psychology*, 71, 618-629. <http://dx.doi.org/10.1037/0021-9010.71.4.618>

- Muchinsky, P. M. (2003). *Psychology Applied to Work* (7th ed.). U.K: Thomson Wadsworth.
- Parker, S. K. (1998). Enhancing Role Breadth Self-Efficacy: The Role of Job Enrichment and other Organisational Intervention. *Journal of Applied Psychology*, December, 835-852. <http://dx.doi.org/10.1037/0021-9010.83.6.835>
- Perrewe, P. L., Hochwarter, W. A., Rossi, A. M., Wallace, A., Maigan, I., Castro, S. L., Ralston, D. A., Westman, M., Vollmer, G., Tang, M., Wan, P., & Van Deusen, C. A. (2002). Are Work Stress Relationships Universal? A Nine Region Examination of Role Stressors, General Self-efficacy and Burnout. *Journal of International Management*, 8, 163-188. [http://dx.doi.org/10.1016/S1075-4253\(02\)00052-2](http://dx.doi.org/10.1016/S1075-4253(02)00052-2)
- Phillips, J. M., & Gully, S. M. (1997). Role of Goal Orientation, Ability, Need for Achievement, and Locus of Control in the Self-efficacy and Goal setting process. *Journal of Applied Psychology*, 82(5), 792-802. <http://dx.doi.org/10.1037/0021-9010.82.5.792>
- Pillai, R., & Williams, E. A. (2004). Transformational Leadership, Self-efficacy, Group Cohesiveness, Commitment and Performance. *Journal of Organizational Change Management*, 17(2), 144-159. <http://dx.doi.org/10.1108/09534810410530584>
- Robbins, S. P. (2003). *Organizational Behaviour* (10th ed.). Upper Saddle River, New Jersey: Prentice Hall Inc.
- Schunk, D. H. (1981). Modelling and Attributional Effects on Children's Achievement: A Self-Efficacy Analysis. *Journal of Educational Psychology*, 73(1), 93-105. <http://dx.doi.org/10.1037/0022-0663.73.1.93>
- Sherer M., Maddux, J. E., Mercandante, B., Prentice-Dunn, S., Jacobs, B., & Rogers, R. W. (1982). The Self-Efficacy Scale: Construction and Validation. *Psychological Report*, 51, 663-671. <http://dx.doi.org/10.2466/pr0.1982.51.2.663>
- Stajkovic, A., & Luthans, F. (1998). Self-Efficacy and Work-Related Performance: A meta-Analysis. *Psychological Bulletin*, 124(2), 240-261. <http://dx.doi.org/10.1037/0033-2909.124.2.240>
- Stevens, C. K., Bavetta, A. G., & Gist, M. E. (1993). Gender Differences in the Acquisition of Salary Negotiation skills: The Role of Goals, Self-Efficacy and Perceived Control. *Journal of Applied Psychology*, October, 723-735. <http://dx.doi.org/10.1037/0021-9010.78.5.723>
- Stumpf, S. A., Brief, A. P., & Hartman, K. (1987). Self-Efficacy Expectations and Coping with Career-related Events. *Journal of Vocational Behaviour*, 31(2), 91-108. [http://dx.doi.org/10.1016/0001-8791\(87\)90037-6](http://dx.doi.org/10.1016/0001-8791(87)90037-6)
- Weinberg, R. S., Gould, D., & Jackson, A. (1979). Expectations and Performance: An Empirical Test of Bandura Self-Efficacy Theory. *Journal of Sport Psychology*, 1(4), 320-331.
- WHO. (2002). The World Health Organisation Health and Work Performance Questionnaire (HPQ). *Journal of Occupational and Environmental Medicine*, 45(2), 156-173.
- Wood, R., & Bandura, A. (1989). Social Cognitive Theory of Organisational Management. *Academy of Management Review*, 14(3), 361-384.

Relationship between School Based Stress and Test Anxiety

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Received: April 19, 2013

Accepted: May 2, 2013

Online Published: May 14, 2013

doi:10.5539/ijps.v5n2p74

URL: <http://dx.doi.org/10.5539/ijps.v5n2p74>

Abstract

A total of 267 junior and senior high school students (grades 7,8,9,10,11,12; ages 12-19) with relatively more informants identifying as females (57.4%) compared to males (42.6%) and more junior high school students (68.3%) than high school students (31.7%), responded to the German Test Anxiety Inventory (TAI-G) (Hoddapp & Benson, 1997) and the School Situation Survey (SSS) (Holmes & Gable, 1989). Pearson product moment analyses yielded significant relationships between most of the TAI-G scales and SSS scales as well as between the scales and sex, age, and grade level. Multiple linear regression analyses significantly identified Academic Stress ($p < .001$) and Age ($p < .05$) as predicting Worry; Academic Stress ($p < .001$), Emotional Stress ($p < .001$), and Physiological Stress ($p < .001$) predicting Emotionality; Peer Interaction ($p < .01$) and Academic Self-Concept ($p < .001$) predicting Confidence; Academic Self-Concept ($p < .001$) and Behavioral Stress ($p < .05$) predicting Interference; and Academic Stress ($p < .001$), Academic Self Concept ($p < .001$), Emotional Stress ($p < .01$), Physiological Stress ($p < .01$), and Age ($p < .01$) predicting TA total score; thus supporting the use of the Transactional Model of Stress and Coping as a general framework for understanding TA.

Keywords: school stress, test anxiety, adolescence, transactional model, junior high, senior high

1. Introduction

The Transactional Model of Stress and Coping (TMSC; Lazarus & Folkman, 1984) posits that anxiety emerges from stress when one perceives that his or her coping resources will not provide adequate support for dealing with presenting stress. This perceived mismatch between a presenting task and one's ability to deal with that task is considered stressful and can lead to anxiety. Accordingly, test anxiety is best understood through analyses of its' precipitating stressors within schools.

1.1 School Based Stress

Educational reform initiatives in North America, the United Kingdom (Polesel, Dulfer, & Turnbull, 2012) and Australia (Dulfer, Polesel, & Rice, 2012) have been the focus of a great deal of controversy in recent years. Such reforms include high stakes testing, higher teacher accountability, and pressure to achieve academic goals, to name a few. Advocates of these reforms suggest that these reforms serve to provide evidence of funding effects, track school and student performance, and to increase achievement skills among students. There is much evidence; however, that suggests that these reforms may be leading to negative outcomes among students, teachers and their families. The negative impact of these reforms on student health and well being, especially with regard to student stress, is a common concern emerging from the literature.

Helms and Gable (1989) developed the School Situation Survey (SSS) in order to measure school-related stress. The model includes two broad domains: (1) Sources of Stress (i.e., Academic Stress, Teacher Interactions, Peer Interactions, and Academic Self-Concept) and (2) Manifestations of Stress (i.e., Emotional, Behavioral, and Physiological). According to Helms and Gable (1989), academic stress is a primary source of school-based stress due to (among other things) rising academic achievement standards and continual monitoring of student achievement by way of testing. Another source of school-based stress is negative teacher-student interactions. Teachers report numerous role-related factors that indirectly lead to stressful interactions with students. These include extended working hours, increased paperwork, verbal abuse from students, general lack of support from administration, and poor resources (Smith, 2007). Helms and Gable (1989) also consider student-peer interactions to be a potential source of student stress. For example, adolescents between the ages of 11 and 15

demonstrate low levels of social support seeking, opting instead to use maladaptive strategies such as resignation, rumination, aggression, and avoidance (Roecker, Dubow, & Donaldson, 1996). Low academic self-concept is another potential source of school stress. For example, students who are challenged by academics typically have low academic self-concepts that contribute to their stress (Grolnick & Ryan, 1990; Kistner, Haskett, White, & Robbins, 1987; Priel & Lesham, 1990). The Helms and Gable (1989) model of school stress also refers to Manifestations of Stress in schools. These include the emotional (e.g., frustration, anger), behavioral (e.g., fighting, back talk) and physiological (e.g., stomachaches) responses to stress.

1.2 Test Anxiety

Test Anxiety consists of interacting phenomenological, physiological, and behavioral responses that occur prior to, during, and following a test (Zeidner, 1998). Typically, the test-anxious person perceives that he or she falls short in intellect or preparedness to successfully complete an evaluation. As noted by Zeidner (1998), in order to understand the etiology of TA, it is important to review the TA in light of the TMSC (Lazarus & Folkman, 1984). In linking TA with the TMSC, Zeidner (1998) theorizes that the variation in people's appraisals of evaluative situations contributes to differences in test-anxious reactions. Specifically, in evaluative situations, people high in TA are thought to demonstrate more appraisals of threat, whereas those low in TA view the same situations as challenging. As a result, the test-anxious individual is preoccupied with task-irrelevant or failure-focused thoughts, whereas low test-anxious individuals are task-focused. Sarason and Sarason (1990) outline key cognitive characteristics associated with anxiety which include the appraisal of threat, negative outcome focus, obsessions of inadequacy that intrude on task-oriented thought processes, and the expectation that failure will contribute to loss of self-esteem and/or will be scrutinized by others. These cognitions are thought to serve a counterproductive role during evaluative situations. Excessive worrying about failure and the ignition of physiological symptoms (e.g., rapid heartbeat; Liebert & Morris, 1967), ultimately compound to diminish one's ability to focus on a task (Sarason, 1984), encode information (Mueller, 1979), retrieve important information (Mueller, Elser, & Rollack, 1993) and ultimately, perform adequately on tests.

Sarason and Mandler's (1952) early research demonstrated a link between anxiety and poor test performance. This was followed by the development of the Test Anxiety Scale for Children (TASC; Sarason et al., 1960) which measured TA among children as a unitary construct. The TASC has been researched extensively for half a century, focusing on factor composition, sex differences, and validity (Ferrando, Varea, & Lorenzo, 1999). This research suggested that TA is actually a multidimensional construct, usually involving several factors.

Subsequently, the construct of TA was divided into two fundamental components: Worry and Emotionality (Liebert & Morris, 1967). Worry represented the cognitive concerns relating to failure and consequences of failure, whereas emotionality represented the physiological symptomatology associated with anxiety (e.g., heart racing). Drawing upon this framework, Spielberger (1980) developed the Test Anxiety Inventory (TAI), which became a widely used and popular method of identifying TA for children, as well as for adults. Over a number of years, several studies supported the inclusion of Cognitive Obstruction or Cognitive Interference (McKeachie, 1984; Swanson & Howell, 1996; Tyron, 1980; Wine, 1971). Sarason (1984) agreed, claiming that both worry (i.e., preoccupation with failure, negative self-talk) and cognitive interference (i.e., disruptive/blocking thoughts) could more accurately describe the cognitive domain of TA. As a result, this factor was represented in Sarason's (1984) Reactions to Tests (RTT) scales, developed through factor analysis on a sample of undergraduate students. In an effort to further develop the construct of TA, Carver and Scheier (1984) proposed that Lack of Confidence should be included in the TA framework. Eventually, these contributions led to the development of a commonly utilized and accepted measure of TA in recent research: the German Test Anxiety Index (TAI-G; Hodapp, 1991, 1995). Ensuing research seeking to validate the psychometric properties of the TAI-G in German and American populations demonstrated high reliability and validity across the various sub-domains (Hodapp, 1991, 1995; Hodapp & Benson, 1997; Keith, Hodapp, Schermeller-Engel, & Moosbrugger, 2003; Musch & Broder, 1999). Overall, the research supported that the components of TA include Worry, Emotionality, Interference, and Lack of Confidence (Hodapp, 1991, 1995), with Worry consistently demonstrating a greater negative impact on test performance compared to the other factors (Deffenbacher, 1980; Hembree, 1988; Liebert & Morris, 1967). It is hypothesized that worry contributes to cognitive interference, interrupting testing during the preparation stage as well as concentration and recall during testing (Deffenbacher, 1980; Hembree, 1988; Liebert & Morris, 1967).

1.3 Rational and Aim of the Study

The major aim of this study was to investigate the relationship between school based stress and test anxiety. In this regard, the major question to be addressed was: (1) Do the SSS subscales demonstrate relationships with the

TAI-G subscales and total score? It was predicted that there would be significant relationships and that they would be consistent with the TMSC.

2. Method

2.1 Participants & Procedures

The sample for the study consisted of students (grades 7 to 12) from one public school district in eastern Canada. Participants were randomly selected from a volunteer pool. The final analysis was conducted with the participation of 267 students. Demographic characteristics of the student sample were determined for sex, age, and grade. This analysis revealed that relatively more females (57.4%) than males (42.6%) took part in the study. The age range for students fell between 12 (7.2%) and 19 (1.1%). The grade range for students fell between 7 (20.6%) and 12 (11.1%). Participating schools included 10 junior high schools (i.e., grades 7 to 9) and 5 high schools (i.e., grades 10 to 12). As such, representation was slightly more than twice that for younger/junior high (i.e., approximately 68.3%) students compared to older/senior high (i.e., approximately 31.7%) students.

Once permission from parents, students, and teachers was obtained, one student from each class was randomly selected for participation. The homes of participating students were contacted via phone by the (1st) researcher and two research assistants. The measures were administered over the telephone after a session of practice trials during which all research assistants and the researcher agreed upon a specific framework within which to make introductions and administer the scales via telephone. Using telephone correspondence was a necessary condition required by the school district.

2.2 Measures

TA was assessed using the English version of the German Test Anxiety Inventory (TAI-G; Hodapp & Benson, 1997). Studies have indicated that this instrument is psychometrically sound. Confirmatory factor analysis (Hodapp & Benson, 1997) supported the Liebert and Morris (1967) dimensions of TA (i.e., Worry and Emotionality), as well as Sarason's (1984) Interference, and Carver and Scheier's (1984) Lack of Confidence among a sample of university students. The TAI-G is purported to have strong psychometric properties among college-aged students, as well as mixed samples consisting of college-aged and adolescent students, with each of the four factors (i.e., Worry, Emotionality, Interference, and Lack of Confidence) demonstrating reliability and validity among German and American populations (Hodapp, 1991, 1995; Hodapp & Benson, 1997; Keith et al., 2003; Musch & Broder, 1999; Stober, 2004). Studies analyzing criterion validity consistently report that the Worry factor bears the strongest negative relationship with testing performance compared to other factors (Deffenbacher, 1980; Morris & Liebert, 1969; Seipp, 1996; Zeidner, 1998). Total scores and subscales demonstrate alpha coefficients, ranging from .79 to .94, providing adequate evidence of internal consistency (Hodapp, 1991).

Student stress was assessed using the School Situation Survey (Helms & Gable, 1989), a 34-item self-report measure designed for students in grades 4 through 12. Seven scales comprise this instrument. Within the domain of *Sources of Stress*, Helms and Gable (1989) define teacher interactions as students' subjective perceptions of the attitudes teachers have developed towards them. Academic stress gauges students' feelings towards their academic performance. Peer interactions gauges student-peer relationships and perceptions of the feelings peers have developed towards them. The subscale academic self-concept is designed to assess personal feelings of self-worth, self-esteem, and self-concept with regard to student academic efficacy. Within the domain of *Manifestations of Stress*, Helms and Gable (1989) define emotional manifestations as a measure of feelings (e.g., shyness, fear). This differs from the traditional definition typically assigned to the concept of emotionality within TA research, where physiological symptoms are the focus. Helms and Gable (1989) include a specific category within this domain, physiological manifestations, which account for such symptoms (e.g., nausea, rapid heartbeat). The final subscale within the *Manifestations* domain is behavioral manifestations, assessing overt actions or reactions towards others (e.g., striking out, demonstrating disrespect). As outlined in the manual, this instrument demonstrates adequate psychometric properties supporting its dimensional structure, as well as evidence for reliability, validity, and internal consistency (Helms & Gable, 1989). In terms of internal consistency, alpha coefficients for the subscales range from .68 to .80. Test-retest reliability coefficients obtained over a 3-week period ranged from .61 to .71. In terms of validity, the manual reports factor analytic findings supporting the seven-scale structure of the measure.

3. Results

Table 1 presents descriptive statistics for the TAI-G and SSS scales. Skewness and kurtosis values were computed to test for the normality of the TAI-G and SSS distributions. All of the skewness and kurtosis values

were well within the acceptable range for all scales of the TAI-G and SSS. Cronbach's alpha internal consistency reliabilities for the TAI-G and SSS scales are presented in Table 2. Almost all reliabilities for the SSS subscales were above .70 with the exceptions of Behavioral Stress ($\alpha = .62$) and Physiological Stress ($\alpha = .63$). All of the reliabilities for the TAI-G scales were .80 and above except for Worry ($\alpha = .77$).

Table 1. Descriptive statistics for TAI-G and SSS scales

	<i>N</i>	<i>M</i>	<i>SD</i>	<i>Range</i>
TAI-G (student ratings)				
Worry	263	26.93	5.48	13 – 40
Emotionality	261	14.55	4.51	8 – 32
Lack of confidence	263	10.99	3.76	6 – 23
Interference	262	11.54	4.05	6 – 24
Total	260	63.99	12.20	33 – 108
TAI-G (parent ratings)				
Worry	267	26.75	5.71	13 – 40
Emotionality	264	14.27	4.99	8 – 30
Lack of confidence	265	10.74	3.82	6 – 24
Interference	266	11.40	4.34	6 – 24
Total	263	63.23	13.36	35 – 102
TAI-G (teacher ratings)				
Worry	167	25.96	6.36	10 – 53
Emotionality	165	12.72	3.92	8 – 28
Lack of confidence	166	12.60	4.70	6 – 23
Interference	166	9.85	3.92	6 – 22
Total	165	61.25	12.07	36 – 97
School Situation Survey (student ratings)				
<i>Sources of stress</i>				
Teacher interactions	262	11.70	3.98	6 – 26
Academic stress	262	9.04	3.08	3 – 15
Peer interactions	262	9.90	3.40	6 – 22
Academic self-concept	262	8.56	3.01	4 – 18
<i>Manifestations of stress</i>				
Emotional stress	262	11.63	3.68	6 – 24
Behavioral stress	260	9.65	2.77	6 – 19
Physiological stress	261	6.24	2.54	3 – 15

Table 2. Internal consistency (Standardized Alpha) for TAI-G and SSS scales

	<i>N</i>	<i>Number of items</i>	<i>Reliability</i>
TAI-G			
Worry	263	10	.77
Emotionality	261	8	.80
Lack of confidence	263	6	.84

Interference	262	6	.84
Total	260	30	.86
School Situation Survey			
<i>Sources of stress</i>			
Teacher interactions	262	6	.72
Academic stress	262	3	.77
Peer interactions	262	6	.71
Academic self-concept	262	4	.78
<i>Manifestations of stress</i>			
Emotional stress	262	6	.77
Behavioral stress	260	6	.62
Physiological stress	261	3	.63

4. Correlational Analyses

Pearson product moment correlation coefficients between all TAI-G and all SSS scales were computed and yielded significant positive linear relationships between most of the TAI-G scales and most SSS scales (see Table 3). For practical purposes, only the exceptions will be noted. There was no significant relationship between Worry and Teacher Interactions or Peer Interactions. The analysis did reveal a significant negative correlation between Worry and Behavioral Stress ($r = -.13, p < .05$). There was no significant relationship determined between Emotionality and Behavioral Stress, nor between the TAI-G total score and Behavioral Stress. Table 4 presents the results of correlational analysis investigating relationships between the scales and sex, age, and grade level. In this analysis males were coded 0 and females coded 1. As such, positive correlations specify higher female scores, whereas negative correlations specify higher male scores. Results for sex established a significant correlation with Worry, Emotionality, TAI-G Total Score, Academic Stress, Behavioral Manifestations of School Stress, and Physiological Manifestations of School Stress. These relationships are characterized by higher scores for females on the factors of worry ($r = .20, p < .01$), Emotionality ($r = .21, p < .01$), TAI-G Total Score ($r = .18, p < .01$), Academic Stress ($r = .26, p < .001$), and Physiological Manifestations of School Stress ($r = .22, p < .01$), and higher scores for males on Behavioral manifestations of School Stress ($r = -.26, p < .001$). The results for age showed a significant correlation with Worry, as well as Academic Self – Concept. These relationships are characterized by higher Worry among younger students ($r = -.13, p < .05$) and higher Academic Self Concept scores among older students ($r = .12, p < .05$). Results for grade level were congruent with patterns of significant correlations established for age.

Table 3. Correlations between all TAI-G and SSS subscales

<i>Subtests & Total Scores</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
1. Worry	--					
2. Emotionality	.45***	--				
3. Lack of confidence	.03	.25***	--			
4. Interference	.15*	.42***	.44***	--		
5. Teacher interactions	.03	.17**	.34***	.41***	--	
6. Academic stress	.61***	.52***	.31***	.28***	.21**	--
7. Peer interactions	-.01	.16*	.30***	.25***	.30***	.08
8. Academic self-concept	.15*	.19**	.52***	.50***	.36***	.32***

9. Emotional stress	.29***	.51***	.29***	.35***	.38***	.48***
10. Behavioral stress	-.13*	.03	.16*	.28***	.51***	-.08
11. Physiological stress	.26***	.48***	.22***	.28***	.24***	.44***
12. TAI-G total score	.68***	.79***	.56***	.69***	.32***	.65***
<i>Subtests & Total Scores</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	
7. Peer interactions	--					
8. Academic self-concept	.17**	--				
9. Emotional stress	.28***	.19**	--			
10. Behavioral stress	.19**	.14*	.17**	--		
11. Physiological stress	.28***	.16*	.56***	.08	--	
12. TAI-G total score	.23***	.46***	.52***	.10	.46***	

Note. Sample sizes ranged from $N = 258$ to 263 . * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4. Correlations between TAI-G and SSS Subscales with sex, age, and grade level

	<i>Sex</i>	<i>Age</i>	<i>Grade level</i>
1. Worry	.20**	-.13*	-.14*
2. Emotionality	.21**	-.05	-.04
3. Lack of confidence	.08	.01	.02
4. Interference	-.01	-.00	-.00
5. Teacher interactions	-.06	.00	-.02
6. Academic stress	.26***	-.06	-.06
7. Peer interactions	-.04	.02	.04
8. Academic self-concept	.08	.12*	.14*
9. Emotional stress	.16*	.06	.07
10. Behavioral stress	-.26***	.12	.09
11. Physiological stress	.22**	.04	.06
12. TAI-G total score	.18**	-.08	-.07

Note. Sex is coded a 0 = Male and 1 = Female so that positive correlations indicate higher scores for females and negative correlations indicate higher scores for males. Sample sizes ranged from $N = 241$ to 263 . * $p < .05$. ** $p < .01$. *** $p < .001$.

5. Regression Analyses

Multiple linear regression analyses were conducted on the sample designating all seven SSS subscales, sex, and age as predictor variables and TAI-G subscales and the TAI-G total score as criterion variables. Separate regressions were computed for each TAI-G. For example, the first regression used the TAI-G Worry subscale as

the criterion variable. The seven SSS subscales, sex, and age were entered as the predictor variables. The next regression used a different TAI-G subscale as the criterion variable. Each regression used the same predictors. Before computing regressions, variables were tested to be sure that the assumptions for regression analyses were met. All skewness and kurtosis values for all variables were well within the acceptable range. Due to some inadequate reliabilities (noted earlier), adjusted R-squared values are provided in addition to the non-adjusted R-squared values for each regression. The assumption of a linear relationship between independent and dependent variables and the assumption of homoscedasticity were tested by plotting the relationship between the residuals and the standardized predicted value of the dependent variable for each regression. For each regression, the residuals were randomly distributed in no noticeable patterns on either side of zero, indicating that there were no violations of linearity or homoscedasticity.

The first multiple regression examined the TAI-G Worry subscale scores as a function of the seven SSS subscales, sex, and age. The overall model was significant, $F(9, 231) = 19.04, p < .001$, accounting for 42.6% of the variance in Worry (adjusted R-squared value was 40.3%). The analysis identified Academic Stress ($p < .001$) and age ($p < .05$) as significant predictor variables, with higher Academic Stress and younger student age predicting higher Worry scores. This pattern remained even when controlling for sex and age. A second multiple regression examined the TAI-G Emotionality subscale scores as a function of SSS scales, sex, and age. The overall model was significant, $F(9, 229) = 23.53, p < .001$, accounting for 48.0% of the variance in Emotionality (adjusted R-squared value was 46.0%). The analysis identified Academic Stress ($p < .001$), Emotional Stress ($p < .001$), and Physiological Stress ($p < .001$) as significant predictor variables, with higher stress scores predicting higher Emotionality scores. These patterns remained even when controlling for sex and age. A third multiple regression examined the TAI-G Lack of Confidence subscale scores as a function of SSS scales, sex, and age. The overall model was significant, $F(9, 231) = 14.22, p < .001$, accounting for 35.6% of the variance (adjusted R-squared value was 33.1%). The analysis identified Peer Interactions ($p < .01$) and Academic Self-Concept ($p < .001$) as significant predictor variables, with higher Peer Interactions or Academic Self-Concept scores predicting higher Lack of Confidence scores. These patterns remained even when controlling for sex and age. A fourth multiple regression examined the TAI-G Interference subscale scores as a function of SSS scales, sex, and age. The overall model was significant, $F(9, 230) = 17.69, p < .001$, accounting for 40.9% of the variance (adjusted R-squared value was 38.6%). The analysis identified Academic Self-Concept ($p < .001$) and Behavioral Stress ($p < .05$) as significant predictor variables, with higher Academic Self-Concept or Behavioral Stress scores predicting higher Interference scores. These patterns remained even when controlling for sex and age. A final multiple regression examined the TAI-G total subscale scores as a function of SSS scales, sex and age. The overall model was significant, $F(9, 228) = 44.37, p < .001$, accounting for 63.7% of the variance (adjusted R-squared value was 62.2%). The analysis identified Academic Stress ($p < .001$), Academic Self-Concept ($p < .001$), Emotional Stress ($p < .01$), Physiological Stress ($p < .01$) and age ($p < .01$) as significant predictor variables, with higher SSS scores on those scales and younger age predicting higher TAI-G total scores. These patterns remained even when controlling for sex and age.

6. Discussion

The results of the correlational analyses yielded significant positive linear relationships between most of the TAI-G scales and most SSS scales. These results are highly consistent with predictions derived from the Transactional Model of Stress and Coping; thus providing significant evidence for the use of this model as a theoretical foundation for the study of TA. The results yielded positive relationships between females and Worry, Emotionality, TAI-G Total Score, Academic Stress, and Physiological Manifestations of School Stress, as well as a significant relationship between males and Behavioral Manifestations of School Stress. These findings corroborate previous research findings and suggest a female predisposition for developing TA (Ferrando et al., 1999; Gierl & Rogers, 1996; Hembree, 1988; Seipp & Schwarzer, 1996; Wren & Benson, 2004; Zeidner & Schleyer, 1999). In this regard, this study suggests that the TAI-G factors of Worry and Emotionality, as well as the Total Score, present particular problems for females. Results associated with the SSS indicate that academic stress is present among females when they endorse Worry and Emotionality. Furthermore, the SSS results indicate that females experience Physiological Manifestations of School Stress, whereas males experience Behavioral Manifestations of School Stress. The results also indicate that although females endorse Academic School Stress to a greater degree than males, as well as TA factors of Worry and Emotionality, these problems among females may easily go unnoticed by outside observers compared to males because females appear to experience stress and anxiety symptoms physiologically and by worrying, whereas males tend to act out.

The results for age and grade established a significant correlation with Worry, as well as Academic Self-Concept. These relationships are characterized by higher Worry scores among younger students and higher Academic

Self-Concept scores among older students. Results for grade level were congruent with the patterns of significant correlations established for age. These results corroborate the Manly and Rosemire (1972) study, which suggested that TA prevalence (in this case Worry), is highest at the junior high level compared to the senior high level. Based on the TMSC, this decline in Worry would theoretically result from a decline in stress. From the results of this study, there appears to be an increase in Academic Self Concept among older adolescents, which may account for the decrease in Worry scores among older teens. Compared to older teens, it would appear that the cognitive component of negative outcome focus (i.e., Worry) may present a particular problem among younger teens, especially with regard to how their skills in school are assessed. The results call for further research investigating the possibility that better transitional, as well as emotional supports for students from the elementary levels of education to junior high might help alleviate fear of failure in school and develop a healthy Academic Self-Concept at an earlier age.

The results from the first and second multiple regressions showed that higher Academic Stress was predictive of higher Worry and higher Emotionality. Thus, one can also say that Worry and Emotionality scores differ as a function of academic stress scores—students with higher Academic Stress scores will have higher Worry and Emotionality scores, and students with lower Academic Stress scores will have lower Worry and Emotionality scores. This data suggests that the original two-factor model including Worry and Emotionality (Liebert & Morris, 1967) of TA is subject to variation as a function of academic stress. This is especially important to know because Worry is considered the most influential TA factor, presenting the most significant barrier to actual testing performance compared to the other factors (Deffenbacher, 1980; Hembree, 1988; Liebert & Morris, 1967; Mueller, 1993). Consistent with the TMSC, intervention strategies should aim toward alleviating Academic Stress among students in an effort to reduce levels of Worry and Emotionality and, possibly, enhance test performance. Future research should be conducted to examine the efficacy of such interventions.

A third multiple regression showed that School Stressors, Peer Interaction, and Academic Self-Concept were predictive of Lack of Confidence on the TAI-G. From the theoretical perspective of the TMSC, these results suggest that negative peer interactions and poor academic self-concept may diminish one's confidence in his or her ability to be successful on tests. This corroborates previous research suggesting that academic self-confidence is enhanced through peer support (Sarason & Sarason, 1994). Moreover, it suggests that social supports during testing might boost one's confidence and lead to better test performance. The data also suggests that intervention strategies aimed at developing student confidence with respect to testing should focus on developing adaptive peer interactions.

The results also revealed that school stress associated with poor academic self-concept also predicted Lack of Confidence towards testing. This is not surprising because both subscales are measuring constructs that are very much alike. Academic self-concept is measuring a broader school stress associated with confidence in one's ability to be successful in school, whereas Lack of Confidence is measuring anxiety associated with confidence in one's ability to be successful in school tests. The finding does, however, suggest that the Lack of Confidence factor of TA is possibly a subcomponent of a broader, more generalized problem related to a poor academic self-concept. In other words, Lack of Confidence towards testing may not be specific to testing situations alone.

A fourth multiple regression showed that school stress associated with Academic Self-Concept was predictive of higher problems associated with the TA factor Interference. During the early development of the construct of TA, several studies supported the inclusion of Cognitive Obstruction or Cognitive Interference (McKeachie, 1984; Swanson & Howell, 1996; Tyron, 1980; Wine, 1971). This study lends further support to the separation of Worry and Cognitive Interference into two distinct factors of the cognitive domain of TA. Specifically, the first multiple regression indicated that Worry was predicted by academic stress. Academic stress did not, however, predict Cognitive Interference in this study. Instead, this analysis demonstrated that school stress associated with academic self-concept was a predictor of Cognitive Interference. This finding suggests that problems associated with academic self-concept could generate intrusive thoughts that might diminish one's concentration levels during tests. This pattern, however, does not seem to be associated with failure focused thoughts because it is not predictive of the Worry factor of the TAI-G. Further research should investigate what types of thoughts are generated when students are experiencing problems with academic self-concept. If not Worry/failure focused, then there must be other intrusive thoughts that interfere with concentration levels and possibly test performance.

This analysis also demonstrated that Behavioral Manifestations of School Stress predicts Cognitive Interference on the TAI-G. This seems plausible, as maladaptive overt behavioral reactions to school stress could very well divert from one's focus during testing. According to TSMC, this result suggests that interventions designed to enhance concentration during testing by reducing cognitive interference should target stressors associated with academic self-concept and provide alternative strategies to maladaptive behavioral reactions to school stress.

Future studies should investigate the impact of such interventions on Cognitive Interference and actual testing performance.

A final multiple regression indicated that higher scores on Academic Stress, Academic Self-Concept, Emotional Manifestations of School Stress, Physiological Manifestations of School Stress, and younger age were predictive of higher TAI-G total scores. Since academic progress is often gauged through testing in school, and the TMSC holds that stress precipitates anxiety, it stands to reason that Academic Stress would predict general TA. This underscores the need to design intervention strategies to reduce academic stress in schools. Further research is required to determine how this might occur. Problems associated with Academic Self-Concept also predicted the TAI-G Total Score, suggesting that a diminished sense of one's ability to be successful in academics may be facilitative of TA. Therefore, enhancing academic self-concept should be included in intervention strategies designed to reduce TA. Further research should investigate how this can be achieved, as well as whether such interventions impact testing performance.

The results also indicated that Emotional and Physiological Manifestations of school stress predict the TAI-G total score. In other words, emotional reactions to stress (e.g., anger, crying, and frustration) and bodily symptoms (e.g., stomachaches, headaches) appear to impact the TAI-G total score, again underscoring the need to develop interventions that provide students with alternative coping strategies. With regard to emotional reactions, students may benefit from learning to react to school stress in a more adaptive manner. With regard to physiological reactions, students may benefit from learning relaxation strategies. Finally, younger age predicted the TAI-G total score, suggesting that younger students demonstrate difficulties with general TA to a greater extent than their older counterparts. Again, this underscores the need to reduce school stress and anxiety from very early on in students' school careers.

7. Conclusion

Using the TMSC as a theoretical guide, this study demonstrated some very important relationships between various types of school stress and the four factors of TA. Future research should be directed toward corroborating these findings.

References

- Carver, C. S., & Scheier, M. F. (1984). Self-focused attention in test-anxiety: A general theory applied to a specific phenomenon. In H. M. van der Ploeg, R. Schwartz, & C. D. Spielberger (Eds.), *Advances in test anxiety research* (vol. 3, pp. 3-20). Swets & Zeitlinger, Lisse, The Netherlands.
- Deffenbacher, J. L. (1980) Worry and emotionality in test anxiety. In I. G. Sarason (Ed.), *Test anxiety: Theory, research and application*. (pp. 111-128) Hillsdale, New Jersey: Erlbaum.
- Dulfer, N., Polesel, J., & Rice, S. (2012). The Experience of Education: The impacts of high stakes testing on school students and their families - an educator's perspective. The Whitlam Institute, Sydney. Retrieved April 30, 2013, from http://www.whitlam.org/__data/assets/pdf_file/0010/409735/High_Stakes_Testing_An_Educators_Perspective.pdf
- Ferrando, P. J., Varea, M. D., & Lorenzo, U. (1999). A psychometric study of the Test Anxiety Scale for Children in a Spanish sample. *Personality and Individual Differences*, 27(1), 37-44. [http://dx.doi.org/10.1016/S0191-8869\(98\)00227-X](http://dx.doi.org/10.1016/S0191-8869(98)00227-X)
- Gierl, M. J., & Rogers, W. T. (1996). A confirmatory factor analysis of the Test Anxiety Inventory using Canadian high school students. *Educational and Psychological Measurement*, 56, 315-324. <http://dx.doi.org/10.1177/0013164496056002012>
- Grolnick, W. S., & Ryan, R. M. (1990). Self-perceptions, motivation, and adjustment in learning disabled children: A multiple group comparison study. *Journal of Learning Disabilities*, 23, 177-184. <http://dx.doi.org/10.1177/002221949002300308>
- Helms, B. J., & Gable, R. K. (1989). *School situations survey: Manual*. Consulting Psychologists Press, California.
- Hembree, R. (1988). Correlates, causes, effects, and treatment of test anxiety. *Review of Educational Research*, 58, 47-77. <http://dx.doi.org/10.3102/00346543058001047>
- Hodapp, V. (1991). Das Prüfungsangstlichkeitsinventar TAI-G: Eine erweiterte und modifizierte Version mit vier Komponenten [The Test Anxiety Inventory TAI-G: An extended and modified version with four components]. *Zeitschrift für Pädagogische Psychologie*, 5, 121-130.

- Hodapp, V. (1995). The TAI-G: A multidimensional approach to the assessment of test anxiety. In C. Schwarzer, & M. Zeidner (Eds.), *Stress, anxiety, and coping in academic settings* (pp. 95-130). Francke, Tübingen, Germany.
- Hodapp, V., & Benson, J. (1997). The multidimensionality of test anxiety: A test of different models. *Anxiety, Stress and Coping*, 10, 219-244. <http://dx.doi.org/10.1080/10615809708249302>
- Keith, N., Hodapp, V., Schermelleh-Engel, K., & Moosbrugger, H. (2003). Cross-sectional and longitudinal confirmatory factor models for the German Test Anxiety Inventory: A construct validation. *Anxiety, Stress, and Coping*, 16, 251-270. <http://dx.doi.org/10.1080/1061580031000095416>
- Kistner, J., Haskett, M., White, K., & Robbins, F. (1987). Perceived competence and self-worth of LD and normally achieving students. *Learning Disability Quarterly*, 10(1), 37-44. <http://dx.doi.org/10.2307/1510753>
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Liebert, R. M., & Morris, L. W. (1967). Cognitive and emotional components of test anxiety: A distinction and some initial data. *Psychological Reports*, 20, 975-978. <http://dx.doi.org/10.2466/pr0.1967.20.3.975>
- Lufi, D., Okasha, S., & Cohen, A. (2004). Test anxiety and its effect on the personality of students with learning disabilities. *Learning Disabilities Quarterly*, 27, 176-183. <http://dx.doi.org/10.2307/1593667>
- Manley, J., & Rosemier, R. (1972). Developmental trends in general and test anxiety among junior and senior high school students. *The Journal of Genetic Psychology*, 120, 219-226. <http://dx.doi.org/10.1080/00221325.1972.10532235>
- McKeachie, W. J. (1984). Does anxiety disrupt information processing or does poor information processing lead to anxiety? *International Review of Applied Psychology*, 33, 187-203. <http://dx.doi.org/10.1111/j.1464-0597.1984.tb01428.x>
- Morris, L. W., & Liebert, R. M. (1969). Effects of Anxiety on Timed and Untimed Intelligence Tests: Another Look. *Journal of Consulting and Clinical Psychology*, 240-244. <http://dx.doi.org/10.1037/h0027164>
- Mueller, J. H. (1979). Test anxiety and the encoding and retrieval of information. In I. G. Sarason (Ed.), *Test Anxiety: Theory, Research & Applications*. Hillsdale, NJ: Laurence Erlbaum Associates.
- Mueller, J. H., Elser, M. J., & Rollack, D. N. (1993). Test anxiety and implicit memory. *Bulletin of the Psychonomic Society*, 31(6), 531-533.
- Musch, J., & Broder, A. (1999). Psychometrische Eigenschaften und Validität des multidimensionalen Prüfungsangstlichkeitsinventars TAI-G [Psychometric properties and validity of the multidimensional test anxiety inventory TAI-G]. *Zeitschrift für Pädagogische Psychologie*, 13, 100-105. <http://dx.doi.org/10.1024/1010-0652.13.12.100>
- Polesel, J., Dulfer, N., & Turnbull, M. (2012). The Experience of Education: The impacts of high stakes testing on school students and their families – literature review. The Whitlam Institute, Sydney.
- Priel, B., & Leshem, T. (1990). Self-perceptions of first- and second-grade children with learning disabilities. *Journal of Learning Disabilities*, 23, 637-642. <http://dx.doi.org/10.1177/002221949002301013>
- Roecker, C. E., Dubow, E. F., & Donaldson, D. (1996). Cross-situational patterns in children's coping with observed interpersonal conflict. *Journal of Clinical Child Psychology*, 25, 288-299. http://dx.doi.org/10.1207/s15374424jccp2503_5
- Sarason, I. G. (1984). Stress, anxiety, and cognitive interference: Reactions to tests. *Journal of Personality and Social Psychology*, 46, 929-938. <http://dx.doi.org/10.1037/0022-3514.46.4.929>
- Sarason, S. B., Davidson, K. S., Lughthall, F. F., Waite, R. R., & Ruebush, B. K. (1960). *Anxiety in elementary school children*. New York, NY: Wiley.
- Sarason, I. G., & Sarason, B. R. (1990). Test anxiety. In H. Leitenberg (Ed.), *Handbook of social and evaluation anxiety* (pp. 475-496). New York: Plenum.
- Sarason, B. R., & Sarason, I. G. (1994). Assessment of social support. In S. A. Shumaker, & S. M. Czajkowski (Eds.), *Social support and cardiovascular disease* (pp. 41-63). New York: Plenum Press.
- Sarason, S. B., & Mandler, G. (1952). Some correlates of test anxiety. *Journal of Consulting and Clinical Psychology*, 47, 810-817.

- Seipp, B., & Schwarzer, C. (1996). Cross-cultural anxiety research: A review. In C. Schwarzer, & M. Zeidner (Eds.), *Stress, anxiety, and coping in academic settings* (pp. 13-68). Tübingen, Germany: Francke-Verlag.
- Smith, T. (2007). How do state level induction and standards based reform policies affect induction experiences and turnover among new teachers. *American Journal of Education*, 113, 273-311. <http://dx.doi.org/10.1086/510168>
- Spielberger, C. D. (1980). *Preliminary professional manual for the Test Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Stober, J. (2004). Dimensions of test anxiety: Relations to ways of coping with pre-exam anxiety and uncertainty. *Anxiety, Stress, & Coping*, 17(3), 213-226. <http://dx.doi.org/10.1080/10615800412331292615>
- Swanson, S., & Howell, C. (1996). Test anxiety in adolescents with learning disabilities and behavior disorders. *Exceptional Children*, 62, 389-397.
- Tyron, G. S. (1980). The measurement and treatment of test anxiety. *Review of Educational Research*, 50, 343-372. <http://dx.doi.org/10.3102/00346543050002343>
- Wine, J. D. (1971). Test anxiety and direction of attention. *Psychological Bulletin*, 76, 92-104. <http://dx.doi.org/10.1037/h0031332>
- Wren, D. G., & Benson, J. (2004). Measuring test anxiety in children: Scale development and internal construct validation. *Anxiety, Stress and Coping*, 17(3), 227-240. <http://dx.doi.org/10.1080/10615800412331292606>
- Zeidner, M. (1998). *Test anxiety: The state of the art*. New York: Plenum Press.
- Zeidner, M., & Schleyer, E. (1999). Test anxiety in intellectually gifted students. *Anxiety, Stress, and Coping*, 12, 163-189. <http://dx.doi.org/10.1080/10615809908248328>

Therapeutic Strategies (Resiliency & Self-Control) in Reducing Late Adolescents' Risky Smoking Behaviour in Oyo State, Nigeria

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Received: February 28, 2013

Accepted: April 1, 2013

Online Published: May 21, 2013

doi:10.5539/ijps.v5n2p85

URL: <http://dx.doi.org/10.5539/ijps.v5n2p85>

Abstract

Cigarette Smoking is one of the risky behavioural problems of exploration and experimentation of the adolescents. One of every six Nigerian adolescents is a smoker, hence the adolescents need help. This study investigates the efficacy of resiliency and self-control strategies on the management of late adolescents' risky smoking behavior. The study adopted experimental design with a 3x2 factorial index. 120 senior secondary school students were randomly selected from three secondary schools, consisting of only male students with diverse characteristics. The treatment lasted for eight weeks. Adolescents Smoking Behaviour Assessment Questionnaire was used for the study. Statistical Package for Social Sciences (SPSS) was adopted for the reliability with internal consistency of 0.95 ($r=0.95$). The choice of items and its selection determined the content validity, with 25 items finally used. Two hypotheses were postulated and tested at 0.05 level of significance. The findings reveal that self-control strategy significantly affect smoking behaviour of the late adolescents ($F_{(1, 39)}=18.103$, $P<0.05$). Also resiliency strategy significantly affect the smoking behavior of the late adolescents ($F_{(1, 39)}=15.883$, $P<0.05$). The two strategies are effective in the management of late adolescents' risky smoking behaviour. The duo can always complement each other in treatment.

Keywords: therapeutic strategies (resiliency & self-control), late adolescents, smoking behaviour

1. Introduction

Adolescence is the phase of life between ages 0-19 years (WHO, 1993). It is believed that more than one – fourth of the world population of 6 billion is between the ages of 10 and 24 and this is the largest group ever to enter adulthood (Boroffice, 2004). This period is marked by significant changes. Physically, the adolescent experiences puberty that brings about development of secondary characteristics and the attendant emotional and intellectual changes. Experimentation and exploration are believed to be the hallmark of adolescence. The adolescent tends to develop a feeling of autonomy of independence from adult control, as he/she acquires some of the skills necessary for functioning in the adult world. Buckingham (1990) described the stage as a time of growing, trying new things, studying and learning. It is well known that rebellion or as a sign of maturity but it ends up being addictive behaviour (Vardavas, 2010).

According to world health organization (WHO, 2011), smoking is the leading preventable cause of disease and premature death in the world. Yet the world consumption of cigarettes is estimated at around six hundred billion cigarettes per year. The total number s to the grave annually; this includes both passive and active smokers. Smoking is becoming one of the important mortality risk factors not only in industrialised countries but also in developing countries. Many smokers begin during adolescence or early adulthood (The World Health Organisation & the Institute for Global Tobacco Control, John Hopkins School of Public Health 2001). Flore, Jean Baker (2008) also asserted that Tobacco addiction usually begins in childhood or adolescence. Numerous reports have documented the health status of youths in Nigeria, America and other industrialized as well as least developed countries. Young people are highly vulnerable to the profound changes in the social environment that have occurred recently and which have considerable effects on their health. The National Longitudinal Study of Adolescent Health (Minnesota Adolescent Health Action Plan, 2002), American school based study of the health related behaviour of adolescents, designed to measure; the social settings of adolescents' lives in which adolescent connect to their social world, and the influence of these social settings, seem to corroborate the assertions of Moronkola and Aremu (2004) that unknown to the adolescents, most of the contending challenges

force them into taking risks which usually have future health implications. In view of this, threats to the adolescents' health stem primarily from their risky behavior. The use of tobacco poor nutrition and sedentary life styles can lead to health problems in later years (Hawkin, Catalano & Miller, 1992).

Cigarettes, the most popular method of smoking consist of finely shredded tobacco rolled in lightweight paper. Scientists have made tremendous success in establishing the much needed fact that cigarette smoke contains various toxic substances that trigger off or exacerbate the tobacco related diseases. The chemical substances in cigarette smoke which are of medical importance can be summarized as cancer producing substances, irritants, nicotine, carbon-monoxide and other chemically active gases including oxides of nitrogen and hydrogen cyanide. Each year tobacco claims the lives of some 2-5 million people, this figure is estimated to reach 8 million by the year 2025 (Mackay, 1990). Smoking has been found to have an effect on the smokers as mentioned in population reports published by Population Information Programme of the John Hopkins University, U.S.A. It shows that the use of tobacco is one of the foremost public health problems in the world. The death rates of men who smoke cigarette were about ten times higher for lung cancer, five times higher for bronchitis, emphysemas and asthma, and two to three times higher for heart disease. The result also revealed that tobacco related diseases, subtracted five to ten years from the life of an average smoker. For all smokers the risk of death increased progressively with the amount of cigarettes smoked.

World Bank (2004) reports on Tobacco control and the attainment of the Millenium Development Goals reported that one of every six students in Nigeria admitted to smoking cigarettes. Mr. Eze Eluche, the Executive Director of the people against Drug Dependence and Ignorance, says smoking among students in Nigeria may even be more common than studies reveal, that the influx of tobacco multinationals hold great danger for the future. And that we should concern ourselves with what may happen in the future because tobacco companies are targeting youths and making it look as if it is cool to smoke (Punch, June 13, 2006).

Some research has been carried out on the effects and implications of cigarette smoking on the smokers and the society. Nichiter and Cartwright (1991) reviewed the data on tobacco cultivation and its impact on ecology, global smoking trends, the economy of the tobacco industry, cigarette marketing, and projected levels of morbidity. They focused on the effects of smoking, not just on the consumer but also on the household. Adelman, Duggan, Hauptman, Joffe (2001) revealed in their study that a school based curriculum for adolescent smoking cessation is more effective than an informational pamphlet and reduces cigarette use by adolescents. Redmond (2002) in this study, smoking reduction among high school seniors, found that the most effective variables involve. Smoking related beliefs and perfection, particularly in anticipated future smoking status, attempted quitting number of smoking friends, and perceptions of other smokers. Cigarette smokers have a higher risk of developing a number of chronic disorders. Consequences of smoking include fatty build ups in arteries, several types of cancer and chronic obstructive pulmonary disease (U.S. Public Health Services, 1997). Igwe (1992) opened in his finding that improved family and community support would prevent many youths in Nigeria from risk behaviour including smoking, drinking alcohol and illicit drugs.

In order to curb this nefarious activity of the adolescents in their smoking behaviour, resiliency and self-control strategies have been identified suitable. For the past three decades, resilience research has grown in popularity and various models and data have emerged as well as criticism about the usefulness of this construct in psychology (Masten, 2001). Resilience simply refers to the development of competence in the face of adversity. Several studies have uncovered a core set of factors that have consistently been shown to promote competence despite adversity. There are other integrations involving these several levels that are involved in the design and delivery of successful prevention programmes for at-risk youth. These factors include relationships with caring pro-social adults, good problem-solving skills, and good intellectual functioning (Masten & Coatsworth, 1998). Risk and protective factors are not just opposite side of the same coin, protective factors exert their benefits only when a risk is present (Rutter, 1987). All the necessary ingredients for resiliency are embedded in the stakeholders such as the individual adolescent, family, peer, work-setting and community.

Self-control strategy is another intervention that is suitable in reducing the smoking behaviour of the late adolescents. One treatment may not be adequate for treating the problem of the adolescents because their problems have diverse causes (Dishion, Andrew, Kavangh, Sobermand, 1996), hence it calls for more treatments for reasonable cure. It is clear to a greater extent that self-control techniques are subject to conflicting reinforcement. In most cases, immediate punishment, discomfort is followed later by reward (Kanfer, 1975). It is under this special reinforcement condition that Kanfer (1972) maintain that a person may exhibit self-control by performing the responses that will avoid future punishment at the expense of present reward thereby refraining from the tempting response that could bring immediate gratification. This indicates that when an adolescent smoker remembers the future danger in smoking, he will voluntarily withdraw from indulging in it, without

anybody forcing him to do so. Having identified self-control as being an appropriate strategy for the management of smoking behaviour, the adolescents need orientation in the skills involved and with their understanding, the skills will increase.

The backbone of this strategy is for the adolescents not to think of themselves as having no will power to cope, they need to think positively to eliminate inner weakness. Self-control, according to Kanfer and Karoly (1972) and Kanfer (1972) is viewed as the final outcome of a three stage self-regulating process involving monitoring, self-evaluation and self-reinforcement which any serious minded person should be able to cope with because it does not require force but skills to go through it successfully. In principle, almost any behavioural problem can be tackled by the application of self-control procedures, provided that the client has the intelligence sufficient to comprehend to carry out such a programme.

1.1 Statement of the Problem

The adolescents are full of life and strength that they usually channel to injurious adventures that can endanger their lives both now and in future. Obioha (2004) in his study concluded that adolescents irrespective of their individual characteristics are vulnerable to cigarette smoking. He later suggested that the government should make appropriate policies prohibiting the sale of cigarette to adolescents and youths generally. This suggestion was supported by ASDA, a leading supermarket in U.K. the above suggestion may not be adequate, because the fundamental human rights may be negated. The late adolescents in their matured age need to participate fully in the eradication of this health hampering habits hence the researcher is employing the two strategies, self-control and resiliency, to reduce their smoking habits.

1.2 Research Hypotheses

The following hypotheses were formulated, and tested at 0.05 level of significance:

- 1) There is no statistically significant difference in the management of smoking behaviour scores between the late adolescents exposed to self-control and the control group.
- 2) There is no statistically significant difference in the management of smoking behavior scores between the late adolescents exposed to resiliency and the control group.

2. Methodology

2.1 Research Design

The study adopted a pre-test, post-test, experimental design with a 3x2 factorial design in which there were three rows consisting of the two treatment strategies, resiliency group, self-control group and the control group (non-treatment groups); and the two columns for the early and late adolescents.

2.1.1 Sample

Adolescents from three secondary schools in Oyo State were subjects for the study. The participants were randomly selected from three schools in Ibadan North Local Government. The researcher worked with selected representation of the population of the entire adolescents (samples). A total of one hundred and twenty (120) participants which were made up of only males from SS II were used, with their ages ranging from 10-14 (early adolescent) and 15-19 (late adolescent).

2.2 Instrumentation

Two instruments were used in this study. The first instrument, Smoking Behaviour Scale (SBS) was used in screening the SS II students to identify smoking behaviour among the students. After screening, 120 were selected depending on their response to the SBS. The SBS was initially administered to 30 students to know if it would clearly give out students who were prone to smoking cigarette, with the internal consistency coefficient 0.85 ($r = 0.85$). The second instrument, Adolescents Smoking Behaviour Assessment Questionnaire (ASBAQ) developed by the researcher, was also used for data collection. The questionnaire had two sections. Section A explored the demographic information of the participants. Section B contains twenty-five items on Adolescents' Smoking Behaviours. The initial 33 items on ASBAQ were administered to a sample of 45 adolescents in three secondary schools within Ibadan. The section is drawn in a Likert-type format and the items explored smoking behavior habit. The items were subjected to computerized item analysis, using Statistical Package for Social Science (SPSS) and items that recorded low reliability were eliminated remaining 25 items with internal consistency coefficient of 0.95 ($r = 0.95$). The content validity was determined by the choice of items and subsequent item selection procedure ensured that the items actually described Adolescents' Smoking Behaviours among youth.

2.3 Procedure

Preliminary visits were made to the three schools randomly chosen in Ibadan North Local Government Area of Oyo State to reflect the urban nature of the schools within the local government. The main purpose of the visits was to get the researcher acquainted with the schools and to address the students educating them about the importance of the research focus to them, the schools and the society at large. With the information at hand the review of literature, possible treatment goals were then set for this study.

- 1) Three schools from Ibadan North Local Government were randomly chosen. Although, the schools are in the same local government area but they are far from each other on different axis to avoid possible contamination.
- 2) All the arms of SS II in each of the three schools were screened using, the SBS rating scale developed by the researcher. 180 subjects were randomly chosen here and systematically reduced to the required number 120 for the research. The participants were randomly allocated into the two experimental groups and the control group.
- 3) All the treatment groups and the control groups were taught and tested respectively within the school environment but during break time and after school hours. The experiment was completed within a school term to avoid time lag effects on the study.
- 4) All participants group in this study were given a pre-test using the measuring instruments designed for the study. The treatment strategies on Resiliency Training and self-control skills were used on groups I and II respectively. After the treatment, the same instrument was used for all the groups to determine the post-treatment scores.

3. Data Analysis

The Analysis of Co-variance (ANCOVA) was the main statistical procedure utilized by the analysis of available data testing the hypotheses.

4. Results

The first hypothesis states that there is no significant difference in the management of smoking behaviour scores between early adolescents exposed to self-control strategy and the control group.

Table 1. Effects of self-control and control on smoking behaviour of late adolescents

Age	Source	Sum of Squares	df	Mean Square	F	P
15-19 years	Corrected Model	6420.907	2	3210.454	75.47	.000
	Intercept	46.430	1	46.430	1.09	.303
	Pretest	5063.682	1	5063.682	119.04	.000
	Treatment	770.037	1	770.037	18.10	.000
	Error	1573.868	37	42.573		
	Total	50701.000	40			

0.05 Level of significant

Results on Table 1 show that self-control significantly affect smoking behaviour of the late adolescents, the hypothesis is rejected ($F_{(1,39)}=18.103$, $P<0.05$). This means that self-control strategy has positive effect on the late adolescents exposed to the treatment.

The second hypothesis states that there is no significant difference in the management of smoking behaviour scores between the late adolescents exposed to resiliency and the control group.

Table 2. Effect of resiliency and control on the behaviour of the late adolescents

Age	Source	Sum of Squares	Df	Mean Square	F	P
15-19 years	Corrected Model	4403.798	2	2201.899	21.88	.000
	Intercept	757.698	1	757.698	7.329	.010
	Pretest	3472.573	1	3472.573	33.574	.000
	Treatment	1642.758	1	1642.758	15.883	.000
	Error	3826.977	37	103.432		
	Total	535191.000	40			

0.05 Level of significance

Results on table 2 show that resiliency significantly affect smoking behavior in the late adolescents, therefore the hypothesis was rejected ($F_{(1,39)} = 15.883$, $P < 0.05$). This also connotes that resiliency as a strategy helps to reduce the smoking behavior of the late adolescents.

5. Discussion

The findings show clearly that self-control is effective among the late adolescents due to the training they received. This supports the assertion of Dacey and Kenny (1997), that during adolescence, the ability of young people to perceive, comprehend and retain information seems to improve with age and instructions. Thus older adolescents tend to have a greater ability than younger adolescents for dealing with complex social and ethical issues because they have a more complex level of information processing. This reflected in the treated group unlike the control group that did not have the opportunity to exercise such skills under this study because they were not opened to such information. There was also a wide gap between resiliency strategy group scores and that of the control. This shows that resiliency on late adolescents here is effective. This findings negates the criticism of resilience studies by some researchers, who argued that the considerable variation in defining key constructs has undermined the interpretability of the subsequent results; others have contended that some variations in methodology is essential in expanding our knowledge of this construct (Masten, 2001). Despite these inconsistencies in the past researches on resiliency, several studies and researches (Rutter, 1987) including this research work have uncovered a set of factors that have consistently been shown to promote competence despite adversity. The late adolescents in the treated group got the knowledge of the sense of connectedness to their parents and families, their feelings of closeness to their parents, satisfaction with family relationships and their sense of being loved and cared for.

5.1 Implications of the Findings for Social Welfare Counselling Practice

The lives of the adolescents may be more endangered with risky smoking behavior, if caution is thrown into the winds, because smoking is being targeted towards the adolescents, due to their nature and character (Arnett, 2001). For adulthood to be salvaged from the smoking problem, the stage (adolescence) before it has to be considered. Many researches and studies have tried to put the problem of smoking among adolescents under control, but some of the suggestions have not really helped the situation, because the adolescents themselves are not directly involved in the solution process, as supported by Adelman et al (2001). According to them the adolescents' smoking behavior can be reduced through the curriculum instead of the use of pamphlet and campaigning against smoking. This is also the view and stand of the researcher. Both resiliency and self-control strategies could be inculcated in the curriculum just as self-defence is introduced into the educational system of some developed countries such as Japan, China, Great Britain etc. The two strategies would involve the adolescents and the educational stakeholders, such as, family, school, peer, community, workplace and even the government in the implementation.

Smoking behavior of the adolescents would be among several behavioural problems to be curbed. Other areas where adolescents risk their lives will be eradicated, such as violence, reckless driving, robbery, sexual abuse, suicide, teenage pregnancy e.t.c. It is also essential to say that the adolescents who have problem of withdrawal from smoking cigarette can be referred, assisted and treated by a more knowledgeable guidance counsellor for the cessation of smoking behaviour. And any female found in the same problem could as well be helped with the study.

In conclusion, self-control has been long and widely used to solve all behavioural problems people encounter. Even though resiliency is a bit new in the field of psychology but it could be encouraged as part of growth and development because much cannot be acquired through it within a very short period of time. Hence, resiliency is

found to be a good behavior modifying technique that could also join those that are already in use. However, the two strategies, self-control and resiliency can always complement each other in the management of adolescent's risky smoking behavior.

References

- Adelman, W. P., Duggan, A. K., Hanptman, P., & Joffe, A. (2001). Effectiveness of a High School Smoking Cessation Programme Pediatrics. *Journal of Pediatrics*, 107(4).
- Arnet, J. (2001). Adolescents responses to cigarette advertisements for Five "YouthBrands" and one "Adult Brand". *Journal of Research on Adolescence*, 11, 425-443. <http://dx.doi.org/10.1111/1532-7795.00019>
- Boroffice, O. B. (2004). Recreation and Health Behaviour of Adolescents. In I. A. Nwazukwe, Y. Bamgbose, & O. A. Moronkola (Eds.), *Contemporary issues and Researches on Adolescents*. Ibadan: Royal people publishers.
- Buckingham, J. (1990). *Coming Alive*. New Jersey: Plainfield.
- Dishion, T. J., Andew, D. W., Kavangh, K., & Sobermand, L. H. (1996). Preventive Interventions for high-risk youth: The adolescent transition programme. In R. D. Peters, & R. J. McMahon (Eds.), *Preventing Childhood disorders Substance abuse, and delinquency* (pp. 184-214). Thousand Oaks, C.A: Sage.
- Fiore, M-Jaen, C., & Baker, T. (2008). *Treating Tobacco Use and Dependence: Update—Clinical Practice Guideline*. Rockville, MD: US Department of Health and Human Services: Public Health Service.
- Hawkins, J. D., Catalano, R. D., & Miller, J. Y. (1992). Risk and Protective Factors for Alcohol and other Drugs, In Adolescence and Early Adulthood: Implications for substances abuse prevention. *Psychological Bulletin*, 112(1), 64-100. <http://dx.doi.org/10.1037/0033-2909.112.1.64>
- Igwe, S. A. (1992). Nigerians Youth at Risk. *Afr. Health*, 14(4), 45-46.
- Kanfer, F. H., & Karoly, P. (1972). Self-control: A behavioural Excursion into the lion's den. *Behavior therapy*, 3, 388-416. [http://dx.doi.org/10.1016/S0005-7894\(72\)80140-0](http://dx.doi.org/10.1016/S0005-7894(72)80140-0)
- Kanfer, F. H. (1972). The maintenance of behavior by self—generated stimuli and reinforcement. In A. Jacob, & L. B. Sachs (Eds.), *The Psychology of private events* (pp. 39 -57). New York: Academic Press.
- Kanfer, F. H. (1975). Self-Management techniques. In F. H. Kanfer, & A. P. Goldstein (Eds.), *Helping people change*. New York: Pergaon.
- Machay, J. A. (1990). Peter And Parental Influence on Adolescent Substance Use: Path Analysis. *The International Journal of Addiction*, 29(50), 647-996.
- Masten, A. S. (2001). Ordinary magic- Resiliency Processes in Development. *American Psychologist*, 56(3), 227-238. <http://dx.doi.org/10.1037/0003-066X.56.3.227>
- Masten, A. S., & Coatsworth, J. D. (1998). The development of competence in favourable and Unfavourable environment: lessons from successful children. *American Psychologist*, 53, 205-220. <http://dx.doi.org/10.1037/0003-066X.53.2.205>
- Minnesota Adolescent Health Action Plan. (2002). *Being, belonging, becoming*. Minnesota Department of Health.
- Moronkola, O. A., & Aremu, A. O. (2004). The challenges of Adolescents in Nigeria: Health Education, Promotion and counseling Implications. In I. A. Nwazuke, Y. Bamgbose, & O. A. Moronkola (Eds.), *Contemporary Issues and Researches on Adolescents*. Ibadan: Royal People Publishers.
- Nichiter, M., & Cartwright, E. (1991). Saving the children of the Tobacco Industry, Medical Anthropology, Quarterly. *Contemporary issues of Anthropology in International Health*, 5(3), 236-256.
- Obioha, E. E. (2004). The Attitude and Reception of High School Studies in Onitsha Metropolis towards Cigarette Smoking. In I. A. Nwazuke, Y. Bamgbose, & O. A. Moronkola (Eds.), *Contemporary issues and Research on Adolescent*. Ibadan, Royal People Publishers.
- Redmond, W. H. (2002). Smoking Reduction Among High School Seniors: A test of selected indicators. *Journal of Adolescent Health*, 31(5), 417-424. [http://dx.doi.org/10.1016/S1054-139X\(02\)00406-8](http://dx.doi.org/10.1016/S1054-139X(02)00406-8)
- Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry*, 57, 316-331. <http://dx.doi.org/10.1111/j.1939-0025.1987.tb03541.x>
- U.S. Public Health Services. (1997). *The Health Consequence of smoking*. USGPO.

- Vardanvas, C. (2010). *Key Points in Preventing Tobacco Use among Adolescents*. Tobacco induced Diseases 8:1.
- WHO. (1993). *The Health of Young People. A Challenge & A promise*. Geneva.
- World Bank. (2004). Adolescent health and Development in Africa: World Bank brings together policy maker and youth for dialogue on their future Development News Media Center.
- World Health Organization. (2011). WHO report on the global Tobacco epidemics, warning about the dangers of Tobacco. Retrieved from <http://www.who.int/tobacco/globalreport/2011/html>

The Effects of Multisensory Method and Cognitive Skills Training on Perceptual Performance and Reading Ability among Dyslexic Students in Tehran-Iran

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Received: February 12, 2013

Accepted: April 22, 2013

Online Published: May 21, 2013

doi:10.5539/ijps.v5n2p92

URL: <http://dx.doi.org/10.5539/ijps.v5n2p92>

Abstract

The purpose of this research is to examine the effects of cognitive (cognitive skills training) and developmental intervention (sensory-perceptual skills training) on performance and reading ability of dyslexic students. In the study 60 dyslexic students participated and they were divided into three experimental groups including 20 students as the first experimental group (E1), 20 students as the second experimental group (E2), and 20 students as the control group (C). The effectiveness of the 16-session intervention for both E1 and E2 groups was measured by Reading and Dyslexic test (RTD) as screening test at the beginning and followed by the Bender Visual Motor Gestalt Test (BVMGT) and Rey-Osterrieth Complex Figure test (ROCF). The results were analyzed by using analysis of variance (ANOVA) to compare mean scores among the three dyslexic groups after intervention. Findings suggest that developmental intervention significantly improves RDT, BVMGT and memory scale of ROCF performance of dyslexic students. However, cognitive intervention does not appear to significantly increase performance of the students compared to the control group.

Keywords: cognitive skills training, cognitive intervention, sensory-perceptual skills training, developmental intervention, dyslexia

1. Introduction

Dyslexia is a specific learning disability of difficulty with accurate and/or fluent word recognition by poor spelling and decoding ability. Most dyslexic students do not enjoy academic achievement and educational inadequacy leads to poor negative consequences, low self-concept, emotional disorder such as isolation, depression, loneliness, even suicide (Mercer & Pullen, 2005), motivational and social cognition problems, and also behavioral disorders (McNamara, 2007). To determine accurate methods for solving learning difficulties, several theories have been advanced. Amongst many theories, cognitive and developmental approaches are used to answer problems related to learning disabilities. According to the cognitive approach the existence of one or more basic cognitive processing and meta-cognitive deficits causes LD, so that they cannot easily learn how to learn, how to control, and how to direct their thoughts in order to learn (Lerner & Kline, 2006). According to Piaget (1959), the child needs to have time, to perform motor activities. Thus, the development of motor-perceptual activities depends on age and dyslexic students need more time to develop these abilities. On the other hand, Vygotsky's theory suggests that what children can do today with assistance, they will be able to do tomorrow proficiently on their own. According to this theory, with the appropriate guidance, performance can precede competence (Cazdan, 1981). As research has indicated, children with dyslexia have different problems in different stages of information processing such as difficulties with tasks involving processing of visual-spatial information (Weiler, Bernstein, Bellinger, & Waber, 2002; Menghini et al., 2011), more cognitive inhibition (Wang, Tasi, & Yang, 2012), difficulties in higher-order processing or executive control processes (Braiard, 2005; Mercer & Pullen, 2009), deficits in visual attention span (Talcott et al., 2000; Bosse, Tainturier, & Valdois, 2007), difficulties in perceptual processing speed (Tallal, Miller, & Fitch, 1995; Stenneken et al., 2011) and memory deficits (Thomson, 1984). According to this, a considerable amount of literature has been published on remediating cognitive and metacognitive deficits in different stages of information processing in children with

dyslexia. These studies focus on improving attention span and memories strategies in children with dyslexia, practicing to retain abstract information (Vaughn et al., 2003; Vaughn & Roberts, 2007); increasing phonological awareness and skills (Schneider et al., 2000; Vadasy et al., 2002); and training decoding, and word reading, writing exercises, and also practicing comprehension strategies while reading texts (Scammacca et al., 2007).

However, developmental theory assumes immaturity is a serious cause of LD. One of the earliest single-factor theories which was developed by Orton (1937) attributed reading disability to an incomplete cerebral dominance. Orton suggested that the disorder is caused by a neurological-maturational lag resulting in delayed lateral dominance for language which leads to disruptions in perceptual functioning (Olitsky & Nelson, 2006). Orton-Gillingham methodology uses visual, auditory, and kinesthetic associations to help students learn sound-symbol relationships. A large and growing body of literature has indicated the effectiveness of employing a multisensory remedial training program with LDs children (Donah, 2012; Falzona, Callejab, & Muscat, 2011; Hazoury, Oweini, & Bahous, 2009; Joshi, Dahlgren, & Boulware, 2002; Oakland, Black, Stanford, Nussbaum, & Balise, 1998; B. Shaywitz et al., 2004; Torgesen et al., 1999; Thorton, Jones, and Toohey, 1982; Foorman et al., 1997; Mihandoost and Elias, 2001; Dev, Doyle, Valente, 2002).

A study conducted by Thorton, Jones, and Toohey (1982) implemented a multi-sensory teaching program incorporating visual learning with oral prompts and finger-tracing, for students' grades two through six. Findings indicated all of the grade levels - except grade two - showed marked improvement from the pretest to posttest. Another study by Foorman et al. (1997) compared three types of reading interventions for students with reading problems in 2nd and 3rd grades in 13 different schools. A synthetic phonics program based on the Orton-Gillingham method was compared with an analytic phonics program and a sight-word program. It was found that the two phonics groups out-performed the sight-word group on phonological analysis (effect sizes 0.23–0.59) but not on word reading, and the synthetic phonics group out-performed the analytic phonics group on both phonological analysis (ES 0.39) and word reading (ES 0.38).

Mihandoost and Elias (2001) in a research investigated the differences in reading attitude and reading comprehension among dyslexic students following the Barton intervention program. Results of the study showed a significant difference between the control group and the experimental group following the Barton intervention program. They concluded that multi-sensory methods such as the Barton intervention program, can improve the dyslexic children's reading comprehension. Dev, Doyle, and Valente (2002) used the Orton-Gillingham technique, which involves visual, auditory, and kinesthetic modalities, with first grade children at the special education level. These children improved enough in their reading abilities to advance them out of the special education level.

There are not many available studies on dyslexia in Iran compared to other countries (Fallahchai 1995; Seif-e-Naraghy & Nadery 2005; Ghonsooly, 2009; Narimani et al., 2009; Sedaghati et al., 2010). The problem in this research is related to the challenges in providing efficient interventions to modify the perceptual abilities of children with dyslexia. Therefore, the study aims to compare the effectiveness of multisensory method adopted from the Orton-Gillingham program based on maturational lag theory (developmental approach) and cognitive and metacognitive skills training based on information processing theory (cognitive approach) on reading and perceptual abilities of students with dyslexia. The study hypothesizes that the scores in Reading and Dyslexic test (RTD), Bender Visual Motor Gestalt Test (BVMGT) and Rey-Osterrieth Complex Figure test (ROCF) are different for developmental intervention, cognitive intervention, and control groups after intervention. It is expected to observe different test scores among the groups after intervention as each intervention is based on a different underlying theory and the study aims to compare the effectiveness of the developmental and cognitive theories.

2. Method

Primary 3rd grade students with dyslexia who were referred to two Specific Learning Disability Centers in Tehran (Iran) participated in the study. Participants were selected from referrals by ordinary school to public Specific Learning Disability Centers in Tehran, Iran. Criteria for participation in the study were that the dyslexic children: (1) did not have a prior history of treatment for dyslexia, (2) had a confirmed clinical diagnosis of dyslexia using Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) criteria by experienced psychologists in the field of exceptional children who were working in the centers, including (a) difficulty with accurate or fluent word recognition, or both, (b) deficit in word decoding, (c) problem in reading rate, (d) weakness in prosody (oral reading with expression), and (e) reading comprehension (Reading disorder, DSM-IV codes: F81.0/315.00), and finally, (3) met T score of 70 or above on average for five subscales in scale of RDT (Iranian version). From these students, 60 participants were matched by statistical indicators in RDT and

they were divided into three groups (two experimental groups and one control group) using random assignment.

The study compares the effectiveness of multisensory method and cognitive skills training on reading and perceptual abilities of students with dyslexia. Multisensory method focused on three sensory modalities simultaneously (visual, auditory, and tactile) provided in seven lessons in 16 sessions/week. The seven lessons include visual perception skills, auditory perception skills, visual tracking skills, alphabet tracking skills in reading, alphabet track, spell tracking skills in reading, and word tracking skills in reading. Developmental intervention was administered on the E1 group and cognitive intervention was administered on the E2 group, while no related intervention was received by the control group. On the other hand, Cognitive strategies, administered on the E2 group, comprised multiple and flexible strategies, self-monitoring, and meta-cognition to help the participants enhance their perceptual performance and reading skills. The cognitive interventional program was adopted from Swanson (1993), Lerner and Kline (2006), and Christo et al. (2009). The intervention used in this study provided five lessons in 16 sessions/week. The lessons included Memory strategies, Word recognition skills, Reading accuracy and fluency, Self-questioning strategy followed by visual imagery, and Meta-cognition strategies.

This research examined three respective tests including Reading and Dyslexic test (RTD), Bender Visual Motor Gestalt Test (BVMGT), and Rey-Osterrieth Complex Figure (ROCF) test. Reading and Dyslexia Test (RDT) was standardized in Iran and is an individually administered test for diagnosing reading ability in dyslexic students. The test contains five subtests which evaluate reading abilities including Word Reading, Word Chains Reading, Word Comprehension, Phoneme Deletion, and Pseudo-Word Reading. Each response in these subtests is considered as one score and total scores are computed using standard score. The BVMGT as a maturational test which implies a close relationship between the ability to perceive process and reproduce designs was used as a perceptual tool of the study. In this test the examinee had to reproduce on a blank piece of paper one figure at a time. The test provides developmental data on child perceptual maturity and has been recognized as one of the most useful tools in the assessment of neurological functioning (Lerner & Kline, 2006). Scoring is based on drawn difficulties. These difficulties may indicate poor visual-motor abilities that include: angular difficulty, bizarre doodling, closure difficulty, cohesion, collision and so on (Groth-Marnat, 2003). Taylor and Sennott (1984) found that the test as a visual perceptual test is a standard instrument for diagnosis and prescription among LDs, and even the test has long been used in the diagnosis of LDs within the school boards. The Bender-Gestalt test with young children reveals inter-scorer reliability to be very high with correlations of .90 and above. Rey-Osterrieth Complex Figure test (ROCF) permits assessment of a variety of cognitive processes, including planning and organizational skills and problem-solving strategies, as well as perceptual, motor, and memory functions. The test is a neuropsychological assessment in which examinees are asked to reproduce a complicated line drawing, first by copying and then from memory. In the Copy condition, the examinee is given a piece of paper and a pencil, and the stimulus figure is placed in front of the examinee. In the immediate recall condition, after a short delay, the examinee is asked to reproduce the figure from memory. Andre Rey defined 18 units of the drawing and assigned point values of 0 to 2 to each unit depending on the degree to which the units are correctly drawn and placed. Findings of Mirhashemi and Ahadi (2006) show that the test has significant validity (Copying scale, 0.77; $P < 0.01$ and memory scale, 0.51, $P < 0.05$) and reliability (0.624, $P < 0.01$) for memory scale in the Iranian population.

3. Results

In experimental research it is assumed that there is no significant difference between experimental group and control group at pre intervention. Here, prior to testing the research hypotheses, this assumption is investigated using a series of one-way ANOVA. The results are presented in order as follows: A one-way ANOVA was used to test RDT difference among three groups. As expected, the result of pre-intervention among three dyslexic groups did not differ significantly, [$F(2.57) = .178, P = .837$]. The result revealed that null hypothesis related to means differences in RDT among dyslexics at pre-intervention was accepted. Also a one-way ANOVA was used to test BVMGT difference among three groups. As expected, the result of pre-test among three groups did not differ significantly, [$F(2.57) = .662, P = .520$]. The result showed null hypothesis related to means differences in BVMGT at pre intervention was accepted. Likewise a one-way ANOVA was used to test ROCFT (copy scale) difference among three groups. As expected, the result of pre-intervention among three groups did not differ significantly, [$F(2.57) = .605, P = .550$]. The result showed null hypothesis of mean differences in three dyslexic groups in copy scale of ROCFT was accepted. Moreover a one-way ANOVA was used to test ROCFT (memory scale) difference among three groups. As expected, the result of pre-intervention among three groups did not differ significantly, [$F(2.57) = 2.328, P = .107$]. As expected the result showed that null hypothesis of memory scale of ROCFT among dyslexic groups at pre-intervention was accepted.

Table 1. Test scores differences in experimental groups and control group at pre intervention

subscale	Group	N	Mean	SD	F	P
RDT	C	20	63.84	10.75	.178	.837 ^{n.s}
	E1	20	62.31	11.63		
	E2	20	64.54	13.63		
BVMGT	C	20	1.74	1.05	.662	.520 ^{n.s}
	E1	20	1.43	1.35		
	E2	20	1.85	1.18		
ROCFT copy scale	C	20	-2.95	2.22	.605	.550 ^{n.s}
	E1	20	-3.72	2.76		
	E2	20	-3.80	3.09		
ROCFT	C	20	-8.25	1.00	2.33	.107 ^{n.s}
Memory scale	E1	20	-6.74	2.64		
	E2	20	-7.93	2.88		

^{n.s}: Not significant

A one-way between group ANOVA was performed to compare the effect of interventions on RDT score of E1, E2 and control groups. As presented in Table 1, the result revealed that the RDT scores of the three dyslexic groups after intervention was significantly different [$F(2, 57) = 8.55, P < .05$]. The *post hoc* comparison using the tukey test indicated that the mean score of RDT for E1 group (Mean=83.38, SD=9.15) was significantly different from control group (Mean=65.98, SD=13.63). However, E2 group (Mean = 75.09, SD = 16.19) did not differ significantly from that of the control group.

Table 2. Test scores differences in experimental groups and control group after intervention

Variable	Groups						P value
	Control group (n=20)		E1 group (n=20)		E2 group (n=20)		
	Mean	SD	Mean	SD	Mean	SD	
RDT	65.98	13.63	83.38	9.15	75.09	16.19	.001*
BVMGT	1.36	.75	.6	1.16	.89	.82	.040*
ROCF (copy scale)	-2.32	1.93	-2.47	2.9	-1.77	2.5	.639
ROCF (memory scale)	-7.9	1.12	-5.31	2.47	- 6.55	1.74	.00*

*: Significant

The second ANOVA was conducted to investigate BVMGT score difference among the three dyslexic groups. There was a significant difference between BVMGT score of control group, the group receiving developmental intervention (E1), and the group under cognitive intervention (E2) at the $p < .05$ level [$F(2, 57) = 0.04, p < .05$]. Post hoc comparisons using the Tukey HSD test indicated that the mean score for E1 group (Mean=.6, SD=1.16) was significantly less than that of control group (Mean=1.36, SD=.75). In contrast, there was no significant difference between E2 group's mean scores (Mean=.89, SD=.82) compared to those of the control group. Therefore, developmental interventions decreased the mean score error in the dyslexic group under the intervention compared to the control group.

As indicated in Table 1, there was no significant difference among the three groups in ROCF (copy scale) test [$F(2.57) = .451, P = .639$]. However, a significant difference was observed in ROCF (memory scale) among the three dyslexic groups [$F(2, 57) = 9.73, p < .05$]. The *post hoc* comparison using the tukey HSD test indicated that the mean scores for E1 group (Mean = -5.31, SD = 2.47) were significantly different from that of the control

group (Mean = -7.9, SD = 1.12); However, E2 group (Mean = - 6.55, SD = 1.74) was not significantly different from control group.

4. Discussion

The critical issue in explanation, prediction, and management of perceptual abilities in students with dyslexia is whether perceptual disabilities lead to dyslexia as supposed by cognitive impairment or developmental lag and immaturity lead to dyslexia. This study examined the effectiveness of two types of intervention (developmental and cognitive) on the perception and sequential reading ability of dyslexic students. Results showed that the mean score in the group following the developmental intervention (E1 group) was significantly different from the control group in RDT, BVMG test, memory scale of ROCF test. However, no significant difference was observed in copy scale of ROCF test. Besides, findings highlighted that the mean score in the group following cognitive intervention (E2 group) was not significantly different from the control group in most of the variables. Therefore, the effect of multisensory method on performance of learning-based tests was more than cognitive skills training. An explanation for more effectiveness of multisensory method is that the multisensory training builds many visual-auditory associations in learning grapheme-phoneme correspondences through kinesthetic activities, develops attention span to details within letters or words that help in word retrieval from long-term memory, reduces boredom, increases the student's involvement time in learning and finally, it provides more feedback to the instructors (Hazoury et al., 2009; Uhry & Clark, 2005). Consistent with the findings of this research, O'Brien, Cermak, and Murray (1988) showed that interventions can improve visual conditions and for this reason motor performance would be improved. Murray, Cermak, and O'Brien (1990) emphasized that visual-perceptual deficits are the main characteristic of children with developmental dyspraxia. For this reason many occupational therapists treating dyslexic students focus on the visual-perceptual problem, visual-motor difficulties, and motor incoordination. Geschwind and Galaburda (1985) pointed out that dyslexic children have average visual-perceptual skills (cited by O'Brien, et al., 1988).

As students who received developmental intervention performed better than control group, it is also concluded that developmental delay is more likely to be the reason for dyslexia. It should be noted that developmental intervention emphasized developmental delays in several areas of maturation which is the major cause of dyslexia (Lerner & Kline, 2006). Dyslexia happens when students are pressed into performing school tasks before they are capable of doing so. Then the demand of schooling can cause failure by requiring students to carry out something beyond their ability, or readiness, at a given stage of maturation (Bender, 1957, cited by Lerner & Kline, 2006). The development of visual-motor activities depends on perceptual-motor functioning and in line with the developmental approach, dyslexic students need more time to develop these skills. Non-dyslexic people learn in a multisensory way automatically while dyslexic learners have to be trained to see and hear words as they learn. (NIACE, 2004). This study helped to determine the most effective method of intervention for children with dyslexia, and it ultimately helps to implement new special education for all school systems.

The findings of this research basically reflect what Piaget (1959) calls the concrete operational stages; therefore nine year old dyslexic students are still in concrete operational stages. The results of this research parallel those of Murray et al. (1990) which mentioned that the main characteristic of developmental dyslexia is visual-perceptual functioning deficits. Further investigation goals comprising duration of more than six months, follow up tests to study effectiveness of the intervention across time and replication of the research in other populations are recommended.

References

- American Psychological Association. (1972). *Ethical standards of psychologists*. Washington, DC: American Psychological Association.
- Anderson, C. A., Gentile, D. A., & Buckley, K. E. (2007). Violent video game effects on children and adolescents: Theory, research and public policy. <http://dx.doi.org/10.1093/acprof:oso/9780195309836.001.0001>
- Beck, C. A. J., & Sales, B. D. (2001). *Family mediation: Facts, myths, and future prospects*. Washington, DC: American Psychological Association. <http://dx.doi.org/10.1037/10401-000>
- Bender, L. A., & Doell, B. (1957). Biological evaluation of proteins: A new aspect. *British Journal of Nutrition*, 11(02), 140-148. <http://dx.doi.org/10.1079/BJN19570029>
- Bosse, M. L., Tainturier, M. J., & Valdois, S. (2007). Developmental dyslexia: The visual attention span deficit hypothesis. *Cognition*, 104(2), 198-230. <http://dx.doi.org/10.1016/j.cognition.2006.05.009>
- Braiard, R. B. (2005). A Comparison Disabled Children and Non-Learning Disability Children on the Rorschach:

An Information Processing perceptive.

- Cazden, C. (1981). Performance before competence: Assistance to child discourse in the zone of proximal development. *Quarterly Newsletter of the Laboratory of Comparative Human Cognition*, 3(1), 5-8.
- Christo, C., Davis, J., & Brock, S. (2009). *Identifying, Assessing, and Treating Dyslexia at School*. New York: Springer Verlag.
- Dev, P. C., Doyle, B. A., & Valente, B. (2002). Labels needn't stick: "At-risk" first graders rescued with appropriate intervention. *Journal of Education for Students Placed at Risk*, 7(3), 327-332. http://dx.doi.org/10.1207/S15327671ESPR0703_3
- Donah, S. (2012). Site Director, International Multisensory Structured. Retrieved from <http://www.zoominfo.com/#!/search/profile/person>
- Fallahchai, H. (1995). An examination of reading and writing disorders among primary school students. AM, University of Tarbiyat-Modarres, Unpublished MA thesis.
- Falzona, R., Callejab, C., & Muscatc, C. (2011). *Structured Multisensory Techniques in Reading and Learning Patterns*.
- Foorman, B. R., Francis, D. J., Winikates, D., Mehta, P., Schatschneider, C., & Fletcher, J. M. (1997). Early interventions for children with reading disabilities. *Scientific Studies of Reading*, 1, 255-276. http://dx.doi.org/10.1207/s1532799xssr0103_5
- Geschwind, N., & Galaburda, A. M. (1985). Cerebral lateralization. *Archives of Neurology*, 42, 428-459. <http://dx.doi.org/10.1001/archneur.1985.04060050026008>
- Ghonsooly, B. (2009). Dyslexia in Persian Language. *Journal of Language and Literature of Faculty of Letters and Humanities*, 41(3), 247-264.
- Hazoury, K. H., Oweini, A. A., & Bahous, R. (2009). A multisensory approach to teach arabic decoding to students with dyslexia. *Learning Disabilities A Contemporary Journal*, 1, 1-20.
- Joshi, R. M., Dahlgren, M., & Boulware, G. R. (2002). Teaching reading in an inner city school through a multisensory teaching approach. *Annals of Dyslexia*, 52, 229-242. <http://dx.doi.org/10.1007/s11881-002-0014-9>
- Lerner, J., & Kline, W. (2006). *Learning Disability Characteristic & teaching strategies* (10th ed.). Boston: Houghton Mifflin Company.
- McNamara, B. E. (2007). *Learning Disabilities. Bridging the gap between research and classroom practices*. New Jersey: printice Hall.
- Menghini, D., Finzi, A., Carlesimo, A. G., & Vicari, S. (2011). Working Memory Impairment in Children with Developmental Dyslexia: Is it Just a Phonological Deficit? *Journal Developmental Neuropsychology*, 36(2), 199-213. <http://dx.doi.org/10.1080/87565641.2010.549868>
- Mercer, C. D., & Pullen, P. C. (2005). *Students with learning Disabilities* (6th ed.). New Jersey: Prentice Hall.
- Mercer, C. D., & Pullen, P. C. (2009). *Student with learning Disabilities* (7th ed.). New Jersey: Prentice Hall.
- Mihandoost, Z., & Elias, H. (2001). The effectiveness of Barton's intervention program on reading comprehension and reading attitude of students with dyslexia i. *Iran J Psychiatry Behav Sc*, 5(2), 43-52.
- Mirhashemi, M., & Ahadi, H. (2006). Normalization of complex figure test.
- Murray, E. A., Cermak, S. A., & O'Brien, V. (1990). The relationship between form and space perception, constructional abilities, and clumsiness in children. *The American Journal of Occupational Therapy*, 44(7), 623-628. <http://dx.doi.org/10.5014/ajot.44.7.623>
- Narimani, M., Sadeghi, A., Homeily, N., & Siahpoosh, H. (2009). A Comparison of Emotional Intelligence and Behavior Problems in Dyslexic and Non-Dyslexic Boys. *Journal of Applied Science*, 9(7), 1388-1390. <http://dx.doi.org/10.3923/jas.2009.1388.1392>
- NIACE, L. (2004). The National Institute of Adult Continuing Education.
- Oakland, T., Black, J. L., Stanford, G. N. L. N., & R., B. R. (1998). An evaluation of the dyslexia training program: A multisensory method for promoting reading in students with reading disabilities. *Journal of Learning Disabilities*, 31(2), 140-147. <http://dx.doi.org/10.1177/002221949803100204>
- O'Brien, V., Cermak, S. A., & Murray, E. A. (1988). Visual perceptual motor abilities and cllffisiness in children

- with and without learning disabilities. *The American Journal of Occupational Therapy*. <http://dx.doi.org/10.5014/ajot.42.6.359>
- Olitsky, S., & Nelson, L. B. (2006). *The Eye and Reading Disorders* (Vol. 5). Lippincott Williams & Wilkins.
- Orton, S. (1937). Reading, writing and speech problems in children.
- Piaget, J., & Inhelder, B. (1959). La genèse des structures logiques élémentaires.
- Scammacca, N., Vaughn, S., Roberts, G., Wanzek, J., & Torgesen, J. K. (2007). *Extensive reading interventions in Grade K-3: From research to practice*. Portsmouth, NH.
- Schneider, W., Roth, E., & Ennemoser, M. (2000). Training phonological skills and letter knowledge in children at risk for dyslexia: A comparison of three kindergarten intervention programs. *Journal of Educational Psychology*, 92, 284-295. <http://dx.doi.org/10.1037/0022-0663.92.2.284>
- Sedaghati, S., Foroughi, R., Shafiei, B., & Maracy, M. R. (2010). Prevalence of dyslexia in first to fifth grade elementary students, Isfahan, Iran. *Audiol*, 19(1), 1-8.
- Seif-e-naraghy, M., & Nadery, E. (2005). *Specific Learning Disabilities: Stages of Diagnosis and Rehabilitation Methods* (3rd ed.). Tehran: Makial.
- Shaywitz, B. A., Blachman, B., Pugh, K., Fulbright, R., & Skudlarski, P. (2004). Development of left occipito-temporal systems for skilled reading in children after a phonologically-based intervention. *Biological Psychiatry*, 55, 926-933. <http://dx.doi.org/10.1016/j.biopsych.2003.12.019>
- Stenneken, P., Egetemeir, J., Schulte-Körne, G., Müller, H. J., Schneider, W. X., & Finke, K. (2011). Slow perceptual processing at the core of developmental dyslexia: A parameter-based assessment of visual attention. *Neuropsychologia*, 49(12), 3454-3465. <http://dx.doi.org/10.1016/j.neuropsychologia.2011.08.021>
- Talcott, J. B., Hansen, P. C., Assoku, E. L., & Stein, J. F. (2000). Visual motion sensitivity in dyslexia: Evidence for temporal and energy integration deficits. *Neuropsychologia*, 38(7), 935-943. [http://dx.doi.org/10.1016/S0028-3932\(00\)00020-8](http://dx.doi.org/10.1016/S0028-3932(00)00020-8)
- Tallal, P., Miller, S., & Fitch, R. H. (1995). Neurobiological basis of speech: A case for the preeminence of temporal processing. *Irish Journal of Psychology*, 16(3), 194-219. <http://dx.doi.org/10.1080/03033910.1995.10558057>
- Taylor, R., & Sennott, J. (1984). *Navigation system and method*. Google Patents.
- Thomson, M. E. (1984). *Developmental dyslexia: Its nature, assessment and remediation*. Edward Arnold London.
- Thornton, C. A., Jones, G. A., & Toohey, M. A. (1982). A multisensory approach to thinking strategies for remedial instruction in basic addition facts. *Journal for Research in Mathematics Education*, 14(3), 198-203. <http://dx.doi.org/10.2307/748382>
- Torgesen, J. K., Wagner, R. K., Rashotte, C. A., Rose, E., Lindamood, P., & Conway, T. (1999). Preventing reading failure in young children with phonological processing disabilities: Group and individual responses to instruction. *Journal of Educational Psychology*, 91, 579-593. <http://dx.doi.org/10.1037/0022-0663.91.4.579>
- Uhry, J., & Clark, D. B. (2005). *Dyslexia Theory and Practice of Instruction*. Baltimore: York Press, Inc.
- Vadasy, P. F., Sanders, E. A., Peyton, J. A., & Jenkins, J. R. (2002). Timing and intensity of tutoring: A closer look at the conditions for effective early literacy tutoring. *Learning Disabilities Research and Practice*, 17, 227-241. <http://dx.doi.org/10.1111/1540-5826.00048>
- Vaughn, S., & Linan-Thompson, S. (2003). What is special about special education for students with learning disabilities? *The Journal of Special Education*, 37(3), 140-147. <http://dx.doi.org/10.1177/00224669030370030301>
- Vaughn, S., & Roberts, G. (2007). Secondary interventions in reading: Providing additional instruction for students at risk. *Teaching Exceptional Children*, 39, 40-46.
- Wang, L. C., Tasi, H. J., & Yang, H. M. (2012). Cognitive inhibition in students with and without dyslexia and dyscalculia. *Research in developmental disabilities*, 33(5), 1453-1461. <http://dx.doi.org/10.1016/j.ridd.2012.03.019>
- Weiler, M. D., Bernstein, J. H., Bellinger, D., & Waber, D. P. (2002). Information processing deficits in children

with attention-deficit/hyperactivity disorder, inattentive type, and children with reading disability. *Journal of Learning Disabilities*, 35(5), 449-462. <http://dx.doi.org/10.1177/00222194020350050501>

Impact of Social Capital on the Psychological Well-Being of Adolescents

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Received: March 29, 2013 Accepted: May 2, 2013 Online Published: May 21, 2013

doi:10.5539/ijps.v5n2p100

URL: <http://dx.doi.org/10.5539/ijps.v5n2p100>

Abstract

This study examines the impact of social capital and individual/family characteristics on the psychological well-being of 12- to 17-year-old adolescents in the United States. The data were provided by the National Survey of America's Families (NSAF). In order to examine the abovementioned effects, social capital as well as individual/family characteristics are included using ordinary least squares (OLS) regression models. The findings are important since empirical validation of the theoretical relationship between social capital and individual/family characteristics, as well as the psychological well-being of adolescents, is not found in the literature. The concept of social capital in the literature is only elaborated as having three distinct dimensions (bonding, bridging, and linking), which suggests that further research using measurement models should focus on these dimensions in order to explore whether a more precise relationship can be discovered.

Keywords: social capital, psychological well-being, mental health, supports, socialization, adolescence

1. Introduction

Social capital, as a relatively new concept in the fields of social epidemiology and health education research, has drawn much attention in recent years. The term "capital" is often used in economics to describe assets that can be invested in order to generate profits. The term "social capital" in health and behavior research can be defined as the sum of durable, trustworthy, reciprocal, and resource-rich network connections, which are used as an asset to empower a society and its members. Effective health education would benefit by addressing personally owned social capital in order to achieve targeted behavior changes. In the past decade, social capital has become a popular topic and research linking it with health and psychological well-being has become prevalent. Social capital has been considered as the web of cooperative relationships among citizens, which facilitates the resolution of collective action problems (Coleman, 1988) and features of social structure such as levels of interpersonal trust, norms of reciprocity, and mutual aid, which act as resources for such collective action (Coleman, 1988; Putnam, 1995, 2000). Social capital is generally considered to be the characteristics of social relationships rather than of individuals (Coleman, 1988), although the issue is a contentious one. Findings from previous studies in the health literature extensively discuss the positive association between social capital and psychological well-being of adolescents (Coleman, 1988; Dorsey & Forehand, 2003; Furstenberg & Hughes, 1995; Keating, 2000). However, only a few studies have focused on the psychological well-being of adolescents. Although factors in the social environment of adolescents, such as emotional and social development, are important in understanding their behaviors in social relationships or socialization, theoretical explanations have received far less attention. In social capital, the majority of research focuses more on individual aggregation and community. Social capital is positively related to psychological well-being (Coleman, 1988; Putnam, 1995, 2000). Although social capital mainly focuses on an adolescent's neighborhood, school, and community institutions, the social interactions that occur among various individuals in these social environments and settings are also important. The individuals in social capital influence social interactions by their individual characteristics (Veenstra, 2000). No consensus exists in the health research literature regarding the effect of social capital on either psychological well-being or the definition and measurement of social capital, making social capital a challenging issue. Therefore, social capital is a subject that may require further investigation. This study attempts to develop an empirical perspective on social capital that addresses psychological well-being while at least partially addressing definition and measurement issues.

The main objective of this study is to propose and test a model as an empirical application that illustrates the process underlying the relationship between social capital and individual/family characteristics, as well as the psychological well-being of adolescents. First, it highlights the relationships between human capital (socioeconomic status measured by education and income, in particular) and self-rated health status, in addition to the psychological well-being among gender and age groups. Second, it explores the relationships between some human aspects of social capital (social and civic participation and the social-psychological constructs of trust, identity, and commitment, in particular) and self-rated health and psychological well-being before and after controlling sociodemographic and human capital effects. If a relationship exists between the human aspects of social capital/health and psychological well-being, then we have evidence of their compositional effect, especially if the relationship holds after controlling human capital effects. If few relationships of this type exist, then the challenge is renewed to find more intricate pathways through which trust in communities, for example, influences the overall health and psychological well-being.

1.1 Psychological Well-Being

In this study, psychological well-being is defined as emotional status or distress (e.g., symptoms of depression/anxiety) and problem behaviors (e.g., self-efficacy/coping). First, this study considers the importance of the negative outcomes of emotional status or distress as symptoms of depression and anxiety (Aneshensel, 2002). Second, it examines the importance of problem behaviors such as coping skills/self-efficacy, which supports the belief that through the exertion of control, one can influence the outcome of an individual's life events. The emotional and social development of coping skills/self-efficacy in adolescence is critical when helping adolescents maintain positive outcomes and promote higher psychological well-being (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001). Thus, psychological well-being provides not only a positive indicator of adolescent emotional and social development, but it is also a broad enabling factor that maintains optimal mental health. Moreover, psychological well-being is shown to be related to social factors.

1.2 Individual and Family Characteristics

In regard to the family income variable that is controlled, African Americans are found to have a slightly higher risk of depression compared to Caucasians. African Americans are also more likely than Caucasians to consider themselves as being in poor health (Dressler, 1993). Overall, adolescent health status is a good predictor of psychological well-being when controlling satisfaction variables such as job and family satisfaction, as well as social resource and demographic variables (Stones & Kozma, 1986). During the early adolescent stage (10–14 years of age), adolescents often have intense friendships with peers and friends of their own gender, which usually result in one or two close friends. During the middle adolescent stage (15–17 years of age), peer and friend relationships become more group-oriented and often include both genders (Feldman & Elliot, 1990). Finally, adolescent males are often seen as seeking autonomy and separation, while adolescent females strive toward greater interdependence and commitment (Sprinthall & Collins, 1995).

In family characteristics, the relationship between family structure and income is part of a larger issue of whether parental absence itself reduces psychological well-being of adolescents or whether it is just a proxy for economic hardship. If economic hardship were the cause of marital dissolution, then one can conclude that family structure is not paramount when determining the outcome of adolescents. Indeed, financial hardship can contribute toward further family tension and disagreements between spouses, thus increasing the risk of marital dissolution. Studies in the United States and Great Britain showed that a lack of economic resources contributed toward divorce (O'Connor, Pickering, Dunn, & Golding, 1999). This underscores the importance of examining the time order of events where economic deprivation contributes toward family transition instead of perceiving economic resources as a consequence of family change. It is equally important to investigate the direct effects of adolescent health as well as those of the intervening mechanisms on their development and psychological well-being. Conversely, if family disruption forces their circumstances into poverty, then family structure may indeed be harmful toward an adolescent's psychological well-being. This is mostly because family income is much higher in two-parent households and adolescents in two-parent families enjoy greater psychological well-being compared to their single-parent counterparts (Acock & Demo, 1994). For living arrangements, while step-parent families are more financially sound compared to single-parent families, step-parent families still fall behind in relation to families led by biological parents (Thomson, Hanson, & McLanahan, 1994). Finally, the mother's education also has a positive effect on the psychological well-being and socioemotional adjustment of adolescents in first-married families and continuously single-parent families (Hope, Power, & Rogers, 1999). Parental mental health may well be the most important family influence. Since parental mental health can greatly affect how the parent interacts with the child, it ultimately creates higher levels of adolescent psychological well-being and positive health outcomes. Finally, employment for adolescents provides them with access to

wider social networks and resource diffusion, which in turn, positively affects their mental health and psychological well-being (William, Takeuchi, & Adair, 1992).

1.3 Social Capital

Coleman (1988) first suggests that social capital draws upon two main sociological theoretical frameworks: theories of social structure and community effects that address broader macro-level factors, and those of interaction and exchange that address interpersonal exchange and micro-level relationships. He believes that social capital is inherent in the social structure of relationships between actors and among actors, and stresses the importance of family and school systems as the most typical settings for investigating social capital. In addition, he views social capital in terms of the norms and social controls that must be understood and adopted in order to succeed. Cattell (2001) focused on two poor neighborhoods in East London and identified how social participation produced clear benefits in the overall psychological well-being. Factors such as church affiliation, perception of personal social support, and support within the neighborhood and its families were the most direct measures of social capital, which discriminated between the levels of functioning in children (Runyan, Hunter, Socolar, Amaya-Jackson, English, & Landsverk, 1998). Putnam (1995) expands Coleman's (1988) social capital concept and framework and finds that networks in social capital play an important role in the provision of other aspects of social capital. He bases a large part of his influential work in Coleman's (1988) study, preserving the foci on action facilitated by social structure. On the basis of Coleman's (1988) definition of social capital in families and schools, Putnam (2000) extends the definition to apply it toward communities in general. His concept of social capital refers to a "collective asset" and a "common good" of neighborhoods and communities. Putnam (2000) introduces three dimensions of social capital: bonding, bridging, and linking. Bonding refers to interpersonal relationships and social support in relationships among relatively homogeneous groups (e.g., ethnic, religious, or socioeconomic), which strengthen the social ties within the particular group. Bridging refers to institutional relationships and social integration in relationships among heterogeneous groups, which strengthen the ties among such groups. Finally, linking refers to norms, solidarity, and reciprocity of community resources in relationships among individuals and groups from different social strata in a hierarchy in which power, social status, and wealth are accessed by the different groups. Thus, Putnam's (2000) three dimensions of social capital are used in this study.

1.4 Contemporary Development of Social Capital on Psychological Well-Being

Recent research on the psychological well-being of adolescents has received much attention (e.g., Keating, 2000; Coleman, 1988; Dorsey & Forehand, 2003; Furstenberg & Hughes, 1995), and the specific research connecting social capital to health outcomes via a social support mechanism is vast. In this sense, social capital is empirically linked to improved social development or socialization of adolescents (Keating, 2000). In addition, interpersonal interaction and social relationships are produced at the community level primarily through social integration of family members, which are positively related to psychological well-being (Coleman, 1988). Social capital for adolescents is also addressed in their neighborhood as well as their social and community institutions. Dorsey and Forehand (2003) find that one factor is more specific to the parents' own interpersonal networks: the availability of support the parent perceives from friends, coworkers, and neighbors. Furstenberg and Hughes (1995) offer the strongest study in support of the effects of interpersonal-level measures of social capital on young adults with a rich dataset collected longitudinally over the subjects' childhood and adolescence. However, their study is limited by the use of a small and nonrandom sample of adolescents born into poor, African-American single-parent households with teenage mothers. As Portes states, social capital performs functions as sources of family support and benefits through the extra-familial network (Portes, 1998). Several other studies show that close parent-child, peer, or teacher-student relationships and/or the experience of being bullied are associated with children of immigrants' life satisfaction (Wong, Chang, He, & Wu, 2010), in addition to their psychological well-being (Ferguson, 2006).

1.5 Research Question

What impact does social capital have on the psychological well-being of 12- to 17-year-old adolescents in the United States?

2. Method

2.1 Data and Sample

This study is based on a secondary analysis and cross-sectional survey of data from the 1999 National Survey of America's Families (NSAF), obtained by the Urban Institute, which is a nonprofit and nonpartisan research center. These data from the NSAF are national representative of the civilian noninstitutionalized population

under the age of 65 as well as their families. In addition, they include an oversampling of families with incomes 200% below the federal poverty level, which allows for detailed analyses of the subgroups of low-income families. The Most Knowledgeable Adult (MKA), the one adult in the household who is most knowledgeable about each child, answers questions about the family members' characteristics. For most children, the MKA is the child's biological mother. The NSAF based their information on a wide array of factors and characteristics related to the physical, economic, social, and psychological well-being of adolescents, children, and adults. In this study, the subjects included 1,490 adolescents (52.3% male ($N = 779$) and 47.7% female ($N = 711$)) from 12 to 17 years of age, which was the national estimate sample of the 1999 NSAF data. The data extensively sampled changing social trends, educational issues, and current policy issues for adolescents in the United States. This sample included Asian and Pacific Islanders (1.5%, $N = 23$), African Americans (12.5%, $N = 186$), Native Americans (1.8%, $N = 27$), and Caucasians (84.2%, $N = 1254$). The descriptive statistics for the data are reported in Table 1.

2.1.1 Social Capital

The social capital variable is measured by several factors that include whether adolescents receive help when they are angry or trying to prevent friends or family members getting into trouble; whether adolescents participate in any club or organization; and the availability of community resources where adolescents could go and receive help for issues such as criminal activity, domestic violence, pregnancy, and drugs/alcohol. The social capital variable ranges from 0 to 11, with the top score indicating that an adolescent has the highest levels of social capital. Conversely, a score of 0 means that the adolescent has the lowest levels of social capital. Finally, in order to get the reliability of social capital, Cronbach's alpha (a coefficient of reliability) is used, which includes a social capital of 0.96.

2.1.2 Psychological Well-Being

The subjective standard of psychological well-being is measured by the Child Behavioral and Emotional Problem Scale (CBEPS) (Urban Institute, 1999), which includes the following six scale items: (a) does not get along with other peers; (b) cannot concentrate or pay attention for an extended amount of time; (c) has been unhappy, sad, or depressed; (d) has difficulty sleeping; (e) lies or cheats; and (f) performs poorly in school. The primary parent has three response choices: (a) often true = 1, (b) sometimes true = 2, and (c) never true = 3. The responses are then totaled for a final score, which ranges from 6 to 18. The highest score of 18 represents an adolescent with the lowest levels of behavioral and emotional problems, which translates into a high level of psychological well-being. Conversely, a score of 12 or less represents an adolescent with high levels of behavioral and emotional problems, which translates into low levels of psychological well-being. Thus, this scale shows us something about the psychological adjustment or depression in adolescents, which uniquely affects aspects of their lives and the overall ability to manage them. Cronbach's alpha of CBEPS is 0.91, which indicates a good internal reliability of the standard.

2.1.3 Individual and Family Characteristics

Family income, which is a constructed and continuous variable, compares income received during the year preceding the survey to the U.S. Census Bureau's federal poverty thresholds for that year. It includes the following scale: (a) less than 50% above the poverty line (0.5); (b) 50% and above, but less than 100% above the poverty line (1.0); (c) 100% and above, but less than 150% above the poverty line (1.5); (d) 150% and above, but less than 200% above the poverty line (2.0); (e) 200% and above, but less than 300% above the poverty line (3.0); and (f) 300% or more above the poverty line (4.0). Parental education is also a continuous measure based on the following: (a) parent completed the 8th grade; (b) parent completed the 9th, 10th, or 11th grade; (c) parent completed the 12th grade, but has no high-school diploma or GED; (d) parent has a GED; (e) parent has a high school diploma; (f) parent completed some vocational or technical classes, but has no certificate; (g) parent has a vocational or technical certificate; (h) parent completed some college classes, but has no college degree; (i) parent has an associate's degree; (j) parent has a bachelor's degree; (k) parent completed some graduate or professional classes, but has no graduate or professional degree; and (l) parent has a graduate or professional degree. Finally, parental mental health is a continuous measure that is captured using a 38-item scale adapted by the Urban Institute from the Mental Health Inventory (MHI-38) for its Medical Outcomes study (Urban Institute, 1999). This measure includes five scale items: (a) felt very nervous, (b) felt calm or peaceful, (c) felt downhearted and blue, (d) felt happy, and (e) felt so down in the dumps that nothing could cheer them up. The primary parent has four response choices: (a) all of the time = 1, (b) most of the time = 2, (c) some of the time = 3, and (d) none of the time = 4. The responses are then totaled and multiplied by five for a final score ranging from 0 to 20. On the basis of this scale, higher scores indicate better primary parent mental health and lower

scores indicate a lower primary parent health status. Cronbach's alpha in this case is 0.94, indicating good internal reliability of the standard.

The adolescents' employment status is a dichotomous variable, which is coded as adolescents who work or not. Adolescents who do not work are considered to be the baseline. The living arrangements of the adolescents are also coded into the following items: (a) live with no parents; (b) live with a single parent; (c) live in a blended/step family; or (d) live with a biological/adoptive family. In this case, the first category (where adolescents live with no parents) is used as the baseline. With respect to individual characteristics, the health status of adolescents is coded as: (a) poor, (b) fair, (c) good, (d) very good, and (e) excellent. The race/ethnicity variable is contained in four overall groups: Asian and Pacific Islanders, African Americans, Native Americans, and Caucasians (the baseline). Finally, the age variable ranges from 12 to 17 years of age and the gender variable is dealt with as a categorical variable where the male is the baseline.

2.2 Data Analysis

First, in order to discover the initial relationships regarding social capital, psychological well-being, and SES variables for 12- to 17-year-old adolescents in the United States, Pearson's product-moment correlations are utilized. Second, in order to more closely investigate the initial relationships, an ordinary least square (OLS) regression model is performed, which consists of social capital, individual, and family characteristic variables as predictors. The statistical influence of social capital in a broader context is included in the first model. After the first model is examined, family characteristics are included in the second model, followed by individual characteristics, which are included in the third and final model.

Table 1. Descriptive statistics regarding 12- to 17-year-old adolescents in the United States 1999 NSAF data (national estimate sample)

Variable	N = 1490
	Mean/%/SD
<i>Psychological well-being: CBPEB (Mean)</i>	15.65 (SD = 3.13)
<i>Social Capital (0–11 score range) (Mean)</i>	2.36 (SD = 10.42)
<i>Family Characteristics</i>	
Family Income (Last Year) (Mean)	2.96 (SD = 1.16)
Parental Education (Mean)	7.00 (SD = 3.26)
Parental Mental Health (Mean)	15.57 (SD = 3.41)
Adolescents' Employment (Percent)	34.0
Adolescents' Living Arrangements (Mean)	3.23 (SD = 1.12)
<i>Individual Characteristics</i>	
Adolescents' Health Status (Mean)	4.27 (SD = 0.89)
<i>Ethnicity (Percent)</i>	
Asians and Pacific Islanders	1.5
African Americans	12.5
Native Americans	1.8
Caucasians (Baseline)	84.2
Age (Mean)	14.6 (SD = 1.76)
Male (Baseline) (Percent)	52.3
Female (Percent)	47.7

3. Results

Pearson's product-moment correlations provide important preliminary information regarding the interrelationships among social capital, psychological well-being, and SES variables for 12- to 17-year-old adolescents in the United States. Overall, all these relationships are significant at the 0.01 level. As initial

relationships, especially, there is a positive and strong correlation between social capital and the psychological well-being of the adolescents in this sample ($b = 0.61, p < 0.01$). There is also a positive and strong correlation between the parental mental health and psychological well-being of these adolescents ($b = 0.57, p < 0.01$) as well as the parental mental health and social capital ($b = 0.57, p < 0.01$). Moreover, there is a positive correlation between adolescent's health status and psychological well-being ($b = 0.24, p < 0.01$) as well as the adolescents' health status and social capital ($b = 0.06, p < 0.01$).

Table 2. Correlations for Psychological well-being (CBEPS) and independent variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Psychological well-being	1												
2 Social Capital	0.614**	1											
3 Family Income	0.175**	0.094**	1										
4 Parental Education	0.199**	0.208**	0.378**	1									
5 Parent Mental Health	0.573**	0.572**	0.229**	0.213**	1								
6 Adolescents' Employment	0.051*	-0.005	-0.061*	-0.016	-0.026	1							
7 Adolescents' Living Arrangements	0.157**	0.032	0.321**	0.141**	0.152**	-0.052*	1						
8 Adolescents' Health Status	0.242**	0.064*	0.229**	0.206**	0.196**	-0.077**	0.150**	1					
9 Asians/Pacific Islanders	0.026	0.006	0.044	0.030	0.032	0.026	0.018	-0.007	1				
10 African Americans	-0.015	-0.008	-0.209**	-0.104**	-0.022	0.097**	-0.246**	-0.157**	-0.047	1			
11 Native Americans	0.002	0.007	-0.053*	0.017	-0.009	0.014	-0.046	-0.018	-0.017	-0.051*	1		
12 Age	-0.022	-0.019	0.044	0.001	0.006	-0.219**	0.024	-0.025	-0.037	0.031	-0.035	1	
13 Gender	0.046	-0.013	0.025	0.009	0.010	-0.013	0.023	0.040	-0.043	0.025	-0.039	0.003	1

* $p < 0.05$, ** $p < 0.01$

Although this study found positive and strong correlations as preliminary relationships, causation is questionable. Thus, in order to investigate causation, an OLS regression model was conducted on psychological well-being among the adolescents in this sample, as shown in Table 3. Model 1 shows that social capital ($b = 0.20, p < 0.01$) is positively significant; 38% of the explained variance of psychological well-being among these adolescents is accounted for. Model 2 shows that social capital ($b = 0.13, p < 0.01$), parental mental health ($b = 0.28, p < 0.01$), adolescents' employment ($b = 0.28, p < 0.01$), and adolescents' living arrangements ($b = 0.24, p < 0.01$) are positively significant. Only 9% of the explained variance increases marginally, as compared to the first model. Model 3 shows that social capital ($b = 0.13, p < 0.01$), parental mental health ($b = 0.25, p < 0.01$), adolescents' employment ($b = 0.31, p < 0.01$), adolescents' living arrangements ($b = 0.23, p < 0.01$), adolescents' health status ($b = 0.54, p < 0.01$), and gender ($b = 0.26, p < 0.05$) are positively significant. Only 2% of the explained variance increased marginally, as compared to the second model.

Table 3. OLS regression of unstandardized coefficients for social capital on psychological well-being (CBEPS) in 1999 NSAF data

Variables	Model 1	Model 2	Model 3
<i>Social Capital</i> (0–11 score range)	0.20**	0.13**	0.13**
<i>Family Characteristics</i>			
Family Income		0.10	0.05
Parental Education		0.20	0.00
Parental Mental Health		0.28**	0.25**
Adolescents' Employment		0.28**	0.31**
Adolescents' Living Arrangements		0.24**	0.23**
<i>Individual Characteristics</i>			
Adolescents' Health Status			0.54**
Asians and Pacific Islanders			0.39
African Americans			0.34
Native Americans			0.29
Age			0.00
Gender (Baseline = Male, 1)			0.26*
R-Square	.38	.47	.49

* $p < 0.05$, ** $p < 0.01$.

4. Discussion and Conclusion

The primary focus of this study is to examine the empirical validation of social capital in order to understand the psychological well-being of adolescents in the United States. Using a sample of 1,490 mostly low-income adolescents, the model completes a reasonable task in predicting psychological well-being. The results underscore important aspects of the hazards faced by adolescents and the social resources available. Social capital makes a significant contribution toward psychological well-being among the adolescents in this sample, and in general, its significant forms include sharing negative or positive feelings with family, friends, or coworkers; talking with parents, friends, or coworkers about personal problems; and having parents around (Coleman, 1988). On the basis of these forms, the more supportive the environment becomes, the more participation in any available community resources. As a result, it leads toward fewer depressive symptoms and better psychological well-being. What is important about this initial finding is that it provides parents, friends, and coworkers with a very direct and manageable strategy for improving the psychological well-being of their adolescents. In addition, if adolescents possess enough social capital, they are more likely to have better health status. Moreover, higher levels of psychological well-being for adolescents may be due, in part, to their parents' greater emotional stability and protection. These adolescents are more likely to talk with their parents, friends, or coworkers about any feelings and problems that they may have. Originally, social capital provided important opportunities for adolescents to easily obtain or access social resources from interpersonal to community levels developed through relationships (e.g., bonding, bridging, and/or linking social capital). However, social capital also helped to improve emotional or social development of adolescents through "features of social organization, such as networks, norms, and social trust, which facilitate coordination and cooperation for mutual benefit" (Putnam, 1995, p. 67). Increasing social capital can lead to beneficial effects and better psychological well-being, as well as better communication and greater long-term academic achievement (Coleman, 1988).

In order to explain the significant mechanism of social capital, three dimensions of social capital (Putnam, 1995) are used in this study: bonding, bridging, and linking. Bonding may contribute in that adolescents take advantage of the opportunities to build and access potential social resources, and expand them through their interpersonal relationships (e.g., friends, parents, and coworkers) with respect to their emotional and social development. Bridging may contribute in that adolescents take advantage of the opportunities to build and access social resources such as strengthening weak ties or social integration through institutional relationships, and expanding them through their institutional relationships with respect to emotional or social development. Finally, linking

may contribute in that adolescents take advantage of the availability of community resources, which is found to play an important role in high levels of psychological well-being. The availability of community resources is important. For example, if an adolescent lives in a community with a program targeting pregnancy, drugs, or crime, he or she is more likely to have a higher level of psychological well-being because of the educational effects of these programs. These community resources indicate that community-based factors may have benefits in addition to interpersonal interaction and networking. These findings show that these community programs have multiple-level benefits for adolescents because they have macro-level community-level effects, opportunities for linking social capital, and services specifically tailored toward adolescent issues.

Finally, the association between social capital and psychological well-being for adolescents differs in specific family SES in regard to individual and family characteristics. The findings of this study may suggest that family structure effects are quite apparent for the psychological well-being of adolescents. This is consistent with previous research which showed that divorce-related stressful events are positively associated with lower psychological well-being as well as internalizing and externalizing behaviors for adolescents (Thomson, Hanson, & McLanahan, 1994). In contrast, living in a biological/step family may be positively associated with better psychological well-being for both parents and adolescents. Divorce can indeed have severe consequences for the economic situation of mothers, which then increases the propensity for hostile parenting. As the results demonstrate, this can contribute toward depressed behavior and low levels of psychological well-being in adolescents. If family structure persists, even when we account for economic resources and family processes, then structure per se is indeed an important determinant of psychological well-being. Finally, if adolescents are employed, they take advantage of information and social resources by using even wider social networks (William, Takeuchi, & Adair, 1992), which positively influence their health status and psychological well-being (George & Landerman, 1984).

In conclusion, this study examined the impact of social capital and individual/family characteristics on the psychological well-being of 12- to 17-year-old adolescents in the United States. The data were based on the 1999 National Survey of America's Families (NSAF). Although the causality is questionable, the findings are important since the empirical validation of the theoretical relationship between social capital and individual/family characteristics, as well as the psychological well-being of adolescents, is not found in the literature. In addition, individual/family characteristics in regard to psychological well-being have not been found in previous research (Coleman, 1988; Putnam, 1995). However, especially since the concept of social capital is elaborated as including Putnam's three distinct dimensions (bonding, bridging, and linking) (1995), further research using measurement models that focus on these dimensions is necessary in order to discover a more precise association. The potential significance of studying how psychological well-being for adolescents may be greatly associated to the extent to which the individual has access to social resources as well as the knowledge to access the three dimensions of social capital (Putnam, 1995). Finally, it would be even more useful and helpful when assisting adolescents with a low level of psychological well-being.

This study contributes toward the understanding of adolescent social capital (Coleman, 1988; Putnam, 1995). First, of the few studies on social capital related to the psychological well-being of adolescents, the majority utilize small, nonrandom samples of adolescents. Second, the major findings are representative of the national estimate sample for adolescents and include a wide range of backgrounds and characteristics. Third, this study tested several social capital indicators. The major findings also address how individual social capital (Coleman, 1988) for adolescents is important for the psychological well-being of their social relationships and social/emotional development. For example, according to Coleman (1988), the social interactions for adolescents that occur with various individuals in these social settings are important. As the results show, individual social capital affects social interactions through adolescent individual characteristics or personal traits (Coleman, 1988). Finally, unique to this study is the fact that attention is given to the accumulation of social capital and individual/family characteristics of the adolescents. This study also supports major findings on the importance of their own social relationships in addition to their emotional and social development. As adolescents make the transition toward adulthood, social capital may be important when obtaining additional social capital as they become increasingly more in control of their socially controlled world relationships and futures (Coleman, 1988).

5. Limitations and Future Directions

Some limitations in this study must be carefully considered. The research design is cross-sectional, which limits its ability to discern causal relationships. Causality can be implied, but not confirmed. Although the causality is questionable, this study shows the strong relationship between social capital and the psychological well-being of adolescents. Further research suggests that a longitudinal study needs to be developed if 38.0% of the explained

variance is that persistent over time. It also suggests that more policy research is needed, which requires involvement by community organizations for adolescents (such as schools) as well as fiscal and organizational investment from given social capital influences. For example, the role of adolescent social capital shows that more institutional or community resources should provide assistance with academic-related tasks in order to enhance the overall school experience of its adolescents. In this case, services such as tutoring or mentoring may need to be widely encouraged and publicized.

Secondary data analysis was used in this study as the quantitative method, but primary data such as questionnaires (Fitzpatrick, Piko, Wright, & LaGory, 2005) and additional qualitative data (Morrow, 2001) may provide even more information about the various strategies and values of social capital on the psychological well-being of adolescents within the social context. In order to reinforce the findings of survey data and view whether the survey reports converge with the conduct and feelings of the individual respondents, a qualitative method should be used in further research. With regard to measurement error, the social capital standards were limited by primarily looking at the availability and access to social capital in social environments or settings where social relationships or socializations have the potential of development. Therefore, with primary data such as those collected on questionnaires, further research should expand the indicators of social capital and address its critical limitations. In social capital, the quantity of these relationships is important because an increase in social capital is argued to cause an increase in opportunities and positive development for adolescents. However, the number of individuals and interactions involved shows little about the quality of interaction. Thus, models should also be extended to include measures of capturing information on actual relationships, networks, and their qualities.

6. Implications

This study suggests that social capital will indeed work for various individuals and neighborhoods even though the results may vary. What is clear from this study, however, is that social capital is important for maintaining the psychological well-being of adolescents. Neighborhood associations can benefit from this knowledge by reaching out and encouraging the development and maintenance of social integration and ties (Coleman, 1988; Putnam, 1995). Further research will be necessary in order to examine cross-cultural similarities and differences for individual behaviors in terms of how to take advantage of the social capital for individual and family characteristics.

Acknowledgements

This research was supported by the Grant-in-Aid for Young Scientists B and the Japan Science Technology (JST) Agency, Japan. This article is based on portions of the first author's doctoral course paper, conducted under the supervision of Prof. D. William Wood, Prof. Emeritus, Eldon L. Wegner, Professor Yean-Ju Lee, Prof. Emeritus Kiyoshi Ikeda, and Prof. Min-Sun Kim. I thank them all for their helpful advice and for providing insightful suggestions and comments on an earlier version of this manuscript. Also, I gratefully acknowledge the National Survey of America's Families (NSAF) for providing useful data.

References

- Acocck, A., & Demo, D. (1994). *Family diversity and psychological well-being*. Thousand Oaks, CA: Sage.
- Aneshensel, C. S. (2002). Commentary: Answers and questions in the sociology of mental health. *Journal of Health and Social Behavior*, 43, 236-246. <http://dx.doi.org/10.2307/3090199>
- Cattell, V. (2001). Poor people, poor places, and poor health: The mediating role of social networks and social capital. *Social Forces*, 70, 1077-1100.
- Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94, S95-S120. <http://dx.doi.org/10.1086/228943>
- Compas, B., Connor-Smith, J., Saltzman, H., Thomsen, A. H., & Wadsworth, M. E. (2001). Coping with stress during childhood and adolescence: Problems, progress, and potential in theory and research. *Psychology Bulletin*, 127, 87-127. <http://dx.doi.org/10.1037/0033-2909.127.1.87>
- Dorsey, S., & Forehand, R. (2003). The relation of social capital to child psychosocial adjustment difficulties: The role of positive parenting and neighborhood dangerousness. *Journal of Psychopathology and Behavioral Assessment*, 25(1), 11-23. <http://dx.doi.org/10.1023/A:1022295802449>
- Dressler, W. W. (1993). Health in the African American community: Accounting for health inequalities. *Medical Anthropology Quarterly*, 7, 325-345. <http://dx.doi.org/10.1525/maq.1993.7.4.02a00030>
- Feldman, S. S., & Elliot, G. R. (Eds.). (1990). *At the threshold: The developing adolescent*. Cambridge: Harvard

University Press.

- Ferguson, K. M. (2006). Social capital and children's psychological well-being: A critical synthesis of the international social capital literature. *International Journal of Social Welfare*, 15, 2-15. <http://dx.doi.org/10.1111/j.1468-2397.2006.00575.x>
- Fitzpatrick, K. M., Piko, B. F., Wright, D. R., & LaGory, M. (2005). Depressive symptomatology, exposure to violence, and the role of social capital among African American adolescents. *American Journal of Orthopsychiatry*, 75(2), 262-274. <http://dx.doi.org/10.1037/0002-9432.75.2.262>
- Furstenberg, F. F., & Hughes, M. E. (1995). Social capital and successful development among at-risk youth. *Journal of Marriage and the Family*, 57, 580-592. <http://dx.doi.org/10.2307/353914>
- George, L. K., & Landerman, R. (1984). Health and subjective psychological well-being: A replicated secondary analysis. *International Journal of Aging and Human Development*, 19, 133-156. <http://dx.doi.org/10.2190/FHHT-25R8-F8KT-MAJD>
- Hope, S., Power, C., & Rogers, B. (1999). Marital status traditions and psychological distress: Longitudinal evidence from a national population sample. *Psychological Medicine*, 29, 381-389. <http://dx.doi.org/10.1017/S0033291798008149>
- Keating, D. P. (2000). Social capital and developmental health: Making the connection. *Journal of Developmental and Behavioral Pediatrics*, 21(1), 50-52. <http://dx.doi.org/10.1097/00004703-200002000-00009>
- Morrow, V. (2001). Using qualitative methods to elicit young people's perspectives on their environments: Some ideas for community health initiatives. *Health Education Research*, 16(3), 255-268. <http://dx.doi.org/10.1093/her/16.3.255>
- O'Connor, T. G., Pickering, K., Dunn, J., & Golding, J. (1999). Frequency and predictors of relationship dissolution in a community sample in England. *Journal of Family Psychology*, 13, 436-449. <http://dx.doi.org/10.1037/0893-3200.13.3.436>
- Portes, A. (1998). Social capital: Its origins and applications in modern sociology. *Annual Review of Sociology*, 24, 1-24. <http://dx.doi.org/10.1146/annurev.soc.24.1.1>
- Putnam, R. D. (1995). Bowling alone: America's declining social capital. *Journal of Democracy*, 6, 65-78. <http://dx.doi.org/10.1353/jod.1995.0002>
- Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. New York: Simon and Schuster.
- Runyan, D. K., Hunter, W. M., Socolar, R. R. S., Amaya-Jackson, L., English, D., & Landsverk, J. (1998). Children who prosper in unfavorable environments: The relationship to social capital. *Pediatrics*, 101, 12-18. <http://dx.doi.org/10.1542/peds.101.1.12>
- Sprinthall, N. A., & Collins, W. A. (1995). *Adolescent psychology: A developmental Review* (3rd ed.). New York: McGraw Hill.
- Stones, M. J., & Kozma, A. (1986). Happy are they who are happy: A test between two causal models of relationships between happiness and its correlates. *Experimental Aging Research*, 12, 23-29. <http://dx.doi.org/10.1080/03610738608259431>
- Thomson, E., Hanson, T., & McLanahan, S. (1994). Family structure and child psychological well-being: Economic resources vs. parental behavior. *Social Forces*, 73(1), 221-242.
- Urban Institute. (1999, March). *Benchmarking child and family psychological well-being measures in the NSAF* (Report No. 6). Washington, DC: Author.
- Veenstra, G. (2000). Social capital, SES and health: An individual-level analysis. *Social Science and Medicine*, 50, 619-629. [http://dx.doi.org/10.1016/S0277-9536\(99\)00307-X](http://dx.doi.org/10.1016/S0277-9536(99)00307-X)
- William, D. R., Takeuchi, D. T., & Adair, R. T. (1992). Socioeconomic status and psychiatric disorder among blacks and whites. *Social Forces*, 71, 179-194.
- Wong, D. F. K., Chang, Y. L., He, X. S., & Wu, Q. B. (2010). The protective functions of relationships, social support and self-esteem in the life satisfaction of children of migrant workers in Shanghai, China. *The International Journal of Social Psychiatry*, 54(2), 143-157. <http://dx.doi.org/10.1177/0020764009102755>

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