ASSESSING DOCTORAL STUDENT DEVELOPMENT OF SELF-AUTHORSHIP: THE EPISTEMOLOGICAL, INTRAPERSONAL, AND INTERPERSONAL GROWTHS

| Mohammed S. Alkathiri* | Imam Abdulrahman bin Faisal University, Dammam, Saudi Arabia | msalkathiri@iau.edu.sa |

ABSTRACT

Aim/Purpose	The purpose of this study was to assess to what extent current doctoral students developed self-authored perspectives, as well as to assess whether or not there was an association between the number of years in the doctoral program and the development of three dimensions of self-authorship (i.e., Epistemological, Intrapersonal, and Interpersonal).
Background	Self-authorship is a way of knowing that assists adults in the management of their lives in a way that helps them succeed in society. It is important to study the development of self-authorship in doctoral students because such development is necessary for individuals to overcome the challenges they experience in doctoral programs. The importance of this study rests on the fact that self-authorship development may prompt doctoral students' ability to succeed in the completion of their doctoral degrees, as well as to meet the challenges of their future in academia.
Methodology	Forty-five doctoral students in a Teaching and Learning program were surveyed on three constructs: Epistemological, Intrapersonal, and Interpersonal. The Doctoral Students' Self-Authorship Questionnaire was developed by the author based on Baxter Magolda's theory of self-authorship development. Three level-two constructs of self-authorship were conceptually and operationally defined.
Contribution	There is no instrument available (i.e., a questionnaire) to assess the self-authorship perspectives of doctoral students. Although it is expected that people will develop self-authored perspectives as they get older, it is unknown to what extent current doctoral students develop self-authorship. No previous studies have assessed doctoral student self-authorship.
Findings	The findings showed that participants had advanced levels in all three dimensions and continued to develop towards self-authorship. However, results showed a nonsignificant association between years in the doctoral program and

self-authorship development. In other words, although doctoral students spend many years in certain programs, this spent time does not contribute significantly to their development of self-authorship.

Recommendations for Practitioners	The current study suggested that doctoral programs should investigate their students' development toward self-authorship and provide them with more opportunities to better improve their self-authorship.
Recommendation for Researchers	The findings suggest further research into the developmental opportunities available for students within doctoral programs that assist students' ability to develop self-authored perspectives.
Impact on Society	The findings supported the importance of assessing doctoral students' self-authorship as part of doctoral programs. Without the assessment of doctoral student development of self-authorship in their programs, less effort might be taken to address student needs in developing self-authorship.
Future Research	Future research may continue the study of self-authorship for doctoral students from different disciplines or schools, especially where attrition rates are high.
Keywords	self-authorship, developmental theory, doctoral students, teaching and learning, higher education

INTRODUCTION

Doctoral students have a significant attrition rate. About half drop out before completing their doctorates (Lindsay, 2015; Martinez, Ordu, Della Sala, & McFarlane, 2013; Wao, 2010). In addition, there is an increase in time that doctoral students in Education take before they complete their doctoral studies, when compared to students in other fields of study (Martinez et al., 2013; Wao, 2010). In response to the concern about the increase in time to complete doctoral degrees, many studies have examined factors that contribute to this trend of high attrition (Maher, Ford, & Thompson, 2004; Martinez et al., 2013). Many factors described in literature (e.g., academic and social integration, economic integration, advising relationships, and personal attributes) correspond to the challenges that adults experience in daily life. Adults are challenged to discover, analyze and integrate information from diverse sources, assess competing interests, communicate and collaborate with diverse people, and make important decisions (Baxter Magolda, 2001; Kegan, 1994).

Research suggests that adults become able to meet such challenges when they understand the contexts of knowledge, recognize the nature of authorities, make their decisions based on internal beliefs and values, and keep track of their relationships with others (Baxter Magolda, 1998, 2001; Pizzolato, 2003, 2005, 2006). According to Pizzolato (2006), individuals who are able to develop the skills and abilities associated with self-authorship become able to develop their own goals, and have good and mature relationships with family members and work fellows (Pizzolato, 2006). Also, individuals who develop internal values and relationship skills are more likely to have the ability to stay away from bad decisions that lead to unwanted results (Baxter Magolda, 2001). These are the indications of self-authorship. Self-authorship is 'the capacity to internally define a coherent belief system and identity that coordinates engagement in mutual relations with the larger world' (Baxter Magolda, 2004, p. xxii). However, the majority of undergraduate and graduate college students are expected to lack self-authored perspectives (Baxter Magolda, 2001; King, Baxter Magolda, Barber, Brown, & Lindsay, 2009; Torres & Hernandez, 2007). According to Wisker and Robinson (2013),

[Doctoral] students' well-being and their identities as academics were affected by and affected their learning journeys as doctoral candidates, their researcher development, and that their sense of being in the world was fundamentally intertwined with the ways they perceived knowledge construction and articulation to take place, or not (p. 139).

It is important to study the development of self-authorship in doctoral students because such development is necessary for individuals to overcome the challenges they experience in doctoral programs. That said, there is no instrument available (i.e., a questionnaire) to assess the self-authorship perspectives of doctoral students. Although it is expected that people will develop self-authored perspectives as they get older, it is unknown to what extent current doctoral students develop self-authorship. No previous studies have assessed doctoral student self-authorship. The investigation of doctoral students' epistemological, intrapersonal and interpersonal growths (i.e., self-authorship) in the current research study was important, because it highlighted to what extent doctoral students develop self-authorship during their studies which would assist them to overcome the challenges they experience in doctoral programs.

CHALLENGING JOURNEY FOR DOCTORAL STUDENTS

The call for a better preparation of doctoral students within the doctoral programs has been made by many earlier and recent researchers (Alkathiri & Olson, 2019). Past research clearly indicated that the journey of doctoral students is demanding, challenging, and exhausting (Alkathiri & Olson, 2019; Devine & Hunter, 2016; Maher, Ford, & Thompson, 2004; Wao, 2010). In fact, it takes doctoral students, in all disciplines, an average of ten years to complete their degrees (Hoffer et al., 2005). Moreover, the attrition rates in doctoral programs range from 33% to 70% (Alkathiri & Olson, 2019). According to Alkathiri and Olson (2019), 'literature articulates that there is a positive impact of better preparing doctoral students on reducing the attrition rate' (p. 37). The challenging journey does not only impact doctoral students' lives, but also their families. Several challenges were reported in the literature that contributed to the difficulty of doctoral journey. For example, although the doctoral students' abilities to have a school-life balance is an important indicator for degree completion, doctoral students are more likely to experience a lack of school-life balance due to several reasons that include doctoral program requirements and family obligations (Alkathiri & Olson, 2019; Hwang et al., 2015; Martinez, Ordu, Della Sala, & McFarlane, 2013; Stimpson & Filer, 2011; Sverdlik, Hall, McAlpine, & Hubbard, 2018).

Doctoral students experience various epistemological, intrapersonal and interpersonal challenges that affect their success and persistence. For example, researchers contributed to some topics that are related to doctoral students' development and wellbeing such as identity development of doctoral students and role confusion (Jazvac-Martek, 2009), the complexity of doctoral students' experiences (Beauchamp, Jazvac-Martek, & McAlpine, 2009), the isolation feelings and social isolation (Ali & Kohun, 2006; Ali & Kohun, 2007; Vekkaila, Pyhältö, & Lonka, 2013), the role of emotional and community support (Devine & Hunter, 2016; Shacham & Od-Cohen, 2009; Vekkaila, Pyhältö, & Lonka, 2013), sense of belonging (O'Meara, Griffin, Kuvaeva, Nyunt, & Robinson, 2017) and the doctoral student-advisor relations (Devine & Hunter, 2016; Wisker & Robinson, 2012). Furthermore, doctoral students are subject to 'anxiety, stress and the challenge of engaging with new thoughts, new directions and possibly large-scale changes to the project' (Wisker & Robinson, 2013, p. 150). All these challenges are best dealt with through the doctoral students' epistemological, intrapersonal and interpersonal growths (Baxter Magolda, 1998, 2001; Pizzolato, 2007; Pizzolato & Ozaki, 2007; Wildman, 2007). According to Wisker and Robinson (2013), there is 'a link between ontology (being in the world) and epistemology (ways of constructing knowledge)' (p. 139). The literature on doctoral students' wellbeing suggests further research on doctoral students' development and its impact on their success. Therefore, the current study aimed to assess to what extent current doctoral students developed self-authored perspectives, as well as to assess if there was an association between the number of years in a doctoral program and the three dimensions of self-authorship (i.e., Epistemological, Intrapersonal, and Interpersonal).

SELF-AUTHORSHIP DIMENSIONS AND PHASES

Self-authorship is a way of knowing that assists adults in the management of their lives in a way that helps them succeed in society (Baxter Magolda, 1998; Kegan, 1994). Self-authorship has three dimensions: Epistemological, Intrapersonal, and Interpersonal (Baxter Magolda, 1998, 2001; Pizzolato, 2007; Pizzolato & Ozaki, 2007; Wildman, 2007). According to Baxter Magolda (2001), the development of the three dimensions occurs in four phases: Following External Formulas, The Crossroads, Becoming the Author of One's Own Life, and Internal Foundations. Individuals in the first phase towards self-authorship (i.e., Following External Formulas) behave and make decisions based on 'perspectives they have uncritically accepted from others' (Hodge, Baxter Magolda, & Haynes, 2009, p. 16). The second phase, Crossroads, is the beginning of developing internal values and beliefs due to a need, although individuals in this phase remain influenced by external formulas. In the third phase, Becoming the Author of One's Own Life, individuals are expected to construct their own internal perspectives about knowledge (Epistemological), about themselves (Intrapersonal), and about the nature of their relationships with others (Interpersonal) (Baxter Magolda, 2001). When individuals reach these third and fourth phases, they are considered self-authored (Laughlin & Creamer, 2007; Pizzolato, 2005, 2006, 2007). In this fourth and final phase, Internal Foundations, individuals are observed as having acted 'in ways that integrated the intrapersonal and cognitive in interpersonal arenas' (Pizzolato, 2007, p. 32). The current study focused on this last stage of self-authorship development. It assessed the doctoral students' behaviors and decisions that reflected the characteristics of the Internal Foundations phase.

CONCEPTUALIZATION AND OPERATIONALIZATION

CONCEPTUAL CONSTRUCTS

In order to achieve self-authorship, the integration of three dimensions shall take place: Epistemological, Intrapersonal, and Interpersonal (Baxter Magolda, 1998, 2001; Pizzolato, 2007; Pizzolato & Ozaki, 2007; Wildman, 2007). The development of these dimensions of self-authorship is 'necessary for adults to build complex belief systems, to form a coherent sense of identity, and to develop authentic, mature relations with diverse others' (Baxter Magolda, 2001, p. 269). For the purpose of this study, level-two constructs were aligned with the three dimensions of self-authorship: Epistemological (what to believe?), Intrapersonal (how to view one's self?), and Interpersonal (how to manage relationships?) (Baxter Magolda, 2001). Level-two construct models have been used in a wide body of educational and psychological research. Typically, a level-two construct model is applicable in research when the measurement instrument assesses a number of related constructs that each of them is measured by several items (Chen, Sousa, & West, 2005). 'The second-order model represents the hypothesis that these seemingly distinct, but related constructs can be accounted for by one or more common underlying higher order constructs' (Chen, Sousa, & West, 2005, pp. 471-472).

Conceptual definition of the epistemological construct.

The Epistemological dimension is conceptually defined in terms of an individual's ability to seek out and construct new knowledge (Kegan, 1994) and make meaning (Pizzolato & Ozaki, 2007). Self-authored individuals are able to 'view knowledge as contextual; develop an internal belief system via constructing, evaluating, and interpreting judgments in light of available evidence and frames of reference' (Baxter Magolda, 2004, p. 8). According to Baxter Magolda (1998), Epistemological dimension relates to the ability to perceive that knowledge is socially constructed. The Epistemological construct of self-authorship answers 'the 'how you know' question' (Baxter Magolda, 2001, p. 23). This is when individuals consider their thoughts about 'the nature of knowledge' and that 'what was right or wrong was not an absolute' (Pizzolato & Ozaki, 2007, p. 196).

Conceptual definition of the intrapersonal construct.

Intrapersonal construct refers to the development and understanding of one's beliefs, identity, interests, values, and goals (Baxter Magolda, 1998; Pizzolato & Ozaki, 2007). Also, Kegan (1994) noted that the Intrapersonal domain of self-authorship is the ability to have a degree of autonomy and be freed from an external authority. Conceptually, Baxter Magolda (2004) identified the Intrapersonal dimension of self-authorship as the individuals' ability to 'choose own values and identity in crafting an internally generated sense of self that regulates interpretation of experience and choices' (p. 8).

Conceptual definition of the interpersonal construct.

Interpersonal construct is the ability to maintain relationships with others, and interact with diverse perspectives while keeping personal autonomy (Baxter Magolda, 1998). Pizzolato and Ozaki (2007) referred to the interpersonal dimension of self-authorship as 'maintaining healthy relationships' with others (p. 196). Conceptually, the Interpersonal construct is the 'capacity to engage in authentic, interdependent relationships with diverse others in which self is not overshadowed by need for others' approval, mutually negotiating relational needs; [and] genuinely taking others' perspectives into account without being consumed by them' (Baxter Magolda, 2004, p. 8). In line with this definition of Interpersonal construct, Kegan (1994) emphasized that self-authored individuals are able to manage relationships based on their internal goals and values.

OPERATIONAL DEFINITIONS

Baxter Magolda (1998, 2001, 2004) observed that self-authored individuals become mindful of their abilities and skills to define knowledge and make decisions according to their internal beliefs and goals, able to consider multiple perspectives, able to give reasons or cite evidence in support of new ideas, and able to balance and maintain relationship with others. In line with these observations, Hodge, Baxter Magolda, and Haynes (2009) confirmed that self-authored individuals demonstrate such 'capacities' including:

An internal set of beliefs that guide decision making about knowledge claims, an internal identity that enables them to express themselves in socially constructing knowledge with others, and the capacity to engage in mutually interdependent relationships to assess others' expertise (p. 19).

The early observations of Baxter Magolda (1998, 2001, 2004) as well as the 'capacities' of Hodge, Baxter Magolda, and Haynes (2009) are indeed the indications of self-authorship that other researchers have agreed on too (e.g., Kegan, 1994; Pizzolato, 2005, 2006; Pizzolato & Ozaki, 2007; Wawrzynski & Pizzolato, 2006). However, according to Wawrzynski and Pizzolato (2006), despite the number of studies that described self-authorship, 'the specific characteristics and behaviors associated with self-authorship have not been identified' (p. 679).

To the author's knowledge, the single quantitative instrument developed to measure self-authorship is Pizzolato's (2007) 24-item Self-Authorship Survey (SAS). SAS was not specifically developed or phrased to assess the self-authored perspectives of doctoral students. Although Pizzolato did not publish the complete instrument, she provided sample items and the subscales of the SAS in her work (Pizzolato, 2007). SAS consist of four subscales, including 'Capacity for Autonomous Action (six items), Problem Solving Orientation (eight items), Perceptions of Volitional Competence (six items), and Self-Regulation in Challenging Situations (four items)' (p. 34). SAS aimed to assess participants on the three dimensions of self-authorship through the 'deconstruction' of these dimensions into skill sets: 'problem-solving skills, relationships with authorities, volitional competence, [and] autonomy' (Pizzolato, 2007, p. 34).

Another study that contributed to the research body of self-authorship was Neumeister's (2007) examination of the factors that characterize self-authorship and the interconnections of these factors. Neumeister (2007) stated that

[His] study sought to address three key shortcomings or limitations in the current scholarly literature: (1) the lack of agreement as to the constituent elements of self-authorship; (2) the lack of large, diverse samples in previous studies of self-authorship; and (3) the dearth of the quantitative research to flesh out existing qualitative studies of self-authorship (p. 5).

In his study, Neumeister (2007) found eight factors that are 'highly intercorrelated' with self-authorship, including: '(1) interdependence; (2) engaging diverse views; (3) dissonance and change; (4) cognitive complexity; (5) engaged responsibility; (6) personal and communal efficacy; (7) congruence; and (8) openness to new ideas and experiences' ('Abstract,' para. 2).

For the purpose of the current study, the factors associated with self-authorship (Neumeister, 2007) as well as the skill sets of SAS (Pizzolato, 2007) were taken into consideration throughout the process of translating previously conceptual defined constructs of self-authorship (i.e., Epistemological, Intrapersonal, and Interpersonal) into operational definitions. As a result, three subscales and six items related to each construct of self-authorship (total of eighteen items) were developed (see Table 2). All three constructs were assessed at the interval level of measurement.

Participants were asked to rate their level of agreement on each item using a 6-point Likert-type scale with 6=strongly agree, 5=agree, 4=slightly agree (*all some form of agreement*), 3=slightly disagree, 2=disagree, and 1=strongly disagree (*all some form of disagreement*). The operational definition of the epistemological construct was the responses (*some form of agreement or disagreement*) to items 2, 3, 4, 6, 9, and 14. The operational definition of the intrapersonal construct was the responses (*some form of agreement or disagreement*) to items 5, 8, 11, 12, 15, and 16. The operational definition of the interpersonal construct was the responses (*some form of agreement or disagreement*) to items 1, 7, 10, 13, 17 and 18. Rather than putting each construct items in order, the items were re-ordered to make sense to participants, and to minimize order-effect bias (Auspurg & Jäckle, 2015).

Using the Doctoral Student Self-authorship Scale, two scores were obtained: subscale scores and an overall self-authorship score. The mean (*M*) score for each group participants' level of agreement on each subscale provided subscale scores. Larger scores implied better self-authored perspectives about the subscale construct. For example, a larger *M* score of the subscale construct of Epistemological implies better self-authored perspectives about nature of knowledge and authorities. A larger *M* score of the subscale construct of Intrapersonal means better self-authored perspectives about one's self. Also, a larger *M* score of the subscale construct of Interpersonal means better self-authored perspectives about relationships with others. Finally, an average of the subscale scores was the overall self-authorship score. Larger self-authorship scores imply an advanced level of self-authorship development.

PURPOSE OF STUDY

The purpose of this study was to assess to what extent current Teaching and Learning doctoral students have developed self-authored perspectives, as well as to examine if the level of self-authorship varies according to the number of years in the doctoral program. The number of years in a Teaching and Learning doctoral program is the independent variable. The dependent variable is self-authorship. The self-authorship dependent variable (a level-one construct) consists of three level-two constructs: the Epistemological, Intrapersonal, and Interpersonal constructs. The study attempted to answer the following research questions:

- Do the current Teaching and Learning doctoral students develop advanced levels of self-authored perspectives in the three dimensions of self-authorship (i.e., Epistemological, Intrapersonal, and Interpersonal)?
- Does the number of years in a Teaching and learning doctoral program, at a Midwestern University in the United States, have a significant effect on doctoral student self-authorship?

METHODOLOGY

PARTICIPANTS

The study used a convenience sample of doctoral students enrolled in the Teaching and Learning program, at a Midwestern University in the United States. An online survey was distributed to all students enrolled in the program (n=83), and forty-five of them completed the survey for a response rate of 54.2 per cent. The majority of participants were females (68.9 per cent). Table 1 shows detailed demographic and background information about participants.

Table 1. Demographic and doctoral major information

Demographic Category	Overall Sample Count (*n*=45)	% *M*
Sex		
Male	14	31.1
Female	31	68.9
Age		
35 years old and Younger	15	33.3
36 years old and Older	30	66.7
Format of Enrollment		
On campus	36	80
At distance	9	20
Years in the Program		
1 – 2	13	28.9
3 – 6	32	71.1
Formed Committee		
Yes	34	75.6
No	11	24.4
Passed Comprehensive Exams		
Yes	26	59.1
No	18	40.9
Started Dissertation		
Yes	25	55.6
No	20	44.4

INSTRUMENT

For the purpose of this study, the Doctoral Students Self-Authorship Questionnaire (DSSAQ) was developed based on Baxter Magolda's (1998, 2001) theory of self-authorship development. All of the DSSAQ items are included in Table 2. The author developed the DSSAQ because there were no complete instruments available to assess doctoral students' self-authorship. The study focused on assessing three constructs of self-authorship (i.e., Epistemological, Intrapersonal, and Interpersonal). Each construct was conceptually identified in keeping with related literature. Also, measurable items (in which each construct was measured) were determined through the operational definitions of constructs. Further discussion of the instrument conceptual and operational definitions is under the Conceptualization and Operationalization sections.

ANALYSIS

Independent t-tests were used to assess if there was an association between years in the doctoral program and self-authorship. To obtain the construct of Epistemological, Intrapersonal, and Interpersonal, questions were averaged. Percentage of some form of agreement, mean, and standard deviation were reported for each of the items. The reliability and correlations for each of the constructs were presented.

PROCEDURE

The study was approved by the University's institutional review board. At the request of the researcher, the director of Teaching and Learning doctoral program sent an email to students enrolled in the program inviting them to participate in the study by completing an online questionnaire. The participation was voluntary, and no compensation was offered. A consent form was shown to participants prior to taking the questionnaire. Completion and submission of the questionnaire was taken as consent.

POTENTIAL MEASUREMENT ERRORS

Random Error

In the current study, no single measured values were reported. Instead, the average of all measured values was calculated and reported. Random error causes variability to the measured values, 'but does not affect the average value for the group' (Donnelly & Trochim, 2005, p. 117). Therefore, the study suggests that random errors may exist, but they do not have an effect on the findings of the study.

Systematic Error

When conducting a study using an instrument (i.e., a questionnaire), systematic errors are usually present. In order to identify and reduce systematic errors, the nature and design of the study should be understood, and the development of the instrument should be explained (Donnelly & Trochim, 2005). An effective way to minimize the existence of systematic error is through the careful development of the instrument (Donnelly & Trochim, 2005). In the current study, conceptualization and operationalization of the constructs that were intended to be measured reflect the careful development of the instrument and contribute to the validity of instrument. Also, 'the use of too few response alternatives on rating scales can lead to lack of sensitivity' (Warner, 2013, p.903). However, the current study used six response alternatives, which increase sensitivity of the measure and minimize systematic errors.

Reliability and validity

Instrument reliability. Instrument reliability refers to the ability of a measurement instrument to give the same results when repeatedly used (Warner, 2013). In order to assess the reliability of the Doctoral Student Self-Authorship Questionnaire (DSSAQ), the reliability test (internal consistency coefficient) was conducted.

Internal consistency reliability. According to Warner (2013), 'when we add together scores on a list of items or questions, we implicitly assume that these scores all measure the same underlying construct, and that all questions or items are scored in the same direction' (p. 919). Therefore, in order to assess the internal consistency of the self-authorship scales, 'at least moderate correlations' (Warner, 2013, p. 919) among the three level-two constructs must exist. It is important to note that high correlations might be problematic. High correlations '… are not necessarily proof that the items measure the same underlying construct' (Warner, 2013, p. 919). In addition, internal consistency of each scale can be assessed by obtaining Cronbach's alpha (Tavakol & Dennick, 2011; Warner, 2013). 'Cronbach's alpha provides a reliability coefficient that tells us, in theory, how reliable our estimate of

the 'stable' entity that we are trying to measure is' (Warner, 2013, p. 931). In other words, when we use Cronbach's alpha, we assume that all items are measuring the same construct (Colton & Covert, 2007; Warner, 2013). The current study has strong internal consistency and high reliability because the results show significant correlations, and a high Cronbach's alpha coefficient between level-two constructs (i.e., Epistemological, Intrapersonal and Interpersonal) (Colton & Covert, 2007; Tavakol & Dennick, 2011).

Instrument validity. Instrument validity refers to 'whether the measurement really measures what it purports to measure' (Warner, 2013, p. 938). There are two strategies for validity assessment that were used to evaluate the validity of the Doctoral Student Self-authorship Questionnaire (DSSAQ): content validity and face validity.

Content validity. Content validity examines 'whether test items represent all theoretical dimensions or content area' (Warner, 2013, p. 939). For example, the current study used the DSSAQ to measure self-authorship development. If the instrument has content validity, it should have items that assess the elements of the construct under study –in this case is self-authorship (Warner, 2013, p. 940). Self-authorship is, theoretically, defined as the ability of adults to understand the contexts of knowledge, recognize the nature of authorities, act and make decisions based on internal beliefs, and maintain their relationships with others (Baxter Magolda, 1998, 2001; Pizzolato, 2003, 2005, 2006). In addition, it has been agreed on that self-authorship has three dimensions: Epistemological, Intrapersonal, and Interpersonal (Baxter Magolda, 1998, 2001; Pizzolato, 2007; Pizzolato & Ozaki, 2007; Wildman, 2007). By looking at the conceptualization and operationalization section of this paper, the instrument contents can be 'mapped out' (Warner, 2013, p. 940). In Table 2, there are the items of DSSAQ. Each item matches a subscale that corresponds to a level-two construct that is a dimension of the construct self-authorship. 'Content validity may be assessed by mapping out the test contents in a systematic way and matching them to a theory' (Warner, 2013, p. 940). In addition, 'expert judges [might be needed to] decide whether the content coverage is complete' (Warner, 2013, p. 940). Therefore, the instrument content validity was examined with the help of external reviewers.

Table 2. Percentage of Some Form of Agreement, Mean, and Standard Deviation for Epistemological, Intrapersonal, and Interpersonal Constructs
(strongly disagree=1, strongly agree=6)

Question Number	Question	% Some Form of Agreement	*M*	*SD*
	Self-authored Epistemological Perceptions			
2	My inner desire drives me to fulfil the academic tasks (i.e. conducting research, writing a paper, and taking a comprehensive exam).	88.4	5.2	1.0
3	As a doctoral student, I am mindful of my abilities and skills.	97.6	5.4	.70
4	I consider that some people might have different perspectives than mine about the value of attaining a doctoral degree in my field.	100	5.6	.54
6	In class discussions, I try to understand the diverse opinions about the issues in my field of study.	100	5.6	.54
9	I chose my committee members based on evidence that assisted my decision.	87.2	4.7	1.2
14	I chose my dissertation topic because it was of interest and value to me.	100	5.6	.58

Question Number	Question	% Some Form of Agreement	M	SD
	Self-authored Intrapersonal Perceptions			
5	Even if an experienced professor recommended a course, I would search for additional information about the course before enrollment.	85.7	4.6	1.3
8	I prefer that professors offer guidelines to do tasks, rather than tell me how and what to do.	95.2	4.9	.84
11	I tend to appreciate assignments where I am able to reflect on my own experiences, even if those assignments are time-consuming.	90.5	4.8	1.0
12	I have my own way of doing academic tasks (i.e. conducting research, writing a paper, and making a presentation).	81.4	4.6	1.2
15	I trust my ability to solve any problems that I may encounter during the development of my dissertation.	93.0	5.0	.85
16	Many students and faculty in my doctoral program know who I am.	69.8	4.2	1.5
	Self-authored Interpersonal Perceptions			
1	I have a plan (i.e., planned schedule) for when to finish my doctoral course work, take the comprehensive exams, and start writing the dissertation.	88.4	5.0	1.1
7	I feel confident to express my thoughts in class and ask questions I think are important	100	5.3	.70
10	When it would be helpful, I don't hesitate to visit or have a meeting with any of my committee members.	77.5	4.5	1.4
13	The topic of my dissertation will ultimately be my decision, although I would appreciate information from my advisor on this matter.	90.7	5.2	1.1
17	I collaborate with others in research and/or presentations during my doctorate.	81.4	4.4	1.4
18	I tend to socialize with the people in the program (e.g., often talk to staff in the program, visit professors in office hours, and build a professional network with others).	53.5	3.6	1.6

Face validity. The other validity test used to assess the DSSAQ was face validity. Face validity refers to the question 'does [an instrument] appear to measure what it says it measures?' (Warner, 2013, p. 940). For example, to assess face validity for the DSSAQ, one can look at the operational definitions and decide if the items seem to measure the construct. In the current study, the operationalization appears to measure the construct –self-authorship. As shown in Table 2, the items seem appropriate for assessing self-authorship. For example, the items 5, 8, 11, 12, 15 and 16 in Table 2 respond to the concept of Intrapersonal dimension as defined by Kegan (1994) and Baxter Magolda (1998); The Intrapersonal dimension of self-authorship is the ability to have a degree of autonomy and be freed from an external authority (Baxter Magolda, 1998; Kegan, 1994). Furthermore, autonomy was one of the skill sets identified by Pizzolato (2007). Another method to assess face validity was to ask a group of seven doctoral students to assess the face validity for the Doctoral Students' Self-Authorship Questionnaire. This method allowed them to assess the instrument as well as share their concerns about it. These doctoral students worked as the external reviewers who helped to assess the instrument validity. They did not take part in the study as participants. They received prior training related to quantitative research by taking doctoral-level courses in this subject.

RESULTS

Participants' responses of some form of agreement are shown in Table 2 for each of the questions. The percentage of some form of agreement was 100 per cent to four questions (i.e., 4, 6, 7, and 14). All these questions, except question 7, are within the Epistemological construct. The lowest agreement was for question 18, 'I tend to socialize with the people in the program.' Overall, the percentage of some form of agreement could be considered high for all of the questions for these participants. The individual items within the constructs were averaged. The reliability and correlations for each of the constructs are shown in Table 3. The results showed high reliability, as well as significant correlations between all constructs.

The means in all three constructs of participants who have been in the doctoral program for one to two years (Participants A) were lower than the means of participants who have been in the program for three to six years (Participants B). However, there were non-statistically significant differences between means in all three constructs of participants based on the number of years in the program (i.e., 1-2 years, and 3-6 years). For Epistemological, Participants A had a mean of M=5.2 and Participants B had a mean of M=5.4. The difference was non-statistically significant, $t(41)$=-.981, p>.05. For Intrapersonal, the mean response for Participants A was M=4.4, and the mean for Participants B was M=4.8. The difference was non-statistically significant, $t(41)$=-1.455, p>.05. For Interpersonal, the mean response for Participants A was M=4.3, and the mean for Participants B was M=4.8. The difference was non-statistically significant, $t(41)$=-1.789, p>.05. Further, Cohen's effect size was computed as shown in Table 3.

Table 3. Correlation of Subscale Constructs and Measures of Internal Consistency

Construct Number	Question Numbers	Subscale Construct	C1.	C2.	α
C1.	2, 3, 4, 6, 9, 14	Epistemological			.81
C2.	5, 8, 11, 12, 15, 16	Intrapersonal	.62*		.79
C3.	1, 7, 10, 13, 17, 18	Interpersonal	.72*	.69*	.74

*Note. *p<.05.*

DISCUSSION

According to Martinez, and colleagues (2013), 'Of the number of students enrolled in doctoral programs across U.S. colleges and universities, successful degree completion is unlikely for approximately 50%' (p. 39). This finding was supported by many researchers and became the unfortunate truth for doctoral programs. There are various reasons that have been reported in the literature concerning the doctoral student departure. Plenty of the reported reasons are linked to epistemological, intrapersonal, and interpersonal challenges such as identity development (Jazvac-Martek, 2009), the complexity of experiences (Beauchamp et al., 2009), isolation and disengagement (Ali & Kohun, 2006; Ali & Kohun, 2007; Vekkaila, Pyhältö, & Lonka, 2013), community and emotional support (Jairam & Kahl, 2012; Shacham & Od-Cohen, 2009; Vekkaila, Pyhältö, & Lonka, 2013), advisee-advisor relationships (Devine & Hunter, 2016; Wisker & Robinson, 2012), sense of belonging (O'Meara et al., 2017), anxiety and stress (Wisker & Robinson, 2013). Overall, 'doctoral work is challenging on a variety of levels, stretching often excessively, the minds as well as the emotions, the stamina and the finances of doctoral students' (Hadjioannou, Shelton, Fu, & Dhanarattigannon, 2007, p. 160). Thus, the purpose of this study was to assess to what extent current doctoral students have developed self-authorship perspectives, as well as to assess if there was an association between the number of years in the doctoral program and the three dimensions of self-authorship (i.e., Epistemological, Intrapersonal, and Interpersonal). 'The doctoral experience is complex and multifaceted, and although doctoral students' achievement and well-being are increasingly examined in higher education research, there is still much to explore and understand about the topic' (Sverdlik et al., 2018, p. 380). Stakeholders' awareness and understanding of doctoral students' self-authorship will help them to address it, hope-

fully resulting in more opportunities that will promote the epistemological, intrapersonal, and interpersonal growths and ultimately lead to students' success in doctoral programs.

The sample of students who had been longer in the doctoral program showed higher agreement with the self-authored perspectives in the three dimensions of Epistemological, Intrapersonal, and Interpersonal. The comparisons were non-statistically significant in all three dimensions of self-authorship. Therefore, it cannot be concluded that time in the doctorate has an effect on the development of self-authorship for individuals. One reason could contribute to the lack of developing self-authorship is that many doctoral students do not get involved in preparatory opportunities due to the lack of time and balance (Alkathiri & Olson, 2019). Moreover, some universities do not offer formal preparatory opportunities for doctoral students, or that students are unaware of such opportunities (Alkathiri & Olson, 2019). According to Alkathiri and Olson (2019), 'there has been less discussion in the literature on formal preparatory opportunities within doctoral programs' (p. 60). The availability of preparatory programs and the degree of involvement in such programs may affect the students' abilities to develop self-authored perspectives. Participants in this study who were in their first and second year in the doctoral program had advanced levels of self-authorship which reflects on the estimation of Baxter Magolda (2001) that most individuals are expected to develop self-authorship in their early 30's than in their undergraduate years. However, individuals continue to develop skills and abilities associated with self-authorship over years they spend in their doctoral programs. Also, results showed that doctoral student development towards self-authorship in all dimensions intertwines, especially the intrapersonal and interpersonal dimensions. For example, the development in the intrapersonal and interpersonal dimensions for participants in this study had fairly similar means. This supports the idea of intertwined nature of the dimensions where individuals will not be able to develop in one dimension with no development in the other ones (Baxter Magolda, 2001; Pizzolato & Ozaki, 2007).

IMPLICATION FOR PRACTICE

There are some implications for practice from this research on the topic of doctoral student development of self-authorship. Doctoral students' development toward self-authorship continues over their doctorate years. Doctoral programs should investigate their students' development toward self-authorship and provide students with opportunities that promote self-authorship. For example, the teaching and advising practices within doctoral programs should be designed to assist students to develop their internal identities, values and goals, as well as to encourage students to build and maintain relationship with others. According to Sverdlik et al. (2018), 'a comprehensive understanding of the doctoral experience focusing on students' physical, psychological, and emotional well-being is warranted to provide a well-rounded perspective on the challenges faced in graduate education' (p. 363). Without the assessment of doctoral student development of self-authorship in their programs, less effort might be taken to address student needs in developing self-authorship. In addition, this research provided a tool that can assist a doctoral program's investigation of student self-authorship development. The research results informed educators in doctoral programs of the extent to which doctoral students naturally develop self-authored perspectives. Educator awareness on this subject will help them to address it, hopefully resulting in more specific opportunities that promote self-authorship development. The importance of this study rests on the fact that self-authorship development may prompt doctoral students' ability to succeed in the completion of their doctoral degrees, as well as to meet the challenges of their future in academia.

REFERENCES

Ali, A., & Kohun, F. (2006). Dealing with isolation feelings in IS doctoral programs. *International Journal of Doctoral Studies, 1,* 21–33. https://doi.org/10.28945/58

Ali, A., & Kohun, F. (2007). Dealing with social isolation to minimize doctoral attrition: A four stage framework. *International Journal of Doctoral Studies, 2,* 33–49. https://doi.org/10.28945/56

Alkathiri, M. S., & Olson, M. R. (2019). Preparing doctoral students for the professoriate through a formal pre-paratory course. *International Journal of Doctoral Studies, 14*, 33-67. https://doi.org/10.28945/4174

Auspurg, K., & Jäckle, A. (2015). First equals most important? Order effects in vignette-based measurement. *Sociological Methods & Research, 46*(3), 490-539. Institute for Social and Economic Research (ISER) Working Paper Series, No. 2012-01. Retrieved from https://www.econstor.eu/bitstream/10419/65949/1/684078031.pdf

Baxter Magolda, M. B. (1998). Developing self-authorship in young adult life. *Journal of College Student Develop-ment*, *39*(2), 143-156. Retrieved from https://eric.ed.gov/?id=EJ568386

Baxter Magolda, M. B. (2001). *Making their own way: Narratives for transforming higher education to promote self-development*. Sterling, VA: Stylus Publishing, LLC.

Baxter Magolda, M. B. (2004). Self-authorship as the common goal of 21st-century education. In M. B. Baxter Magolda, & P. M. King (Eds.). *Learning partnerships: Theory and models of practice to educate for self-authorship* (pp. 1-35). Sterling, VA: Stylus Publishing, LLC.

Beauchamp, C., Jazvac-Martek, M., & McAlpine, L. (2009). Studying doctoral education: Using Activity Theory to shape methodological tools. *Innovations in Education and Teaching International, 46*(3), 265–277. https://doi.org/10.1080/14703290903068839

Chen, F. F., Sousa, K. H., & West, S. G. (2005). Testing measurement invariance of second-order factor models. *Structural Equation Modeling: A Multidisciplinary Journal, 12*(3), 471–492. https://doi.org/10.1207/s15328007sem1203_7

Colton, D., & Covert, R. W. (2007). *Designing and constructing instruments for social research and evaluation*. San Francis-co, CA: Jossey-Bass.

Devine, K., & Hunter, K. H. (2016). PhD student emotional exhaustion: The role of supportive supervision and self-presentation behaviours. *Innovations in Education and Teaching International, 54*(4), 335-344. https://doi.org/10.1080/14703297.2016.1174143

Donnelly, J. P., & Trochim, W. M. (2005). *Research methods: The concise knowledge base, workbook*. Cincinnati, OH: Atomic Dog Publishing.

Hadjioannou, X., Shelton, N. R., Fu, D., & Dhanarattigannon, J. (2007). The road to a doctoral degree: Co-travelers through a perilous passage. *College Student Journal, 41*(1), 160-177.

Hodge, D. C., Baxter Magolda, M. B., & Haynes, C. A. (2009). Engaged learning: Enabling self-authorship and effective practice. *Liberal Education, 95*(4), 16-23. Retrieved from https://files.eric.ed.gov/fulltext/EJ871317.pdf

Hoffer, T. B., Welch, Jr. V., Williams, K., Hess, M., Webber, K., Lisek, B., Loew, D., & Guzman-Barron, I. (2005). *Doctorate recipients from United States universities: Summary report 2004*. Chicago: National Opinion Re-search Center. Retrieved from http://www.norc.org/PDFs/publications/SED_Sum_Rpt_2004.pdf

Hwang, E., Smith, R. N., Byers, V. T., Dickerson, S. H., McAlistar-Shields, L., Onwuegbuzie, A. J., & Benge, C. (2015). Doctoral students' perceived barriers that slow the progress toward completing a doctoral disserta-tion: A mixed analysis. *Journal of Educational Issues, 1*(1), 164-190. https://doi.org/10.5296/jei.v1i1.7703

Jairam, D., & Kahl Jr., D. H. (2012). Navigating the doctoral experience: The role of social support in success-ful degree completion. *International Journal of Doctoral Studies, 7*, 311-329. https://doi.org/10.28945/1700

Jazvac-Martek, M. (2009). Oscillating role identities: The academic experiences of education doctoral students. *Innovations in Education and Teaching International, 46*(3), 253-264. https://doi.org/10.1080/14703290903068862

Kegan, R. (1994). *In over our heads: The mental demands of modern life*. Cambridge, MA: Harvard University Press.

King, P. M., Baxter Magolda, M. B., Barber, J. P., Brown, M. K., & Lindsay, N. K. (2009). Developmentally ef-fective experiences for promoting self-authorship. *Mind, Brain, and Education, 3*(2), 108-118. https://doi.org/10.1111/j.1751-228X.2009.01061.x

Laughlin, A., & Creamer, E. G. (2007). Engaging differences: Self-authorship and the decision-making process. *New Directions for Teaching & Learning, 2007*(109), 43-51. https://doi.org/10.1002/tl.264

Lindsay, S. (2015). What works for doctoral students in completing their thesis? *Teaching in Higher Education, 20*(2), 183-196. https://doi.org/10.1080/13562517.2014.974025

Maher, M. A., Ford, M. E., & Thompson, C. M. (2004). Degree progress of women doctoral students: Factors that constrain, facilitate, and differentiate. *The Review of Higher Education*, *27*(3), 385–408. https://doi.org/10.1353/rhe.2004.0003

Martinez, E., Ordu, C., Della Sala, M. R., & McFarlane, A. (2013). Striving to obtain a school-work-life balance: The full-time doctoral student. *International Journal of Doctoral Studies*, *8*, 39–59. https://doi.org/10.28945/1765

Neumeister, J. R. (2007). *This new whole: An exploration into the factors of self-authorship in college students*. Doctoral Dissertation. Maryland, US: University of Maryland, College Park. Retrieved from https://drum.lib.umd.edu/bitstream/handle/1903/7187/umi-umd-4571.pdf

O'Meara, K., Griffin, K. A., Kuvaeva, A., Nyunt, G., & Robinson, T. (2017). Sense of belonging and its contributing factors in graduate education. *International Journal of Doctoral Studies, 12*, 251-279. https://doi.org/10.28945/3903

Pizzolato, J. E. (2003). Developing self-authorship: Exploring the experiences of high-risk college students. *Journal of College Student Development, 44*(6), 797-812. https://doi.org/10.1353/csd.2003.0074

Pizzolato, J. E. (2005). Creating crossroads for self-authorship: Investigating the provocative moment. *Journal of College Student Development, 46*(6), 624-641. https://doi.org/10.1353/csd.2005.0064

Pizzolato, J. E. (2006). Complex partnerships: Self-authorship and provocative academic advising practices. *NACADA Journal, 26*(1), 32-45. https://doi.org/10.12930/0271-9517-26.1.32

Pizzolato, J. E. (2007). Assessing self-authorship. *New Directions for Teaching & Learning, 2007*(109), 31-42. https://doi.org/10.1002/tl.263

Pizzolato, J. E., & Ozaki, C. C. (2007). Moving toward self-authorship: Investigating outcomes of learning partnerships. *Journal of College Student Development, 48*(2), 196-214. https://doi.org/10.1353/csd.2007.0019

Shacham, M., & Od-Cohen, Y. (2009). Rethinking PhD learning incorporating communities of practice. *Innovations in Education and Teaching International, 46*(3), 279–292. https://doi.org/10.1080/14703290903069019

Stimpson, R. L., & Filer, K. L. (2011). Female graduate students' work-life balance and the student affairs professional. In P. A. Pasque, & S. E. Nicholson (Eds.). *Empowering women in higher education and student affairs: Theory, research, narratives, and practice from feminist perspectives* (pp. 69-84). Sterling, VA: Stylus Publishing, LLC.

Sverdlik, A., Hall, N. C., McAlpine, L., & Hubbard, K. (2018). The PhD experience: A review of the factors influencing doctoral students' completion, achievement, and well-being. *International Journal of Doctoral Studies, 13*, 361-388. https://doi.org/10.28945/4113

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education, 2*, 53-55. https://doi.org/10.5116/ijme.4dfb.8dfd

Torres, V., & Hernandez, E. (2007). The influence of ethnic identity on self-authorship: A longitudinal study of Latino/a college students. *Journal of College Student Development, 48*(5), 558-573. https://doi.org/10.1353/csd.2007.0057

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

Warner, R. M. (2013). *Applied statistics: From bivariate through multivariate techniques* (2nd edition). Los Angeles: Sage Publications.

Wao, H. O. (2010). Time to the doctorate: Multilevel discrete-time hazard analysis. *Educational Assessment, Evaluation and Accountability*, *22*(3), 227-247. https://doi.org/10.1007/s11092-010-9099-6

Wawrzynski, M., & Pizzolato, J. E. (2006). Predicting needs: A longitudinal investigation of the relation between student characteristics, academic paths, and self-authorship. *Journal of College Student Development*, *47*(6), 677-692. https://doi.org/10.1353/csd.2006.0071

Wildman, T. M. (2007). Taking seriously the intellectual growth of students: Accommodations for self-authorship. *New Directions for Teaching & Learning, 2007*(109), 15-30. https://doi.org/10.1002/tl.262

Wisker, G., & Robinson, G. (2012). Doctoral 'orphans': Nurturing and supporting the success of postgraduates who have lost their supervisors. *Higher Education Research and Development, 32*(2), 300-313. https://doi.org/10.1080/07294360.2012.657160

Wisker, G., & Robinson, G. (2013). Picking up the pieces: Supervisors and doctoral 'orphans.' *International Journal for Researcher Development, 3*, 139–153. https://doi.org/10.1108/17597511311316982

BIOGRAPHY

Dr. Mohammed S. Alkathiri is an Assistant Professor and Dean at the Deanship of Academic Development, Imam Abdulrahman bin Faisal University, Saudi Arabia. Parts of his responsibilities are to design and provide professional development training programs for faculty members with the intention of improving teaching practices and ultimately enhancing students' learning experiences. He earned his Ph.D. in Teaching and Learning with emphasis in Higher Education. His study and work gave him huge opportunities to learn from many scholars at different institutions and to have a good grasp of knowledge in the field of teaching and learning in higher education.