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Psychological Comparisons of Undergraduate and Graduate College of Education Students

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This is a study of 57 graduate students and 229 undergraduate students in classes preparing them to be teachers. The survey extended over a period of five years, involving 14 classes in a college of education. Using the Personality Research Form scales to compare the psychological aspects of undergraduate and graduate college of education students, t-test results indicated that graduate students scored higher on Achievement, Harmavoidance, Understanding, and Desirability. All other comparisons were not significant using the present criteria.

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This study used a psychological test, the Personality Research Form (PRF), developed by Jackson (1999), to investigate graduate and undergraduate students in classes where they were learning to be teachers. The PRF is a commonly used test in the field of psychology and it measures normal personality traits. Psychological tests in education provide information about characteristics of teachers and students (Becker, 2003; Binet & Simon, 1916; Chassel & Chassel, 1921; Frost, 1967; Kleiter, 1973; Mould, 1953; Pintner, 1921; Sapp, 2002; Thorndike & Hagen, 1961). Such information can be used to improve teaching and learning. For example, Denzine, Martin, and Cramblet (2005) encouraged those in teacher education programs to provide pre-service teachers with knowledge of personality psychology. They write that understanding one's own personality, and that of others, is relevant for teacher induction and for meeting the diverse needs of learners. There have been investigations of the characteristics of those studying to be teachers. There have been studies of undergraduate students (Evans & Waring, 2006; Schurr, Ruble, Henriksen, & Alcorn, 1989; Ward, Cunningham, & Summerlin, 1974). There have been studies of graduate students (Kreutzkampf, 1979; Roseman, 1999; Willing, Guest, & Morford, 2001). There have also been studies that examine both graduate and undergraduate students (Ayers & Brimm, 1975; Benjamins & Erdman, 1977; Davenport & Davenport, 1984; Linder & Janus, 1985; Onwuegbuzie, Slate, & Schwartz, 2001; Slobodzian, 1971).

In addition, there have been studies of graduate and undergraduate students outside teacher education programs. Researchers have examined the characteristics of graduate or undergraduate students in general without specifying a major, of the students had multiple college majors (Artino, & Stephens, 2009; Bateman, 1999; Baucom, Greene, 1979; Cassel, & Todd, 1974; Chatterjea, 1961; Eisenberg, Gollust, Golberstein, & Hefner, 2007; Fritz, Speth, Barbuto, & Boren, 2004; Gardner, & Barnes, 2007; Jehng, Johnson, & Anderson, 1993; Jemi-Alade, 2008; Lanier, Nicholson, & Duncan, 2001; Mau & Pope-Davis, 1993; McCaffrey, 1980; Robinson, 1989; Sapp, 1996; Scott, 1981; Wentworth, & Chell, 1997; Wilson, 2010; Woolley, 2002; Yang, 2007). There have also been studies of students in specific majors. The students were in such college majors as psychology, nursing, occupational therapy, social work, counseling, and business (Baca, 1978; Brown & DeCoster, 1991; Dodds, Reid, Conn, Elliott, & McColl, 2010; Elias, 1987; Fotheringham, 1952; Henggeler, Heitzmann, & Hanson, 1985; Kazmier, 1966; Llorens, Adams, 1978; May, 2009; Morton-Rias, Dunn, Terregrossa, Geisert, Mangione, & Ortiz, & Honigsfeld, 2007; Neimeyer, Lee, Saferstein, & Pickett, 2004; Roell, 1982; Simons, Jacobucci, & Houston, 2005; Simmons, 1998; Swanson & Wodarski, 1982; Thoermer, & Beate, 2002).

Both the studies of students in teacher education programs, and the studies of students outside teacher education programs, used different measures, and investigated different factors than the ones used in the present study. Therefore, making it difficult to compare the results of these studies with the present study. For example, Brown & DeCoster, 1991, studied nursing students and used the Myers-Briggs to study such factors as introversion and extroversion; whereas, the present study uses the Personality Research Form and studies 22 other factors, such as need to nurture, and need for control. These studies provide information on why students behave and think as they do. They provide insight into students' strengths and weaknesses. Many of these studies also provide information on preferred or better ways of learning.

According to some authors (e.g., Coffield, Moseley, Hall, & Ecclestone, 2004; Dunn, Dunn, & Price, 1984; Hawk & Shah, 2007; Honey & Mumford, 1982; Jackson, Hobman, Jimmieson, & Martin, 2008; Kolb, 1984; Myers & McCaulley, 1985; Pashler, McDaniel, Rohrer, & Bjork, 2009; Schurr, Ruble, Henriksen, & Alcorn, 1989), people have characteristics

whereby they either learn better, or prefer to learn, through certain methods and modalities (e.g., kinesthetic, auditory, visual). This preference occurs either through learned behavior or through innate neurological propensities.

The PRF can be used to help determine if graduate and undergraduate students have different characteristics in the way they learn and process material. Accordingly, this study uses the PRF to compare the two groups. The purpose of this study is to determine if graduate and undergraduate students in a college of education have preferred, or better, ways of learning. Such information can help teachers determine if the two groups should be taught differently or the same. In the context of this study, the term "teachers" shall refer to those who teach students in college. The term "students" refer to those in college who are learning to be teachers. The students are both graduate and undergraduate students.

Method

Procedure

Over a period of five years, students in 14 classes took the Personality Research Form (PRF). The PRF measures students' characteristics. The classes were part of a college of education at a public university, with about 13,000 students, in the Midwest. Three hundred and fifteen students took the inventory. Of these students, 29 did not provide complete data (e.g., missing gender, year in school) and their responses were not used in the study. Fifty-seven graduate students and 229 undergraduate students provided completed inventories. About half the students came from a major metropolitan area and the rest came from other geographic areas (e.g., suburban, rural areas). There were 113 males, and 173 females in the study; about 87% were Caucasian, 4% African-Americans, 8% Hispanics, and 1% Asian. Professors told the students that taking the PRF was voluntary, their responses would be confidential, and that whether or not they took the inventory, and whatever their responses, had no bearing on their grades and any evaluations of them. There were no students who decided not to take the inventory. Professors and the researcher told the students that taking the PRF would provide them the opportunity to understand themselves better. They were also told that the PRF would help them learn a perspective to view students, colleagues, supervisors, and people in general (i.e., view them from the perspective of the factors that comprise the PRF scales). A psychologist administered the PRF to the students during their regular class period. The psychologist returned in approximately two week to give the students their inventory results and to provide an interpretation and facilitate discussion.

Instrument

The test that was used in this study was the Personality Research Form. A brief description of the PRF scales:

Abasement: gives in to other people, accepts blame and criticism, subordinating.
Achievement: competitive, aspires to accomplish difficult tasks.
Affiliation: enjoys being with people.
Aggression: enjoys fighting and arguing, easily annoyed.
Autonomy: does not like commitments or responsibilities to people, places, or obligations.
Change: enjoys new and different experiences, dislikes routine.
Cognitive Structure: is not comfortable with ambiguity or uncertainty.
Defendence: defensive against real or imagined threats from people, does not accept criticism readily.
Dominance: likes to direct and control others.
Endurance: willing to work long and hard, does not give up easily.
Exhibition: enjoys being the center of attention.
Harmavoidance: wants to avoid harm.
Impulsivity: acting without thinking things through first.
Nurturance: willing to give sympathy and comfort, to help them, to assist.
Order: likes to have things neat and orderly.
Play: likes to have fun.
Sentience: aware of smells, sounds, sights, tastes, and the way things feel.
Social Recognition: concerned about reputation and the approval of others.
Succorance: seeks sympathy and reassurance.
Understanding: wants to understand things; has intellectual curiosity.
Desirability: tendency to present self positively and favorably.

The Personality Research Form has a long history in the area of personality assessment (Jackson, 1999). It is appropriate for those 13 years old and older, in grades 7-16, adults, and with college students. Schools, colleges, clinics, guidance centers, business, industry, career and personnel counseling, personnel selection and placement, managerial development, and research are settings and situations where it can be useful. Norms are available for adolescent and various adult populations including college students, psychiatric inpatients, and criminal offenders. The PRF is largely based on the works of Henry Murray (1938). He and his colleagues at Harvard Psychological Clinic attempted to

provide a set of variables that would comprehensively describe personality.

The PRF internal consistency reliabilities of the PRF have ranged between .50 and .91 (median = .70), and test-retest reliabilities have ranged between .80 and .96 (median = .91). In terms of reliability values, correlations between PRF scale scores and separate ratings of trait-relevant behaviors ranged from .16 to .64 (median = .27); another study of correlations between self- and roommate-ratings on the PRF constructs ranged from .27 to .74 (median = .53)(Sigma Assessment Inc., 2005-2007).

Results

Table 1 provides summaries of the comparisons between college of education undergraduate and graduate students. Data analysis entailed the use of t-tests, as well as Cohen's *d* effect size. To correct for type I errors because of the number of t-tests, a Bonferroni correction was used (also called Fisher's method of alpha splitting; Kusuoka, & Hoffman, 2002). Results indicated graduate students scored statistical higher than undergraduate students on Achievement, Harmavoidance, Understanding, and Desirability scales. All other comparisons were not significant using the present criteria.

Discussion

It is important to remember that the results reflect undergraduate and graduate students as groups; there are individuals who do not reflect their group's profile. It should also be noted that even though the PRF purports to measure traits, this does not mean that people are not capable of exhibiting behaviors that are not characteristic of them. In education (and therapy) we assume that people are capable of learning and changing (Baltes, Reese, & Lipsett, 1980; Boud, Keogh, & Walker, 1985; Drubach, 2000; Hopson, 1981; Kandel, Schwartz, & Jessell, 2001; Kidd, 1978; Knowles, 1980; Kolb, 2000; Neville, & Bavelier, 2000; Rutter & Rutter, 1992; Sousa, 2001; Steinbach, 1993; Tennant, 1988; Tennant & Pogson, 1995; Tulving, & Craik, 2000). There is considerable neurological evidence to substantiate this assumption (Eriksson et al., 1998; Liggan, & Kay, 1999; Linden, 2006; Rakic, 2002; Rioult-Pedotti, Donoghue, & Dunaevsky, 2007; Zhao et al., 2003). Therefore, if a student has a characteristic indicted on a scale, this does not mean they are not capable of expressing or learning how to increase or decrease characteristics on the other part of the scale. For example, an individual who scores low on the Desirability scale (high scores reflect tendency to present self favorably) can increase this characteristic by learning more about their positive qualities, or by engaging in tasks that result in success--thus, possibly increasing a more positive appraisal of themselves.

A number approaches can be used to deal with the results of this study. For example, the results indicated that undergraduate students had lower Achievement and Understanding scores (reminder: high Achievement scores indicate willingness to aspire to do difficult tasks; high Understanding scores indicate a desire to obtain knowledge and understand the world around them). A teacher who wants to cater to these students' characteristics might avoid providing difficult tasks for them, and minimize explanations of what they teach. On the other hand, a teacher education program might want to increase these characteristics in their undergraduates. It is interesting to determine if there is a relationship between Achievement and Understanding with Desirability: do students have lower opinions of themselves because they do not have high levels to achieve and understand? Therefore, can Desirability scores be increased by having students achieve difficult goals and by instilling in them a desire for knowledge? To cater to graduate students' higher need to achieve and understand, a teacher might provide challenging tasks for them, and provide them with more explanations and information (compared to what they provide to undergraduate students).

If a goal of a teacher education program is to encourage bachelor level students to go on to graduate school (Heming, 1984, recommended that a graduate level education be required for teaching) then undergraduates' lower Achievement needs might be increased by encouraging them to have higher aspirations. Increasing their appreciation for learning and knowledge might increase their need for Understanding. Their Desirability scores might be increased by teachers informing them that they have the ability and characteristics to continue with their education and do graduate work.

A teacher can respond in a number of ways to the characteristics indicated on Harmavoidance scale (high scores indicate willingness to take risks). The response would depend on the teacher's goals. For example, the lower Harmavoidance scores of undergraduates can be considered a desirable or undesirable characteristic. On the one hand, this implies that undergraduate students are more apt to think "outside the box," and be innovative. On the other hand, they may take risks that are ill considered or place people and programs in jeopardy. A teacher might want to caution them about taking risks, and provide information on consequences of behaviors. In terms of graduate students' responses to the Harmavoidance scale, their responses indicate that they want to be safe and not engage in risky behavior. These might be considered beneficial characteristics. On the other hand, these might be characteristics that mitigate creativity and openness to

Table 1
Comparisons (t-tests) of Graduate and Undergraduate Pre-service Teachers Scores on the Personality Research Form

	Graduate[a]		Undergrads[b]				
PRF Scales	*Mean*	*SD*	*Mean*	*SD*	*df*	*t Stat*	*P-value*[c]
Abasement	6.68	2.89	6.72	2.59	80	-0.10	0.92
Achievement	10.89	2.87	9.90	3.14	92	2.30	0.02*
Affiliation	10.33	3.78	10.72	3.46	81	-0.70	0.49
Aggression	8.26	3.61	8.84	3.42	83	-1.10	0.28
Autonomy	5.91	3.01	6.17	3.50	97	-0.55	0.58
Change	8.51	2.74	8.57	3.19	98	-0.14	0.89
Cognitive Structure	9.70	3.01	9.22	3.46	96	1.05	0.30
Defendence	7.00	3.09	7.33	3.45	94	-0.71	0.48
Dominance	9.84	3.51	9.68	3.92	94	0.31	0.76
Endurance	10.32	2.89	9.75	3.25	94	1.30	0.20
Exhibition	7.89	4.27	8.54	4.11	84	-1.03	0.31
Harmavoidance	9.86	3.81	8.38	4.62	101	2.51	0.01*
Impulsivity	6.26	3.49	7.08	3.71	90	-1.56	0.12
Nurturance	12.14	2.55	12.06	2.92	96	0.20	0.84
Order	8.49	4.62	8.31	4.90	90	0.27	0.79
Play	9.37	3.05	9.94	3.36	93	-1.25	0.21
Sentience	9.26	3.26	9.90	3.25	86	-1.32	0.19
Social Recognition	8.96	2.69	8.46	3.54	109	1.19	0.24
Succorance	8.84	3.93	9.13	4.02	88	-0.49	0.63
Understanding	8.70	3.43	7.41	3.68	91	2.50	0.01*
Infrequency	0.25	0.51	0.33	0.68	111	-1.06	0.29
Desirability	11.81	2.49	10.79	2.72	92	2.70	0.01*

Note: t Critical two-tail = 1.98
[a]Grads, *n* = 57. [b]Undergrads *n* = 229. [c]P(T <= t) two-tail, alpha level = .05, Bonferroni correction = 0.031.

changes. If teachers want their graduate students to be more innovative and try new and different ideas that may be risky, then they may want to consider having plans to deal with reticence on the part of the students. It might be beneficial for the teacher to investigate their fears and concerns. The teacher might then teach them how to deal with their concerns.

There are many applications of the PRF. For example, Kourilsky (1996) found effective teaching related to the use of generative teaching principles, social maturity, receptivity to criticism, and to ability to incorporate criticism. Some of the PRF's scales can help provide information on these factors. The PRF's Social Recognition scale provides information on the degree to which a person is concerned about what other people think of the person, and the Autonomy scale provides information on the degree to which a person will be committed to obligations. These two scales might tap into elements of social maturity. In regard to Kourilsky's point that effective teachers should be receptive to criticism, and have the ability to incorporate criticism, the PRF's Defendence and Change scales provide information on these characteristics: the Defendence scale measures the person openness to criticism and the person's defensiveness; the Change scale measures the person's willingness to change and try new and different experiences.

There are a number of limitations and caveats concerning this study. This study found differences, as measured by personality factors. However, other factors could affect the results. For example, education might increase the factors measured in the Achievement, Understanding, Harmavoidance, and Desirability scales. Therefore, the differences found on these scales might be the function of education rather than personality characteristics. In addition, maturation might account for the differences: the mean age of the undergraduate students was 21.03 (SD = 4.16), for graduate students it was 26.16 (SD = 7.92).

The samples in this study consisted of students training to be in different fields of teaching. Therefore, the results of this study could pertain to students in teacher education programs in general. However, more relevant information might be obtained by studying students in particular areas of teaching, for example, there is evidence from PRF studies (Jackson, 1999) that there are differences in the profiles of math-science-

physics teachers and high school social science teachers. Therefore, there might be different profiles for students learning to teach the various areas of teaching (e.g., elementary school, foreign language, special education, music, physical educations).

Greater understanding of self and others has been helpful in many areas of society. The insight provided by psychological inventories such as the PRF can help teachers and students discern their characteristics. Such insight can help students understand themselves better and help teachers determine where they should modify their methods of teaching in order to better educate their students.

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