

Distinctive Big Five and Narrow Personality Traits of Psychology Majors

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ABSTRACT - Using data from 120 undergraduate psychology majors and 1,916 non-psychology majors at a large Southeastern university and based on Holland's (1996) person-environment fit model, we examined whether the two groups differed on the Big Five model of personality and four narrow personality traits. For psychology majors, we investigated the relationship between personality traits and major satisfaction. As hypothesized, psychology majors scored higher on Openness to Experience, Work Drive, and lower on Tough-mindedness than non-majors. All of the traits except for Extraversion were related to major satisfaction. Possible explanations for these findings were discussed in terms of the adaptive value of each trait.

Psychology is among the most popular undergraduate college majors (Brewer, 2006). Choice of college major has been found to be a function of perceived interests, abilities, and personality (Larson et al., 2010). Selection of major is but one challenge facing college students. Most students will change majors at least one time during college, possibly resulting in extended time to complete the degree and additional financial expenses. Thus, beyond choosing a major, finding satisfaction with a major is of great importance. Personality traits representing the Five Factor Model (i.e., Extraversion, Openness, Agreeableness, Conscientiousness, and Emotional Stability) as well as narrow traits (i.e., other personality traits which are of narrower conceptual scope than the Big Five, such as Optimism, Sense of Identity, and Work Drive) have been linked to college major satisfaction (e.g., Lounsbury, Smith, Levy, Leong, & Gibson, 2009). Utilizing the same Big Five and narrow traits as Lounsbury et al. (2009), the present study examined important personality traits which differentiate psychology majors from non-majors. Drawing on Holland's person-environment fit model (Holland, 1996), our general purpose was twofold: 1) to compare the Big Five and narrow personality traits of psychology majors to non-majors; and 2) to assess the relationship between these traits and satisfaction with psychology as a major. Directional hypotheses were advanced based

on the meaning of each construct, prior research, and conceptual analysis of attributes important for psychology majors.

There is a voluminous literature on various attributes which typify and distinguish psychology majors (e.g., Busato, Prins, Elshout, & Hamaker, 2000); however, there are fewer studies on personality characteristics of psychology majors. For some personality traits, studies which compare psychology and non-psychology majors have yielded mixed results. For example, Busato et al. (2000) found that both academic success and achievement motivation of psychology majors were positively related to Conscientiousness. But Lievens, Coetsier, De Fruyt, and Maeseneer (2002) found that psychology students scored lower than other majors on Conscientiousness.

There are also inconsistent findings for another Big Five trait—Extraversion. Busato and his colleagues (2000) reported a negative association between Extraversion and examination results for psychology students. However, DeFruyt and Mervielde (1996) suggested that some Extraversion facets are actually positively correlated with academic success and psychology majors tend to score higher on Extraversion than most other majors. Regarding the Big Five personality trait of Agreeableness, DeFruyt and Mervielde (1996) found that psychology majors tend to have higher Agreeableness scores than non-majors. Research on the other two Big Five personality traits—Neuroticism and Openness to Experience—is also limited. Marrs, Barb, and Ruggiero (2007) observed that undergraduate psychology majors scored higher on Openness than students from “a variety of academic majors.” Also, DeFruyt and Mervielde (1996) found that a combined sample of psychology and education majors registered higher scores on Openness and Neuroticism than students in other majors.

Despite a diversity of findings, research on personality attributes which distinguish psychology majors is generally fragmented, piecemeal, and lacking an overarching theoretical framework which would systematize and explain observed findings. Accordingly, the present study drew on two well-established, extensively validated conceptual models—Holland’s vocational theory and the Big Five personality taxonomy—to investigate which personality traits differentiate psychology majors from other majors and whether these traits are related to major satisfaction.

Holland’s theory has a well-validated empirical foundation from which the relationship between an individual’s personality and the environment of interest can be explicated. A major premise of Holland’s (1996) theory is that both satisfaction and achievement depend on the degree of “fit” between the person and the environment in which one functions. As Holland (1996) concluded:

Studies show that people flourish in their work environment when there is a good fit between their personality type and the characteristics of the environment. Lack of congruence between personality and environment leads to dissatisfaction, unstable career paths, and lowered performance. (p. 397)

After decades of research on person-environment fit in the occupational arena (Holland, 1996), Holland extended his vocational theory to the college context (Rosen, Holmberg & Holland, 1997). Applied to college students, Holland’s model holds that (a) there are differences in the underlying personality traits of students who choose different

majors, and (b) students who possess personality traits which are a good fit with their particular major will have higher satisfaction with that major. Thus, consistent with Holland's fit theory, Lounsbury et al. (2009) found that business majors displayed higher levels of Conscientiousness, Emotional Stability, Extraversion, and Tough-Mindedness than non-majors, and that these traits correlated positively with the students' life satisfaction. In Holland's model applied to college students (Rosen et al., 1997), psychology majors typically exemplify three of Holland's basic interest codes-- Social, Investigative, and Enterprising—reflecting, respectively, the psychology major's emphasis on helping people, interpersonal dynamics, and social interaction; its analytical, research, and scientific orientation; and its emphasis on pragmatism, initiative, and social influence.

Although Holland's model has been articulated primarily in terms of vocational interests, it can be readily employed to characterize students' personalities as assessed by the Big Five traits (Lounsbury et al., 2009). The importance of the Big Five traits as key markers of normal personality and their influence on academic success has been extensively documented (e.g., Busato et al., 2000). However, recent studies have proposed and verified empirically that the Big Five taxonomy is too broad to fully account for student outcomes such as student satisfaction and academic performance (e.g., O'Connor & Paunonen, 2007) and that the use of narrow traits is warranted. Recent studies have shown that narrow personality traits add incremental validity above and beyond the Big Five in accounting for variance in different criteria. For example, Lounsbury et al. (2009) found that four narrow personality traits-- Assertiveness, Optimism, Tough-Mindedness and Work Drive--were uniquely related to the well-being of college students in different majors, even after controlling for the Big Five traits.

The present study assessed both the Big Five as well as four narrow personality traits--Optimism, Tough-Mindedness, Sense of Identity, and Work Drive (Lounsbury et al., 2009) -- in relation to satisfaction with major for psychology undergraduates. We examined the following hypotheses and research questions:

Research Question 1: On which personality traits do psychology majors differ from students in other majors? Psychology students appear to have different values than students in other majors and they tend to score higher on Empathy than non-psychology majors (Harton & Lyons, 2003). Also, psychology majors have higher Social scores on Holland's basic vocational interest dimension, reflecting a concern for helping, serving, and counseling people. One possible reason for this is that the majority of psychology majors have career intentions related to professional practice, notably clinical and counseling psychology (Rottinghaus, Gaffey, Borgen, & Ralston, 2006). Practitioners and, to a lesser extent, those who teach psychology share as a core value the importance of sensitivity to the needs, concerns, and feelings of people who are distinguished by their race, ethnicity, sex role orientation, and disability status as well as many different psychological problems, such as depression, schizophrenia, and anxiety disorders. This value is transmitted to psychology majors in many different ways, including textbooks, journals, conferences, curriculum requirements, classes, field placements, service learning programs, and, of course, psychology faculty, graduate students, advisers, and others who participate in the education and training of psychology students. Thus,

assuming that psychology majors are more tender-minded than students in other majors, we advanced the following hypothesis:

Hypothesis 1a: Psychology students will have significantly lower scores on Tough-Mindedness than non-psychology majors.

A case can also be made for expected differences of psychology majors on the Big Five trait of Openness. Harmon, Hanson, Borgen, and Hammer (1994) found that psychology majors have higher scores on the Investigative interest scale, reflecting their disposition to be analytical, critical thinkers who are interested in theory and research. Since Investigative interest scores have consistently been found to be positively related to Openness (Larson, Rottinghaus, & Borgen, 2002), we advanced the following hypothesis:

Hypothesis 1b: Psychology students will have significantly higher scores on Openness than non-psychology majors.

Regarding the Big Five trait of Agreeableness, previous research has observed that psychology majors have distinctively high scores on this trait. Lievens et al. (2002) found that psychology majors have higher average scores on Agreeableness than non-psychology majors. Also, Umbach and Porter (2002) observed that psychology majors scored higher on Holland's Social category, reflecting a concern for helping other people which, in turn, is consistent with one of the main missions of the profession of psychology—to promote the “health, well-being, and dignity” of individuals in diverse contexts.

Thus, we advanced the following hypothesis:

Hypothesis 1c: Psychology students will have significantly higher scores on Agreeableness than non-psychology majors.

Having established a conceptual rationale for higher scores of psychology majors on the traits of Agreeableness, Openness, and Tender-Mindedness, three additional hypotheses were tested for psychology majors in the present study:

Hypothesis 2a: Tender-mindedness will be significantly positively related to major satisfaction.

Hypothesis 2b: Agreeableness will be significantly positively related to major satisfaction.

Hypothesis 2c: Openness will be significantly positively related to major satisfaction.

We also investigated the relationship of the remaining traits to major satisfaction for psychology majors:

Research Question 2: Are Emotional Stability, Extraversion, Conscientiousness, Optimism, Sense of Identity and Work Drive significantly related to major satisfaction for psychology majors? We examined these traits because they have been found to be positively related to other indices of satisfaction, including life satisfaction and satisfaction with college (Lounsbury, Saudargas, Gibson, & Leong, 2005), as well as negatively related to intention to withdraw college (Lounsbury, Saudargas, & Gibson, 2004).

Finally, considering the emerging literature that emphasizes utilizing narrow personality traits in addition to the Big Five when assessing personality (Lounsbury et al., 2009) as well as research indicating that narrow personality traits account for additional variance in both college satisfaction and life satisfaction above and beyond that accounted for by the Big Five traits we investigated the following:

Research Question 3: Do narrow personality characteristics as a whole add to the predictability of major satisfaction above and beyond the Big Five traits? To answer this question, we used a hierarchical multiple regression analysis with the Big Five variables entered as a set followed by the narrow traits entered as a set.

Method

Participants

Students who were enrolled in a first-year studies program in a large Southeastern university volunteered to participate in the present study. Data were collected from a total of 2036 students. Of these, 120 identified themselves as majoring in Psychology. Of these 120 participants, 84% were female (16% male). Sixty-two seven percent of the participants were Freshmen; 17%, Sophomores; 4%, Juniors; and 16%, Seniors. Eighty-two percent of the participants identified themselves as Caucasian, 14%--African-American, 2%--Hispanic, 1%--Asian, and 1%--other. "Respondents were asked to indicate their age using categories with the following results: Under 18---3%, 18-19--65%, 20-21--16%, 22-25--8%, 26-30--3%, 31-39--4%, 40+--1%."

Procedure

After obtaining human subjects approval from the university's Institutional Review Board, participants were solicited to take a personality inventory (described below) online. Upon completion of the inventory, each participant was provided a feedback report summarizing their personality characteristics and implications for a variety of personal topics including area of study, social life, managing stress, study habits, and utilizing campus resources.

Measures

We used the Resource Associates Transition to College (TTC) Inventory for college students (Lounsbury & Gibson, 2009). The TTC inventory measures *normal personality* characteristics in relation to students making the transition from high school to college. It encompasses the Big Five personality characteristics as well as four narrow personality traits. The TTC has been shown to have good reliability and criterion- and construct validity properties (Lounsbury, Tatum, et al., 2003; Lounsbury & Gibson, 2009). The TTC has been used in a variety of university settings, mainly to help students identify areas for self-understanding, personal improvement, and advising functions. A brief description of each of the TTC personality scales is presented below along with the number of items in the scale and internal consistency reliability of each scale based on the present data.

Big Five personality traits.

1. Agreeableness -- propensity for being pleasant, cooperative, acting harmoniously with others. (7 items; Cronbach's alpha = .81)

2. Conscientiousness-- being dependable, trustworthy, and orderly; having an inclination to follow the rules. (7 items; Cronbach's alpha = .79)

3. Emotional Stability -- overall level of adjustment and resilience in the face of stress and pressure. (6 items; Cronbach's alpha = .82)

4. Extraversion -- tendency to be outgoing, gregarious, warmhearted and expressive. High scorers tend to talk and socialize more, as well as more actively participate in clubs, groups, and discussions. (7 items; Cronbach's alpha = .86)

5. Openness -- receptivity to new learning, change, and novel experiences. (8 items; Cronbach's alpha = .75)

Narrow personality traits. 1. Optimism -- tendency to be hopeful, upbeat, and positive about the future; persist in the face of setbacks and problems. (7 items; Cronbach's alpha = .84). 2. Sense of Identity -- having a sense of purpose and knowing one's self and where one is headed in life; having a core set of beliefs and values which guide one's decisions and actions. (8 items; Cronbach's alpha = .84). 3. Tough-mindedness -- appraising information and making decisions based on logic, facts, and data versus feelings, values and intuition. (7 items; Cronbach's alpha = .76). 4. Work Drive -- tendency to be hard-working, industrious, and inclined to put in much time and effort to reach goals and achieve at a high level. (9 items; Cronbach's alpha = .81). 5. Major Satisfaction-- Following Lounsbury and Gibson (2009), six items measured Major Satisfaction, including satisfaction with courses available in one's major, quality of professors, availability of advisers, how much one is learning, one's progress toward a degree, and satisfaction with the major as a whole. (6 items; Cronbach's alpha = .81).

Results

Table 1 displays the means and standard deviations for the ten personality traits for psychology majors and non-majors along with the results of independent *t*-tests comparing the means of the two groups.

Table 1
Comparisons between Psychology and Non-Psychology Majors on Study Variables and Correlations with Major Satisfaction

Scale	Psychology Majors		Non-Psychology Majors		<i>t</i> (2,034)	Correlation with Major Satisfaction
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Agreeableness	3.79	.65	3.73	.61	-1.13	.23**
Conscientiousness	3.39	.56	3.37	.49	-.39	.36**
Emotional Stability	3.14	.71	3.17	.69	.51	.24**
Extraversion	3.63	.74	3.67	.73	.64	.16
Openness	3.73	.56	3.56	.59	-3.18**	.22*
Optimism	4.02	.59	4.01	.57	-.16	.41**
Identity	4.03	.59	3.96	.60	-1.17	.45**
Tough Mindedness	2.04	.57	2.34	.65	4.82**	-.23**
Work Drive	3.31	.65	3.17	.62	-2.34**	.50**

* $p < .05$ ** $p < .01$

As hypothesized, psychology majors had significantly higher scores than non-majors on Openness-- $t(2034)=-3.18$, $p<.01$ -- and significantly lower scores on Tough-Mindedness-- $t(2034)=4.82$, $p<.01$. Our hypothesis regarding Agreeableness was not supported as psychology majors did not have significantly different scores on Agreeableness than non-majors-- $t(2034)=1.13$, n.s. Psychology majors did, however, score significantly higher on Work Drive-- $t(2034)=-2.34$, $p<.01$ --compared to non-

majors. The two groups were not significantly different from each other on any of the other personality traits. Table 1 also presents the correlations between the personality traits and major satisfaction for psychology majors. Regarding the first research question, all but one (Extraversion) of the nine traits were significantly correlated with major satisfaction, with a significant, negative correlation found for Tough-Mindedness while the other seven significant correlations were positive. To assess the third research question, we performed a hierarchical multiple regression analysis with the set of Big Five traits entered on the first step and the set of four narrow traits entered on the second step. The Big Five traits accounted for 21% of the variance in major satisfaction ($R^2 = .21$; $F(4,114) = 6.08, p < .01$) and the narrow traits accounted for an additional 18% of the variance ($R^2 \text{ Change} = .18$; $F(8,110) = 8.31, p < .01$).

Discussion

All of the hypotheses of the present study--with the exception of our prediction that psychology majors would score higher than non-majors on Agreeableness--were supported, which, taken as a whole, supports the use of Holland's person-environment fit theory for psychology majors. Consistent with our conceptual rationale, psychology majors had higher levels than other majors on Work Drive and Openness, but a lower mean level of Tough-Mindedness (i.e., higher on Tender-Mindedness).

That psychology majors scored higher on Openness may be a function of the association of Openness with academic success among first year undergraduate psychology students (DeFruyt & Mervielde, 1996). Their higher Openness scores may also be a function of two factors: (a) Openness is inversely related to conservatism (Van Hiel & Mervielde, 2004); and (b) psychology majors tend to be among the least conservative in their sociopolitical attitudes and behavior (Feldman & Newcomb, 1969).

That psychology students scored higher than non-majors on Tender-Mindedness is consistent with similar findings by Harton and Lyons (2003) and with the public image of psychology. Tender-mindedness is an integral part of the public perception of psychology as a field (Webb & Speer, 1985). Lay people and college students alike often see psychology as a profession concerned with helping people. Accordingly, more tender-minded or empathetic students may be more likely to choose psychology as a major. In addition, psychology is portrayed on vocational interest inventories used for choosing a college major, such as the Strong Interest Inventory, as favoring Social interests--which involve helping, serving, teaching, healing, and inspiring other people (Rosen et al., 1997). Also, empathy--defined as insight into behavior and sensitivity--is listed as one of the learning goals for psychology undergraduates by an APA taskforce (American Psychological Association, 2009). Moreover, about half of psychology graduates choose to specialize in clinical or counseling psychology (Morris & Maisto, 2008)--which require empathy and feeling-sensitivity--thus, it is not surprising to find that Tender-Mindedness is a distinguishing attribute of psychology majors.

That psychology students scored higher than non-majors on Work Drive may be a function of psychology being one of the most popular majors across campuses in the United States, which, in turn, can result in stricter criteria and more competition to become admitted to (and remain in) the major. Also, unlike some fields--such as business, education, nursing, social work, and engineering--an advanced degree, in most

cases a doctorate, is typically required if a person wants to either: a) offer services to the public as a psychologist (in which case licensure is also required in the United States); or b) teach psychology in a college or university. Students who are willing to invest the time and effort to attain a graduate degree, most often a doctorate, in psychology would be more likely to have higher levels of Work Drive.

Tough-Mindedness was negatively correlated with major satisfaction while all of the other traits under study, except Extraversion, were significantly, positively correlated with the satisfaction of psychology students with their major. We previously provided a rationale for the importance for psychology majors of work drive, tender-mindedness and openness to experience, so we now address the importance of the other five traits.

First, Agreeableness characterizes individuals who are amiable, friendly, and pleasant in their interpersonal behavior (Lounsbury et al., 2005). Since these qualities are usually expected of psychology students who are trained in clinical and counseling work, as well as psychological consulting roles, students with higher levels of Agreeableness represent a better fit for psychology, which will likely also be associated with more amiable, equable relations with professors, advisers, fellow students, and others associated with a psychology program.

Why psychology majors' Conscientiousness scores are positively associated with their major satisfaction scores is readily interpretable. Psychology students are often reinforced for being conscientious. For example, psychology students who are more dependable, reliable, organized, and achievement-motivated are typically better candidates for the Psi Chi national honor society and more likely to become officers in their local chapter, and they are more likely to receive strong letters of recommendation from professors. Also, extra-credit activities, such as participation in a social psychology experiment or taking a personality inventory, involve conscientiousness-related attributes such as competence, dutifulness, and timeliness. Furthermore, Conscientiousness is predictive of grades in psychology classes (Lounsbury, Sundstrom, Loveland, & Gibson, 2003). Thus, psychology majors with higher levels of Conscientiousness are likely to have higher GPA's in psychology, which would likely lead to more satisfaction with psychology as a major.

As for Emotional Stability being positively correlated with satisfaction with psychology as a major, this may simply reflect a more global pattern of positive relationships between Emotional Stability and subjective well-being (DeNeve & Cooper, 1998) as well as life satisfaction of college students (Lounsbury et al., 2005). Emotional Stability may be especially important for psychology majors, since psychology's primary mission is to promote psychological well-being and improve people's lives (<http://www.apa.org/about/index.aspx>). Indeed, approximately one-fourth of APA's 46 professional divisions either directly or indirectly deal with mental health topics. Consistent with Holland's (1996) person-environment fit model, students with higher levels of the above traits would have better fit with the psychology major and be more satisfied it. A similar explanation can be advanced for the finding that psychology majors with higher levels of optimism were more satisfied with psychology as a major. This result may reflect a more general pattern of previously observed positive relationships between Optimism and other indices of satisfaction, including life satisfaction (Wong, Lee, Ang, Oei, & Ng, 2009) and satisfaction with college (Lounsbury et al., 2005).

Seligman (1991) noted that optimism is an important trait for success in areas of endeavor which “require persistence and initiative”, often in the face of stressful circumstances. Optimism has been associated with better adjustment to college and higher levels of academic performance (Chemers, Hu, & Garcia, 2001). Then, too, optimism, both as “learned optimism” and as a component of *positive psychology* is a desirable attribute which can be readily taught in the psychology curriculum, viz., in introductory, social, health, and personality psychology courses (Neimark, 2007).

The present result of psychology students who have a stronger sense of identity being more satisfied with their major is consistent with the literature on college student development as well research on identity achievement among college students. Identity achievement is viewed as a key stage of development both in terms of the general life span (Erikson, 1980) and as a superordinate goal of college student development (Chickering, 1969). Chickering (1969) portrayed sense of identity as a desired outcome in the emotional, social, physical, and intellectual development of college students. Also, identity achievement has been found to be positively related to life satisfaction of college students (Lounsbury et al., 2005). Along these lines, identity issues represent an important topic in several key psychology courses, including introductory, developmental, personality, life-span, and abnormal psychology.

The regression analysis results indicate that the Big Five and narrow traits in combination accounted for more than three-fifths of the variance in major satisfaction of psychology students. Consistent with research in other areas (e.g., Paunonen & Nicol, 2001), the present findings support both the use of the Big Five and narrow personality traits in accounting for variation in satisfaction with psychology as a major. Since such a large proportion of the variance in major satisfaction is accounted for by personality traits, and because the personality traits of college students precede their satisfaction with a major, it is an open question whether other variables reflecting, say, quality and availability of teachers and courses, as well as other factors like advising and career planning services can account for unique variance in major satisfaction above and beyond personality traits. It would be disconcerting to those responsible for administering a major—viz., the faculty and staff-- if it were found that satisfaction with psychology as a major is solely or primarily a function of the personality traits of the students prior to deciding to major in psychology. Future research should investigate whether other factors such as the faculty and courses play a significant, unique role in determining student satisfaction with psychology as a major.

Study Limitations

There are several limitations of the current study that should be noted. Future research in this area should try to replicate the present findings using a more diverse mix of geographic locations and types of colleges and universities, since the present study was conducted at a single, large public university in the Southeastern U.S. Also, over 80% of the study participants were Caucasian and 80% were female, which also leaves open the question of replicable findings for different racial/ethnic groups and for groups with more equal representation of males and females (however, it should be noted the 75% of doctoral degrees in psychology are awarded to women). Then, too, it would be interesting to see if these findings hold up across samples of upper-classmen and graduate students.

The possibility of differential gender effects was not examined. Another limitation of the present study is that we did not employ a longitudinal design which could have permitted us to look at personality changes over time and subsequent withdrawal or dropout from college.

Conclusions

Nevertheless, the results of the present study indicate that Holland's (1996) person-environment fit model can be usefully applied to the study of Big Five and narrow personality traits in relation to psychology majors. As hypothesized, psychology majors were differentiated from non-psychology majors by their higher levels of Open-mindedness, Work Drive, and Tender-Mindedness. Also, with the exception of Extraversion, all of the personality traits measured in this study were significantly related in the expected direction to major satisfaction. In each case, a rationale for the importance of these traits was provided in terms of the nature of the field of psychology, similar findings from other studies involving psychology students and college students in general, and research on the construct validity of the Big Five and narrow personality traits. Interestingly, variation in satisfaction with psychology as a major was largely accounted for by personality traits, leaving open the question, and, indeed, the challenge for future researchers, of whether any other factors, such as quality of teaching and nature of the curriculum, are uniquely related to satisfaction with the psychology major.

References

- American Psychological Association. (2009, November 19). APA vision statement. Retrieved from <http://www.apa.org/about/>.
- Brewer, C.L. (2006). Undergraduate education in psychology: United States. *International Journal of Psychology*, 41, 65-71.
- Busato, V., Prins, F., Elshout, J., & Hamaker, C. (2000). Intellectual ability, learning style, personality, achievement motivation and academic success of psychology students in higher education. *Personality and Individual Differences*, 29, 1057-1068.
- Chemers, M., Hu, L., & Garcia, B. (2001). Academic self-efficacy and first year college student performance and adjustment. *Journal of Educational Psychology*, 93(1), 55-64.
- Chickering, A. W. (1969). *Education and identity*. San Francisco: Jossey-Bass.
- De Fruyt, F., & Mervielde, I. (1996). Personality and interests as predictors of educational streaming and achievement. *European Journal of Personality*, 10(5), 405-425.
- DeNeve, K., & Cooper, H. (1998). The happy personality: A meta-analysis of 137 personality traits and subjective well-being. *Psychological Bulletin*, 124(2), 197-229.
- Erikson, E.H. (1980). *Identity and the life cycle*. New York: Norton.
- Feldman, K., & Newcomb, T. (1969). *The impact of college on students*. New Brunswick, NJ US: Transaction Publishers.
- Harmon, L. W., Hansen, J. I., Borgen, F., & Hammer, A. (Eds.). (1994). *Strong Interest Inventory: Applications and technical guide* (pp. 281-290). Stanford, CA: Stanford University Press.

- Harton, H., & Lyons, P. (2003). Gender, empathy, and the choice of the psychology major. *Teaching of Psychology*, *30*(1), 19-24.
- Holland, J. (1996). Exploring careers with a typology: What we have learned and some new directions. *American Psychologist*, *51*(4), 397-406.
- Larson, L., Rottinghaus, P., & Borgen, F. (2002). Meta-analyses of Big Six interests and Big Five personality factors. *Journal of Vocational Behavior*, *61*(2), 217-239.
- Larson, L.M., Wu, T.F., Bailey, D.C., Gasser, C.E., Bonitz, V.S., & Borgen, F.H. (2010). The role of personality in the selection of a major: With and without vocational self-efficacy and interest. *Journal of Vocational Behavior*, *76*, 211-222.
- Lievens, F., Coetsier, P., DeFruyt, F., & De Maeseneer, J. (2002). Medical students' personality characteristics and academic performance: A five-factor model perspective. *Medical Education*, *36*(11), 1050-1056.
- Lounsbury, J., & Gibson, L. (2009). *Transition to college assessment: Technical summary*. Knoxville, Tennessee: Resource Associates.
- Lounsbury, J. W. Saudargas, R. A., & Gibson L. W. (2004). An investigation of Big Five and narrow personality traits in relation to intention to withdraw from college. *Journal of College Student Development*, *45*(5), 517-534.
- Lounsbury J. W., Saudargas, R., Gibson, L. W., & Leong, F. T. (2005). An investigation of broad and narrow personality traits in relation to general and domain-specific life satisfaction of college students. *Research in Higher Education*, *46*, 707-729.
- Lounsbury, J., Smith, R., Levy, J., Leong, F., & Gibson, L. (2009). Personality characteristics of business majors as defined by the Big Five and narrow personality traits. *Journal of Education for Business*, *84*(4), 200-204.
- Lounsbury, J. W., Sundstrom, E., Loveland, J., & Gibson, L.W. (2003). Intelligence, 'Big Five' personality traits, and work drive as predictors of course grade. *Personality and Individual Differences*, *35*, 1231-1239.
- Lounsbury, J., Tatum, H., Gibson, L., Park, S., Sundstrom, E., Hamrick, F., & Wilburn, D. (2003). The development of a big five adolescent personality inventory. *Journal of Psychoeducational Assessment*, *21*(2), 111-133.
- Marrs, H., Barb, M., & Ruggiero, J. (2007). Self-reported influences on psychology major choice and personality. *Individual Differences Research*, *5*(4), 289-299.
- Morris, C.G. & Maisto, A.A. (2008). *Understanding psychology* (8th ed.). Upper Saddle River, NJ: Prentice Hall.
- National Center for Educational Statistics (2008). Digest of education statistics. Retrieved from http://nces.ed.gov/programs/digest/d08/tables/dt08_314.asp
- Neimark, J. (2007, May 1). The optimism revolution. Retrieved from <http://www.psychologytoday.com/articles/200704/the-optimism-revolution>.
- O'Connor, M., & Paunonen, S. (2007). Big Five personality predictors of post-secondary academic performance. *Personality and Individual Differences*, *43*(5), 971-990.
- Paunonen, S., & Nicol, A. (2001). The personality hierarchy and the prediction of work behaviors. *Personality psychology in the workplace* (pp. 161-191). Washington, DC US: American Psychological Association.
- Rosen, D., Holmberg, K., & Holland, J. (1997). *The educational opportunities finder*. Odessa, FL: Psychological Assessment Resources.

- Rottinghaus, P.J., Gaffey, A.R., Borgen, F.H., Ralston, C.A. (2006). Diverse pathways of psychology majors: Vocational interests, self-efficacy, and intentions. *The Career Development Quarterly*, 55, 85-94.
- Seligman, M. E. P. (1991). *Learned optimism*. New York: Pocket.
- Umbach, P., & Porter, S. (2002). How do academic departments impact student satisfaction? Understanding the contextual effects of departments. *Research in Higher Education*, 43(2), 209-234.
- Van Hiel, A., & Mervielde, I. (2004). Openness to experience and boundaries in the mind: Relationships with cultural and economic conservative beliefs. *Journal of Personality*, 72(4), 659-686.
- Webb, A. & Speer, J. (1985). The public image of psychologists. *American Psychologist*, 40, 1063-1064.
- Wong, S., Lee, B., Ang, R., Oei, T., & Ng, A. (2009). Personality, health, and coping: A cross-national study. *Behavior Science Research*, 43(3), 251-279.