



DOCTORAL STUDENTS' IDENTITY DEVELOPMENT AS SCHOLARS IN THE EDUCATION SCIENCES: LITERATURE REVIEW AND IMPLICATIONS

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ABSTRACT

Aim/Purpose	The purpose of this paper is to offer a systematic review of empirical literature examining doctoral students' identity development as scholars in the education sciences. We frame our analysis through a constructivist sociocultural perspective to organize our findings and discuss implications for multiple actors and components that constitute the system of doctoral education, with doctoral students as the central actors of the system.
Background	Despite increasing interest in the professional identity development of postsecondary students via their experiences in educational programs, relatively little is known about how doctoral students develop their identity as professionals who engage in scholarship. We focus specifically on the experiences of education sciences doctoral students, given their unique experiences (e.g., typically older in age, more professional experiences prior to starting doctoral program) and the potential of education sciences doctoral programs contributing to the diversification of academia and future generations of students and scholars.
Methodology	Our systematic literature search process entailed reviewing the titles, abstracts, and methods sections of the first 1,000 records yielded via a Google Scholar search. This process, combined with backwards and forwards citation snowballing, yielded a total of 62 articles, which were read in their entirety. These 62 articles were further reduced to 36 final articles, which were coded according to an

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	inductively created codebook. Based on themes derived from our coding process, we organized our findings according to a framework that illuminates individual identity development in relation to a larger activity system.
Contribution	This systematic review presents the current body of scholarship regarding the identity development of education sciences doctoral students via a constructivist sociocultural framework. We contribute to the study of doctoral education and education research more broadly by focusing on an area that has received relatively little attention. A focus on the identity development of doctoral students pursuing the education sciences is warranted given the field's promise for preparing a diverse group of future educators and education scholars. Furthermore, this analysis broadens the conversation regarding scholarship on this topic as we present doctoral student identity development as occurring at the intersection of student, faculty, program, disciplinary, institutional, and larger sociocultural contexts, rather than as individualized and local endeavors.
Findings	Looking across our reviewed articles, identity as scholar emerged as <i>recognition by self and others of possessing and exhibiting adequate levels of competence, confidence, autonomy, and agency with respect to scholarly activities, products, and communities</i> . Students often experience tensions on their journey towards becoming and being scholars, in contending with multiple identities (e.g., student, professional) and due to the perceived mismatch between students' idealized notion of scholar and what is attainable for them. Tensions may serve as catalysts for development of identity as scholar for students, especially when student agency is supported via formal and less ubiquitous subsidiary experiences of students' doctoral programs.
Recommendations for Practitioners	We recommend that actors within the broader system of doctoral student identity development (e.g., doctoral students, faculty, organizational/institutional leaders) explicitly acknowledge students' identity development and intentionally incorporate opportunities for reflection and growth as part of the doctoral curriculum, rather than assume that identity development occurs "naturally." In this paper, we provide specific recommendations for different stakeholders.
Recommendations for Researchers	Our literature review focused on studies that examined the identity development of doctoral students in the education sciences. We recommend further discipline-specific research and synthesis of such research to uncover similarities and differences across various disciplines and contexts.
Impact on Society	Doctoral students have the potential to become and lead future generations of educators and scholars. Taking a sociocultural and system-level approach regarding the successful identity development of doctoral students is necessary to better support and cultivate a diverse group of future scholars who are well-equipped to lead innovations and solve problems both within and outside academia.
Future Research	Possible areas of future research include focusing on the experiences of students who leave their programs prior to completion (and thus not developing their identity as scholars), investigating specific knowledge, skills, and attitudes associated with activities that studies have claimed contribute to identity development, and examining phenomena or traits that are seen as more biologically determined and less modifiable (e.g., attention-deficit/hyperactivity disorder, dyslexia, and mental health differences) in relation to doctoral students' identity development. Finally, we recommend that future research should look into the underlying norms and nuances of ontological, epistemological, and methodological roots of programs and disciplines as part of the "story" of developing

identity as scholar. Norms, and related philosophical underpinnings of typical doctoral education (and the tasks these translate into) were not explored in the reviewed literature.

Keywords

identity development, identity as scholar, doctoral students, education sciences, cultural-historical activity theory, systematic review

INTRODUCTION

Since the 1950s, researchers have explored the notion of individuals' identity, and identity evolution, in relation to formal and informal education experiences. One of the most widely cited definitions of identity in education scholarship comes from Gee (2000), who describes identity as being the product of interactions with others and related actions that allow the individual to be "recognized as a certain 'kind of person,' in a given context" (p. 99). Based on a framework of symbolic interactionism aligned with the Meadian interpretation of identity, many scholars deem identity as less a thing possessed and more a process involving identification with groups and actions, involving recognition of an individual's affinity with those by the self and others. Given the many groups individuals interact with, many theorists also assume that individuals experience multiple context-specific identities informed by social roles and activities (Holland & Lachicotte, 2007).

An emerging body of research explores the relationships between various student identities and their success (e.g., performing well on education tasks and in education environments) and persistence (e.g., completing courses, programs, and degrees) in formal education programs across disciplines at the postsecondary level (e.g., Boyd et al., 2003; French et al., 2005; Hernandez et al., 2017). Additionally, researchers have explored how professional programs charged with developing practitioners' knowledge and skills across professions impact the professional identity of students in baccalaureate programs in science and engineering (Eliot & Turns, 2011; Nadelson et al., 2017; Villanueva & Nadelson, 2016), nursing and other health professions (Adams et al., 2006), and K-12 teacher preparation (Beijaard et al., 2004; Goodson & Cole, 1994). Yet, looking across this literature, the concept of professional identity is notably under-defined (Trede et al., 2012).

We also note a relative dearth in research concerning the professional identity development of those preparing to enter the profession of academia and other industries that require professional scholars or researchers. Additionally, we deem that a focus on doctoral students in the education sciences is particularly important given the field's promise for preparing a diverse group of future educators and education scholars (see Hussar et al., 2020; National Center for Science and Engineering Statistics [NCSES], 2020). The purpose of this systematic review is to identify, critique, and synthesize the research literature detailing professional identity development of doctoral students in the education sciences. This systematic review is distinct from several recent reviews that have covered similar topics in that we focus specifically on identity development rather than the general challenges and opportunities of doctoral education (see Pifer & Baker, 2016) and in that we espouse a broader definition of identity as scholar, rather than focus on one specific aspect of doctoral students' identity development, such as student identity development with regards to academic writing (see Inouye & McAlpine, 2019). Additionally, to our knowledge, this is the first systematic review that specifically addresses the identity development of doctoral students in the education sciences.

We define *professional identity* as an individual's felt and recognized association with a vocation requiring specialized knowledge and skills (*a profession*) and pertinent values, activities and norms. Specifically in this review, we focus on the development of identity as scholar of those engaged in doctoral programs in the education sciences, defining *identity as scholar* as a specific type of professional identity and as an individual's felt or recognized association with communities doing scholarship pertaining to an academic discipline.

In the ensuing sections, we provide a review of the related literature, then introduce Gee's (2000) theory of identity and Engeström's (1987, 2001) cultural-historical activity theory (CHAT) as the frameworks guiding our systematic review. We then explain our systematic literature search and analysis processes. After presenting the four main themes of *objectives*, *activities/processes*, *antecedents*, and *tensions*, we discuss these findings by situating our work in our frameworks. We conclude with recommendations for practice and future research.

REVIEW OF RELATED LITERATURE

IDENTITY DEVELOPMENT THROUGH DOCTORAL EDUCATION

Doctoral students enter their advanced studies with diverse intentions and motivations, ranging from deepening one's engagement with a particular research interest area to career change or advancement (Sakurai et al., 2017; A. Taylor, 2007). While many doctoral programs acknowledge and work to prepare students for the realities of diverse future professional positions connected to such diverse intentions and motivations, many are based on the model of preparing graduates for work in *academia* (systems of education) as *academics* (those working in this system), usually as employees of institutions of higher education. Though academia is vast, and professions that fall under this large umbrella are diverse, many doctoral programs prepare students to assume faculty positions that, among other tasks (e.g., teaching, service) include expectations around the tasks of knowledge dissemination and/or discovery (Nettles & Millett, 2006). A significant body of research explores the processes of doctoral students attempting to become faculty and the trials and tribulations with respect to such. This includes research concerning *socialization* (e.g., Austin, 2002; Gardner, 2010; Golde, 2005; Lovitts, 2001), or the integration processes experienced by faculty-in-training and newer faculty, and how these experiences impact individuals' success and persistence as faculty (e.g., Lovitts, 2001; Lovitts & Nelson, 2000).

However, as some researchers have rightly pointed out, the notion of socialization does not account for a diversity of students' experiences, autonomy and agency, and the complexity of contextual factors and realities influencing students' development (Jazvac-Martek, 2009; Sweitzer, 2009). Indeed, in recent decades, there has been an increase in studies that focus specifically on the challenges faced by doctoral students with suggestions for improving doctoral education as a system (Pifer & Baker, 2016), rather than those based on a framing that views students as needing to become adequately socialized or "fit into" an existing system. For some researchers, such as Sweitzer (2009), development of relevant identity is part of socialization and is currently under-investigated in its relevance to student development with respect to engaging with professions and communities. Among researchers who have taken up the notion of doctoral student identity development, the focus has tended to be about one specific aspect of developing as a scholar, such as student identity development with regards to academic writing (Inouye & McAlpine, 2019). In our work, we espouse a broader definition of developing identity as a scholar, or *ability and recognition as someone who can participate in and create research of the caliber required in academia* (Nettles & Millett, 2006). In other words, we view identity as scholar as a type of professional identity, where the specific profession of focus is that which involves engaging in scholarship.

The tasks associated with being a professional in academia (e.g., teaching, research, service) do not overlap completely with the range of activities and norms that constitute scholarship—although the pursuit of scholarship is oftentimes deemed one part of being a professional in academia. For the purposes of this paper, we define scholarship as *novel knowledge generation or application (academic discovery), with potential for dissemination of products towards collective attainments (academic achievement) by an individual-scholar or community of scholars*. We deem research to be one part of the larger set of activities constituting scholarship, which may include activities in addition to research, such as securing extramural funding and participating in (inter)national scholarly organizations via service and dissemination of

one's research. Research is a central part of doctoral students' training to become scholars, and previous studies have taken up this topic by commenting on the importance of doctoral programs explicitly training its students to become researchers (Hochbein & Perry, 2013) and arguing that in addition acquiring technical research skills, students must adequately develop their sense of independence as knowledge creators, rather than knowledge consumers (Gardner, 2008; Pifer & Baker, 2016). In this study, we operate with the understanding that doctoral-level programs prepare students to engage in scholarship via various activities and processes, including those related to research, that we will collectively refer to as programs' objective to prepare scholars. A scholar-in-training is assumed to gain experience through coursework and other activities, including creating inquiry designs, collecting and analyzing data, writing, and preparing for disseminations of work to disciplinary and academic communities. Doctoral education programming, and degree conferred, is intended to foster and substantiate a student's identity as scholar.

THE NOVELTY AND NEED FOR A FOCUS ON THE EDUCATION SCIENCES

Similar to other disciplines, an intended outcome of the roughly 200 education sciences doctoral programs in the United States (graduating 7,000 doctorates total per year) is the development and production of education scholars (White & Grinnell, 2011). This holds true for both of two types of doctorates conferred in education: the research doctorate (i.e., PhD), conferred on those producing original knowledge through scholarship; and the professional doctorate (i.e., EdD), conferred on those demonstrating significant advancement of ideas and impact informed by scholarship on a profession or in a professional situation (Gardner, 2009). Yet, research concerning development of identity as scholar among doctoral students in the education sciences is notably scarce and is justifiably needed given a recent government report from the National Center for Science and Engineering Statistics (NCSES) Directorate for Social, Behavioral and Economic Sciences (2020). This NCSES report is one of few governmental or scholarly reports that provide detailed coverage of nation-wide doctoral degree attainment figures in the United States and provides fodder for concerns about our ability to meet the demands of our nation via doctoral programming in the education sciences.

According to the NCSES (2020) report, trends over the last decade (2000-2019) in the United States show that students with education doctorates are more likely than doctorate recipients of any other discipline to have "definite employment commitments in academe in the United States." During this 10-year period, the proportion of education doctorates with definite academic employment has seen a small uptick from 53% in 2000 to 57% in 2019, while this same figure has dipped or held steady for doctorate recipients in all other disciplines represented in the report, including the life sciences (from 49% to 36%), physical sciences and earth sciences (from 29% to 17%), mathematics and computer sciences (from 41% to 28%), psychology and social sciences (from 60% to 52%), engineering (from 17% to 12%), humanities and arts (from 81% to 72%), and other non-science and engineering fields (held constant at 76%). This juxtaposition of job prospects is not surprising given recent reports that show a relative stagnation, and even slight decrease, in the number of first-time enrollees and graduates of education doctorate programs in the United States, compared to several other fields (mostly from the science, technology, engineering, and mathematics, or STEM fields) that have seen notable increases in program enrollees and completers roughly covering the years between 2006 and 2016 (Hussar et al., 2020; NCSES, 2020; Okahana & Zhou, 2017). Although there is an overall excess in demand for academic employment opportunities for doctorate recipients across the board (NCSES, 2020), recent trends in the education sciences point to a need to better investigate reasons for prospective students' waning interest in the education sciences and how education science doctoral programs may better attract, support, and retain students in order to ultimately prepare future scholars.

Furthermore, an enhanced focus on increasing the success and persistence of those with promise to earn doctorates in the education sciences is important to challenging the status quo of academia itself. Education doctorate recipients are a fairly diverse bunch, especially when compared to other dis-

ciplines. Among all disciplines represented in the NCSES report (2020), education doctorate recipients in 2019 have the highest median age of 38.3 (all-discipline median age is 31.5) and nearly 40% of education doctorate recipients in 2019 were aged 41 or older and just 13% made up those aged 30 or younger. In comparison, the all-discipline proportion of doctorate recipients who were aged 30 or younger was 45% (NCSES, 2020). These trends are not surprising; students often enroll in an education sciences doctoral program after working for some time as a professional in a related field (e.g., K-12 classroom educator, informal setting educator) rather than immediately after undergraduate or master's level work, as is more typical in other disciplines. Furthermore, the education sciences have historically enjoyed high participation of women; over the last three decades between 1989 and 2019, women earned 58-70% of all education doctorates, numbers that surpass the proportion of women doctorates in psychology and the social sciences (46-60% over the same time period) and in humanities and arts (43-51% over the same time period) (NCSES, 2020). Among the STEM disciplines, only the life sciences can claim above 50% women doctorate recipients at any point over this same period (55% in 2019), with the other STEM disciplines trailing at around 24% to 34% women doctorates in 2019 (NCSES, 2020). In addition, the field of education enjoys a relatively high percentage of recipients identifying as Black or African American; in 2019 this was at 16% of doctorate earners (NCSES, 2020). In comparison, other social sciences and the life sciences realized percentages of 9% and 6%, respectively, with other STEM disciplines as low as near 2% (NCSES, 2020). These trends in the racial/ethnic diversity of education doctorates are corroborated in other governmental data sources (see Hussar et al., 2020). While we recognize the problematic nature of relying on a select few academic disciplines that have traditionally seen higher percentages of minoritized groups to continually take on the responsibility of "diversifying" academia, we argue that the relative diversity of education doctorates should be recognized and continually supported since any dip in education doctorates translates into a loss of ground gained in the diversity of the professoriate, within postsecondary administration and, ultimately, across academe.

Accurate doctoral student attrition numbers are arguably hard to come by for a variety of reasons (Maddox, 2017), but relatively recent scholarship claims that almost half of students who begin all doctoral programs in the United States do not complete their degree (Gardner, 2009; Golde, 2005). While we continue to lose doctoral students in the academic "pipeline," and potentially those who may contribute to the much-needed diversification of academia, inquiry into the attrition of doctoral students remains notably limited (Council of Graduate Schools, 2004; Golde, 2005). This may, perhaps, be due to assumptions regarding the lesser needs of doctoral students (compared to their undergraduate and master's counterparts) and, thus, the lesser attention of faculty, programs, and institutions to attend to them (Gardner, 2009). Doctoral students may be assumed to be cognitively and socially mature students who have "figured out" who they are and what they want to do professionally, self-aware of their professional ambitions and motivations, the realities of education program demands, and their associated competencies and limitations. These assumptions, however, are somewhat disputed by studies that have examined doctoral students' struggle with individual-based factors, such as career and personal goal changes (Gardner, 2009; Holmes et al., 2010), inaccurate assumptions regarding the demands of doctoral programs (Gardner, 2009), and mental health issues (Panger et al., 2014). As we will show through this systematic review, we contend that the field of doctoral education research is ripe for further exploring these individual-level factors in conjunction with broader sociocultural factors, via a focus on doctoral students' identity development.

A growing body of scholarship highlights faculty practices and programmatic/institutional structures at play with respect to doctoral student attrition. Case studies show students leaving doctoral programs for reasons of advisee/advisor tensions (Sowell et al., 2008), poor program (Golde, 2005; Golde & Dore, 2001) or discipline "fit" (Sowell et al., 2008), "dismissal" (Tinto, 2012), and isolation (Golde, 2005). Additionally, although researchers who study the best practices of doctoral programs generally agree that attempting to recommend a "one-size fits-all" approach to doctoral education is counterproductive (Barnett et al., 2017), they also recommend that best practices must go beyond attempting to address individual student-level factors, and recommend doctoral programs provide

structural supports, such as adequate mentorship and training for both students and faculty (Brill et al., 2014; Di Pierro, 2007) and increased sensitivity to cultural issues (Deshpande, 2017). An additional consideration that may impact doctoral student development at a broader level is the accreditation of institutions and programs, which influences how institutions and programs prioritize their resources and programmatic foci (Adkison-Bradley, 2013; Miles et al., 2014; Zorek & Raehl, 2013), which in turn may influence how doctoral students are supported and cultivated. These studies highlight the complex interplay of factors that impact doctoral students' experiences and the development of their identities via their educational journeys, which our systematic literature review addresses. Student success and persistence with respect to professions, and the education programs that prepare them for these, occur at the intersection of student, faculty, program, disciplinary, institutional, and larger sociocultural contexts.

We assume that the experiences of doctoral students in the education sciences occur at this intersection as well, although limited research confirms and explores this (Wulff & Austin, 2004). The socialization literature, notably, is somewhat constrained by an over-focus on types of interpersonal relationships and communities impacting doctoral students' success and persistence, with less attention given to more complete systems of influence. Additionally, with most traditional models of doctoral programs focused on fostering scholars with deep yet narrow content expertise, researchers and practitioners may be relatively less attuned to other broader knowledge, experiences, and overall contextual factors that may be crucial for students' holistic development as scholars (Emmioglu et al., 2017). With this systematic literature review, we hope to answer the calls from others to examine the complexity of multiple influences on doctoral students' development (Golde, 2005; Lovitts, 2001; Nelson & Lovitts, 2001; Wulff & Austin, 2004). Investigations heading this call may provide insight that can alleviate the significant and plethora of costs of doctoral student attrition to students, faculty, programs, institutions, funders, and the nation (Golde, 2005; Strayhorn, 2010). Additionally, we see the need for inquiry concerning those in a specific field, the education sciences, extending past research that has focused on indicators of doctoral students' success and persistence without allowing for consideration or disaggregation of discipline or degree type (Maddox, 2017). We argue that emerging scholars in the education sciences bring novel realities to their experiences, necessitating a focused investigation into the existing literature examining education sciences doctoral students' development of identity as scholar.

FRAMEWORKS GUIDING OUR LITERATURE REVIEW

We assume disciplinary, institutional, departmental, programmatic and interpersonal contexts can influence doctoral students' development, including their development as scholars. In recognition of these contextual influences, we position our review in a constructivist paradigm (Schwandt, 2015), privileging doctoral students' lived experiences and how these experiences shape who they are and how they undertake the challenges of doctoral education. We utilize two analytical lenses, Gee's (2000) theory of identity and Engeström's (1987, 2001) cultural-historical activity theory (CHAT), to situate and advance understanding of how doctoral students in the education sciences develop their identity as scholar within greater systems and complex contexts. These analytical lenses also afford us a framework through which to make relevant suggestions for those interested in improving doctoral students' success, faculty members' work and productivity, programmatic and institutional efficacy, efficiency or growth, as well as research informing these topics.

GEE'S THEORY OF IDENTITY

Gee's (2000) theory of identity explicates four perspectives of how an individual may be recognized as a "certain kind of person" by their self or others: the *nature perspective* (or *N-identity*), the *institutional perspective* (or *I-identity*), the *discourse perspective* (or *D-identity*), and the *affinity perspective* (or *A-identity*). The four perspectives are best understood as interwoven, coexisting facets of an individual's identity.

While they do not exist independently or in a hierarchy, one or various perspectives may become more salient for an individual in a given context.

From the nature perspective (or N-identity), the basis for one's identity is viewed as inherent, existing or developing somewhat outside the influence of society. Gee (2000) provides an example by referring to his being an identical twin, an identity he was born with and that he, or others, have limited control over. Still, other identity perspectives can be thought of as conferring some meaning to these N-identities, since N-identities often work in consort with other identity perspectives.

The institutional perspective (or I-identity) highlights how social institutions have power in conferring one's identity. Workplaces, schools, and governmental organizations are a few of the many examples of institutions informing an individual's I-identities. According to Gee (2000), titles or roles conferred by institutions (e.g., "professor") shape how individuals are recognized as "certain kinds of persons."

The discourse perspective (or D-identity) derives its relevance from socially generated "*discourse or dialogue* of other people" (Gee, 2000, p. 103). D-identities gain their power as "other people treat, talk about, and interact with" (Gee, 2000, p. 103) an individual as exhibiting certain qualities (e.g., being a charismatic person). Interactions with and recognition by groups of others is central to how D-identities are constructed and sustained.

The affinity perspective (or A-identity) situates an individual's identity within a set of common experiences and practices of groups. Gee (2000) suggests that being a *Trekkie* (a fan of the TV series *Star Trek*) is an A-identity initiated and maintained by an individual in relation to an affinity group the individual chooses to align with by engaging in the practices of the group (e.g., attending conventions, collecting memorabilia, dressing up as characters from the show). An A-identity perspective privileges shared practices, specifically, across members of a group.

While Gee (2000) states that different historical research periods have given primacy to different facets of this four-perspective framework, he contends that "[t]hey are four strands that may very well all be present and woven together as a given person acts within a given context" (p. 101). Indeed, the examples supplied by Gee (e.g., being an identical twin, a professor, a charismatic person, a *Trekkie*) are open to examination through all four identity perspectives, especially when considered in relation to specific contexts. The relationship between identity perspectives is not static, nor are there crisp delineations between the perspectives. Identity is fluid, ever changing, and dynamic based on context, and certain perspectives can be foregrounded in certain contexts.

Like Gee (2000), we recognize the impact of societal and cultural norms, processes, communities, and other structures on students' (developing) identities. This perspective on identity allows us to move beyond essentialist notions of whether or not certain students have the "right" identity to succeed as scholars. It also allows us to focus on contextual factors interacting with individual factors so that we may arrive at suggestions for improved practice for all actors in a system, rather than focusing on students' inabilities to become socialized into an existing static system. By viewing identity as dynamic and contingent upon recognition by the self and others with respect to relevant activities, we are able to take into account the complex contexts within which identity development takes place. The context gives significance to students' activities, which may or may not be recognized as valid by those who are part of education systems (e.g., peers and faculty), impacting students' identity development. To help illuminate the potential impacts on students' identity development as scholars within complex contexts, we operationalize Gee's (2000) identity theory within the larger frame of cultural-historical activity theory (Engeström, 1987, 2001).

CULTURAL-HISTORICAL ACTIVITY THEORY

Cultural-historical activity theory (CHAT) is based on Vygotsky's (1978) notion of *mediated acts*—individuals receive external stimuli (sign) and transform these into internal cognates, which then act as

affordances (mediators) for their actions. CHAT allows for an exploration of social systems that frame mediated actions, or what Engeström (1987) terms *activity systems*. Focusing on an activity system expands Vygotsky's individual-focused conceptualization of human activity by incorporating various system-level elements that motivate and enable collective action. When considering the activity system as the unit of analysis, various system elements influence the system's progress towards an *object* (e.g., developing as a scholar), while the object also guides the direction of system elements. An object, in fact, may not ever be achieved; rather, "object-oriented actions are always, explicitly or implicitly, characterized by ambiguity, surprise, interpretation, sense making, and potential for change" (Engeström, 2001, p. 134). As well, the nature of an object may evolve over time, as other elements of the system modify it.

Subjects in an activity system engage in actions towards achieving the object, impacted by interactions with other elements of the system, which include mediating artifacts, rules, community, and divisions of labor. *Mediating artifacts* are physical tools or signs utilized by subjects in their efforts to achieve objects. *Rules* are means and norms by which subjects are governed or directed as they engage in activities. *Community* refers to persons or groups engaged in the activity system, whose actions may also influence the object and the subject's progress towards it. Finally, the *division of labor* denotes community members' interdependent roles regarding action. Interactions between these elements are implied in the structure of an activity system. These interactions occur as subjects strive towards the object of the activity system.

We situate our analysis assuming doctoral students, as the central subject of our activity system, engage with elements of the system in ways that may help them, or not, achieve the object of developing identities as scholars (see Figure 1), including things such as coursework (mediating artifacts), expectations for productivity in scholarship (rules), interactions with their peers and faculty (community), who provide influence and guidance in such structures as dissertation committees (where divisions of labor can be exemplified).

Ultimately, analysis of activity systems allows us to explore how humans impact and experience change within social systems, largely via exploring *contradictions* (or *tensions*) between the subject and other elements of the system (Roth, 2012). Social systems are fraught with conflict. Not intrinsically negative, conflict can be a trigger for change; acknowledgement of and attendance to conflict allows for activity systems to evolve. In this systematic review, we explore evolution of identity as scholar, the programs, faculty and other contextual factors that are important in that process, and potential transformations to the system as enhancements to that process.

Taken in the larger contexts of academia, disciplines, institutions, departments, and programs, we utilize the frameworks of Gee and Engeström to zoom in on individuals' identity while maintaining a focus on social and cultural systems that impact identity. Gee's identity theory provides the fluid perspective of identity rooted in social discourse and Engeström's activity theory bridges the gap from social discourse into human action. We contend that Gee's (2000) identity theory and Engeström's (1987, 2001) cultural-historical activity theory (CHAT) meld well here to frame our analysis within a social system of doctoral education, in the education sciences, and work in tandem to highlight different critical aspects of our findings.

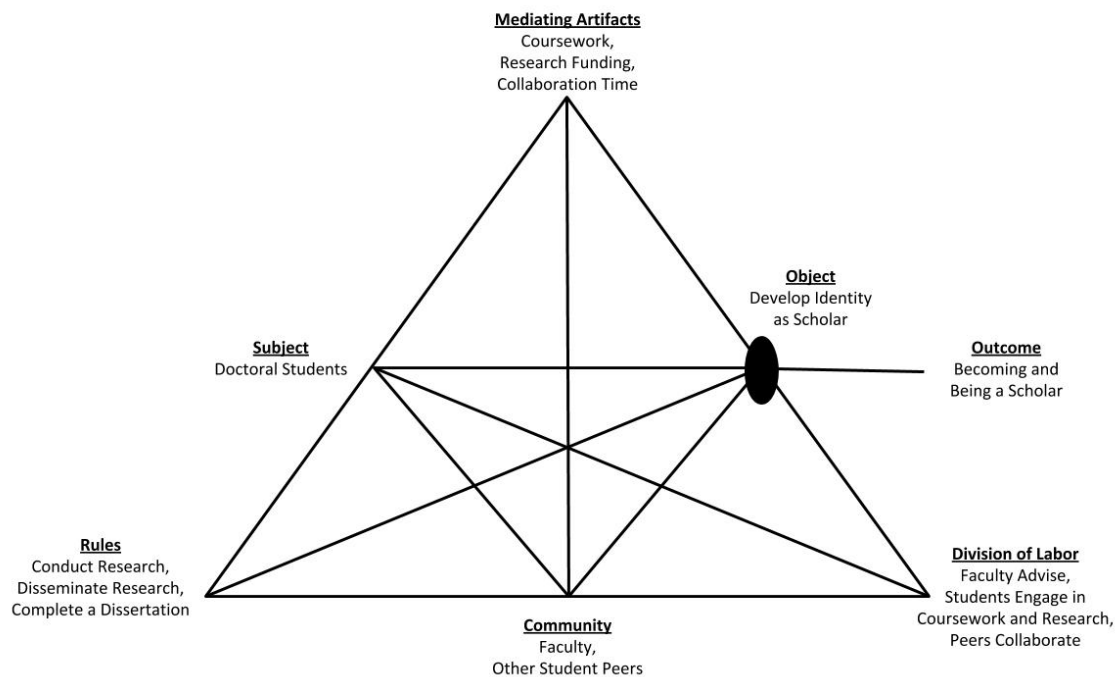


Figure 1. Hypothesized activity system of doctoral students' development of identity as scholar. Adapted from "Expansive Learning: Toward an Activity Theoretical Reconceptualization," by Y. Engeström, 2001, p. 135.

METHOD

RESEARCH QUESTIONS

We conducted a systematic review of empirical literature examining doctoral students' identity development as scholars in the education sciences. The following three research questions guided our search and review of literature:

1. What are the foci, methods, and frameworks that have been used to explore and conceptualize identity relevant to doctoral students' identities as scholars?
2. How do doctoral students' identities as scholars form/evolve through education science doctoral programs, including those transitioning from diverse professional backgrounds?
3. What are practical implications offered in the literature for relevant stakeholders, including faculty, students, and relevant organizations, in terms of how to successfully foster development of identities as scholars of doctoral students in the education sciences?

LITERATURE SEARCH STRATEGY AND INCLUSION CRITERIA

Unstructured phase

Although our focused search of the literature began in January of 2018, the genesis of this project dates back to the spring of 2017, when the first and third authors were enrolled in a doctoral seminar taught by the second author. During this time, the authors of this paper, along with seven other doctoral students enrolled in the seminar, began a search of the literature focused on the same topic as outlined here. Although the process of literature search and identification was somewhat less structured and less exhaustive than the current review, we collectively agreed upon a set of 14 articles (see

Appendix). Based on this initial set of articles, the three authors of this paper developed a codebook over the summer and fall of 2017. Our codebook development process entailed the first and third authors independently reading the 14 articles and noticing emergent ideas as they relate to our research questions. We started this process by working collaboratively on Google Sheets, where the two authors listed each emergent idea as a new row of the spreadsheet. The columns of the spreadsheet corresponded to the 14 articles. In the cells that were at the intersection of each row (emergent idea) and column (article), we copied and pasted excerpts from the articles and/or provided supplementary explanations that served as evidence for why each author decided to create a new row or why the emergent idea that the other author identified did or did not apply to the particular article. We kept draft versions of our codebook along with our commentary and revision history. This codebook development process was extensive and iterative. The first and third authors met every two weeks for a period of 6 months to discuss each emergent idea and accompanying evidence, create codes and subcodes, and write a description for each (sub)code. The second author attended the last several meetings during this 6-month period to participate in our discussions and suggest modifications. Once we arrived at a version of the codebook that all three authors agreed upon as robust, we imported the codebook into Dedoose qualitative coding software for use in subsequent analysis. This version of the codebook went through further minor modifications once we applied it to the articles identified during the structured phase. The final version of our codebook is shown in Table 1.

Table 1. Codebook

	Code	Level 1 Subcode	Level 2 Subcode
Identity Types	Academic identity		
	Doctoral student identity		
	Education leader identity		
	Education researcher identity		
	Personal identity		
	Professional identity		
	Teacher educator identity		
Formation/Evolution of Identity as Scholar	Dynamic nature of identities	Depending on climate of certain context	
		Depending on individual prior life experiences	
		Depending on physical location or environment	
		Depending on task at hand	
		Identity as constructed and socially situated	
		Individuals contending with multiple identities	
	Envisioning identity possibilities		
	Evolves in a staggered manner		

	Code	Level 1 Subcode	Level 2 Subcode
	Evolves in relation to an idealized version	Idealized version as source of tension	
	Evolves through engaging with others	Communities or groups with shared norms	
		Faculty interaction	
		Peer Interaction	
		Feedback	Giving feedback
			Receiving feedback
	Evolves through agency	Agency granted by others	
		Student initiated agency	
	Evolves through reflection	Formal/prompted	
		Informal/unprompted	
	Evolves through validation	Validation by others	
		Validation by self	
	Evolves with experience	Formal experiences	
		Informal experiences	
		Subsidiary professional development experiences	Writing group
		Dependent on engagement level	
		Trying out identities	
	Identity as frames for thought and action		
	Realigning of identity with changing external expectations		
	Relationships among multiple identities	Compartmentalizing multiple identities	
		Multiple identities reinforcing one another	
		Multiple identities causing dissonance	

Note. The above codes pertain to the second research question regarding the formation and evolution of identity as scholar. Codes pertaining to the first (methods) and third (implications) research questions have been omitted from this table to reduce redundancy with the information presented in Tables 3 and 5.

Structured phase

We conducted our more structured search for relevant literature via Google Scholar between January 27, 2018 and February 16, 2018. Specifically, we searched for peer-reviewed literature written in English (from various countries) since the year 2000 that described empirical pieces that involved the collection and analysis of novel data. Thus, we excluded book chapters, essays, theoretical pieces, the-

ses/dissertations, “gray literature,” and literature reviews from our analysis. As well, we were only interested in literature that presented some data and discussion (a) about doctoral students (even if non-doctoral students were included in the study), and (b) from the education sciences (even if other disciplines were included in the study). Further, we were only interested in literature specifically addressing identity and specifically with respect to scholarship or research or components of such, such as writing or reading scholarship.

Our search initially yielded 3,660 records and we screened the first 1,000 records’ titles, abstracts, and methods sections. We excluded 966 records based on the exclusion criteria above (not peer-reviewed, non-English, non-empirical), as well as per their failures to attend to the education sciences, doctoral student experiences specifically, and scholarly or scholarship-related identity. To the 34 that remained, we added six articles that we became aware of via the earlier non-structured phase, that also met our inclusion/exclusion criteria. Using these 40 articles, we reviewed their complete list of citations and, using the same inclusion/exclusion criteria, we identified 14 additional articles. Additionally, we employed the “cited by” function of Google Scholar, then applied the same inclusion/exclusion criteria, a process that yielded eight additional articles (see Figure 2).

We read in their entirety the 62 articles total we identified via the above processes, to ascertain if each article truly met our inclusion/exclusion criteria. In the first reading, the first author read all 62 articles, and the second and third authors each read half of the total set of articles, independently. This process resulted in our collectively questioning the worth of multiple articles for our review. While the two authors conducting the initial reading of each article were often in agreement regarding the need to exclude an article, all three authors still met to discuss every article. This helped to ensure we were collectively applying the same inclusion/exclusion criteria, and to consider arguments for modification of any of these criteria. This resulted in us eliminating 26 of the 62 articles. We uploaded our final set of 36 articles into Dedoose for coding. We tested the codebook developed in our unstructured phase on a set of three articles that were part of the original group of 14 articles, and also part of the final set of articles included in the current project resulting from the structured review phase. These three articles were Foot et al. (2014), Murphy et al. (2014) and A. Taylor (2007). After coding these three articles independently, we noted a high level of alignment among all three coders.

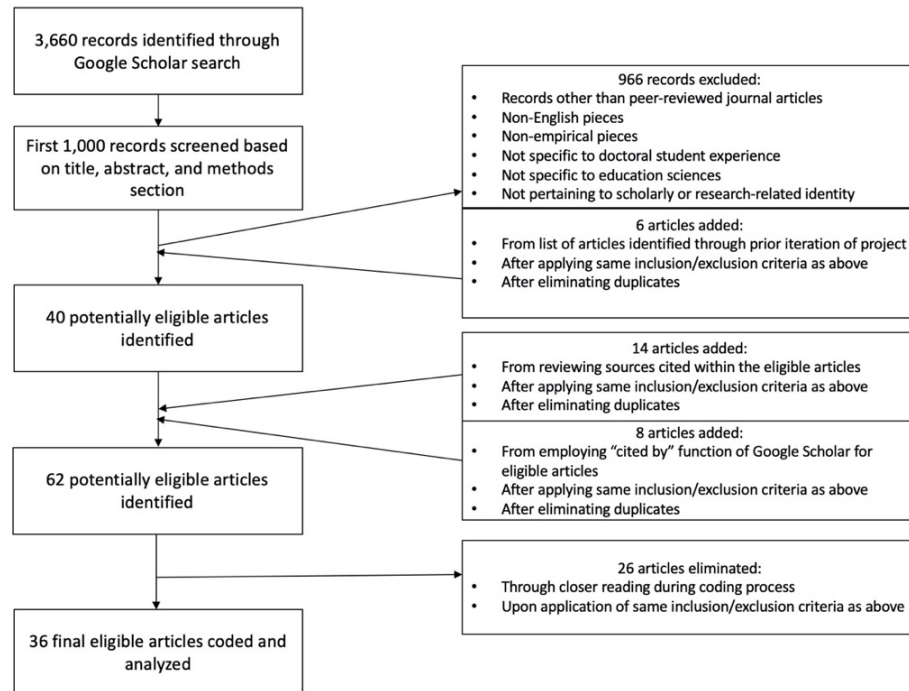


Figure 2. Flowchart of literature search and screening process.

ANALYSIS

Utilizing our codebook developed and tested during the unstructured phase, two authors independently coded each article via Dedoose, with the first author coding the entire set of 36 articles and the second and third authors each coding one half of the set of articles. While coding, we met frequently to discuss modifications to the codebook where necessary, and to check if the same codes were applied (or not) to an article consistently between analysts. During these interim check-in meetings, we noted strong alignment among all three co-authors, which we attribute to our multiple and extended conversations during the development of what eventually became our codebook. Throughout analysis, all three authors made use of the memoing function in Dedoose to record our thoughts and emergent patterns and themes.

Table 2. Code Application by Article (abridged)

Code	Level 1 Subcode	Level 2 Subcode	Ai (2017)	Betten-court et al. (2017)	Bond & Koops (2014)
Evolves through engaging with others			x	x	x
	Communities or groups with shared norms		x	x	x
	Faculty interaction		x	x	x
	Peer Interaction			x	x
	Feedback		x	x	x
		Giving feedback	x	x	
		Receiving feedback	x		x
Evolves through agency			x	x	x
	Agency granted by others		x		x
	Student initiated agency		x	x	x
Evolves through reflection			x		x
	Formal/prompted				x
	Informal/unprompted		x		x

Note. The above table is an abridged version of the table we used to determine which codes were applied at the article level. This abridged table has been included here for explanatory purposes. The complete table is available from the authors upon request.

Our unit of analysis was at the article level—that is, regardless of the number of times a particular code was applied to an article and regardless of whether the two analysts applied the code to the exact same portion(s) of an article, we counted the article as having been coded with the particular code in question. For instance, to Ai's (2017) article, both the first author and third author applied *faculty interaction*, which was a subcode to the code, *evolves through engaging with others*. The first author applied

this code nine times to the article, each time she felt that the content of the article aligned with the definition of this subcode (*identity as scholar is amenable to change based on interaction with faculty, which may include conversations and/or work with faculty*), whereas the third author applied this code once, near the beginning of the article when he saw that the main focus of this article concerned a doctoral student's development of identity as scholar per the student's interaction with faculty. Thus, even though the exact number of times the two authors applied this code differed (as well as the specific portions of the article to which the code was applied) we counted the code *faculty interaction* as being applicable to the article.

Once all 36 articles were coded, all three authors reviewed the code application table (a portion of which is reproduced in Table 2) and discussed whether we collectively agreed on the application of each code at the article level, revisiting and revising (where necessary) what we discussed during interim check-in discussions. At this stage, we also discussed patterns and themes we saw in light of our research questions, by incorporating some of our earlier thoughts we recorded via memos.

Over the course of our coding and accompanying discussions, it became apparent to us that many of the articles we reviewed described identity as resulting from the complex interactions of individuals and their contexts, and identity was conceptualized as both a process ("becoming") and product ("being"). This noticing informed our selection of the frameworks (Engeström, 1987, 2001; Gee, 2000) guiding our review, as we were interested in frameworks that hold meaningful explanatory power per the assumptions and framings taken up by the authors of the articles we reviewed.

DESCRIPTIVE CHARACTERISTICS OF ARTICLES INCLUDED IN THE REVIEW

There was considerable focal, methodological, and conceptual (frameworks and assumptions) overlap across the 36 articles reviewed. Table 3 summarizes these characteristics, including the type of doctoral degree study participants were pursuing (either the PhD or EdD). Importantly, other findings did not sort per the basic descriptive characteristics listed in Table 3, including those focused on PhD students and those focused on EdD students. Thus, we do not present thematic findings delineated on these descriptive characteristics. Below, we briefly elaborate on the frameworks and assumptions espoused by the authors in conceptualizing identity, as these ground the authors' findings and our assessment of these findings.

Frameworks and assumptions for conceptualizing identity

Researchers utilized various frameworks in their research to root and explore identity, although some authors tended to be more explicit about their conceptualization of identity than others. Namely, eight of the reviewed articles did not present any form of explicit conceptualization of identity and 12 articles loosely conceptualized identity by referring to several existing research, though without a central theory or conceptualization. Of the remaining articles, the most common theoretical underpinning espoused by the authors was the sociocultural perspective (n=13), exemplified in theories such as Lave and Wenger's (1991) Legitimate Peripheral Participation and Holland et al.'s (1998) Figured Worlds. This finding is similar to what Inouye & McAlpine (2019) noted in their review of literature concerning studies that examined academic identity development (though not specific to education sciences) via doctoral writing and feedback; sociocultural perspectives tended to be the favored perspective of authors studying doctoral students' identity development.

Regardless of whether or not authors relied on explicit identity theories, almost all papers we reviewed (n=34) presented identity as dynamic rather than static, always in transition or development. Researchers generally spoke of identity as socially situated, constructed (rather than simply existing or innate) as a result of the interplay of social and individual factors (n=29).

Table 3. Characteristics of Articles Reviewed

	Characteristic	Occurrences
Degree of Focus	PhD	21
	EdD	9
	Both PhD and EdD	3
	Unclear	3
Study Location	United States of America	17
	United Kingdom	9
	Canada	5
	Australia	4
	Turkey	1
Data Collection Time Period	During Doctoral Program	30
	During and After Doctoral Program	6
Method Genre	Qualitative	32
	Mixed	4
Data Collection Methods*	Individual Interview	21
	Artifact Analysis	21
	Questionnaire/Survey	11
	Participant Observation/Ethnographic Fieldwork	8
	Focus Group Interviews	6
Study Participants' Relation to Researchers	Study Participants Not Researchers	21
	Self-Study	15
Framework for Conceptualizing Identity*	Legitimate Peripheral Participation/Communities of Practice (Lave & Wenger, 1991; Wenger, 1998)	8
	Cultural Historical Activity Theory (Engeström, 2001)	2
	Figured Worlds (Holland et al., 1998)	2
	Gee's Theory of Identity (Gee, 2000)	2
	Other Frameworks	5
	Identity Loosely Conceptualized Based on Multiple Perspectives	12
	No Explicit Conceptualization of Identity	8

*Categories are not mutually exclusive and total occurrences may add up to more than 36.

FINDINGS

THEMATIC FINDINGS CONCERNING DEVELOPING IDENTITY AS SCHOLAR

Researchers identified multiple influences on education science doctoral students' development of identities as scholars. We group these influences under four themes to highlight the individual and

contextual realities implicated in doctoral students' development as scholar: (a) *objectives*, or what students work towards in their doctoral journey, notably concerning students' competence, confidence, autonomy, and agency with respect to scholarly activities; (b) *activities/processes*, or the non-individual-specific activity system factors that students experience in their doctoral programs and play a role in their development as scholars, such as engaging with peers and faculty members around feedback on scholarly products; (c) *antecedents*, or individual-specific factors that students, as subjects, bring to the activity system of doctoral student experience, such as their prior professional experiences or personal identities; and (d) *tensions*, or the disturbances in the activity system such as the mismatch between students' idealized version of scholar and what they perceived to be attainable for them, which can lead to rejecting identity as scholar, reconciling identities, or reimagining of the ideal version of scholar on the part of students. These four themes and the related major subthemes are summarized in Table 4. In addition to presenting these four themes, we include a brief section on implications as recommended by the authors of the articles included in this review, prior to offering our own recommendations in our Discussion section.

Table 4. Major Thematic Findings Concerning Developing Identity as Scholar

Theme	Subtheme	Occurrences
Objectives: What students are developing towards	Identity as scholar evolves per changes in competence and confidence	27
	Identity as scholar evolves as students enact their sense of autonomy and agency	22
Activities/Processes: What students can experience during doctoral programs	Feedback regarding scholarly products and activities are crucial for students' development of identity as scholar	18
	Validation and the accompanying sense of confirmation or approval play an important role in students' development of identity as scholar	21
	Reflection allows students to become self-aware and leads to students' self-assessment of their development of identity as scholar	21
	Supportive relationships with faculty and peers assist students' development of identity as scholar	16
Antecedents: What students bring to their doctoral experience	Doctoral students contend with multiple identities throughout their doctoral experience	28
	Students rely on, and are influenced by, identities from prior life experiences	26
Tensions: Disturbances that catalyze the development of identity as scholar	Developing identity as scholar is staggered ; disruptions and challenges are common	16
	One major source of tension is students' experiencing dissonance among their multiple identities	19
	Another major source of tension is students' comparing themselves to an "idealized" version of scholar	9

Objectives: What students are developing towards

Researchers presented an overarching notion that development of identity as scholar manifests through competence, confidence, autonomy, and agency regarding scholarship, and that the objective of doctoral education is to develop these qualities. These objectives—what students are working towards in their doctoral trajectories—were not presented as fixed end-goals but general characteristics

that students developed, directing and serving as guideposts to students and others concerned with students' becoming scholars.

Competence and confidence. Many articles (n=27) noted that as students go through a doctoral program, their identities as scholars evolve per changes in competence and confidence concerning actions and cognition as scholars. Competence and confidence regarding scholarship—the mastering of necessary knowledge/skills and the self-assurance regarding such mastery—occurred in conjunction at times; an increase in competence concerning certain scholarly tasks or activities (e.g., knowledge of concepts and methods applicable to their research or writing skills) increased students' feelings of confidence as emerging scholars (n= 6). Oftentimes, an increase in competence and confidence involved engagement with and feedback from others such as faculty and peers, or even family members in some cases, who helped develop and recognize students' emerging competence and confidence as scholars (n=9).

Autonomy and agency. A majority of articles (n=22) documented a second objective of developing as scholars: doctoral students' actions and felt capacity to act in relation to scholarly tasks and activities—or their autonomy (i.e., actions) and agency (i.e., felt capacity to act) with respect to various tasks and activities related to scholarship. The role of faculty was instrumental in these moves towards students' independence and ownership, such as when faculty provided opportunities for doctoral students to try out their autonomy and agency in a supported environment through collaborative research (n=4). However, students' exercise of autonomy and agency did not always entail as much faculty involvement. For instance, students also took the initiative to engage in collaborative research with other peers to interrogate their own identity development process (n=2).

Activities/processes in the system: What students can experience during doctoral programs

Across research articles, we saw similarities about what students must do or engage in to develop their identities as scholars. We refer to activities across education science doctoral programs as *what* students do (e.g., collaborating with faculty on a research project), and refer to processes as *how* students progress towards identity as scholar by way of the activities and accompanying interactions. Some activities documented as influencing development of identity as scholar were those we deemed somewhat ubiquitous across doctoral programs in the United States (e.g., coursework, dissertation research); at other times, we noted activities that were not as ubiquitous in U.S. doctoral programs. Non-ubiquitous activities were more subsidiary in the sense that they were not required components of doctoral programs and were, instead, often student-initiated and driven (e.g., writing groups created among student peers). Across these more and less ubiquitous activity types, we describe four categories of processes, with corresponding activities, that contributed to students' development of identities as scholars over the course of their doctoral programs: feedback, validation, reflection, and supportive relationships.

Feedback to students regarding scholarly products and activities. Authors of half of the articles reviewed (n=18) noted the importance of feedback on students' development of identity as scholar. Feedback from faculty carried weight with doctoral students for several reasons. In some cases, this was because faculty were viewed as experienced scholars who could tangibly assist in improving specific scholarly products, such as manuscripts for publication, conference presentations, and dissertations (n=6). In most cases, feedback from faculty occurred in the context of formal activities of doctoral programs, such as when dissertation chairs and supervisors provided feedback on students' writing and progress in their doctoral programs (n=4), and over the course of collaborating on research projects with faculty (n=3). In some instances, students sought and received feedback from faculty through informally organized writing groups that were created explicitly for the purposes of engaging with peers and faculty on scholarly activities (n=2).

Feedback from peers (n=12) was also noted as playing an instrumental role in students' identity development as scholars. Similar to the experiences that students had with faculty feedback, engaging in

peer feedback offered opportunities for improving students' competencies and confidence as scholars and allowed them to see themselves as developing identities as scholars. Unlike faculty feedback, however, peer feedback was often a two-way process during which students both received feedback from and provided feedback to other students through proofreading/editing, collaborative writing, and through discussions concerning writing products. Peer feedback was sometimes intentionally incorporated into doctoral students' coursework (n=3), but in most cases, opportunities for peer feedback occurred in writing groups or informal peer support networks that students voluntarily participated in outside of the required coursework (n=9).

Validation of doctoral students as scholars. Validation was another process that numerous researchers (n=21) remarked as playing a significant role in students' development as scholars. Though closely related to the process of receiving and providing feedback, we read validation as a distinct process warranting special attention per the importance of *confirmation* or *approval* of students' identity as scholar. Collaborating with faculty on research projects proved to be particularly impactful as students interpreted invitations for collaboration as validating students' participation as legitimate, providing them with the opportunity to "feel like" scholars (n=5). The research we reviewed found that validation from peers whom students perceived as more knowledgeable, accomplished, or otherwise "closer" to being a scholar was seen as a source of legitimacy that contributed to students' identity development as scholars (n=3). Also, wider communities of scholars served as a source of validation for students, oftentimes via students' experiences of having their research accepted to research conferences, and presenting at and attending conferences, where students engaged with other scholars (n=6).

Reflection regarding developing into scholars. Reflection was another frequently cited (n=21) process that researchers noted as having an impact on doctoral students' development of identities as scholars. Reflection was presented as students' awareness of the realities concerning the processes of becoming scholars, ultimately allowing for students' self-assessment of relevant characteristics and development. Formal programmatic and subsidiary opportunities intentionally designed to elicit such purposeful student reflection were found to be especially beneficial (n=17), although researchers also noted that students sometimes engaged in unprompted reflection that also contributed to their overall development as scholars throughout their doctoral journey (n=10). Examples of opportunities or activities that inspired purposeful reflection by students on identity and progress towards becoming scholars included course projects, close mentorship and/or collaborative relationships with faculty, workshops, and research and writing groups.

Supportive relationships that assist development as scholars. As we examined findings concerning the importance of engaging with others more closely, we found doctoral students largely attributed something to this engagement besides "simply" receiving feedback or validation—namely, the importance of the nature of the relationships with faculty and peers feeling "supportive." Examples of supportive relationships with faculty were those in which faculty were characterized as exhibiting patience with students' growing knowledge and skills necessary for conducting research, faculty "investment" in students' knowledge and skills evolution, including faculty providing students with relevant research opportunities, and faculty willingness and openness to discussing and providing practical advice on topics relating to being a scholar (n=5).

In terms of findings concerning supportive relationships with peers, several authors remarked on the cohort model as a source of social and emotional support that contributed to students' ability to learn and develop as scholars (n=4). Among peers, the tight coupling of social/emotional support and intellectual or scholarly task-oriented support was quite common, which led to a general sense of trust in peers, allowing students to be vulnerable via the sharing of scholarly products and critical feedback instrumental for their ongoing development as scholars (n=4). Oftentimes writing groups, that were not required components of doctoral programs, offered a supportive environment among peers where students felt encouragement, collegiality, commitment, and accountability regarding their scholarly activities and growth (n=7).

Antecedents: What students as subjects bring to the activity system of doctoral experience

Most articles (n=28) detailed that doctoral students contend with multiple identities throughout their doctoral experience, such as that of professional (n=25), student (n=24), and academic (n=20). In many articles (n=26), students were shown to rely on, and be influenced by, identities from prior life experiences, which had a bearing on their development. Examples of identities students brought with them to their doctoral programs from prior life experiences included that of being a mother, a K-12 educator, and someone with a positive association with reading and writing.

Nearly a third of articles (n=11) claimed that doctoral students struggled in the beginning stages of their program due to the felt incongruence, or incompatibility, between what they may consider to be antecedent professional identities (e.g., K-12 practitioner) and their identity as doctoral students and emerging scholars. Some articles (n=7) noted how students with identities considered non-dominant socially (e.g., with respect to gender, race/ethnicity, nationality, relationship or family status) experienced incongruence with their emerging identities as scholars. Below, we elaborate on such incongruence in our discussion of the final theme of tensions, which served as the catalyst in many cases to precipitate the development of identities.

Tensions: Disturbances in the system that catalyze the development of identities

Nearly half of the articles in our review (n=16) explicitly noted the staggered nature of developing as a scholar. That is, disruptions and challenges were common experiences for many doctoral students and the process of developing identities as scholars was rarely straightforward. As elaborated above, antecedent identities, which students brought with them from prior life experiences, were one source of possible challenges as students oftentimes experienced dissonance between their antecedent identities and the new identity of scholar that students were striving towards. Given the instrumental role of tensions in the development of students' identity as scholar, we elaborate on this theme via specific examples.

In two studies included in our review, students felt their antecedent identities and their emerging identities as scholars remained too disparate throughout their doctoral program. For instance, Hinojosa & Carney (2016), who studied Mexican American women in a counseling education doctoral program, found that some students perceived "borders between their ethnic and academic identities" (p. 208), and questioned their abilities to be their "authentic" selves in a predominantly white doctoral program, which offered few role models and mentors of color who might help them develop their identities as scholars. While students attempted to reconcile these identities throughout their program, to bring them in better concordance with one another, they felt this to be an insurmountable struggle. As a result, they ultimately "rejected" their identities as scholars and resumed their non-academic professional careers post-program.

In cases where authors noted that students eventually reconciled the tensions concerning their multiple identities, we detected two main patterns. The first was in the form of compartmentalizing their conflicted identities and the responsibilities associated with those identities (n=12) as in, for instance, some of the doctoral students in Rockinson-Szapkiw et al.'s (2017) study who claimed being "mom during the day, student/scholar when children are sleeping" (p. 65). In other cases, doctoral students evolved in their thinking regarding their seemingly disparate identities, coming to the realization that, while seemingly first to be in conflict, their multiple identities could reinforce each other (n=15). In Dinkelman et al.'s (2006) study, two students eventually noted that their identity as former K-12 teachers strengthened through their emerging identity as scholars and that their identity as scholars were strengthened via incorporation of their practical knowledge into their scholarly activities; eventually, they "came to see a research university as a place to 'practice theory,' a place where teachers did not have to give up their identities to become researchers" (p. 17).

Another source of tension for students as they pursued the object of developing as scholars was when students felt they were not measuring up to an “idealized” version of scholar ($n=9$). Students formulated their “ideal” based on specific academics they saw as role models they wanted to emulate ($n=2$), professional standards and expectations of what it means to be a scholar ($n=2$) or disciplinary norms around commonly accepted theories, methods, and discourses ($n=3$). Within the group of articles that described tensions due to the mismatch between students’ idealized version of scholar and their perception of their own development as scholars, we detected two main strategies employed by doctoral students to overcome the tension.

The first was detailed in a group of articles ($n=5$) that described students going through “various stages of self-doubt” (Stewart et al., 2013) and “self-inefficacy” (Foot et al., 2014) due to their perception that they lacked the necessary skills and knowledge required of an ideal scholar. Ultimately, these students overcame the disruptions to their identity development through the exposure to and engagement in the previously mentioned activities and processes (feedback, validation, reflection, supportive relationships) that are part of the overall activity system of their doctoral programs. Additionally, authors noted that students had a strong sense of resolve to overcome the tension they were going through and remained committed to attaining their goal of developing as scholars. For instance, Coryell et al. (2013) described doctoral students in their study struggling with “feeling like an imposter” and that these students “describ[ed] learning to do research, and developing a personal research identity, as a precarious adventure” yet eventually, students’ “experiences resolved out of dogged determination and perseverance” (p. 380). Thus, in these articles, the disruptions that students experienced were temporary, and ultimately, a source of motivation in their overall journey towards developing as scholars.

On the other hand, a second group of articles ($n=4$) described the disconnect between an idealized version of scholar and students’ perception of their own development leading to students’ reimagining what it means to be a scholar, rather than staying the course to pursue the original ideal. One of the participants of Murakami-Ramalho et al.’s (2008) study experienced her doctoral journey as a “raging battle” due to her perception that going through a doctoral program would change her identity (in becoming a scholar), and that change would also equate to threats to a part of her identity committed to racial justice. In this doctoral student’s experience, the “ideal” scholar did not entail commitment to racial justice as she “had witnessed others who had entered the educational institution strongly committed to improving the plight of their racial group and exited the doctoral program transformed into an instrument to maintain the status quo” (p. 828). Rather than resigning to the fact that to be a scholar means “maintaining the status quo,” this doctoral student embraced the “raging battle” inside her to recreate a version of scholar that integrates rigorous scholarly research and her passion for racial justice by collaborating with like-minded peers. Thus, unlike the first group of articles, this second group of articles described doctoral students recreating for themselves what it means to be a scholar and pursuing this new ideal, rather than continuing to pursue their initial ideal that was a source of tension in their identity development trajectory.

Implications from the reviewed literature

Before turning to a synthesized discussion of the four themes, we first present implications as recommended by the authors of the articles included in this review, prior to offering our own recommendations (see Table 5 for a summary).

Many researchers suggested specific implications for doctoral students, faculty, and programs based on their findings regarding how doctoral students develop their identities as scholars. Most implications and recommended actions were geared towards doctoral students, urging them to take notice and action regarding their own scholarly identity development ($n=28$). Specifically, researchers encouraged students to recognize that developing into a scholar entails students’ own agentic involvement, sacrifices, and “effort, time, and commitment” (Teeuwssen et al., 2014, p. 692). Researchers

suggested that students make their goals and intentions known to others so that faculty can guide students appropriately through mentorship (n=2) and so that peers can provide the necessary support and feedback (n=4). Furthermore, multiple researchers called for students to engage in purposeful reflection, to better make sense of the transitions and tensions they were experiencing (n=9).

Implications were also geared towards faculty, a common suggestion being that faculty should make efforts to raise students' awareness of inevitable identity evolution (n=19). Researchers noted that well-designed coursework and successful writing and/or professional support groups oftentimes entailed discussion about the realities of identity transitions, and how to navigate them, going beyond simply addressing specific skills and knowledge development (n=10). Researchers also suggested that by asking students to explicitly reflect on their identity transitions, potentially alongside faculty being transparent and vulnerable about their own developmental processes (n=3), faculty could model the development of students' identities as scholars. Researchers also urged faculty to be more aware of what doctoral students bring with them to their doctoral experience. Specifically, researchers suggested that faculty be attuned to the needs of doctoral students who may face additional barriers in developing as scholars, such as part-time students who may have reduced opportunities for exposure to various doctoral experiences as well as peers and faculty (n=3), and mothers who not only juggle family-life and academic-life but may also contend with the lack of positive role models and negative stereotypes regarding women/mothers in academia (n=1).

Table 5. Implications from the Reviewed Articles

	Recommendation	Occurrences
For Doctoral Students	Take notice and action regarding one's own identity development as scholar	28
	Request or seek mentorship and support from faculty and peers	6
	Engage in purposeful reflection about one's own identity development as scholar	9
For Doctoral Faculty	Raise students' metacognitive awareness about their identity development as scholar	19
	Incorporate intentional discussions about identity development in formal student engagement opportunities	10
	Invite student reflection by being transparent about faculty identity development	3
	Be cognizant of needs of diverse students (e.g., part-time students, students who are mothers)	4
For Doctoral Programs	Interrogate whether marginalized students are being served adequately	3
	Institute and support cohort models	4
	Create designated workshops on topics related to identity development	5
	Provide spaces or groups for social and scholarly support	5

The body of literature also revealed implications for doctoral programs. A number of researchers urged that programs interrogate whether they were adequately serving marginalized student populations such as students of color, women, and women of color (n=3) and to put forth strategies to better serve these groups. Multiple researchers also recommended that education leaders and administra-

tors add formal structures that intentionally include activities and processes that foster students' understanding of identity development and abilities as scholars. Examples included cohort models (n=4), designated workshops or seminars (n=5), and "spaces" or "groups" that can provide both social support and support for scholarly activities (n=5).

DISCUSSION

Overall, we found that the research on identity development as scholar in the education sciences comprises a small body of research that generally lacks strong theoretical conceptions of identity as scholar. Acknowledging these limitations, we also contend that there are meaningful insights per the patterns that emerged from the 36 articles we deemed pertinent. We begin by noticing an overall conception that identity development is situated at the intersection of the socio-cognitive (human thought) and cultural-historical (human action) domains and, thus, contend that to best investigate and foster identity development as scholar we must do so at this intersection. We now do so, utilizing Gee's (2000) identity theory and Engeström's (1987, 2001) cultural-historical activity theory to situate our literature review findings, attempting to highlight realities and strategies that may afford enhanced doctoral students' success, faculty members' work and productivity, programmatic and institutional efficacy, efficiency or growth, and research informing these topics.

THE OBJECT DEFINED: WHAT IT MEANS TO DEVELOP IDENTITY AS SCHOLAR

According to Engeström (2015), the *object* of an activity system is the "durable concerns and carriers of motives...generators and foci of attention, volition, effort, and meaning" (p. xvi). Although most of the articles we reviewed did not offer an explicit definition of identity as scholar, Engeström's definition of object and Gee's (2000) socio-cognitive framework of four identity perspectives help us understand what it means for doctoral students to develop their identity as scholar. We view the object of our activity system as a compilation of various "indicators" of identity as scholar, emerging per the meaning-making in the mind of relevant subjects (i.e., doctoral students) and other community members (e.g., program faculty), and their collective actions according to a division of labor. Looking across our reviewed articles concerning those enrolled in doctoral programs in the education sciences, identity as scholar emerges as *recognition by self and others of possessing and exhibiting adequate levels of competence, confidence, autonomy and agency with respect to scholarly activities, products, and communities*. We see this object occurring at the confluence of students' nature (N), institutional (I), discourse (D), and affiliation (A) identities, some of which students bring from prior life experiences and some of which students acquire and develop while going through their doctoral programs. Ultimately, these identities evolve to form students' identity as scholar as a result of all parts of the activity system interacting and changing with one another.

SUBJECT, COMMUNITY, AND DIVISION OF LABOR: THE ACTORS AND THEIR ROLES IN THE SYSTEM

In framing our analysis through Engeström's (1987, 2001) cultural-historical activity theory, doctoral students in education science programs are the obvious central actors (or subjects) of the activity system of identity development as scholars. Students bring various antecedent identities (e.g., K-12 educator, mother) from prior life experiences, aligned with characteristics consistent with Gee's (2000) N-, I-, D-, and A-identity perspectives. These antecedent identities play an important role in the development of identity as scholar, as students envision and make comparisons to their evolving notions of (ideal) scholar. How these idealized notions of scholar evolve are intimately related to other important actors of the activity system (i.e., community) that, via a division of labor, serve as affordances for identity development as scholars.

For instance, as doctoral students engaged in scholarly work, programs and institutions sanction what it means to be a scholar through their provision of institutionally conferred titles such as doctoral student and faculty member. Programs and institutions also play the role of normalizing affordances regarding scholarly work through formalized aspects of the program such as available courses, course sequences, and qualifying exams. Additionally, programs and institutions are the local manifestations of broader disciplinary, epistemological, and methodological communities that serve as the affinity and/or discourse groups that students are expected to engage in. Peers and faculty provide opportunities for collaboration, feedback, reflection, and support, sometimes through formalized means, such as within the formal advisor-advisee relationship. Other instances are less formalized, such as student-initiated writing groups. Significant others also provide support and reinforce antecedent identities, such as when family members affirm the synergistic relationship between students' racial/ethnic background and their scholarly pursuits. And broader disciplinary communities encountered by students outside their institutions (e.g., when students attend research conferences) serve as the context in which students' affinity- and discourse-based identities are affirmed.

RULES OF THE SYSTEM: HOW ONE BECOMES (RECOGNIZED AS) SCHOLAR

In adopting Engeström's (1987, 2001) notion of "rules," we use the terminology to denote the norms and practices through which students realize the object of being recognized as scholar. In other words, rules are what help answer the following question: given the object, the actors, and their roles, *how does one become (recognized as) scholar?*

In many of the studies reviewed for our analysis, discursive engagement (talking and interacting with others) and alignment with affinity groups (via shared practices) were at the crux of allowing doctoral students to feel like they were embodying, and being recognized as embodying, identity as scholar. Specifically, examples of discursive engagement included participating in "intellectual exchanges" or peer-review with other doctoral students (Crossouard et al., 2008; Jazvac-Martek, 2009; Lassig et al., 2013; Maher et al., 2008), seeking and receiving feedback from faculty (Ai, 2017; Dollarhide et al., 2013; Inouye & McAlpine, 2017; Rockinson-Szapkiw et al., 2017), engaging with and earning the respect of undergraduate students (Bond & Koops, 2014; Dinkelman et al., 2006; McAlpine et al., 2009), and having non-academic friends or family appreciate their work (Hinojosa & Carney, 2016; Rockinson-Szapkiw et al., 2017; C. A. Taylor, 2011). Examples of affinity groups included doctoral program cohorts, writing groups, or other academic and/or professional development support groups in the proximity of students' institutions (e.g., Butler et al., 2014; Klenowski et al., 2011; Kosnik et al., 2011; Lassig et al., 2013). Additional examples regarding affiliation with relevant groups entailed engagement with scholarly communities via academic conferences (Ai, 2017; Bond & Koops, 2014; Darracott, 2017), or students' recognition of their aligning with certain epistemological frameworks and practices (Darracott, 2017; Mertkan & Bayrakli, 2018).

Putting these examples together then, becoming a scholar was largely achieved via a student acquiring *legitimacy*, as well as their intensive and meaningful participation (their changed *peripherality*) with respect to relevant communities through ongoing and prolonged exposure and participation in discursive engagement with affinity groups. Legitimacy is confirmation regarding knowledge, skills, and activities associated with being a scholar, largely institutionally assigned and discourse influenced, by relevant others (notably program faculty and larger research communities) and the self. Over time, the most successful students (those with stronger identities as scholars) evolve to the point of being perceived as legitimate scholar. As well, the most successful students will have achieved intensive and meaningful participation with respect to relevant communities; this enhanced peripherality allows for feelings of empowerment with respect to scholarship and belonging.

We recognize Lave and Wenger's (1991) seminal book, *Situated Learning: Legitimate Peripheral Participation*, and Wenger's (1998) extension of that work, *Communities of Practice: Learning, Meaning, and Identity*. Our use of the terms "community," "legitimacy," and "peripherality" in this study are generally aligned with the conceptualization and usage of these terms by Lave and Wenger (1991) and Wenger

(1998). However, given the scope of our study and findings, we did not have sufficient evidence upon which to make claims about our study's fidelity to the overall theoretical perspective of Legitimate Peripheral Participation/Communities of Practice (which consist of additional components beyond the concepts of community, legitimacy, and peripherality). Thus, our findings are framed via the works of other sociocultural theorists (Engeström 1987, 2001; Gee, 2000) with borrowed concepts from Lave and Wenger's (1991) and Wenger (1998).

CONTRADICTIONS: THREATS AND OPPORTUNITIES FOR THE DEVELOPMENT OF STUDENTS' IDENTITY AS SCHOLAR

During interactions with peers and faculty, doctoral students' identities as scholars are consistently measured against more established scholars, and their activities, in the field. This benchmarking, or attempt to align with more established scholarly norms and practices, serves as the basis for doctoral students to construct, confirm, and replicate adequate levels of competence, confidence, autonomy and agency required of them to be recognized as a scholar. Notions of (ideal) scholar contribute to feelings of dissonance for some students and, to a degree, may impede their development of identity as scholar. For instance, given that established academics who could serve as role models or the "ideal" notion of scholar were predominantly white and male, students' racial, ethnic, or gender identities and their experience of ethnocentrism (Hinojosa & Carney, 2016; Murakami-Ramalho et al., 2008; Teeuwesen et al., 2014) or sexism (Hinojosa & Carney, 2016; Lawrence, 2017; Rockinson-Szapkiw et al., 2017) threatened students' identity development as scholars. Similarly, some students may feel their antecedent identities associated with family relationships (e.g., mother), professional roles (e.g., K-12 teacher), and program status realities (e.g., part-time student), are seemingly at odds with notions devaluing these identities in relation to being successful scholars.

In addition to antecedent identities that are viewed as in conflict with available notions of (ideal) scholar, we note the power of institutionally sanctioned identities in creating tensions in developing identity as a scholar. For example, the institutionally assigned identity of doctoral student (as opposed to professional or researcher, for instance) was a label that some students took on with resistance, and an identity students felt impeded being recognized as scholar (Jazvac-Martek, 2009; Lawrence, 2017; Stewart et al., 2013). In another example, participants of Lawrence's (2017) study, who were former schoolteachers and aspiring teacher-educators, encountered barriers in reconciling their professional background with their scholarly endeavor to become education researchers. These felt barriers were due to their institution-based identities of K-12 practitioner and the associated perception that individuals with practitioner backgrounds are somehow unfit for scholarship. This example expresses a notion that D- and I- identity perspectives have confounding effects on one another because the doctoral student's ability to negotiate through discourse perspectives on their identity can further weigh upon institutionally assigned identities that may disadvantage some students based on professional background. Ascribed identities matter a lot to students' developing legitimacy and peripherality as scholar, and that ascription comes about largely in relation to institutionally sanctioned identities.

Indeed, antecedent and/or institutionally assigned identities, when experienced as in tension with what students are striving towards in terms of their (ideal) notion of scholar, may manifest as student anxiety, isolation, feelings of inadequacy, and fatigue as they attempt to navigate the system. These experiences can put some students at enhanced risk regarding their program's impact and relevance and their success and persistence within it. In the majority of articles we reviewed, such tensions ultimately catalyzed actions that allowed for greater legitimacy and stronger peripherality, discourse and affiliation with relevant entities, and institutional validation. In some cases, this was through the students' own recognition of their antecedent identities as an asset to be drawn upon and/or a foundation for the synthesis of identity as scholar (Bond & Koops, 2014; Dollarhide et al., 2013; Murphy et al., 2014; Teeuwesen et al., 2014). In many cases, however, the mobilization of all other components of the activity system are additionally necessary.

MEDIATING ARTIFACTS: AFFORDANCES THAT LEAD TO MORE EFFICACIOUS DEVELOPMENT OF IDENTITY AS SCHOLAR FOR DIVERSE STUDENTS

As noted by Engeström (1987, 2001), a perturbation in the system (such as the tensions noted above) allows for a system's evolution—in this case, more efficacious development of doctoral students' identity as scholar. With legitimacy and increased peripherality with relevant scholarly communities as the vehicles for realizing the object of being recognized as scholar, we found certain mediating artifacts aiding in students' abilities to achieve D- and A-identities that allow for the overcoming of challenges posed by conflict-inducing I-identities and antecedent (N-)identities. As such, these mediating artifacts (activities and processes) can be thought of as strategies against doctoral student anxiety per feelings of inadequacy, isolation, irrelevance and even, potentially, students' attrition or rejecting identity as scholar. Although we designate such activities and processes as mediating artifacts towards development of students' identity as scholar, we acknowledge that in reality, these activities and processes oftentimes entail the involvement of multiple parts of the larger activity system (subject, community, division of labor, rules) for the overall evolution of the system to better support students to realizing their object of becoming a scholar.

In the reviewed literature, we found some of the most efficacious activities and processes credited for evolving the system to have certain characteristics. In particular, rather than more ubiquitous and commonplace components of most (U.S.) doctoral programs, such as required coursework or formalized milestones like qualifying exams, less institutionalized and less ubiquitous experiences and interactions were largely credited for helping students' development of their D- and A-identities that would ultimately strengthen their identities as scholars. Coupled with student agency, these experiences fostered students' legitimacy and increased peripherality. For example, collaborating with peers and faculty in student-initiated writing groups, specifically providing and receiving feedback in those settings (Inouye & McAlpine, 2017; Lassig et al., 2013; Maher et al., 2008; Murakami-Ramalho et al., 2013; Murphy et al., 2014), were particularly helpful in fostering students' sense of competence, confidence, agency, and autonomy as scholars. Additionally, faculty who found opportunities to express to students vulnerability concerning their own writing and research (Butler et al., 2014; Lassig et al., 2013), or to share the less visible aspects of being a scholar, such as factors impacting work-life balance (Bond & Koops, 2014; Rockinson-Szapkiw et al., 2017) were noted as particularly influential in students' development of identity as scholars. Further, we note the importance of opportunities that afforded students' reflections regarding their selves as scholars. These included opportunities that fostered students' reflection on their development as scholars and, relatedly, their recognition of this development as a process, including the reality that such development is punctuated with tensions and often not straightforward (Butler et al., 2014; Murphy et al., 2014). In many cases, such opportunities help students re-conceptualize what it means to them to become a scholar, which may begin to rectify the misalignment between antecedent and institutionally assigned identities students initially perceive as being in conflict with their emerging identity as scholars.

CONCLUSION

Readers of this article are likely interested in improving doctoral education and in the education sciences specifically. Readers may, in fact, know something about the promise that formal education programs have on individuals' development of identity, and identity development on individuals' persistence and success in related tasks and programs. Yet research concerning the impact of formal professional education programs on the development of professional identity still remains scarce, apart from those that focus on one specific aspect of doctoral students developing as professionals who engages in scholarship (e.g., writing). Like those adding to a growing body of research concerning students preparing for work in other disciplines (e.g., engineering, counseling, teacher education), we contend that there is a need to explore doctoral students' identity development that may, in some ways, be unique to the role of scholar in the education sciences. We assert this focus is especially

timely, given the role of education sciences doctoral program in preparing diverse individuals to assume positions that require qualifications as scholar. Furthermore, this systematic review broadens the conversation regarding scholarship on the topic of doctoral student identity development as a process occurring at the intersection of student, faculty, program, disciplinary, institutional, and larger sociocultural contexts.

Through our review of 36 empirical research articles and our analysis via Gee's (2000) identity theory and Engeström's (1987, 2001) cultural-historical activity theory, we have found that students, as the central subjects of the activity system, discursively engage with relevant affinity communities consisting of other actors and related divisions of labor. Through these actions and interactions, students move closer to the object of being recognized as scholars. This object is achieved via enhanced peripherality and legitimacy in relevant affinity communities. Oftentimes, antecedent and/or institutionally assigned identities induce perturbances in the system, which allow for a more efficacious development of doctoral students' identity as scholar. This is achieved through the mobilization of mediating artifacts in the form of both ubiquitous and less commonplace activities and processes that occur in their doctoral programs. In many cases, less institutionalized and less ubiquitous experiences and interactions ultimately strengthen students' identities as scholars.

Based on these findings, the present state of doctoral student education appears to be such that beneficial mediating artifacts (and ultimate overall evolution of the system) typically require a considerable amount of initiative and effort on the part of students and faculty "going the extra mile" to support doctoral students' development of identity as scholars. Rather than promoting the idea that these individuals bear sole responsibility for overcoming the contradictions of the activity system of doctoral students' identity development as scholars via their extra efforts, we now turn to recommendations for stakeholders and structures in the larger activity system of doctoral students' development of identity as scholar.

RECOMMENDATIONS FOR PRACTICE

Given the focus of our review concerning empirical investigations of doctoral students in the education sciences and the characteristics of these students in comparison to those in other disciplines (e.g., education sciences doctoral students typically being older in age and with more professional experiences prior to entering graduate studies), we put forth the below set of recommendations for practice. We offer what we see as implications for various stakeholders concerned about doctoral students' success, faculty members' work and productivity, and programmatic and institutional efficacy, efficiency, or growth. While we recognize the limited generalizability of our review and associated recommendations, we acknowledge that some of our findings may resonate and be of use to those with affiliations in other disciplines, doctoral programs, and professional activities. We recommend future discipline-specific research to uncover our recommendations' applicability.

Prospective and current doctoral students

To future and current doctoral students, who are embarking on a process towards a doctoral degree and the accompanying experience of identity development as scholars, we suggest:

- Consider that prior life experiences are valuable; recognize felt initial dissonance concerning one's existing identities and idealized identity as scholar is not uncommon and can often-times act as a catalyst in the overall process of development of identity as scholar.
- Engage meaningfully with as many faculty, and other scholars, as possible, who are willing to provide constructive feedback and dialogue.
- Collaborate consistently and purposefully with peers, who might be able to empathize from a vantage point of common identity development experiences and how to foster more successful ones.

- Reflect intentionally on one's own scholarly work and processes regarding identity development as scholar. Take stock of deficiencies and proficiencies that serve as resources for scholarly growth.

Doctoral program faculty

Doctoral faculty are positioned uniquely at the juncture of programmatic, institutional, and disciplinary norms and interface with aspiring scholars who must rely on them for guidance and support. Development of doctoral students as professionals, and surely identity development as scholars, is bound to be difficult and different from former educative experiences (including undergraduate experiences). Doctoral faculty (including committee chairs, advisors, course instructors) have the professional imperative to facilitate the development of novice scholars who may bring antecedent identities somewhat foreign to faculty members' own experiences. Based on our findings, we suggest:

- Know the cultural assets and prior life experiences students bring into the doctoral program, including how these can be integrated with scholarly norms and expectations.
- Encourage and model opportunities that usher scholarly activity and growth, noting that transparency and vulnerability on the part of faculty can often serve as powerful learning and growth opportunities for students.
- Specifically organize reflection experiences that help doctoral students assess their development as scholar, and the process of such.
- Provide safe and constructive spaces that allow students to express their needs for development.

Organizational/institutional leaders

We further challenge those who may be designing or overseeing programs that confer doctoral degrees to help evolve programs, and their elements, to cultivate more equitable results (success and persistence in doctoral programs) for diverse students, as well as enhanced support for faculty working to improve the efficacy of their programs for these students. Specifically, we suggest to leaders:

- Encourage programs to be more intentional (e.g., course sequencing, mentoring/advising) to more explicitly attend to the development of students' identities as scholars and provide impetus to critically examine the efficacy of these goals regularly.
- Consider counting as workload, or criteria for promotion and tenure, the additional/time-intensive work of faculty attempting more efficacious identity development as scholars for their doctoral students.
- Facilitate opportunities for peer-to-peer as well as student-faculty collaboration on scholarship through formalized program components (e.g., collaborative research as a part of coursework) and/or provision of infrastructure (e.g., host a database of ongoing projects in the department that are looking for student collaborators).

RECOMMENDATIONS FOR FUTURE RESEARCH

In addition to our recommendation for research focused on students' development of identities as scholar via doctoral programs in other disciplines, we see multiple directions for future researchers interested in professional identity development, particularly as it relates to doctoral students. Most notably, all articles that were included in our review explored the experiences of doctoral students who were ultimately successful in developing identities as scholars or at the very least, obtained their doctorate degree, although two articles reported some of their study participants as having "rejected" the identity of scholar, choosing instead to return to their prior professional roles. We suggest that there is an underexplored opportunity and need to better understand doctoral students who ultimately leave their programs prior to completion and/or do not develop their identity as scholar

(whether voluntarily or involuntarily) given the high rate of doctoral attrition and possible lessons that could be gleaned from individuals for whom tensions did not serve as the catalyst for identity development as scholar.

Another notable omission in the literature is investigations of subjects' cognition towards realizing their identities. Specifically, little is known regarding the "zone of proximal development" (Vygotsky, 1978) or the scaffolding by the subject of appropriate knowledge, skills, attitudes and (diminishing) reliance on educators of these things (and effects over time on the system's distribution of efforts). Simply put, while the authors we reviewed diagnosed actions and processes to help with identity as scholar development, we currently have little to say in terms of what happens between the "input" and "output." For instance, beyond hearing about promising writing activities, practitioners would benefit from knowing what specific aspects of writing processes were impactful. We note a related need for research to better explore the specifics of activities and processes aiding identity development. As well, we need better understanding regarding the relative efficacy of these affordances. For instance, given limitations to people's time, what interactions are most important for students' identity development as scholars?

As well, the field is in need of research examining the impact of individual dispositions and characteristics on identity development, and vice versa. Given our review, we argue that greater attention to characteristics that may be seen as associated with N-identities need exploration in research concerning students' identity development, and not just pertaining to professions and doctoral education. Indeed, there is a "significant renewal" in educational research to attribute certain phenomena in learning and development to "biology, chemistry, neurons, and/or earlier experiences (e.g., stimulation before 3 years of age)" (Gee, 2000, p. 120) that may inform doctoral education as well. We argue that related phenomena should be considered and better understood, perhaps allowing for illumination of how student traits seen as more biologically determined and less modifiable (e.g., attention-deficit/hyperactivity disorder, dyslexia, and mental health differences) may interact with other factors influencing doctoral students' development of identity as scholars.

Lastly, we also recommend looking into the underlying norms and nuances of ontological, epistemological, and methodological roots of programs and disciplines as part of the "story" of developing identity as scholar. Norms and related philosophical underpinnings ("rules" within our CHAT framework) of typical doctoral education (and the tasks these translate into) have not yet been explored. In fact, there may be critical differences between the experiences of students in different disciplines. As well, we need to problematize the largely homogeneous populations that identity research often assumes (including, perhaps, our own research presented here). Critical standpoints are absent from the literature. Indeed, what is privileged in doctoral education may create even more difficulties for some students regarding their development of identity as scholar, including student dissonance with the type of research (and research tools) against their other identities and related commitments. We must be careful to not default to easiest recommendations ("create more writing groups!", "mentor better!") that may assume a homogeneous population of students and that leave other potentially instrumental norms unchallenged.

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APPENDIX

Complete List of Articles Included in the Systematic Review and Articles from the Unstructured Phase of the Review

References marked with an asterisk (*) indicate studies included in the final systematic review. References marked with a dagger (†) indicate studies that were part of the unstructured phase of the review.

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