



Volume 15, 2020

THE VALIDATION OF USING ASSESSMENT TOOLS AND A THEORY TO MENTOR DOCTORAL STUDENTS WITH INTEGRITY AND TRUSTWORTHINESS

L. R. Roberts*

Right Angle Educators,
West Cape May, NJ, USA

laura@rightangleeducators.com

* Corresponding author

ABSTRACT

Aim/Purpose	The primary aim of this study was to reveal the assessment tools and a theory preferred to mentor doctoral students with integrity and trustworthiness. The connection between mentors' feelings of trustworthiness and protégé success were explored.
Background	This study examines the concept presented in 1983, 1985, and 1996 by Kram of mentor relations (MR) theory, which illustrates that graduation rates can improve with effective mentoring. In the United States, doctoral programs have low graduation rates. Scholars and researchers agree that doctoral programs must develop ways and means to improve their graduation rates. This researcher examined an extension of Kram's mentor relations theory by employing the Mentor Integrity and Trustworthiness (MIT) theory, which depicts that mentors with a strong sense of integrity and trustworthiness provide a safe haven for protégés to succeed. As supported by Daloz, a trustworthy mentor provides a safe haven for protégés to take the intellectual risks required to produce an original contribution to the canon of scholarly knowledge in the form of a doctoral dissertation.
Methodology	A quantitative research methodology of data collection ensued including the researcher generated MIT scale and the mentors' perceptions of protégés' independence (MPPI) scale, a survey to establish acceptable levels of internal consistencies for items on the two scales, a supported evidence of the content validity of the two scales, the researcher's analysis of the validity of the MIT theory, and a multi-stage sampling method to recruit a research sample of 50 mentors from four universities in the eastern part of the United States from several education-related doctoral programs. The doctoral programs

Accepting Editor Felix O Quayson | Received: April 27 2019 | Revised: September 3, September 28, October 23, 2019 | Accepted: December 17, 2019.

Cite as: Roberts, L. R. (2020). The validation of using assessment tools and a theory to mentor doctoral students with integrity and trustworthiness. *International Journal of Doctoral Studies*, 15, 29-56.

<https://doi.org/10.28945/4475>

(CC BY-NC 4.0) This article is licensed to you under a [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/). When you copy and redistribute this paper in full or in part, you need to provide proper attribution to it to ensure that others can later locate this work (and to ensure that others do not accuse you of plagiarism). You may (and we encourage you to) adapt, remix, transform, and build upon the material for any non-commercial purposes. This license does not permit you to use this material for commercial purposes.

	were diverse in terms of selectivity, type of degree, and mentors' years of experience.
Contribution	This research study contributes to existing literature knowledge by generating the relationship between mentors' feelings of trustworthiness and protégés' success as measured by graduation rate and the number of awards won by protégés. The validation of the mentor integrity and trustworthiness (MIT) scale and the mentor perceptions of protégé independence (MPPI) scale, and the supported evidence of content validity and reliability for both scales will deepen and extend the discussion of doctoral mentoring in higher education.
Findings	Results indicated that mentors' feelings of trustworthiness were correlated with the number of dissertation awards won by protégés and with graduation rates. Graduation rates and dissertation awards rates were not measured directly, but were reported by the mentors. In addition, the researcher found that mentors perceived their protégés to be independent scholars, in general, however, minimally in the area of writing the research methods section of their dissertation.
Recommendations for Practitioners	The researcher discussed the practical implications for mentors' professional development in trustworthiness and integrity. The researcher also provided the Right Angle Research Alignment table to help protégés organize and manage the research methods section of their dissertation.
Recommendations for Researchers	Researchers should continue to explore MIT theory with experimental methods to attempt to improve the internal validity of the theory.
Impact on Society	The researcher encourages scholars to test the MIT theory in mentoring relationships that go beyond doctoral studies such as mentoring in business and in the arts. The researcher also encourages scholars to test whether the MIT theory is relevant in other kinds of teaching relationships such as coaching and tutoring.
Future Research	Further research questions that arise from this study are as follows: What can mentors do to improve their integrity? What can mentors do to improve their feelings of trustworthiness? How can the MIT and MPPI instruments be refined and improved?
Keywords	doctoral mentoring, mentor trustworthiness, mentor integrity, transformation to independent scholar, protégé development

INTRODUCTION

“Be impeccable with your word. Speak with integrity. Say only what you mean. Use the power of your word in the direction of truth and love.” —Don Miguel Ruiz, 1997

Successful and timely completion of the doctoral degree is an important goal for doctoral students in higher education. Doctoral students' scientific contributions to the canon of scholarly knowledge benefits colleges and universities in higher education, which improves their international rankings (van de Schoot, Yerkes, Mouw, & Sonneveld, 2013; Woolderink, Putnik, van der Boom, & Klabbers, 2015). In addition, doctoral students' scientific contributions benefit society due to the practical value of applied scientific knowledge and increased information in the world (Woolderink et al., 2015). Furthermore, the professional development of doctoral students may occur as a result of doctoral completion. The following connectives are likely to benefit doctoral students such as a psychological benefit of improved self-esteem linked to the completion of a difficult task (Lovitts, 2001), and better

preparation to compete in the job market as research scientists, scholars, educational leaders, and university professors (National Science Board, 2003).

Another important concern is that doctoral student attrition is expensive for universities. Many doctoral programs provide stipends to students in exchange for teaching and research assistantships. Program administrators consider these stipends as investments in student productivity that will contribute to the scientific productivity of the university. If students leave part way through their program these investments never come to fruition. One study claimed that a 10% decrease in doctoral student attrition translated to a yearly savings of \$1 million for the university (Smallwood, 2004).

Doctoral faculty are also impacted by doctoral student attrition. Faculty invest precious time and resources in the development of their advisees and protégés. In some doctoral programs, students work together with faculty members on research teams that are supported by faculty grants. Students' dissertation research ideas are integrated across the members of the research team; their ideas fit together like a jigsaw puzzle. If students leave the research team before completing their dissertation, they let down the whole team and faculty may feel their time has been wasted (Lunneborg & Lunneborg, 1973).

STATEMENT OF THE PROBLEM

There is consensus among experts that the goal of doctoral education is the transformation of a dependent student to an independent scholar (Baker, Pifer, & Flemion, 2013; Lovitts, 2008; Roberts & Bandlow, 2018; Roberts & Ferro Almeida, 2019; Roberts, Tinari, & Bandlow, 2019; Woolderink et al., 2015). Many doctoral students in the US fail to make this transformation as evidenced by data showing doctoral student drop-out rates averaged about 50% (Craft, Augustine-Shaw, Fairbanks, & Adams-Wright, 2016; Golde, 2005; Gonzalez, Marin, Figueroa, Moreno, & Navia 2002; Gonzalez et al., 2001; Grant, Hackney, & Edgar, 2014; Ibarra, 1996; Lovitts, 2001, 2005; Most, 2008; Nettles, 1990; Nettles & Millet, 2006; Solorzano, 1993; Vaquera, 2007).

Effective mentoring has shown to be a solution to the attrition of doctoral students (Council of Graduate Schools, 2016; Curtin, Stewart, & Ostrove, 2013; Golde, 2005; Grant et al., 2014; Luna & Cullen, 1998; Welton, Cumings Mansfield, Lee, & Young, 2015; Woolderink et al., 2015). However, experts and theorists disagree on the definition of effective mentoring.

This researcher proposes that effective mentoring has to do with being trustworthy. One purpose of this study was to create two new research instruments (the mentor integrity and trustworthiness [MIT] scale and the mentors' perceptions of protégés' independence [MPPI] scale) and then collect data to test psychometric validity of the research instruments. A second purpose was to test whether the data were consistent with the mentor integrity and trustworthiness (MIT) theory.

LITERATURE REVIEW

Theories of effective mentoring are incomplete

Current theories of mentoring draw from theories of self-regulation, systems operations, leadership, organizational behavior, adult development, and adult learning (Orland-Barak, 2010; Ragins & Kram, 2007). However, these theories are incomplete in one important area: not enough attention on the qualities and behaviors of the mentor that nurture a positive relationship with the protégé. Kram (1983, 1985, 1996) put forward the mentor relationship (MR) theory to provide a framework for researchers to begin to explore what these mentor qualities and behaviors might look like. Schunk and Mullen (2013) claimed mentors' qualities and behaviors may have a positive impact on protégés' success, however current theories are inadequate to identify the specific mentor qualities and behaviors that bring about positive outcomes for protégés. The researcher intended for this paper to address this gap in the literature by testing whether mentors' integrity and trustworthiness are linked to successful outcomes for protégés and, if yes, what might be a plausible logic model to explain the link.

The importance of trust in mentor/protégé relationships

Research suggests that it is important for effective mentors to create trusting relationships with protégés. For example, consider data from an exploratory qualitative study (Roberts & Bandlow, 2018; Roberts & Ferro Almeida, 2019; Roberts, Tinari, & Bandlow, 2019) in which the researchers asked 21 effective mentors, “How important is it to create trust with students?” A large majority of the respondents (76%) said trust is “critical,” “essential,” “absolutely vital,” “fundamental,” or “really important.” Fourteen percent said trust is “important.” One person said, “Trust is a given,” and one person said, “I assume they do trust.” None of the mentors said trust was unimportant. The researchers concluded from these data that trust is very important in a successful mentor–protégé relationship.

These findings (Roberts & Ferro Almeida, 2019) were consistent with theory and empirical evidence presented by Tschannen-Moran and Hoy (Hoy & Tschannen-Moran, 1999; Tschannen-Moran & Hoy, 1998) that show that students are likely to reach higher achievement when trust is present in the mentor-protégé relationship. Thus, in the current study, the researcher examined the hypothesis that mentors’ integrity and trustworthiness correlated with their students’ achievement as measured by their reports of students’ graduation rates and the number of dissertation awards students had won and the extent to which students had achieved independent scholar status.

Trust and the risk of failure

A doctoral program is a high-stakes degree for the protégé and the mentor. It requires a high degree of investment and commitment from both people; they must count on each other and there is a real risk of failure for both. Failure is a possibility even at the first step of the journey for protégés’ application to the doctoral program. To follow this line of logic further, supposedly protégés are accepted into doctoral programs, however, they are still at risk for failure because there is a 50% chance that they will never complete the degree (Craft et al., 2016; Golde, 2005; Gonzalez et al., 2002; Gonzalez et al., 2001; Grant et al., 2014; Ibarra, 1996; Lovitts, 2001, 2005; Most, 2008; Nettles, 1990; Nettles & Millet, 2006; Solorzano, 1993; Vaquera, 2007). In this paper, the researcher hypothesized that the probability of failure could be reduced if protégés could find mentors who had integrity and faith in their own trustworthiness.

How does trust impact teaching and learning?

Goddard, Tschannen-Moran, and Hoy (2001) found that when there is a trusting relationship between a teacher and a student, graduation is more likely and the student is likely to perform at a higher level. A partial explanation of these findings is that when students trust their teachers, the students are more likely to believe the teacher and they are more likely to take the risks required for learning (Goddard et al., 2001).

The relevance of trust in doctoral education

Doctoral education is the capstone educational experience for many protégés. Up until this point in their education, protégés often consider themselves as consumers of knowledge. The hallmark of doctoral education is for a protégé to transform from a consumer of knowledge to a creator of knowledge. Thus, doctoral education requires a protégé to venture into uncharted scholarly territory; it is a journey of discovery. Travelers on this path must develop creativity and faith in themselves (Baker et al., 2013; Lovitts, 2008; Roberts & Bandlow, 2018; Roberts & Ferro Almeida, 2019; Roberts, Tinari, & Bandlow, 2019; Woolderink et al., 2015).

The process of writing a doctoral dissertation requires protégés to master micro-skills: they must tackle complex problems of logic and intuition. They must face intellectual decisions in the process of writing strong research questions such as writing definitions of constructs, creating methods to measure constructs, and writing definitions of populations and samples. They must also create methods to recruit samples, collect data, analyze data, interpret analyses, synthesize results, discussions of

the practical and scholarly implications of the findings. This list of intellectual decisions is just the skin of the apple (McAlpine, Jazvac-Martek, & Hopwood, 2009).

Writing a dissertation is a long-term creative project; it requires a great investment of time and intellectual energy to master all of the necessary skills and to execute the project. Protégés must have faith in their own creativity, logical abilities, and intuitions. In many cases, a dissertation idea starts from an intuition based on one's own observations at work or in life (Snieder & Larner, 2003). This intuition then grows and becomes a driving question which leads the protégé into the scholarly literature to find answers to the research driving question(s). Protégés must learn to trust themselves and develop faith and belief that the topic is important enough to warrant such great devotion. A doctorate is a high-stakes degree because it requires a great investment of time, money, and energy and the likelihood of success is at 50% (Craft et al., 2016; Golde, 2005; Gonzalez et al., 2002; Gonzalez et al., 2001; Grant et al., 2014; Ibarra, 1996; Lovitts, 2001, 2005; Most, 2008; Nettles, 1990; Nettles & Millet, 2006; Solorzano, 1993; Vaquera, 2007).

A trusting relationship with a mentor is especially important. A trusting relationship is only possible when mentors perceive themselves to be people of professional and personal integrity. Moreover, based on Bandura's social learning theory (2001), sustained contact with a mentor may gradually cause trustworthiness to become internalized by the protégé. When protégés perceive themselves as trustworthy, they may be more willing to take the risks necessary to present original and creative ideas in the form of a dissertation.

Trust in mentor–student relationships

Empirical evidence showed that effective mentors nurture trusting relationships with protégés (Anderson, Day, & McLaughlin, 2006; Baker et al., 2013; Gearity & Mertz, 2012; Holley & Caldwell, 2012; Kram, 1985; Lovitts, 2005; Luna & Cullen, 1998; Nettles & Millett, 2006; Orellana, Darder, Pérez, & Salinas, 2016; Weidman, Twale, & Stein, 2001). This is consistent with Daloz (1986) who claimed that students ideally go through a transformation under the care and guidance of a mentor who has the skills needed to nurture a relationship in which the student can experience fundamental trust as the basis for growth.

Mentor as safe haven

According to Daloz (1986), when protégés meet their mentors, they encounter a space that can be described as a safe haven. When trust is present, the protégé gains at least three benefits during the meeting. First, consider the situation where protégés are struggling with their logic model or suppose they are lacking some expert knowledge about research methods. If they trust their mentors, they know that mentors will ask the right questions to help them reinforce their logic model and that mentors will direct them to the correct resources to fill the gaps in their research methods knowledge. A second benefit that occurs when trust is present is that students know that they can try out their unconventional, out-of-the-box ideas. When trust is present, protégés know the mentors will not cut them off or ridicule them, but instead will welcome new ideas and encourage further exploration. Another benefit that occurs when trust is present is that students are allowed to fail and, if they fail, the trustworthy mentors will encourage protégés to pick themselves up and try again. Research has shown that protégés were more receptive to learning from their mentors when levels of trust were high (Fleig-Palmer & Schoorman, 2011).

Trust and attachment theory

The theme of mentor as a safe haven comes from attachment theory (Bowlby, 1988) and is a glittering thread that runs through much of the research on effective mentoring. Attachment theory describes healthy growth for young children. Best (2011) argued that attachment theory could be generalized to adult relationships between supervisors and employees. This researcher argues that attach-

ment theory describes relationships between doctoral mentors and protégés. The research on the importance of trust in the mentoring relationship is consistent with attachment theory because protégés secure trusting attachment to their mentors and take risks to learn; however, they are willing to move outside of their comfort zone to try new things and explore new ideas and skills without the feeling of anxiety.

The limitation of applying attachment theory in the doctoral mentoring context is that there is a danger of casting the mentor–protégé relationship as a parent–child relationship. This is an incorrect model because the protégé is an adult, not a child. Unhealthy co-dependencies can emerge if either the mentor or the protégé has a parent–child model in mind to describe the relationship (Gardner, 2008; Roberts & Bandlow, 2018; Woolderink, et al., 2015). Once mentors and protégés become aware of this potential problem, this researcher believes they can avoid it.

Does mentor integrity matter?

According to Tschannen-Moran and Hoy (1998, 2000) integrity is an important component of trust. By extension, this researcher argues that mentors who perceive themselves as trustworthy also perceive themselves to have a high degree of integrity. Drawing from attachment theory, this researcher hypothesizes that mentors who trust themselves and who have a high degree of personal integrity will transmit a sense of safety and security to their protégés. This sense of safety, in turn, will empower the protégés to take the risks necessary to create a dissertation that adds an original contribution to the canon of scholarly knowledge.

DESCRIPTION OF THE STUDY

Hypotheses

This researcher hypothesizes that mentors who perceive themselves as trustworthy have higher graduation rates than mentors with lower perceptions of trustworthiness. Furthermore, the researcher hypothesizes that mentors who perceive themselves as trustworthy have protégés who write higher quality dissertations than those who had lower perceptions of trustworthiness. Finally, the researcher hypothesizes that mentors who perceive themselves as trustworthy have protégés who attain higher levels of independence as scholars.

A definition and assessment of mentor integrity and trustworthiness

To test the researcher's hypotheses of positive correlations between mentors' integrity and protégés' success, the researcher needed to define and measure mentor integrity and trustworthiness. A careful review of the literature revealed a gap in the scholarly literature showing no researcher had created an instrument to measure doctoral mentor integrity and trustworthiness. Thus, one of the researcher's goals for this paper was to create and validate such an instrument. Tschannen-Moran and Hoy (1998, 2000) provided the foundational definition for this effort in their seminal work in which they conceptualized trustworthiness as a multidimensional construct composed of (a) benevolence, (b) honesty and reliability, and (c) competence. This researcher reviewed the literature for a research instrument that measured trust in an educational context and found a useful model in Tschannen-Moran's 2009 trust scales. Although Tschannen-Moran (2009) measured teachers' trust of principals, this researcher adapted most of the items to measure the extent to which mentors perceived themselves to possess personal integrity and felt trustworthy. Some more recent studies show that Tschannen-Moran's conceptualization of the definition of trust and her model for assessing trust continue to be relevant in scholarly studies (Mitchell, Kensler, & Tschannen-Moran, 2018; Tschannen-Moran & Garies, 2015).

Doctoral protégé success

In the Hypotheses section, the researcher posed several hypotheses pertaining to the links between doctoral protégé success and mentor integrity and trustworthiness. To test these hypotheses, the researcher needed to define and measure doctoral protégé success. Countless different ways could measure doctoral protégé success, but the researcher focused on just three indicators as follows. Graduation is the most obvious marker and a high quality well-written dissertation is a marker of success. There is some subjectivity in the evaluation of a “high quality” dissertation. However, the researcher assumed that a dissertation recognized by a university, national, or international award, would be of high quality. Another, less tangible criterion of protégé success would be the extent to which protégés make a successful transformation from dependent student to independent scholar.

The researcher measured these indicators as follows. For graduation, the researcher used individual mentors as the unit of analysis and computed the percentage of their protégés who they reported had completed their doctoral degree. For dissertation quality, again, the researcher used individual mentors as the unit of analysis and computed the number of dissertation awards they reported their protégés had won. For transformation to independent scholar, the researcher used mentor–protégé dyads as the unit of analysis and the researcher asked the mentors to nominate one of their protégés and then evaluate the extent to which their target protégés had made a successful transition to independent scholar status. No instrument was available in the scholarly literature to measure this construct. Thus, another objective of this study was to create and validate a research instrument to measure mentors’ perceptions of their protégés’ transformations to independent scholar status.

PURPOSE OF STUDY

The sections below explain the steps that were used to create the Mentor Integrity and Trustworthiness (MIT) instrument and the Mentor’s Perception of Protégé’s Independence (MPPI) instrument. One purpose of this study was to create these two new research instruments and then collect data to test psychometric validity of the research instruments. A second purpose was to test whether the data were consistent with the mentor integrity and trustworthiness (MIT) theory.

RESEARCH METHODOLOGY

SAMPLING

One of the goals of this study was to pilot test research instruments to measure several facets of mentoring in the context of doctoral studies. To this end, the researcher created a questionnaire and distributed it to 180 mentors at four universities in the eastern part of the United States. Fifty mentors responded; thus, the response rate was 27%, which is slightly below a typical response rate of 33% for studies of this type (Nulty, 2008).

Sampling occurred in a three-stage process. In stage one, the researcher used convenience sampling. The researcher obtained permission from four colleagues who held the role of program head in educational doctoral programs to recruit doctoral mentors and protégés to participate in a study on effective mentoring.

In stage two, the program heads provided the researcher with email addresses for all of the doctoral mentors in each program, and the researcher used a census sampling methodology to invite all mentors to participate in the study. The invitation included a SurveyMonkey link to a consent form and the questionnaire. The sampling frame consisted of 180 mentors from all four programs. In addition to the perceptions of the mentors’, the researcher also conducted a survey to learn of the perceptions of one of each mentor’s protégés.

In stage three, the researcher asked the mentors to invite one of their protégés to participate in the study. In order to match mentors with their protégés, the researcher assigned each mentor/protégé

dyad a unique 4-digit number. The researcher asked each mentor to choose one of his or her protégés at random and to forward an invitation to the protégé with a SurveyMonkey link to a consent form and a questionnaire similar to the one sent to mentors. The protégé was asked to enter the unique 4-digit code on the questionnaire. This method allowed the researcher to match each mentor with his or her protégé by using each dyads' unique code. This method produced a random sample of the mentor/protégé dyads in the four doctoral programs by virtue of the census sampling methodology, each mentor/protégé dyad had an equal chance of participating in the study. The analysis of the data pertaining to the perceptions of the protégés is reported separately. Mentors and protégés could withdraw from the study at any time. However, no participants withdrew from the study.

The researcher submitted a formal Internal Review Board (IRB) proposal to one of the four universities for approval to conduct the research study. At the time of the study, the researcher was a faculty member at one of the universities named, for the purposes of this study, Alpha University. The IRBs for the other three universities allowed the researcher to distribute the questionnaires to their mentors and protégés with the condition that a copy of Alpha University's IRB approval form was included in the request for participation. Each of the other three university IRBs had an approval reciprocity agreement with Alpha university.

The IRB did not identify any conflict of interest between the researcher and the research participants. All participants were informed that the data would be stored in the researcher's password-protected work computer, accessible only to the researcher. Moreover, participants were informed of strict confidentiality protection and all data deleted after three years.

Questions about background information about the doctoral programs and about the mentors themselves were included on the questionnaires to provide a basis for statements about external validity in the discussion section. The researcher used pseudonyms to identify the schools and assured the mentors that the school names are strictly confidential.

The researcher adopted a post-positivist stance and, thus, there was a need to consider researcher biases and take measures to counter those biases. The current study was part of a broader inquiry into the mentor characteristics that bring about protégé success. In prior studies the researcher presented qualitative data to explore the impact of mentor trustworthiness on protégé success (Roberts & Bandlow, 2018; Roberts & Ferro Almeida, 2019; Roberts, Tinari, & Bandlow, 2019). In order to check for validity of the thematic analysis of data, the researcher recruited a second coder to provide a check on consistency of emergent themes. The second coder had different life experiences and different biases than the primary researcher. Thus, the second coder helped to correct for any error as part of the triangulation process (Trochim & Donnelly, 2008).

Drawing from the post-positivist stance the researcher reasoned that a quantitative exploration of the topic would strengthen the triangulation process (Trochim & Donnelly, 2008). To this end the researcher designed a quantitative study, collected, and analyzed quantitative data. The quantitative data assessed mentors' and protégés' perceptions of mentor trustworthiness and perceptions of protégés' successful outcomes.

Then the researcher examined the probability that these two sets of variables were correlated. The results from the mentors' perspectives are presented below. These results show the probability that the two sets of variables are correlated when measured from the mentors' perspective. A separate study shows the probability that the two sets of variables are correlated when measured from the protégés' point of view. Taken together the qualitative data from prior studies, the probability of correlations drawing from quantitative data from the mentors' perspective (current study), and the probability of correlations drawing from quantitative data from the protégés' perspective (presented separately) provide checks for validity and correct some of the researcher bias as part of the triangulation process.

RESULTS/FINDINGS

BACKGROUND CHARACTERISTICS OF THE DOCTORAL PROGRAMS

The mentor sample consisted of 50 faculty members from doctoral programs in education at four universities, 31 (62%) from Alpha University, 4 (8%) from Beta University, 5 (10%) from Gamma University, and 10 (20%) from Delta University. Alpha University is a small, private school near the East coast of the United States and the doctoral program is a relatively new program (three years old) in Educational Leadership. Beta and Delta are larger, private universities, also near the East coast of the United States. The Beta program is a well-established program and the mentors in this study taught in the School Psychology Program, the Special Education Program, and the Teacher Education Program. The mentors from Delta University taught in the College of Education and Human Development. Finally, Gamma University is a larger, private university in the southeastern part of the United States and these mentors taught in the Department of Educational Foundations, Leadership, and Technology (see Table 1). In addition to listing the various types of doctoral programs at each university, Table 1 provides information on the following variables for each university: modal acceptance rate for student applicants, mean percentage of students in different types of doctoral programs (i.e., EdD, PhD, or other type of doctorates), and mean percentage of students in part-time versus full-time programs.

Table 1. Frequency and Percentage of Mentors at Each University and Doctoral Program Descriptive Statistics

University	Programs	Mentors		Modal AR	M				
		f	%		PhD	EdD	Other	PT	FT
Alpha	Educational leadership	31	62	> 75	.34	99.66	0	79.67	20.33
Beta	School psychology, special education, teacher education	4	8	25–50	82.50	0	17.50	27.50	72.50
Gamma	Educational foundations, leadership, and technology	5	10	50–100	92.50	0	7.50	66.80	33.20
Delta	Education and human development	10	20	25–50	97.00	3.00	0	75.50	24.50
Total		50	100	> 75 ^a	35.74 ^b	62.13	2.13	73.24 ^c	26.76

Note. *f* = frequency; *M* = mean; AR = acceptance rate; PT = part-time; FT = full-time; ^a*n* = 26; ^b*n* = 47; ^c*n* = 49.

Program acceptance rates

The researcher asked mentors to report the acceptance rate for students who have applied to their doctoral program. Almost half of the sample (*n* = 24, 48%) did not know their program's acceptance rate. As shown in Table 1, the modal response overall was "more than 75%." There was a differential pattern across schools on this variable. The large majority of mentors at Alpha University claimed

“more than 75%” of applicants had been accepted into their program. Gamma University was also fairly inclusive (modal acceptance rate = 50% to 100%). Whereas, Beta and Delta Universities were relatively selective (modal acceptance rates = 25% to 50%).

EdD, PhD, and other doctoral programs

To get a sense of the different kinds of degree programs that were represented, the researcher asked mentors what percentage of their protégés were in EdD programs, PhD programs, or other doctoral programs. Table 1 shows that, on average, 35.74% of protégés were in PhD programs, 62.13% were in EdD programs, and 2.13% were in other kinds of doctoral programs. An analysis by university revealed most of the protégés at Alpha University were EdD students, whereas most of the protégés at Beta, Gamma, and Delta Universities were PhD students.

Full-time versus part-time programs

Table 1 shows the percentage of mentors who have protégés who are full-time versus part-time students. For the sample as a whole, the split is 73.24% part-time and 26.76% full-time. However, there are stark differences from one university to the next. In particular, the large majority of students at Alpha, Gamma, and Delta Universities were part-time. In contrast, the majority of students at Beta University were full-time.

The researcher asked each mentor how long it took to fill out the questionnaire. The large majority of respondents (95.9%) took less than 15 minutes to finish; only two people (4.1%) took between 15 and 30 minutes to complete the questionnaire. For future uses of this questionnaire, it is reasonable to assume that most mentors will be able to complete the questionnaire in less than 15 minutes and the questionnaire will not pose an undue burden on respondents.

BACKGROUND CHARACTERISTICS OF THE MENTORS

Number of years as a mentor

To provide some background information on the mentors in the sample, the researcher asked several questions about their experiences as a doctoral mentor. The first question was, “How many years have you been a doctoral mentor?” The responses ranged from 1 to 20 years of experience. The data were positively skewed, with a median of 4.50 years and a mean of 6.26 years ($SD = 5.15$). The “years as a mentor” category with the greatest percentage of mentors was “2 years as a mentor” with 20% of the sample ($n = 10$). The researcher deemed this group to be fairly inexperienced in the mentoring role. The “years as a mentor” category with the second largest percentage of mentors was “10 years as a mentor” with 14% of the sample ($n = 7$). The researcher deemed this group to be fairly experienced in the mentoring role. Thus, it is reasonable to conclude that the mentors in this sample represent a fairly wide range in terms of years of experience.

Number of years mentors and protégés have worked together

In this study, the researcher paired each mentor with a current protégé so that she could conduct analyses pertaining to the mentor–protégé dyads. Most of the analyses of the dyads will be presented in a separate paper. For the current paper, the researcher assessed how long the mentor had been working with the target protégé. Descriptive data for this variable are given in Table 2. As can be seen on the table, nine mentors (18%) had been with their protégé less than a year, nineteen mentors (38%) had been with their protégé between one and two years, twelve mentors (24%) had been with their protégé between two and three years, and 10 mentors (20%) had been with their protégés more than three years. If one assumes that the mentor and protégé relationships began when the protégés were just starting their dissertation and one also assumes that a dissertation should take between one

and three years, these numbers look reasonable. However, it would be helpful to have more information; for those who have been with their protégé more than three years, it would be helpful to know how much longer than three years mentors and protégés have been together.

Table 2. Descriptive Statistics for the Length of Time Each Mentor Worked with Each Protégé

Response	Length of time working together	<i>f</i>	Valid %
Valid	Less than 1 year	9	18
	1 to 2 years	19	38
	2 to 3 years	12	24
	more than 3 years	10	20
	Total	50	100

Note. *f* = Frequency

Number of protégés who completed the doctorate

To know how active the mentors were, the researcher asked questions about the number of protégés they had mentored who had completed their degree. The values range from 0 to 36 protégés who completed the degree; the mean and median number of successful protégés for these mentors were six and three protégés, respectively (see Table 3). However, it should be noted that 18% of mentors ($n = 9$) had mentored more than 10 protégés through to completion of the doctorate. These numbers show that the mentors in this sample represent a fairly wide range in terms of experience. It should also be noted that all of the statistics reported in Table 3 are based on mentors' self-reports.

Table 3. Descriptive Statistics for Variables Pertaining to Mentors' Work with Protégés

Variable	<i>M</i>	<i>SD</i>	Min.	Max.
How many doctoral students have you mentored through to completion of the degree? ^a	6.00	8.07	0	36
How many doctoral students are you advising at the current time? ^a	4.90	5.14	0	24
Of those doctoral students you have advised, please estimate the number who dropped out of their doctoral program. ^a	1.08	2.02	0	10
Graduation rate ^b	80.13	29.80	0	100
Number of dissertation awards at university level ^c	.66	1.38	0	6
Number of dissertation awards at national level ^b	.38	.74	0	3
Number of dissertation awards at other levels ^a	.26	.88	0	5
Total number of dissertation awards ^d	1.26	2.69	0	11

Note. *M* = mean; *SD* = standard deviation; ^a $n = 50$. ^b $n = 40$. ^c $n = 44$. ^d $n = 39$.

Number of current protégés

The researcher also asked how many doctoral students each mentor had been advising at the time of data collection. The values ranged from 0 to 24. The mean and median numbers of "current" protégés were 4.9 and 3.0, respectively (see Table 3). It is remarkable that five of the mentors were working with 10 or more protégés at the time of study. These numbers indicate that even though many of the mentors were new to this work, most were very actively engaged in mentoring at the time of the study.

Number of students who dropped out of their program

The researcher asked mentors to respond to the following request, “Of those doctoral students you have advised, please estimate the number who dropped out of their doctoral program.” As shown on Table 3, the number who dropped out ranged from 0 to 10. The mode and the median value for this variable were both zero. Given that the national average for doctoral student drop-out hovers around 50% (Craft et al., 2016; Golde, 2005; Gonzalez et al., 2002; Gonzalez et al., 2001; Grant et al., 2014; Ibarra, 1996; Lovitts, 2001, 2005; Most, 2008; Nettles, 1990; Nettles & Millett, 2006; Solorzano, 1993; Vaquera, 2007) it appears the mentors in the current sample are beating the odds. However, it should also be noted that these data show a slightly inflated picture of success given that 14 of the 28 mentors who had zero protégés drop-out of their program were very new to mentoring and had not had any protégés complete their program either.

Graduation rates

The researcher went a step further by computing graduation rate for each mentor. First, the researcher computed the total number of protégés each person had mentored. Then the researcher computed, for each mentor, the percentage of protégés who had completed their doctorate. For the 40 valid cases on this variable, the mean graduation rate was 80.13% ($SD = 29.80$; see Table 3). Because the data were negatively skewed, the researcher also computed the median graduation rate, which was 91.29%. The graduation rate ranged from zero to 100%. The modal graduation rate was 100%. Fully 45% of the mentors in this sample had a graduation rate of 100%. Given that the modal or typical graduation rate for this sample was twice the national average graduation rate, it appears that the mentors and the programs in this sample were performing much higher than most mentors and programs.

Number of protégés who received a dissertation award

The researcher also asked mentors if any of their protégés’ dissertations had been recognized with awards at the university level, the national level, or another level. The researcher created a Total Awards variable, for all mentors, by adding together the number of dissertation awards their protégés had won at each level. The minimum number of dissertation awards was 0 and the maximum number of dissertation awards was 11.

Table 4. Frequency and Percentage of Mentors by the Number of Dissertation Awards Won by Protégés

Number of Dissertation Awards	Mentors	
	<i>f</i>	Valid %
0	26	66.70
1–2	7	17.95
3–4	2	5.13
5–6	1	2.56
7–8	1	2.56
9–10	1	2.56
11–12	1	2.56
Total	39	100.0
System missing	11	
Total	50	

Note. *f* = Frequency

As shown on Table 4, there were 39 valid cases for this variable. Twenty six mentors (66.7%) had zero protégés who won dissertation awards, seven mentors had one or two protégés who won dissertation awards, two mentors had three or four protégés who won dissertation awards. One mentor was represented in each of the remaining categories for number of dissertation awards won. Although most mentors did not have any protégés who won dissertation awards, it is remarkable that a

third of the valid sample of mentors did have protégés who won dissertation awards and one mentor tallied as many as 11 protégé dissertation awards. It should also be noted that all of the statistics reported in Table 4 are based on mentors' self-reports.

CONSTRUCT VALIDITY OF RESEARCH INSTRUMENTS: CONTENT VALIDITY AND INTERNAL CONSISTENCY

RESEARCH QUESTION 1

Do the data provide evidence of construct validity for the research instrument designed to measure mentors' self-perceived integrity and trustworthiness (i.e., the MIT scale)?

One purpose of this paper was to conduct a validation study for an assessment tool designed to measure a new construct called *mentor integrity and trustworthiness* (MIT). To achieve this end, the researcher created an instrument to measure this construct. As noted above, the researcher adopted the definition of trustworthiness as conceptualized by Tschannen-Moran and Hoy (1998) as a multidimensional construct composed of (a) benevolence, (b) honesty and reliability, and (c) competence. In addition, the researcher used the items in Tschannen-Moran's 2009 trust scales to model the items in the MIT scale. The researcher created a set of 14 items to measure each of the subscales as shown in Table 5. Three items were designed to measure perceptions of mentors' benevolence: one was a general trust item; three were designed to measure perceptions of mentors' reliability; four measured perceptions of mentors' honesty; and three measured whether mentors perceived themselves to be competent in the eyes of their protégés. Some of the items were favorably worded and some were unfavorably worded in an effort to break up a response set. The researcher surveyed 50 mentors asking them to respond to the 14 items using the same Likert-type response options modeled by Tschannen-Moran (2009; Strongly Disagree = 1, Disagree = 2, Somewhat Disagree = 3, Somewhat Agree = 4, Agree = 5, Strongly Agree = 6).

Table 5. Items Designed to Measure the Extent to Which Mentors Perceive Themselves Trustworthy

Item	Subscale and direction						
	B+	B-	C+	G+	H+	H-	R+
I typically act with my protégé's best interests in mind. (B+)	✓						
My protégé trusts me. (G+)				✓			
I tend to neglect my protégé. (B-)		✓					
My protégé can rely on me. (R+)							✓
My protégé has faith in my integrity. (H+)					✓		
I tend to hide my true thoughts and feelings from my protégé. (H-)						✓	
I am competent in guiding my protégé. (C+)			✓				
I let my protégé know what is really going on. (H+)					✓		
I show concern for my protégé. (B+)	✓						
I give my protégé competent guidance. (C+)			✓				
When I promise something to my protégé, I keep my word. (R+)							✓
I follow through on my commitments to my protégé. (R+)							✓
I give my protégé good advice. (C+)			✓				

Item	Subscale and direction						
	B+	B-	C+	G+	H+	H-	R+
I am open and authentic with my protégé. (H+)					✓		

Note. The symbols in parentheses after each item signify the subscale and the direction of each item, either favorably worded (+) or unfavorably worded (-). B = benevolence subscale; R = reliable subscale; H = honesty subscale; C = competence subscale; G = general trust.

The researcher reverse scored the unfavorably worded items and conducted a Cronbach's alpha test to determine whether the items formed a reliable trustworthiness scale when taken together. The researcher also conducted Cronbach's alpha tests for each of the subscales. The researcher combined the "reliability" items and the "honesty" items together in a single subscale. The Cronbach's alpha coefficients for the total scale and for each subscale are presented in Table 6.

As shown in Table 6, with the exception of the Benevolence subscale, the full scale's and all of the subscales' Cronbach's alpha coefficients met the criterion for reliability (e.g., .70 or higher, according to Johnson and Christensen, 2017). The researcher also found the Cronbach's alpha for the Trustworthiness scale and the Honesty–Reliability subscale could be improved by deleting Item 6, "I tend to hide my true thoughts and feelings from my protégé." Thus, the researcher created a general Trustworthiness scale score by computing the mean score for all of the items in the scale with the exception of Item 6. The researcher reverse scored the unfavorably worded items prior to computing the scale and subscale scores. The researcher created an Honesty–Reliability subscale score by computing the mean of all the Honesty and Reliability items, with the exception of Item 6. The researcher created a Competence subscale score by computing the mean of all the Competence items. Because the Cronbach's alpha coefficient for Benevolence was so low, the researcher concluded the items did not load onto a single scale. In subsequent analyses, the researcher treated each of the Benevolence items as individual constructs. Based on the steps listed in this section, the researcher concluded that the Trustworthiness scale possesses content validity and internal consistency.

Table 6. Cronbach's Alpha Coefficients for the Trust Scale and Subscales

Subscale	Cronbach's alpha
Trustworthiness	.81/.86*
Benevolence	.33
Honesty and reliability	.71/.87*
Competence	.82

Note. *These coefficients were computed after deleting Item 6.

Mean levels of mentors' self-perceived trustworthiness

The researcher reasoned it would be helpful to present some descriptive context for the current sample. Thus, she computed the descriptive statistics for the Trustworthiness Scale, the Honesty–Reliability subscale, the Competence subscale, and the Benevolence items; these statistics are presented in Table 7. First, the researcher examined the mean for the Trustworthiness scale, i.e., with all items taken together. The mean was 5.59 and the median was 5.62; the best interpretation of these statistics was mentors tended to "strongly agree" with the Trustworthiness items. Next, the researcher examined descriptive statistics for each Benevolence item and for the subscale scores. As shown in Table 7, the highest mean (5.88) and median (6.00) were for the Benevolence item, "I typically act with my protégé's best interests in mind." The second highest mean (5.76) and median (6.00) were for the Benevolence item, "I show concern for my protégé." The next highest mean (5.68) and median (5.83) were for the Honesty–Reliability subscale. These summary statistics are either very close to or exactly equal to 6, which corresponds to "strongly agree." The next highest mean (5.43) and median (5.33), for the Competence subscale, were between 5 and 6, but closer to 5 (agree). So, the best interpretation of these numbers was that the typical mentor "agreed" that she was competent.

The lowest mean (1.92) and median (2.00) were for the Benevolence item, “I tend to neglect my protégé.” Thus, the typical mentor responded to this item with “disagreement.” In sum, the typical mentor “strongly agreed” with the two positively-worded Benevolence items and with the items on the Honesty–Reliability scale. And, the typical mentor “agreed” with the Competence items, and “disagreed” with the unfavorably worded Benevolence item. Thus, the researcher concluded these mentors generally perceived themselves to be trustworthy.

Table 7. Descriptive Statistics for Trustworthiness Scale, Subscales, and Benevolence Items

Subscale	<i>M</i>	<i>Mdn</i>	<i>Mo</i>	<i>SD</i>	Min.	Max.	Text meaning
Trustworthiness	5.59	5.62	6.00	.34	4.77	6.00	SA
Benevolence Item 1: I typically act with my protégé’s best interests in mind.	5.88	6.00	6.00	.33	5.00	6.00	SA
Benevolence Item 2: I show concern for my protégé.	5.76	6.00	6.00	.43	5.00	6.00	SA
Honesty and reliability	5.68	5.83	6.00	.37	5.00	6.00	SA
Competence	5.43	5.33	5.00	.49	4.00	6.00	A
Benevolence Item 3: I tend to neglect my protégé.	1.92	2.00	2.00	1.01	1.00	5.00	D

Note. *M* = mean; *Mdn* = median; *Mo* = mode; *SD* = standard deviation; Min. = minimum; Max. = maximum; SA = Strongly Agree; A = Agree; D = Disagree.

RESEARCH QUESTION 2

Do the data provide evidence of construct validity for the research instrument designed to measure mentors’ perceptions of their protégés’ levels of independence as scholars (i.e., the MPPI)?

There is consensus among experts that a successful journey of doctoral protégés is defined by a transformation from dependent student to independent scholar (Baker et al., 2013; Lovitts, 2008; Roberts & Ferro Almeida, 2019; Woolderink et al., 2015). Because there was not a scale available in the literature to measure the extent to which mentors perceived their protégés had achieved independent scholar status, it was necessary for the researcher to develop one. The title of this tool is the Mentors’ Perception of Protégé’s Independence (MPPI) instrument. In this section, the researcher presented evidence of the content validity and internal consistency of the MPPI.

Table 8 shows the items the researcher generated for the MPPI. Two foundational, exploratory, qualitative studies by Roberts, Tinari, & Bandlow (2019) and by Hyatt and Williams (2011) showed that effective mentors provide support to help propel their protégés toward independence in the following areas: scholarly thinking, scholarly writing, and research methods. These studies provided the springboard for the specific items in the MPPI as listed in Table 8.

Table 8. MPPI Items Measuring the Extent to Which Mentors Perceived Protégés to be Independent

MPPI item	Mentors' perception	
	(+)	(-)
My protégé is independent in his or her literature search skills. (+)	✓	
My protégé needs a lot of help from me to find information in the scholarly literature. (-)		✓
My protégé is independent in his or her ability to think as a scholar. (+)	✓	
My protégé needs a lot of help from me to think through his or her research ideas. (-)		✓
My protégé is independent in his or her ability to write as a scholar. (+)	✓	
My protégé needs a lot of help from me to write in a scholarly way. (-)		✓
My protégé is independent in his or her ability to develop a sound research methodology. (+)	✓	
My protégé needs a lot of help from me to develop his or her research methods. (-)		✓

Note. Favorably worded items are indicated with (+), unfavorably worded items are indicated with (-).

The researcher computed the Cronbach's alpha for all items taken together, and for each subscale as presented in Table 9.

Table 9. Cronbach's Alpha Coefficients for the MPPI Scale and Subscales

Scale/Subscale	Number of items	Cronbach's alpha
MPPI	8	.89
ILSS	2	.74
IST	2	.57
ISW	2	.80
IRM	2	.81

Note. General scale: MPPI = Mentors' Perception of Protégés' Independence. Four subscales: ILSS = Independence in Literature Search Skill; IST = Independence in Scholarly Thinking; ISW = Independence in Scholarly Writing; IRM = Independence in Research Methods.

With the exception of IST, all of the subscales and the general scale reached the criterion for a reliable scale (i.e., $> .70$). Thus, the researcher computed the scale and subscale scores for each reliable index. For IST, the researcher treated each item as a separate construct. Based on the data presented above, the researcher concluded that the instrument possessed strong content validity and the MPPI scale and subscales (with the exception of IST) possessed acceptable internal consistency.

Mean levels of mentors' perceptions of protégés' levels of independent scholarship

The researcher reasoned it would be helpful to present some descriptive context for the current sample regarding MPPI. Thus, she presented the descriptive statistics for the MPPI scale, subscales, and the IST items in Table 10. The distributions for the general scale (MPPI) and the subscales were approximately normally distributed, with a slight negative skew. The three indices of central tendency for the general scale (MPPI), the subscales ILSS, ISW, and the item "My protégé is independent in his or her ability to think as a scholar," were close to or equal to 5, which corresponded with a response of "Agree." For IRM, the data were approximately normally distributed, but with a negative skew and a slightly lower mean than the other subscales ($M = 4.33$) and the median was 4.5, halfway between 4 (Somewhat Agree) and 5 (Agree). For the item, "My protégé needs a lot of help from me to think through his or her research ideas," the data were somewhat normal, but with a positive skew.

The modal score was 2 or Disagree, the mean and median were 3 or Somewhat Disagree. In general, mentors agreed that their protégés were independent in literature search skills, scholarly writing, and scholarly thinking. Regarding independence in research methods, the typical mentor responded either “agree” or “somewhat agree.” In general, mentors perceived their protégés to be independent, but a little less so for their ability to think through the research methodology.

Table 10. Descriptive Statistics for the MPPI Scale, Subscales, and Items

Scale, subscales, and items	<i>M</i>	<i>Mdn</i>	<i>Mo</i>	<i>SD</i>	Min.	Max.	Text meaning
MPPI	4.66	4.88	5.00	.83	2.75	6.00	Agree
ILSS	5.14	5.00	5.00	.75	3.00	6.00	Agree
ISW	4.54	5.00	5.00	1.16	1.50	6.00	Agree
IRM	4.33	4.50	5.00	1.08	2.00	6.00	Between somewhat agree and agree
IST Item 1 ^a	5.24	5.00	5.00	.69	4.00	6.00	Agree
IST Item 2 ^b	3.00	3.00	2.00	1.29	1.00	5.00	Somewhat disagree

Note. *M* = mean; *Mdn* = median; *Mo* = mode; *SD* = standard deviation; Min. = minimum; Max. = maximum; ^aIST Item 1 = My protégé is independent in his or her ability to think as a scholar. ^bIST Item 2 = My protégé needs a lot of help from me to think through his or her research ideas. General scale: MPPI = Mentors' Perception of Protégé's Independence. Four subscales: ILSS = Independence in Literature Search Skill; IST = Independence in Scholarly Thinking; ISW = Independence in Scholarly Writing; IRM = Independence in Research Methods.

CONSTRUCT VALIDATION OF MIT THEORY

RESEARCH QUESTION 3

Do the data provide evidence of construct validity for the MIT theory?

In this section, the researcher tested whether the data provided construct validity in support of the MIT theory. The MIT theory states that mentor trustworthiness helps protégés to be successful. In order to test for construct validity of the theory, the researcher examined three hypotheses as follows:

Research question 3: Hypothesis A

The researcher hypothesized that trustworthy mentors would have more protégés graduate.

Research question 3: Hypothesis B

The researcher hypothesized that trustworthy mentors would have more protégés receive dissertation awards.

Research question 3: Hypothesis C

The researcher hypothesized that trustworthy mentors would have more protégés who made a successful transition to independent scholar status.

Because mentors were nested within schools, it was important to consider a school level effect for each of the correlations tested below. The researcher examined the correlation between school and each of the outcome variables. None of the correlations was significant. Thus, the researcher concluded that there were no effects of school for the criterion validity tests.

Results for research question 3: Hypothesis A

The researcher hypothesized that trustworthy mentors would have more protégés graduate.

As shown in Table 11 and in Figure 1, mentors' integrity and trustworthiness is favorably linked to their protégé graduation rate. Mentors who perceived themselves to be more trustworthy had higher graduation rates. Mentors who perceived themselves to be less trustworthy had lower graduation rates ($b = 42.15, \beta = .48, p < .002$). According to Cohen's criteria (1988), this was a moderate to large effect. Thus, the hypothesis was supported.

Table 11. Coefficients for the Regression of Protégé Success on Mentoring Integrity and Trustworthiness

Outcome	Predictor b (β)
Mentor's students' graduation rate	42.15**(.48)**
Number of awards	2.48*(.31)*
Protégés' independent scholarship (MPPI)	-.08(-.03)

Note. Outcome = protégé success as measured by graduation rate, number of awards, and MPPI; Predictor = mentors' integrity and trustworthiness (MIT); b = unstandardized regression coefficient, β = standardized regression coefficient, Beta * $p < .05$. ** $p < .002$.

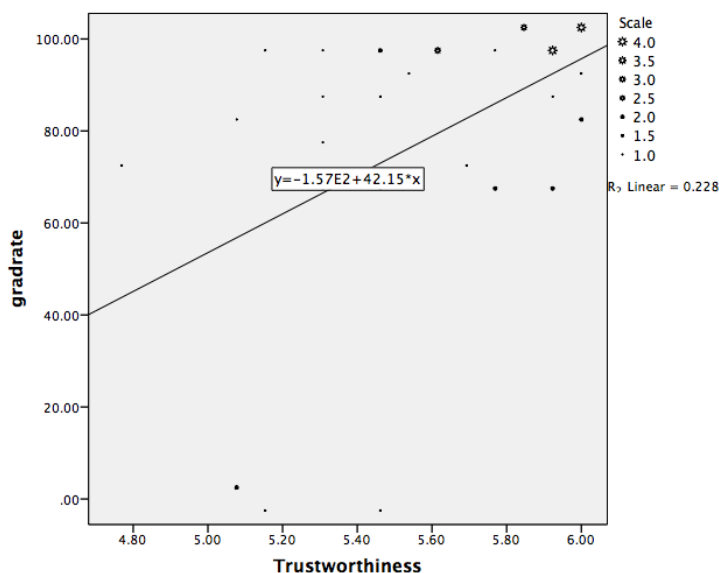


Figure 1. Mentors who perceived themselves more trustworthy had higher graduation rates.

Results for research question 3: Hypothesis B

The researcher hypothesized that trustworthy mentors would have more protégés receive dissertation awards.

As shown in Table 11 and in Figure 2, mentors' integrity and trustworthiness was favorably linked to the number of awards their students had won. Mentors who perceived themselves to be more trustworthy had students who had won more awards. Mentors who perceived themselves to be less trustworthy had protégés who had won fewer awards ($b = 2.48, \beta = .31, p < .05$). According to Cohen's criteria (1988) this was a moderate effect size and the hypothesis was supported.

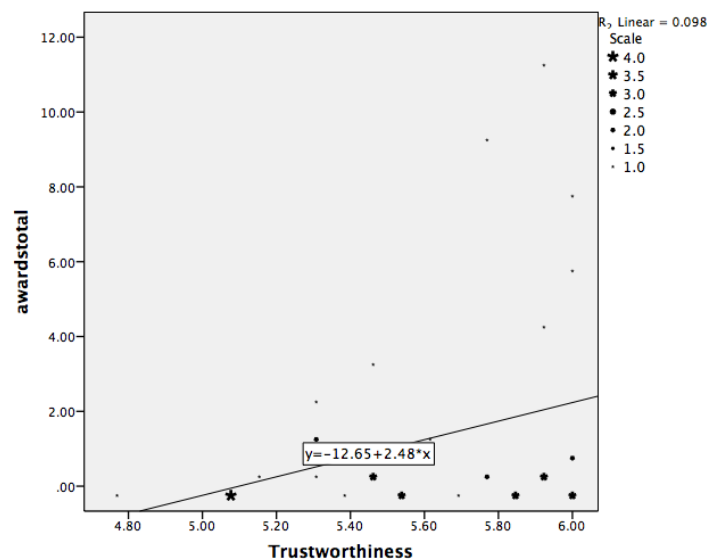


Figure 2. Mentors who perceived themselves more trustworthy were more likely to have protégés who won research awards.

Result for research question 3: Hypothesis C

The researcher hypothesized that trustworthy mentors would have more protégés who made a successful transition to independent scholar status.

To test this hypothesis, the researcher regressed the MPPI scale on the MIT scale. The researcher expected the regression coefficients would be positive and significant. As shown in Table 11, the regression coefficients were not significant ($b = -.08, \beta = -.03, p = ns$) showing no relationship between MIT and MPPI. The data show the relationship between MPPI and MIT was not significantly different than 0. The hypothesis was not supported by the data. It should, however, be noted that the sample size and effect size were small resulting in a low power test; the power of the test to detect a significant effect was only 5.5%. A low power test increases the probability of a type 2 error. It is possible that the nonsignificant result is due to a type 2 error.

DISCUSSION

CONSTRUCT VALIDITY

Construct validity of research instruments

This study indicated evidence of content validity, internal consistency, and criterion validity for two new research instruments pertaining to doctoral mentoring. More specifically, the researcher presented evidence of validity for the MIT instrument that can be used to measure mentor integrity and trustworthiness. These findings were consistent with prior scholarly work on the definition and measurement of trust in an educational context (Hoy & Tschannen-Moran, 1999; Mitchell et al., 2018; Tschannen-Moran & Garies, 2015; Tschannen-Moran & Hoy, 1998, 2000).

In addition, the researcher provided evidence of validity for the MPPI instrument that can be used to measure mentors' perceptions of the extent to which their protégés had attained independent scholar status. This finding was consistent with the qualitative data presented in Roberts and Ferro Almeida (2019). The tests of criterion validity were somewhat mixed; although MIT was correlated with grad-

uation rate and number of dissertation awards, it was *not* correlated with mentors' perceptions of protégés' independent scholar status (MPPI). This finding may have been a limitation of the cross-sectional nature of the data.

According to theory, the link between mentors' trustworthiness and MPPI is a developmental phenomenon and likely be observed with longitudinal data. The researcher had asked mentors to pick a target protégé to evaluate. The researcher did not place any control on which phase of mentoring the mentor–protégé dyad were in. Some mentors may have picked protégés who were just starting their program, whereas other mentors may have picked protégés who were near the end of their program. This methodology introduced a great deal of variability into the analysis that could not be controlled with cross-sectional data. However, the researcher plans to follow up this study with a longitudinal study of the development of independence over time. The researcher expects that longitudinal data may present a more valid test of the hypothesis of a positive link between mentors' trustworthiness and the development of protégés' independence.

Construct validity of MIT theory

The data showed support for the mentor integrity and trustworthiness (MIT) theory. This theory is an extension of Kram's Mentor Relationship (MR) theory (Kram, 1983, 1985, 1996; Schunk & Mullen, 2013) which posits that mentors behave in certain ways that create a favorable and supportive relationship with protégés. Kram identified mentor relational behaviors that were wide-ranging such as coaching, counseling, providing confirmation, actively listening, providing constructive criticism, modeling, and showing acceptance.

MIT theory involves a new angle to MR theory. MIT theory does not identify specific *behaviors* that the mentor performs, but instead identifies a set of attitudes that the mentor possesses: attitudes of trust in oneself, and belief in one's own personal and professional integrity. The data show when mentors embody these attitudes, the protégés have favorable outcomes.

How might attitudes of integrity and trustworthiness affect protégés? Drawing from MR theory (Kram, 1983, 1985, 1996), the researcher believes the protégé learns about these attitudes by talking with and spending time with the mentor. They can talk directly about the values of personal and professional integrity and about ethics. In addition, the mentors' sense of integrity can manifest in their behaviors and protégés can learn by observing their mentors (Bandura, 2001). According to the logic of the theory, protégés will gradually internalize these attitudes and develop their own sense of personal and professional integrity and feelings of trustworthiness.

According to MIT theory, this internalized trustworthiness is helpful for mentors and protégés to become successful due to the safe haven part of attachment theory. The researcher believes mentors and protégés who have internalized a sense of integrity and trustworthiness are able to trust themselves and their own motives, intuitions, logic, and competencies. They are able to admit if their competencies are weak in a specific area, and this allows them to get help and develop in that area. This internalized sense of integrity and trustworthiness can be useful in creating a safe haven within each individual. In addition, this safe haven is the proper "interior space" or mindset through which mentors and protégés try out new ideas, conduct logical thought experiments, and pull out new questions and creative ideas that add something unique and original to the canon of scholarly knowledge. The researcher believes an interior mental mindset of trustworthiness is necessary for beneficial creativity to blossom. Another implication for scholarship is that with this study, psychology researchers can use two new and well-validated constructs and instruments with which to study the topic of doctoral mentoring (i.e., the MIT and the MPPI scales).

These findings are also consistent with the Tough Love theory of mentoring presented by Roberts and Ferro Almeida (2019) grounded in data from interviews of 21 effective mentors from seven doctoral programs in the United States; the focus of the interviews was to understand the strategies and attitudes mentors believed improved their effectiveness. The data from Roberts and Ferro Almeida

(2019) suggested that effective mentors practiced Tough Love, which is a combination of trustworthiness and *high expectations*. The current study included support for the trustworthiness part of the Tough Love theory but did not address the high expectations part of the theory.

EXTERNAL VALIDITY OF FINDINGS

To whom do these results generalize? Is this theory valid for other mentors at other universities? The findings may generalize to other doctoral mentors in departments similar to the ones studied in the current research, i.e., education-related doctoral programs in the eastern part of the United States that were diverse in terms of EdD students, PhD students, part-time students, full-time students, and diverse in terms of selectivity. With regard to the mentors' personal characteristics, the results may generalize to mentors who are diverse in terms of years as a mentor. The researcher encourages future researchers to test these ideas with mentors in doctoral programs in other parts of the United States and the world as well as in other academic disciplines. The researcher encourages scholars to test MIT theory in mentoring relationships that go beyond doctoral studies, such as mentoring in business and in the arts. The researcher also encourages scholars to test whether the MIT theory is relevant in other kinds of teaching relationships such as coaching and tutoring.

INTERNAL VALIDITY OF STUDY

Whenever a researcher puts forth a causal theory, as with the MIT theory in the current study, it is important to provide a discussion of the internal validity of the study's conclusions. Given that the data in this study are nonexperimental and correlational, internal validity is limited. The study findings show consistency with the theory but do not provide adequate evidence to prove the theory. In future research, the researcher would like to conduct an experiment in which she provides professional development to a group of mentors in a treatment group to teach them the skills and attitudes that have been identified in the current study for mentors who possess integrity and trustworthiness (i.e., MIT training). The researcher would also identify a comparison group of mentors who do not receive the professional development training. The researcher would then propose to compare the two groups on indices of protégé success. The researcher hypothesizes that the mentors who receive the MIT training will have more successful protégés than the mentors will in the control group. If the results of such an experimental study are consistent with the MIT theory, this study can be useful in providing stronger support for the MIT theory.

VALIDITY OF CORRELATIONS

The two most important correlations in the validation test for the MIT theory were the correlations (a) between trustworthiness and graduation rate and (b) between trustworthiness and number of dissertation awards. The alpha level for these tests was $p < .05$. Thus, the researcher was willing to tolerate a 5% probability of Type 1 error. The power of the correlations was .92. Thus, the researcher was willing to accept an 8% probability of a Type 2 error. Because the correlations were significant, the researcher concluded the power was strong enough to eliminate Type 2 error in this particular research context. The researcher deems the conclusion validity for these tests of MIT theory to be strong. However, the conclusion validity of the test of MIT theory pertaining to the outcome variable MPPI, was based on a low power test; there is a reasonable possibility that this nonsignificant result was due to a type 2 error.

IMPLICATIONS FOR PRACTICE FOR MENTORS

This research shows that mentors who want their protégés to be successful would do well to develop integrity and trustworthiness as a mentor. The scholarly literature is rich with information on this topic and the researcher recommends that mentors work to develop qualities that describe trustworthy mentors. According to the following excerpts from interviews of 21 effective mentors by Roberts

and Ferro Almeida (2019), mentors nurtured trust by speaking with honesty, openness, and authenticity. They nurtured trust by being open about their own experiences as a doctoral student and by being willing to admit their own vulnerabilities. For example, one mentor said:

I will share things about myself such as how I felt when I went through the dissertation process, I recall the feelings of the power differential under which I had to work as a grad student and the injustices...which I experienced with my cohort. I think there is some 'street cred' that goes along with that.

Mentors also nurtured trust by acting with benevolence (i.e., acting with the protégé's best interests in mind). For example, one mentor stated:

(Students) have to trust that we are acting in their best interest to let themselves be vulnerable. They are not used to getting a paper back with lots of mark-ups. Moreover, we have to communicate that this is about us shaping them as professionals and not about us criticizing them. If you do not have that kind of (trusting) relationship with them, they are not going to hear that feedback in the same way and they are not going to use it to develop.

Mentors nurture trust by being consistent, accountable, meeting deadlines, and giving timely feedback. One mentor quantified "timely feedback" on chapter drafts by saying, "If they hand it in Sunday, I will get back to them Wednesday or Thursday at the latest. This is what establishes trust." Mentors established trust by giving competent guidance, by establishing collegial, respectful, and collaborative relationships, and by protecting the protégé when necessary. For example, one mentor said:

You need to help them navigate the political landscape. At the university, there is a political landscape. They need to know how to navigate red tape and personalities...We do not need people on the committee who are going to spend all their time pontificating on their accomplishments. I teach them about organizational politics.

This mentor's thinking reinforced the information presented above about an aspect of attachment theory called *safe haven* (Bowlby, 1988). According to Bowlby, a parent provides safe haven to a child who is attached and conveys a sense of trust that the parent will be able to help him deal with any difficult situations that arise. Although Bowlby's work pertained to relationships between parents and young children, Best (2011) claimed that some of the dynamics of attachment theory are relevant throughout the lifespan. As shown by the quote preceding this paragraph, some of the dynamics of attachment theory are specifically relevant in the relationship between mentors and protégés.

The findings in this study are similar to the findings of other researchers. Other researchers showed mentors nurtured trust by being respectful, empathic, patient, flexible (Woolderink et al., 2015), caring, organized, supportive, sociable, open-minded, accessible, and optimistic (Barnes, Williams, & Archer, 2010; Grant et al., 2014; Orellana et al., 2016). In addition, mentors established trust by being insightful team players and by practicing strong coaching, decision-making, listening skills, and reflective learning skills (Ehrich, Hansford, & Tennent, 2004; Grant et al., 2014; Khene, 2014). Moreover, mentors built up trust by keeping a confident and encouraging tone with protégés (Kram, 1985; Pifer & Baker, 2016; Vekkaila, Pyhältö, & Lonka, 2013; Woolderink et al., 2015). Research also shows mentors nurture trust by showing care for the student as a whole person with a life, commitments, interests, and passions outside of their student role (Martinsuo & Turkulainen, 2011; Paglis, Green, & Bauer, 2006; Salani, Albuja, & Azaiza, 2016; Southern, 2007; Woolderink et al., 2015).

TRUST, OPENNESS, AND VULNERABILITY

The findings of this study are consistent with other research. For example, one study showed that trust building requires honesty, openness, and a willingness to be vulnerable (Sutherland & Yoshida, 2015). For example, Norma Mertz described her relationship with her protégé, Brian Gearity; she described how their relationship was authentic (Gearity & Mertz, 2012). She modeled self-awareness of

her strengths and weaknesses and was willing to be open with her student. She claimed that by being open about her vulnerabilities, she could work on those areas and improve (Gearity & Mertz, 2012). In this way, she modeled trust for Brian and he was able to open up to her about his own areas of vulnerability. Once he had identified his vulnerabilities, he was able to work on them and improve in those areas. According to Kram (1985), when mentors inspired trust, the students were more honest about their own vulnerabilities and willing to admit mistakes. Trust was an important ingredient for effective knowledge sharing and, ultimately, for dissertation completion.

IMPLICATIONS FOR PRACTICE FOR PROTÉGÉS

Although mentors agreed their protégés had achieved independent scholar status, generally, they were less inclined to agree that their protégés had achieved independent status in their ability to think through their research methodology. This finding leads to the hypothesis that protégés would benefit from learning a programmatic approach to organize their thoughts pertaining to the development of their research methods plan. There is a useful tool available to help protégés along these lines. The name of the tool is the Right Angle Research Alignment (RARA) table (Roberts, 2016; Roberts, Tinari, & Bandlow, 2019) and it was designed to guide protégés through the steps of aligning scholarly research questions, data sources, and analysis plans. An example of one student's work using this alignment tool is in Table 12 (Areias, 2016). The researcher recommends that protégés use this tool to help them develop and organize their research methods plans for their dissertations. This tool was designed to help mentors and protégés achieve better clarity for the research methods part of the dissertation.

Table 12. Exemplar for an Alignment Tool for Research Questions, Hypotheses, Data Sources, and Analysis Plans

Research question and hypothesis	Data source	Analysis plan
In American-sponsored overseas schools in Africa, what percentage of teachers report leadership at Levels 0, 1, 2, 3 and 4? This question was exploratory; no hypotheses were proposed.	Teacher leadership questionnaire (TLQ) assessment of teacher leadership phase.	Frequency and percentage of teachers at each phase of teacher leadership (0–4)
What is the average number of leadership activities reported by American-sponsored overseas school teachers in Africa? This question was exploratory; no hypotheses were proposed.	TLQ assessment of intensity of teacher leadership.	Mean and standard deviation of the intensity teacher leadership score.

DIRECTIONS FOR FURTHER RESEARCH

With regard to directions for future research, the researcher encourages other scholars to dig deeper into the topic of mentor integrity and trustworthiness. Further research questions that arise as a result of this study are as follows: What can mentors do to improve their integrity? What can mentors do to improve their feelings of trustworthiness? How can mentors improve in each of the identified components of trustworthiness (benevolence, honesty–reliability, competence)? Which of the trustworthiness components has the strongest impact on protégés' success? What are the mechanisms to explain the MIT theory? How can the MIT and MPPI instruments be refined and improved? Is there a correlation between mentors' perceptions of their own trustworthiness and protégés' perceptions of the mentors' trustworthiness? Would longitudinal data that followed mentors and protégés over time show a correlation between mentors' trustworthiness and the development of protégés' independence as scholars?

CONCLUSION

This study showed a significant, positive relationship between mentors' feelings of trustworthiness and protégés' success as measured by reported graduation rate and number of awards won by protégés. Based on mentors' self-reports, those who perceived themselves as more trustworthy had more

protégés graduate and had more protégés who won dissertation awards. In contrast, mentors who perceived themselves as less trustworthy had fewer protégés graduate and had fewer protégés who won dissertation awards. These findings are important because they may guide doctoral program administrators in the area of mentors' professional development. Specifically, the findings suggest that administrators should instruct mentors to focus on development of their own integrity and trustworthiness.

This study's findings are consistent with Kram's Mentor Relations (MR) theory (1983, 1985, 1996) in which it was proposed that certain mentors' behaviors and qualities can contribute to a positive mentor/protégé relationship and that a positive mentor/protégé relationship may facilitate protégés' professional development. This study's findings also support the Mentor Integrity and Trustworthiness (MIT) theory that suggests mentors' trustworthiness and integrity bring about better mentor/protégé relations, which in turn, help protégés' professional development and success. Some of the ways mentors' perceived trustworthiness may impact protégé success are as follows: a) perhaps a trusting relationship provides a safe space that allows protégés to take risks to assert creative and original thought that contributes to the canon of scholarly knowledge and b) perhaps by modeling honesty and authenticity, mentors encourage protégés to do the same; in turn, perhaps protégés' honesty and authenticity empower their assertions of creative and original thinking.

In general, mentors reported their protégés' were successfully engaged in independent scholarship; however, protégés were less independent with regard to writing the research methods section of their dissertation. Thus, there may be a need for mentors to improve their own competence in the area of research methods. In addition, there appears to be a need for programs to provide better instruction in the area of research methods. In order to address this need, the researcher presented a tool entitled the Right Angle Research Alignment (RARA) table that can be used to help mentors and protégés work together to organize and manage the research methods section of the protégés' dissertations (Roberts, 2016; Roberts, Tinari, & Bandlow, 2019).

This study also provided psychometric validation of two new research instruments entitled the mentor integrity and trustworthiness (MIT) scale and the mentor perceptions of protégé independence (MPPI) scale. The MIT scale is used to assess mentors' perceptions of their own trustworthiness. The MPPI scale is used to assess whether mentors perceive their protégés have made a successful transformation to independent scholarship. These instruments may be helpful to other scholars who are interested in conducting further research into mentors' behaviors and characteristics that may have a positive impact on protégés' successful transformation from dependent student to independent scholar.

REFERENCES

- Anderson, C., Day, K., & McLaughlin, P. (2006). Mastering the dissertation: Lecturers' representations of the purposes and processes of Master's level dissertation supervision. *Studies in Higher Education, 31*(2), 149–168. <https://doi.org/10.1080/03075070600572017>
- Areias, S. M. (2016). *School level supports for teacher leadership: Teachers' perceptions in American-sponsored overseas schools in Africa*. Unpublished doctoral dissertation. Lehigh University, Bethlehem, PA.
- Baker, V. L., Pifer, M. J., & Flemion, B. (2013). Process challenges and learning-based interactions in Stage 2 of doctoral education: Implications from two applied social science fields. *The Journal of Higher Education, 84*(4), 249–276. <https://doi.org/10.1353/jhe.2013.0024>
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52*, 1–26. <https://doi.org/10.1146/annurev.psych.52.1.1>
- Barnes, B. J., Williams, E. A., & Archer, S. A. (2010). Characteristics that matter most: Doctoral students' perceptions of positive and negative mentor attributes. *NACADA Journal, 30*(1), 34–46. <https://doi.org/10.12930/0271-9517-30.1.34>

- Best, K. C. (2011). Inductive supervision as a scaffolding mechanism for improving employee performance. *Journal of Leadership & Organizational Studies*, 18(3), 397–407. <https://doi.org/10.1177/1548051811407505>
- Bowlby, J. (1988). *A secure base*. New York, NY: Basic Books.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum.
- Council of Graduate Schools. (2016). *Ph.D. Completion Project*. Retrieved from <http://cgsnet.org/phd-completion-project>
- Craft, C. M., Augustine-Shaw, D., Fairbanks, A., & Adams-Wright, G. (2016). Advising doctoral students in education programs. *NACADA Journal*, 36(1), 54–65. <https://doi.org/10.12930/NACADA-15-013>
- Curtin, N., Stewart, A. J., & Ostrove, J. M. (2013). Fostering academic self-concept: Mentor support and sense of belonging among international and domestic graduate students. *American Educational Research Journal*, 50(1), 108–137. <https://doi.org/10.3102/0002831212446662>
- Daloz, L. (1986). *Effective teaching and mentoring*. San Francisco, CA: Jossey-Bass.
- Ehrlich, L. C., Hansford, B., & Tennent, L. (2004). Formal mentoring programs in education and other professions: A review of the literature. *Educational Administration Quarterly*, 40(4), 518–540. <https://doi.org/10.1177/0013161x04267118>
- Fleig-Palmer, M., & F. David Schoorman. (2011). Trust as a moderator of the relationship between mentoring and knowledge transfer. *Journal of Leadership & Organizational Studies*, 18(3), 334–343. <https://doi.org/10.1177/1548051811408615>
- Gardner, S. K. (2008). What's too much and what's too little? The process of becoming an independent researcher in doctoral education. *The Journal of Higher Education*, 79(3), 326–350. <https://doi.org/10.1080/00221546.2008.11772101>
- Gearity, B. T., & Mertz, N. (2012). From “bitch” to “mentor”: A doctoral student's story of self-change and mentoring. *The Qualitative Report*, 17(59) 1–27.
- Goddard, R. D., Tschannen-Moran, M., & Hoy, W. K. (2001). A multilevel examination of the distribution and effects of teacher trust in students and parents in urban elementary schools. *The Elementary School Journal*, 102(1), 3–17. <https://doi.org/10.1086/499690>
- Golde, C. M. (2005). The role of department and discipline in doctoral student attrition: Lessons from four departments. *The Journal of Higher Education*, 76, 669–700. <https://doi.org/10.1353/jhe.2005.0039>
- Gonzalez, K., Marin, P., Figueroa, M. A., Moreno, J. F., & Navia, C. N. (2002). Inside doctoral education in America: Voices of Latinas/os in pursuit of the Ph.D. *Journal of College Student Development*, 43, 540–557. Retrieved from <https://www.press.jhu.edu/>
- Gonzalez, K., Marin, P., Perez, L. X., Figueroa, M. A., Moreno, J. F., & Navia, C. N. (2001). Understanding the nature and context of Latina/o doctoral student experiences. *Journal of College Student Development*, 42, 563–579. Retrieved from <https://www.press.jhu.edu/>
- Grant, K., Hackney, R., & Edgar, D. (2014). Postgraduate research supervision: An ‘agreed’ conceptual view of good practice through derived metaphors. *International Journal of Doctoral Studies*, 9, 43–60. <https://doi.org/10.28945/1952>
- Holley, K. A., & Caldwell, M. L. (2012). The challenges of designing and implementing a doctoral student mentoring program. *Innovations in Higher Education*, 37, 243–253. <https://doi.org/10.1007/s10755-011-9203-y>
- Hoy, W. K., & Tschannen-Moran, M. (1999). Five faces of trust: An empirical confirmation in urban elementary schools. *Journal of School Leadership*, 9, 184–208. <https://doi.org/10.1177/105268469900900301>
- Hyatt, L., & Williams, P. E. (2011). 21st century competencies for doctoral leadership faculty. *Innovative Higher Education*, 36(1), 53–66. <https://doi.org/10.1007/s10755-010-9157-5>
- Ibarra, R. A. (1996). *Latino experiences in graduate education: Implications for change—A preliminary report*. Washington, DC: Council of Graduate Schools. Retrieved from <http://cgsnet.org/>

Validation of the Mentoring Integrity Scale

- Johnson, R. B., & Christensen, L. (2017). *Educational research: Quantitative, qualitative, and mixed approaches* (6th ed.). Washington, DC: SAGE Publications.
- Khene, C. P. (2014). Supporting a humanizing pedagogy in the supervision relationship and process: A reflection in a developing country. *International Journal of Doctoral Studies*, 9, 73–83. <https://doi.org/10.28945/2027>
- Kram, K. E. (1983). Phases of the mentor relationship. *The Academy of Management Journal*, 26, 608–625. <https://doi.org/10.2307/255910>
- Kram, K. E. (1985). *Mentoring at work: Developmental relationships in organizational life*. Glenview: Scott, Foresman and Company.
- Kram, K. E. (1996). A relational approach to career development. In D. Hall & D. Hall & Associates (Eds.), *The career is dead—long live the career: A relational approach to careers* (pp. 127-132). San Francisco: Jossey-Bass. <https://doi.org/10.1002/hrm.3930260214>
- Lovitts, B. E. (2001). *Leaving the ivory tower: The causes and consequences of departure from doctoral study*. Lanham, MD: Rowman & Littlefield. Retrieved from <https://rowman.com/>
- Lovitts, B. E. (2005). Being a good course-taker is not enough: A theoretical perspective on the transition to independent research. *Studies in Higher Education*, 30(2), 137–154. <https://doi.org/10.1080/03075070500043093>
- Lovitts, B. E. (2008). The transition to independent research: Who makes it, who doesn't, and why. *The Journal of Higher Education*, 79(3), 296–325. <https://doi.org/10.1353/jhe.0.0006>
- Luna, G., & Cullen, D. L. (1998). Do graduate students need mentoring? *College Student Journal*, 32(3), 322–330.
- Lunneborg, C. E., & Lunneborg, P. W. (1973). Doctoral study attrition in psychology. *Research in Higher Education*, 1, 379–387. <https://doi.org/10.1007/bf00991671>
- Martinsuo, M., & Turkulainen, V. (2011). Personal commitment, support and progress in doctoral studies. *Studies in Higher Education*, 36(1), 103–120. <https://doi.org/10.1080/03075070903469598>
- McAlpine, L., Jazvac-Martek, M. and Hopwood, N. (2009). Doctoral student experience in Education: Activities and difficulties influencing identity development, *International Journal for Researcher Development*, 1(1), 97-109. <https://doi.org/10.1108/1759751X201100007>
- Mitchell, R. M., Kensler, L. & Tschannen-Moran, M. (2018). Student trust in teachers and student perceptions of safety: Positive predictors of student identification with school, *International Journal of Leadership in Education*, 21(2), 135-154. <https://doi.org/10.1080/13603124.2016.1157211>
- Most, D. E. (2008). Patterns of doctoral student degree completion: A longitudinal analysis. *Journal of College Student Retention: Research, Theory & Practice*, 10(2), 171–190. <https://doi.org/10.2190/CS.10.2.d>
- National Science Board. (2003). *The science and engineering workforce: Realizing America's potential* (No. NSB 03-69). Washington, DC: National Science Foundation.
- Nettles, M. T. (1990). Minority graduate education project report: Black, Hispanic, and White doctoral students, before, during and after enrolling in graduate school. Educational Testing Services. Retrieved from <https://www.ets.org/>
- Nettles, M. T., & Millett, C. M. (2006). *Three magic letters: Getting to Ph.D.* Baltimore, MD: The Johns Hopkins University Press. Retrieved from <https://jhupbooks.press.jhu.edu/>
- Nulty, D. D. (2008). The adequacy of response rates to online and paper surveys: What can be done? *Assessment and Evaluation in Higher Education*, 33(3), 301–314. <https://doi.org/10.1080/13603124.2016.1157211>
- Orellana, M. L., Darder, A., Pérez, A., & Salinas, J. (2016). Improving doctoral success by matching PhD students with supervisors. *International Journal of Doctoral Studies*, 11, 87–103. <https://doi.org/10.28945/3404>
- Orland-Barak, L. (2010). *Learning to mentor-as-praxis: Foundations for a curriculum in teacher education*. New York, NY: Springer.

- Paglis, L. L., Green, S. G., & Bauer, T. N. (2006). Does adviser mentoring add value? A longitudinal study of mentoring and doctoral student outcomes. *Research in Higher Education, 47*, 451–476. <https://doi.org/10.1007/s11162-005-9003-2>
- Pifer, M. J., & Baker, V. L. (2016). Stage-based challenges and strategies for support in doctoral education: A practical guide for students, faculty members, and program administrators. *International Journal of Doctoral Studies, 11*, 15–34. <https://doi.org/10.28945/2347>
- Ragins, B. R., & Kram, K. E. (Eds.). (2007). *Handbook of mentoring at work: Theory, research, and practice*. Los Angeles, CA: SAGE.
- Roberts, L. R. (2016). *Zesty methods: A recipe for research success*. Retrieved from <https://rightangleresearch.wordpress.com/2016/05/16/zesty-methods-a-recipe-for-research-success/>
- Roberts, L. R., & Bandlow, R. (2018). The Goldilocks Phenomenon: Are we helping doctoral students too much, too little, or just right? *Journal of Higher Education Management, 32*(2), 62–80.
- Roberts, L. R., & Ferro Almeida, S. (2019). Is trustworthiness important in a doctoral mentor? Toward a theory of tough love mentoring. *International Journal of Doctoral Studies, 14*, 613–635. <https://doi.org/10.28945/4419>
- Roberts, L. R., Tinari, C. M., & Bandlow, R. (2019). An effective doctoral student mentor wears many hats and asks many questions. *International Journal of Doctoral Studies, 14*, 133–159. <https://doi.org/10.28945/4195>
- Ruiz, D. M. (1997). *The four agreements: A practical guide to personal freedom*. San Rafael, CA: Amber-Allen.
- Salani, D., Albuja, L. D., & Azaiza, K. (2016). The keys to success in doctoral studies: A preimmersion course. *Journal of Professional Nursing, 32*(5), 358–363. <https://doi.org/10.1016/j.profnurs.2016.01.005>
- Schunk, D., & Mullen, C. (2013). Toward a conceptual model of mentoring research: Integration with self-regulated learning. *Educational Psychology Review, 25*(3), 361–389. <https://doi.org/10.1007/s10648-013-9233-3>
- Smallwood, S. (2004, January 16). Doctor dropout. *The Chronicle of Higher Education*, p. 19A.
- Snieder, R. & Larner, K. (2003). *The art of being a scientist: A guide for graduate students and their mentors*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/cbo9780511816543>
- Solorzano, D. G. (1993). *The road to the doctorate for California's Chicanas and Chicanos: A study of Ford Foundation minority fellows*. Latina/Latino Policy Research Program, University of California. California Policy Seminar. Retrieved from <http://clpr.berkeley.edu/>
- Southern, N. L. (2007). Mentoring for transformative learning: The importance of relationship in creating learning communities of care. *Journal of Transformative Education, 5*(4), 329–338. <https://doi.org/10.1177/1541344607310576>
- Sutherland, I. E., & Yoshida, R. K. (2015). Communication competence and trust in leaders. *Journal of School Leadership, 25*, 1039–1063. <https://doi.org/10.1177/105268461502500602>
- Trochim, W. M. K., & Donnelly, J. P. (2008). *The research methods knowledge base*. Mason, OH: Cengage Learning.
- Tschannen-Moran, M. (2009). Fostering teacher professionalism: The role of professional orientation and trust. *Educational Administration Quarterly, 45*, 217–247. <https://doi.org/10.1177/0013161x08330501>
- Tschannen-Moran, M. & Gareis, C. R. (2015). Faculty trust in the principal: An essential ingredient in high-performing schools, *Journal of Educational Administration, 53*(1), 66–92. <https://doi.org/10.1108/jea-02-2014-0024>
- Tschannen-Moran, M., & Hoy, W. K. (1998). A conceptual and empirical analysis of trust in schools. *Journal of Educational Administration, 36*, 334–352. <https://doi.org/10.1108/09578239810211518>
- Tschannen-Moran, M. & Hoy, W. K. (2000). A multidisciplinary analysis of the nature, meaning, and measurement of trust. *Review of Educational Research, 70*(4), 547–593. <https://doi.org/10.3102/00346543070004547>
- Vaquera, G. (2007). Testing theories of doctoral student persistence at a Hispanic serving institution. *Journal of College Student Retention, 9*(3), 283–305. <https://doi.org/10.2190/CS.9.3.c>

- van de Schoot, R., Yerkes, M. A., Mouw, J. M., & Sonneveld, H. (2013). What took them so long? Explaining PhD delays among doctoral candidates. *PLoS One*, 8(7), e68839. <https://doi.org/10.1371/journal.pone.0068839>
- Vekkaila, J., Pyhältö, K. & Lonka, K. (2013) Experiences of disengagement: A study of doctoral students in the behavioral sciences. *International Journal of Doctoral Studies*, 8, 61-81. <https://doi.org/10.28945/1870>
- Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: A perilous passage?* San Francisco, CA: Jossey-Bass. Retrieved from <http://www.josseybass.com>
- Welton, A. D., Cumings Mansfield, K., Lee, P., & Young, M. D. (2015). Mentoring educational leadership doctoral students: Using methodological diversification to examine gender and identity intersections. *NCPEA International Journal of Educational Leadership Preparation*, 10(2), 53–81.
- Woolderink, M., Putnik, K., van der Boom, H., & Klabbers, G. (2015). The voice of PhD candidates and PhD supervisors. A qualitative exploratory study amongst PhD candidates and supervisors to evaluate the relational aspects of PhD supervision in the Netherlands. *International Journal of Doctoral Studies*, 10, 217–235. <https://doi.org/10.28945/2276>

BIOGRAPHY



Dr. L. R. Roberts is director of Right Angle Educators, a mentoring service for doctoral students. In addition to mentoring, she provides educational materials for doctoral students on the topic of research methods and statistics; she also provides one-to-one tutoring to doctoral students in research methods and statistics. Her research interests include developing theories about excellence in doctoral student mentoring and discovering strategies for mentor development. She earned a Bachelor's degree at Lafayette College, a Master's degree at Temple University, and a Doctorate degree at Penn State. Contact information: 112 Stevens Street, West Cape May, NJ 08204; (215) 527-5872; laura@rightangleeducators.com