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DEFINING EPISTEMIC AGENCY: PERSPECTIVES FROM EPISTEMOLOGY AND EDUCATIONAL PSYCHOLOGY

A DISSERTATION APPROVED FOR THE DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

BY THE COMMITTEE CONSISTING OF

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ABSTRACT

This paper explores the concept of epistemic agency in educational contexts, seeking a conceptual understanding of epistemic agency within the field of educational psychology that accounts for the many complex manifestations of epistemic agency that we see out of students and teachers in the classroom—both desirable and undesirable. This study consisted of a series of focus groups with epistemologists, educational psychologists, and a cross disciplinary focus group consisting of both epistemologists and educational psychologists. Additionally, this study involved individual semistructured interviews probing the evolution of the participants' conceptions of epistemic agency and related scholarship over the course of the study timeline. Data was analyzed through thematic analysis and yielded insights about 1) the interactional, social, and ecological nature of epistemic agency, 2) the need for a model of epistemic agency that is inclusive of the many messy manifestations of epistemic agency, 3) the need for a model of epistemic agency that is inclusive of both a descriptive and normative accounting of epistemic agency, 4) the need for a characterization of epistemic agency as a complex system rather than a construct. Overall, this study calls out the importance of a full and inclusive understanding of the complexity of epistemic agency and epistemic contexts in the classroom at a time when teachers and students are grappling with epistemic ecosystems that are rapidly changing alongside the development of generative and agentic artificial intelligence technologies.

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Ch. 1 – Introduction

Decades ago, Jean Anyon (1980) wrote about the stark contrast in the types of work presented to and expected of students from different socio-economic backgrounds in the United States. The vignettes depicted in her article described the daily tasks of fifth graders from four different socio-economic strata. Students in the working-class school were expected to perform rote procedures and were assessed based on their ability to successfully carry out those procedures. In contrast, students in an executive and elite school were expected to engage in problem solving and inquiry. The results of their work were certified not by their teacher but through self-evaluation, consensus with their peers, and additional problem solving and inquiry.

These portraits of work for students of different socioeconomic backgrounds are reflective not only of the daily tasks of those students and the educational philosophy in the classrooms and schools they attend, but these portraits are also reflective of some of the environmental determinants of the students' epistemic agency. Put simply epistemic agency is an individual's ability to act in pursuit of their epistemic goals (Ahlstrom, 2010). The students in the working class schools from Anyon's study had limited epistemic agency within the context of the classroom. They were not afforded the ability to frame their own goals for academic tasks nor to choose the processes by which they achieved them. The students in the elite schools, on the other hand, were afforded opportunities to be responsible and accountable for their own thinking. This sort of educational experience can have a ripple effect outside of the classroom. If individual students within entire social strata are educated within socially determined epistemic norms, this

education has the potential to frame the questions that help collectively determine epistemic agency for whole classes of individuals in society: what counts as knowledge? what kind of knowing matters? who are the knowers? and how do they come to know?

In 2020, a special edition of the journal Educational Psychologist suggested that a pressing issue for scholars who work and think about epistemic issues in education is the advent of the "post-truth era," (Barzilai & Chinn, 2020) which involves questions of how to combat misinformation and attitudes that are adversarial to the epistemic authority of scientific claims. Many educational psychologists who conduct research surrounding these questions are concerned with epistemic cognition, or the types of cognitive processes involved in the achievement of epistemic products (Chinn et al., 2014). Scholars of epistemic cognition are exploring how individuals understand the nature of knowledge, how individuals select reliable processes for arriving at knowledge claims, how individuals process conflicting information, or how individuals frame their epistemic goals.

This important work involves fine grained analysis of the cognitive processes that lead to specific epistemic stances and justified beliefs. However, the products with which this work is concerned are the stances and beliefs themselves. What of the individuals who hold these stances and the environmental influences upon these stances and upon the individuals themselves? By stepping back and looking more holistically at the stakes of epistemic cognition not only for the cognitive byproducts of epistemic processes but at the results and consequences for the people who create and live with those byproducts, we can open space for conversations about epistemic cognition, epistemic environments, and epistemic justice. At the crux of this space is epistemic agency.

However, epistemic agency is a poorly defined construct within educational research and educational psychology. For scholars in our field to conduct further meaningful work in the service of understanding and furthering epistemic agency and epistemic justice, a more robust definition of epistemic agency must be achieved.

The objective of this study is to do just that—to explore possibilities for a more robust definition of epistemic agency in educational spaces by bringing together epistemologists and educational psychologists in cross disciplinary conversations about epistemic agency.

Dissertation structure

This study unfolds as follows. Chapter two offers a review of the literature about epistemic agency within both educational and epistemological fields, highlighting some differences between the two bodies of work. Chapter three details the methods of this study, the timeline, and the four progressive stages of data collection and analysis. Chapter four presents the findings of the study offering a separate report and analysis for each stage of data collection. Chapter four also contains a literature addendum and a methods update. The former is included to account for the works on epistemic agency published between the writing of the literature review in chapter two in 2020 and the final phase of data collection in 2025. The methods update is included to detail the ways in which the study objective and research questions change in response to the data collected and analyzed in the first three phases of study. Chapter five offers a discussion of the results, including a brief recapping of the findings, a detailed rationale for the evolution of the study, and a discussion of my interpretation of the findings, practical implications and directions for further research.

Epistemic what?

This dissertation dives right into epistemological jargon, which can feel a bit like jumping into the deep end. In this section, I attempt to provide a life preserver of sorts by offering an overview of epistemic terms. These definitions draw from sources in epistemology and educational psychology. Terms are grouped thematically.

Core epistemic terms

Epistemology - Epistemology is the branch of philosophy that investigates the nature, sources, limits, and justification of knowledge and belief (Goldman, 2011).

Social epistemology - Social epistemology is the branch of epistemology that looks at how social interactions, institutions, peer influence, and collective practices contribute to the processes underlying knowledge and belief (Goldman, 2011).

Context related terms

Epistemic context – Epistemic context is defined as the situational factors influencing knowledge evaluation and other epistemic processes (Goldman, 2011). These factors include internal contexts like prior knowledge, personal history, and dispositions and external contexts like the classroom, peers, community, institutions, and norms.

Epistemic structures – These are frameworks that organize knowledge production and dissemination like power hierarchies, educational practices, evidentiary standards of knowledge. These structures can shape access to knowledge and ability to understand and disseminate knowledge (Goldman, 2011).

Epistemic communities – Epistemic communities are groups of individuals who engage

collaboratively and interdependently to achieve epistemic goals. Epistemic communities such as scientific communities also share standards and practices for knowledge production (Grasswick, 2018).

Epistemic identity – Epistemic identity is a person's self-perception as a knower. Epistemic identity can also be shaped by other people's perception of a person as a knower (Grasswick, 2018).

Epistemic roles – Epistemic roles are positions that people take up in knowledge-related practices like knowledge production, dissemination, and evaluation (Grasswick, 2018).

Epistemic norms and standards – Epistemic norms and standards are criteria for knowledge production and evaluation (Goldman, 2011).

Justice related terms

Epistemic justice and injustice – Epistemic justice is fair treatment of a person as a knower including due credibility and equitable access to knowledge related resources. Epistemic injustice refers to harm done to a person in their capacity as a knower (Fricker, 2017).

Epistemic oppression – Epistemic oppression occurs when systematic barriers restrict the epistemic agency of oppressed or marginalized groups (Pohlhaus, 2020).

Epistemic resistance – Epistemic resistance is defined as the actions of oppressed groups reclaiming their epistemic agency by bypassing dominant epistemic structures (Pohlhaus, 2020).

Cognition related terms

Epistemic cognition – Epistemic cognition is defined as the cognitive processes that people engage to think about knowledge and knowing (Chinn et al., 2014).

Epistemic processes – Epistemic processes are the methods or strategies that people use to gather and evaluate knowledge (Chinn et al., 2014).

Epistemic aims – Epistemic aims are the goals or objectives that guide epistemic activity (Chinn et al., 2014).

Epistemic ends and achievements – Epistemic ends and achievements are the outcomes of epistemic processes that fulfill epistemic aims (Chinn et al., 2014).

Epistemic stances – Epistemic stances are the attitudes and dispositions that people adopt towards knowledge and epistemic activities (Chinn et al., 2014).

Epistemic ideals – Epistemic ideals are the standards used to evaluate the quality of epistemic processes and epistemic ends (Chinn et al., 2014).

Virtue and vice related terms

Epistemic virtues and vices – Epistemic virtues are traits of intellectual character aimed at epistemic goods such as truth or understanding, for example, open-mindedness or epistemic humility. Epistemic vices are traits of intellectual character that can hinder the pursuit of epistemic goods, for example, arrogance or dogmatism. (Baehr, 2015)

Epistemic autonomy – Epistemic autonomy involves acting with independence when forming and evaluating beliefs while remaining responsibly open to external sources of knowledge (Baehr, 2015).

Epistemic responsibility – Epistemic responsibility is the employment of epistemic virtues to pursue truth in a manner that is accountable to one's epistemic community (Baehr, 2015).

Epistemic reliability – Epistemic reliability is the consistent production of true belief through epistemic processes (Baehr, 2015).

Chapter 2 – Epistemic Agency Literature Review

In this literature review, I provide an overview of the literature on epistemic agency in education research and in epistemology. I begin with an overview of epistemic agency in educational research. However, the literature looking directly at epistemic agency is limited, so I also explore the literature that looks more broadly at agency in educational research as well as the literature on epistemic cognition. I follow with an overview of epistemic agency in the epistemological literature and end with a summary and synthesis of the gaps and discrepancies in the body of work on epistemic agency within the two disciplines, thinking through what is lacking and where the two can complement one another.

Epistemic Agency in Educational Research

Within educational research, epistemic agency is a relatively new construct. It was initially introduced thirty years ago as a component of Scardamalia's Knowledge Building pedagogy (Damsa et al., 2010), and today, it is explored almost exclusively in the context of science education (Miller et al., 2018; Stroupe et al., 2018). However, even within the study of science pedagogy, epistemic agency is not a popular subject of investigation.

In contrast, two sister strands of research explode with activity. There are numerous explorations of agency, not epistemic—just agency, in education across several domains including science, literacy, language learning, history, and mathematics (Clark & Nye, 2017; Grootenboer & Jorgensen, 2009; Larsen–Freeman, 2019; Varelas et al., 2015). Additionally, the study of epistemic cognition is also a burgeoning and booming field (Hofer, 2016).

The literature on agency in education and epistemic cognition both have insights to offer the study of epistemic agency. Investigations of agency in educational domains offer more robust theoretical foundations for the construct of epistemic agency, and the field of epistemic cognition sheds light on the cognitive, affective, and motivational mechanisms underpinning epistemic agency.

In this section looking at epistemic agency in education research, I explore these three strands of research—epistemic agency, agency, and epistemic cognition.

Epistemic Agency

Epistemic agency in education research looks at two separate constructs of epistemic agency—shared epistemic agency and individual epistemic agency. Chronologically, the construct of shared epistemic agency is developed first as a part of Scardamalia and Bereiter's 1991 work on agency in knowledge building. Individual epistemic agency emerged after the issuance of the Next Generation Science Standards in 2013 which calls for students to take an active role in the epistemic processes in the science classroom (Miller et al., 2018).

Shared Epistemic Agency. Epistemic agency in education research looks at two separate constructs of epistemic agency—shared epistemic agency and individual epistemic agency. Chronologically, the construct of shared epistemic agency is developed first, in 1991 we first see epistemic agency in education research introduced as a component of Scardamalia's Knowledge Building pedagogy (Damşa et al., 2010). Within the knowledge building pedagogical framework, the aim of instruction is to distribute responsibility for the achievement of learning goals so that responsibility is shared between the teacher and students rather than residing solely

in the teacher (Scardamalia, 2002). As students take on increased autonomy and responsibility for generating, pursuing, and monitoring learning goals, they exhibit greater degrees of epistemic agency.

However, Scardamalia and Bereiter (1991) conceived of two extreme manifestations of student epistemic agency. On the one hand, students had extremely constrained epistemic agency in contexts where teachers tightly controlled learning goals and processes. On the other hand, students can be given what Scardamalia and Bereiter (1991) consider to be an excess degree of epistemic agency wherein they are lone agents, experimenting upon and making sense of the world around them, determining for themselves the goals, processes, and products of their knowledge building endeavors.

In consequence, Scardamalia and Bereiter (1991) focus on what they deem to be an ideally constructive form of epistemic agency in the classroom context—epistemic agency in the service of collective cognitive responsibility (Scardamalia, 2002). In Scardamalia's framework, epistemic agents are individuals who actively contribute ideas and negotiate the tension between their personal ideas and ideas contributed by others in a group. Through collective negotiation, the group deals with planning, regulating, and constructing knowledge.

As a result of this conception of epistemic agency as a construct centered around an epistemic community or a group rather than the individual, many scholars exploring epistemic agency are asking questions about how epistemic agency emerges within a collective (Damşa et. al, 2010), the behaviors that contribute to shared epistemic agency (Damşa et al., 2010; Damşa &

Andriesson, 2012), and the environments that facilitate shared epistemic agency (Chen & Zhang, 2016; Kárpáti & Dorner, 2012; Oshima et al., 2018; Yang, et al., 2020).

Shared epistemic agency emerges from behaviors that further inquiry and collective problem-solving efforts (Damşa et al., 2010; Damşa & Andriesson, 2012). Students are considered epistemic agents if they contribute to collaborative efforts to create shared knowledge products. There are two dimensions of group activity that contribute to shared epistemic agency: knowledge related or epistemic actions, and regulative or process related actions. Epistemic actions are actions that contribute to the creation of shared knowledge objects such as contributing ideas or collaboratively negotiating ideas. Regulative actions involve goal setting and planning future joint action (Damşa et al., 2010; Damşa & Andriesson, 2012).

Shared epistemic agency does not emerge automatically out of collaborative learning efforts. Rather, it must be fostered by building collective community cultures in which all members' ideas are valued and by emphasizing the importance of reflection and metacognition (Yang et al., 2020). Additionally, the learning environment must assess and provide feedback for both epistemic and regulative actions (Chen & Zhang, 2016). Kárpáti and Dorner (2012) also suggest that learners who have not typically been expected to inhabit agential roles within a larger epistemic community can benefit from explicit mentoring in participating in shared epistemic activities.

An implicit thread that runs through the studies and explorations of shared epistemic agency is the fuzzy role that the individual epistemic agent plays or does not play in collective epistemic activities (Damsa & Andriesson, 2012). As Kárpáti and Dorner (2012) suggest,

traditional pedagogical models do not always position students in agential roles, they ask students to inhabit the position of a receiver of knowledge rather than one of a producer of knowledge. Therefore, students ought to be taught how to inhabit an active role within a larger knowledge community, even how to see themselves as epistemic agents within epistemic communities. This raises the possibility that some students within a knowledge community fall short of acting as epistemic agents and that an exclusive focus on shared epistemic agency leaves those students behind.

Individual Epistemic Agency. Explorations of epistemic agency as it manifests in individual students are almost exclusively centered around science education. This is because the Next Generation Science Standards (NGSS) emphasize that students should learn science-as-practice—or that students ought to learn to engage with scientific knowledge and processes as doers of science rather than learners of canonical scientific knowledge as determined by educators (Miller et al., 2018; Stroupe, 2014).

Scholars of individual epistemic agency continue to characterize epistemic agency as a characteristic of individuals or groups that assume responsibility and act towards the creation of knowledge and practice of a greater epistemic community (Ko & Krist, 2019; Stroupe, 2014). This makes sense within the context of a science classroom engaging the NGSS because educators are interested in building a community of science practitioners both within the classroom and fostering an understanding that their students are participants within the larger scientific community (Ko & Krist, 2019; Miller et al., 2018).

The prevailing questions of these explorations of epistemic agency in science classrooms surround how educators can negotiate the tensions of power, authority, and responsibility for knowledge in the classroom. Stroupe (2014) notes that in the classroom, epistemic agency can be held by individual students, by the class as a collective, or by the teacher. Traditionally epistemic agency is centered in the teacher. Stroupe (2014) discusses the ways in which science practice communities in classrooms help shift epistemic agency to the students so that the students can take on responsibility for shaping the epistemically related practices and epistemic products of the community. However, the move to shift epistemic responsibility, power, and agency away from the teacher and towards the students is necessarily initiated and facilitated by the teacher in the classroom (Stroupe, 2014).

What is notable about this idea of epistemic agency as something that can be transferred through changes in classroom culture and instruction is that it supports the notion that epistemic agency, at least in the context of a science classroom, is a transmittable property and that it is necessarily limited—if the teacher has it, then students do not and vice versa. In their instrument for characterizing discourse in science classrooms, Sandoval et al. (2020) operationalize a definition of epistemic agency that also supports this notion. They define epistemic agency as "the locus of authority and accountability for what counts as knowledge in the classroom and the acceptable means for knowledge construction and evaluation" (Sandoval et al., 2020, pg. 5). Within their scale, epistemic agency can be negatively coded to indicate that the locus of agency is positioned within the teacher, positively coded to indicate that the locus of agency is positioned within the student (granted by the teacher), or zero coded to indicate that students have been granted limited agency within classroom discourse.

Miller et al. (2018) note that the enactment of epistemic agency by individual students is not as simple as adapting pedagogical practices to position students as epistemic agents. They define epistemic agency as "students being positioned with, perceiving, and acting on, opportunities to shape the knowledge building work in their classroom community." (Miller et al., 2018, pg. 1058), acknowledging that instructors can position students with agential epistemic opportunities, but students must still have the capacity and willingness to engage those opportunities. Miller et al. (2018) recognize that students can enact agency in the classroom in messy, problematic ways. Students can refuse to engage in instructional tasks, reject classroom knowledge goals, or challenge the dominant epistemic norms of the classroom, for example. However, these students, according to Miller et al. (2018), are not considered epistemic agents because they do not contribute to knowledge building in their community. Therefore, if students are to be able to engage in agential epistemic behavior in the classroom, they require more than being granted agency by a science teacher, they also require the ability and motivation to perceive, understand, choose and act upon epistemic opportunities to contribute to their classroom community. There is a dialectical relationship between the agent and their environment. Whether the agent enacts agential epistemic behavior in a way that satisfies the normative standard of their epistemic community emerges from the interaction between the agent and their environment.

Since Miller et al. (2018) opened up this more dynamic conception of epistemic agency, scholars have been grappling with some of the messier problems of planning and facilitating instruction that allows for true student agency (Gonzalez-Howard & McNeil, 2020; Ko & Krist, 2019; Stroupe et al., 2018). For example, if students are to engage in science education as

practitioners of science rather than recipients of scientific knowledge and if they are to engage as true epistemic agents, then they ought to be granted latitude to select the goals and methods of their scientific practice. Moreover, they ought to play a role in justifying and certifying the results and conclusions of their methods. However, allowing students excess agency in the classroom recalls Scardamalia and Bereiter's (1991) warning about creating environments for students to be solitary sense-makers.

In most classroom environments, there is little risk of excessively agentic students. Many teachers are either required or encouraged to plan instruction in accordance with a prescribed curriculum. Knowledge in scientific domains builds progressively. Students are held accountable for meeting academic standards, and teachers are held accountable for guiding student achievement to meet those standards. What often results are "pseudo-agential" environments where students are invited to engage in prescribed methods of inquiry leading to pre-determined conclusions that support canonical scientific knowledge required by educational standards (Miller et al., 2018; Stroupe et al., 2018). These environments invite active student participation in inquiry but not agential student participation.

Aside from navigating the tension between curriculum requirements and student agency, science teachers also must grapple with student skills and capacity to engage in and monitor their own progress in scientific inquiry. The foremost hurdle that researchers observed to student epistemic agency is the students' difficulty in imagining themselves as epistemic agents (Ko & Krist, 2020; Stroupe et al., 2018; Zimmerman & Weible, 2018). Stroupe et al. (2018) suggest that the students in their case study have so long conceived of themselves as recipients of scientific knowledge rather than creators and co-creators of scientific knowledge that teachers need to both

explicitly define student roles as agentic and explicitly re-distribute epistemic power between students and instructors. However, guiding students' choices as epistemic agents in scientific inquiry is an artful negotiation because students may lack sufficient knowledge and skills to fruitfully engage in opportunities for epistemic agency. Ko & Krist (2020) and Stroupe et al. (2018) identify these as opportunities to solicit and contribute to student knowledge, opportunities to build knowledge through scientific practice, opportunities to select and monitor progress towards knowledge goals that are meaningful to students, opportunities to change structures that constrain and support agentic action, and opportunities to select methods.

Agency

The construct of agency in education has, over the last two decades, been a popular topic of research across a number of different academic domains, but as a construct, it suffers from a lack of definitional consistency (Arnold & Clark, 2014; Matusov et al., 2016). Agency has been associated with autonomy, free-will, freedom, and capability (Matusov et al., 2016). It has also been conceptualized as a property positioned within a person as a collection of skills and capacities to act (Bandura, 2001; Bandura, 2006) or as dispositional and motivational drives to act (Cavagnetto et al., 2020). This perspective differs from epistemic agency, which, from Miller et al.'s (2018) definition is understood to emerge either from the position of the epistemic agent within larger epistemic structures or from an interaction between the agent's capacities, motivations, and epistemic position.

Within most research on agency in education, however, this understanding of agency as a property of individual actors is critiqued as an oversimplification of the social dynamics which constrain and enable agency (Arnold & Clark, 2014; Carlone et al., 2015; Kane, 2015; Varelas et

al., 2015). An example of the chief complaint with this perspective is that an individual may have both the capacity and motivation to act but may be prevented from doing so by other agents or by social norms and structures. Therefore, capacity and motivation are insufficient determinants of agency. To account for the added complexity of the social dynamics of agency, scholars have also defined agency as an emergent phenomenon of the interactions between the agent; the agent's skills, dispositions, and motivations; and the societal structures that constrain and enable action (Vaughn, 2020), similar to Miller et al.'s (2018) conception of epistemic agency. Building on this perspective and the former, some scholars characterize agency as an individual's ability to navigate, produce, and modify both local and societal structures and their position within those structures (Matusov et al., 2015).

Theoretical frameworks for agency. There are three primary theoretical frameworks that inform understanding and explorations of this more complex notion of agency in education. The first is the structure-agency dialectic (Carlone et al., 2015; Kane, 2015; Verelas et al., 2015). The second is the emergence of agency through interactions between identity and figured worlds (Barton & Tan, 2010). The third is complex dynamic systems theory (Larsen-Freeman, 2019).

The structure-agency dialectic has been used as a tool to frame explorations of dynamics in the classroom and beyond the classroom which can lead to equitable or inequitable experiences for students (Verelas et al., 2015). Structures are social schemas and cultural norms that exist within a domain to govern social action, and agency is an individual's capacity to act, leveraging resources and skills to create new contexts and practices within those structures

(Verelas et al., 2015). The specific questions that arise out of the structure-agency dialectic in education deal with the nature of interaction between agents, agency, and educational structures; the agentic ways in which students act within educational structures; and the methods by which educators can frame and modify structures to allow space for increased student agency (Carlone et al., 2015; Kane, 2015; Verelas et al., 2015).

The structure-agency dialectic also provides a useful frame to expand Miller et al.'s (2018) definition of epistemic agency. Whereas Miller et al.(2018) focus primarily on the aspects of classroom structures that allow for or hinder agency as well as students' capacity to capitalize on opportunities for agency, the structure-agency dialectic opens space to explore the nature of student agency and the impact of students' agentic action on classroom structures. In other words, the structure-agency dialectic frames student agency not only as a desirable end-state of classroom structures but as a dynamic force itself. Agency and its manifestations are in themselves worthy of examination (Kane, 2015; Verelas et al., 2015).

The second theoretical framework underlying investigations of epistemic agency conceptualizes student agency as manifesting in the creation of agentic identities and reimagining the figured worlds in which those identities may participate. Figured worlds are "realms of interpretation" governed by the mutual agreement of participating actors upon social norms which assign significance and value to people, activities, and outcomes within that realm (Barton & Tan, 2010, pg. 192). The idea of agentic identities in figured worlds builds upon a critique of the structure-agency dialectic which charges the structure-agency framework with an analytical lens that is insufficient for imagining change in persistently embedded social structures (Ahearn, 2001). Within the framework of agentic identities in figured worlds, enacted agency

necessarily shifts the agent's conception of their own identity. Because the figured world in which the agent interacts is co-constructed by its participants, the figured world necessarily shifts as well. As a result, agency itself is a property positioned between the identity of the agent and the figured world in which they interact (Barton & Tan, 2010).

The third theoretical framework is Complex Dynamic Systems Theory (CDST). CDST is a framework through which to analyze agency and the ways in which agency impacts and manifests in the world. CDST comes laden with fewer implications for the definitional nature of agency itself. Larsen-Freeman (2019) examines the agency of secondary language learners. She defines agency as the act of "optimizing conditions for one's own learning and choosing to deploy one's semiotic resources to position oneself as one would wish in a multilingual world" (pg. 71). Comparatively, Larsen-Freeman's conception of agency is simpler than what is suggested by either the structure-agency dialectic or the framework of agentic identities in figured worlds. Put simply, Larsen-Freeman's definition of agency defines it as an action or series of actions involving capacity and choice within a specific domain. However, the application of CDST asks that we consider that every manifestation of agency emerges out of complex, nested relational systems.

Epistemic cognition

Epistemic cognition is a field of study that is much older, more robust and active than the study of epistemic agency, and there are clear connections between the two areas of study. It is therefore surprising to find that the two fields barely interact (Sandoval, 2014). Indeed, it seems as though scholars who study epistemic agency do not have much interest in epistemic cognition and vice versa.

This lack of overlap is unfortunate. Enriching the study of epistemic cognition with a properly defined construct of epistemic agency would open new avenues to discuss the interactions between epistemic cognition, epistemic justice and educational equity. Additionally, allowing understandings of epistemic cognition to inform conceptions of epistemic agency could contribute to a more comprehensive definition and understanding of epistemic agency.

Epistemic cognition refers to the various types of cognition involved in the achievement of epistemic ends such as knowledge, understanding, beliefs and explanations. Within educational psychology, epistemic cognition has been conceptualized in a few different forms: as a developmental progression of cognition (Kuhn & Weinstock, 2002), as a series of independent but interrelated beliefs (Schommer, 1990), as a repository of resources brought to bear upon epistemic problems (Hammer & Elby, 2002), and as a set of related and situationally dependent types of thoughts and processes (Chinn et al., 2014).

It is this last conception of epistemic cognition upon which I will focus, specifically, Chinn et al.'s (2014) AIR model of epistemic cognition, which categorizes epistemically related cognitions into epistemic *aims and values*, epistemic *ideals*, and *reliable processes.* The AIR model is useful because it integrates many elements of other models of epistemic cognition. For example, beliefs about knowledge from Schommer's model such as simple or complex knowledge structures can be categorized as epistemic ideals. Beliefs about sources of knowledge from authority or from one's own known reasoning reflect reliable processes used to achieve epistemic ends. The stages of Kuhn's developmental model from multiplist to evaluativist perspectives in the judgement of knowledge and the processes related to each stage of epistemic development can also be categorized as reliable processes in the AIR model.

Looking back on Miller et al.'s (2018) definition of epistemic agency constituting students "being positioned with, perceiving, and acting on, opportunities to shape the knowledge building work in their classroom community" (p. 1058), we see that the AIR model can help illuminate the ways in which students may be perceiving, understanding, and acting on knowledge building opportunities. As an example, Student A may be tasked with engaging in a scientific inquiry investigation that their teacher has designed to position students as epistemic agents. However, the student frames their epistemic aims for the classroom as an aim of understanding rather than an aim of inquiry or knowledge construction. Additionally, in the classroom, the student operates under an established ideal of belief in knowledge aligned with canonical scientific knowledge. The student holds another epistemic ideal that epistemic authorities outside of themselves serve as the source of canonical scientific knowledge. Therefore, the student calls upon their skills and resources to query trusted epistemic authorities to relay the knowledge they seek—their teacher or textbook—as the reliable process they select to achieve their epistemic aim.

The field of epistemic cognition has additional contributions to enrich the construct of epistemic agency. Building still on Miller et al's (2018) definition, which involves student's capacity and motivation to act upon epistemic opportunities, we see that the AIR model helps account for students' capacity to act epistemically. However, epistemic emotions, motivations, and dispositions may help us account for students' motivations to act upon epistemic opportunities.

Epistemic emotions are emotions that are the products of processing information as well as the characteristics of the information itself (Pekrun & Linnenbrink, 2012). Epistemic emotions in the literature are often discussed in an academic context. However, epistemic emotions only arise

when the academic task is epistemic in nature. Therefore, epistemic emotions can arise anytime a person is engaging in the processing of information. Pekrun & Linnenbrink (2012) discuss five distinct epistemic emotions: surprise, curiosity or interest, anxiety, enjoyment, and frustration.

Epistemic motivations and dispositions are states and traits that drive people to engage in deep thinking and exploration of knowledge (Amit & Sagiv, 2013). Two commonly discussed types of epistemic motivation are need for cognition, which is the degree to which individuals enjoy engaging in effortful cognitive tasks (Petty et al., 2009) and need for closure, which is the degree of discomfort that individuals feel when dealing with ambiguity and uncertainty (Sinatra et al., 2014). Both need for cognition and need for closure are described as both traits or dispositions that characterize the epistemic tendencies that people generally tend to exhibit as well as momentary states that influence epistemic behavior in the moment (Muis et al., 2018).

Epistemic Agency in Epistemology

Overview of the field

When we discuss epistemic agency in epistemology, it is important first to lay out the landscape of the epistemological field in order to understand the place that epistemic agency holds within that landscape. Epistemology is the study of the acquisition, dissemination, and retention of knowledge. Within the field of epistemology, there is a split between classic epistemology and social epistemology (Goldman, 2011). Social epistemology is then further bifurcated into camps of analytical social epistemology and critical social epistemology (Collin, 2016).

Traditional or classic epistemology is concerned with how individual epistemic agents engage with and justify various knowledge-related achievements such as truth and beliefs (Goldman, 2011). In this context, epistemic agency refers to the actions and choices that individual agents must make in their quest to "acquire, store, process, assess, or transmit" knowledge (Goldberg, 2016, pg. 5). Classic epistemologists consider the role that various forms of evidence can play in the achievement of epistemic ends, and testimony from other epistemic agents is considered simply another source of evidence. Social epistemologists, on the other hand, take the "epistemic significance of other minds" (Goldberg, 2016, pg. 5) as their whole project.

Analytic social epistemologists extend the project of classical epistemologists. They too consider the ways in which individual epistemic agents engage with and justify various epistemic achievements. However, they adopt the assumption that knowing is inherently social and depends on complex webs of epistemic dependency with other epistemic agents (Goldberg, 2016). Within analytic social epistemology, epistemic agency refers not only to the actions and choices that individual agents take to achieve their own epistemic achievements but also to the roles and responsibilities that individual agents have in providing evidence to other epistemic agents (Goldman, 2011).

Critical social epistemology departs more dramatically from classical epistemology in that critical social epistemologists are not exclusively focused on the individual agent and the justification of their beliefs. Rather, critical social epistemologists operate on the assumption that knowledge is socially constructed through intersubjective agreement within epistemic

communities. Therefore, the primary unit of analysis within critical social epistemology is an epistemic collective made up of epistemic agents (Collin, 2016).

Within critical social epistemology, Goldman (2011) identifies two camps. The first is concerned with the processes by which collectives of epistemic agents certify knowledge and various degrees of belief as well as the knowledge achievements of those collectives. Epistemic agency within this context is assigned both to individual agents and to collective agents. Agency is moderated by the epistemic status of individual agents but refers primarily to the roles and responsibilities that those agents play in the collective assertion of knowledge. For example, those agents may be members of a jury who, based on various sources of evidence, determine the status of a plaintiff in a trial, or those agents may be consumers of the news who, based on reporting of the trial, form beliefs of the plaintiff's guilt and discuss those beliefs with a neighbor or colleague.

The second camp of critical social epistemologists is concerned with epistemic systems. These are formal and informal social systems that aim to elevate the possession and justification of information, knowledge, and truth for the communities within those systems. Social epistemologists who study epistemic systems are concerned with the division and distribution of epistemic labor, value, and power amongst members of the system as well as whether the modus operandus of the system are conducive to the epistemic ends it professes to endorse (Goldman, 2011). Like with the first camp of critical social epistemologists, epistemic agency within this context can be conferred to individual agents or epistemic collectives. Additionally, epistemic agency refers to the actions and choices that epistemic agents play in serving as informants and inquirers of knowledge (McGlynn, 2020). However, within this camp, there is a particular

emphasis on the systemic structures that circumscribe the actions and influence of epistemic agents (Goldman, 2011).

Epistemic agency within epistemology, classical or social, is a vast project because it can refer to anything and everything that epistemic agents do either as solitary seekers of truth, members of collectives entangled in webs of knowledge dependency, or as epistemic collectives themselves. In other words, almost the whole body of epistemological study relates to epistemic agency. In order to narrow the scope of this review, I have chosen to focus on two areas of study that are relevant to epistemic agency in education. Both fall within the scope of critical social epistemology. The first is a description of the requirements and mechanisms of epistemic agency. The second is an examination of epistemic injustice and the social structures that constrain epistemic agency.

Epistemic Agency in epistemology

Within epistemology, epistemic agency is often connected to the concepts of epistemic autonomy and epistemic responsibility. The tension between epistemic autonomy and forces that limit epistemic autonomy are framed by Elgin (2013) as the Kantian problem of autonomy versus heteronomy where heteronomous forces are forces that constrain an individual's ability to choose. Heteronomous forces can be external to the person such as epistemic norms that can serve to limit the epistemic authority of certain classes of people such as students, or, as noted by Sosa (2013) and Engel (2009), internal to a person. Because the formation of many of our own implicit beliefs and predispositions occur outside of our awareness and because these implicit beliefs and predispositions influence our beliefs and actions in ways that can be outside of our

awareness and control, our implicit beliefs and perspectives are also considered heteronomous forces (Grasswick, 2018). Epistemic autonomy and subsequently, epistemic agency, follows from an agent's successful navigation of these heteronomous forces, which requires reflective rejection or endorsement of the norms, values, and knowledge assertions of the epistemic community (Grasswick, 2018).

Elgin (2013) makes a connection between epistemic agency and epistemic responsibility, writing that an appropriate expectation for epistemic agents is the ability to take responsibility not only for what they believe but the methods for arriving at those beliefs and why. However, Engel (2009) asserts that the link between agency and responsibility is problematic because people cannot be held responsible for their implicit beliefs and perspectives if they have little control over the formation and influence of those beliefs and perspectives in the first place. However, both Reed and Elgin write that epistemic agency and epistemic responsibility can be enhanced through the exercise of certain intellectual virtues or virtuous intellectual action such as open-mindedness and reflection (Elgin, 2013; Reed, 2001). Moreover, Elgin (2013) notes that an important component for epistemic agency is both the capacity to understand and understanding itself of epistemic aims, epistemic processes, epistemic stances, and the epistemic context that both constrain and facilitate epistemic agency. Notably, Elgin frames this capacity to understand and the understanding itself as a prescriptive norm, skills to be developed and taught. The expectation for epistemic responsibility follows the acquisition of these skills, which are necessary prerequisites of epistemic agency (2013).

Another component of epistemic agency, which Elgin identifies in her writing is the nature of agentic engagement within an epistemic community. An epistemic agent, ideally, is self-aware

of their own participation and power within an epistemic community, so that they understand their potential to "make the rules, devise the methods, and set the standards that bind them" (Elgin, 2013, pg. 1). Key here, as in the navigation of heteronomous forces discussed previously, is the capacity for reflexivity and self-awareness.

Epistemic Injustice

Epistemic injustice involves either transactional or systematic harm to an agent's epistemic status. Fricker identifies two types of epistemic injustice (2017). The first is testimonial injustice wherein the value of someone's testimony is downgraded because of beliefs and biases surrounding their epistemic position. One of the classic exemplars used in the literature on epistemic injustice is Tom Robinson, the character in the novel *To Kill a Mockingbird* who is accused of raping a white woman. Because Tom Robinson is a black man, his testimony of innocence is not accepted within the criminal justice system or the beliefs of his community. When testimonial injustice occurs repeatedly and systemically, it results in epistemic oppression, which is the infringement of an epistemic agent's ability to exercise epistemic agency and access the epistemic resources required to participate in their epistemic community (Dotson, 2012). In Tom Robinson's case, because he is a member of an epistemically marginalized community who suffers systematic epistemic oppression, his ability to leverage epistemic resources is severely compromised. Even when he can present copious amounts of evidence to support his innocence and even when he presents this evidence by proxy of his white attorney who is respected as an epistemic authority in the community, his testimony is rejected.

The second type of epistemic injustice identified by Fricker (2017) is hermeneutical injustice where an epistemic agent lacks or is deprived of the hermeneutical resources to comprehend or make others comprehend an aspect of their social experience. For example, recall Student A who, having experienced education through more traditional pedagogical paradigms, has difficulty imagining their role as a learner as anything beyond encoding and retrieving knowledge passed to them by epistemic authorities—their teacher and their textbook. Student A cannot understand the circumscribed nature of their epistemic agency, nor can Student A imagine alternate possibilities for agentic behavior as a student because they do not have the resources to do so. According to Dotson, hermeneutical injustice is uniquely structural, arising from norms and social schema that govern epistemic practice (2012).

Epistemic Agency and Epistemic Agency—Mapping the bridge between the disciplines

There are differences between the construct of epistemic agency as it exists in educational psychology and the concept of epistemic agency within epistemology. The first and most striking difference is that in educational psychology, epistemic agency is a much newer and less well-developed concept than in epistemology. In educational psychology, I will consider epistemic agency as the construct defined by Miller et al. (2018): "students being positioned with, perceiving, and acting on, opportunities to shape the knowledge building work in their classroom community" (pg. 1058) where epistemic agency is a state emerging from the elements detailed in this definition. This construct is still in the early stages of development and would benefit from enrichment from understanding of generalized student agency in education and epistemic cognition. In contrast, epistemic agency in epistemology is a concept that is instrumental to nearly all aspects of knowledge seeking, and while it is not always explicitly explored, the idea

of epistemic agency is informed by a wide network of epistemological investigation. Multiple facets of epistemic agency have been explored including the way that epistemic agency reflects the degree to which the knowledge seeking and distributing activities of epistemic agents are inhibited and enabled in different contexts and systems.

Within epistemology, there have been calls for critical consideration of the balance between the descriptive and normative nature of epistemic agency as well investigations of epistemic agency (Goldberg, 2016; Fuller, 2016). In most epistemological investigations, epistemic agency is a descriptive concept with normative goals. It is a term that can describe the degree of autonomy and responsibility of an epistemic agent in achieving their epistemic goals. However, an epistemologist may explore, for example, ideal states of epistemic agency such as the ways in which epistemic agents can maximize their epistemic agency by altering socio-epistemic structures (Dotson, 2012) or the mechanisms of epistemic agency that best contribute to the epistemic achievements endorsed in educational contexts (Elgin, 2013).

The construct of epistemic agency in educational psychology, on the other hand, is exclusively normative with an implicit binary threshold by which to determine whether epistemic agency has been achieved or not. I believe that this normative characterization of epistemic agency is largely because it is a construct developed to serve a system of educational standards that seeks to achieve specific epistemic ends. However, a definition that imposes a binary nature on the construct of epistemic agency makes it difficult to characterize and investigate aberrant cases such as when a student exercises agency in actively deciding *not* to participate or contribute constructively to the classroom epistemic community.

The construct of epistemic agency in educational psychology is also not well equipped to be able to handle the complexity that is suggested to surround epistemic agency, at least within critical social epistemology. Critical social epistemologists consider nested levels of epistemic agency within systems, with complex hierarchical (i.e. students, teachers, and administrators in schools), horizontal (i.e., varied levels of social caché amongst peers), and temporal interactions (i.e., cumulative effects of past experiences) (Finn, 2016). Miller et al.'s (2018) definition best refers to a snapshot or vignette of epistemic agency within a local classroom context, which is perhaps best for practical empirical explorations with limited resources. However, knowing that epistemic agency of individual agents is impacted by larger social structures requires a construct that considers those structures.

Miller et al.'s (2018) definition of epistemic agency intimates a multidimensional construct. It suggests that to understand students' epistemic agency, one must consider both the external position of the epistemic agent along with the internal capacities and motivations of the epistemic agent. However, it lacks the framework to consider the mechanisms of either dimension or the framework to explore the interaction between the two. Research in epistemology can help enrich these aspects—providing a framework of epistemic injustice to be able to consider external positioning of the agent within socio-epistemic structures and a framework of epistemic autonomy, responsibility and virtue to be able to understand agentic epistemic capacity.

Comparing the construct of epistemic agency in educational psychology to the concept of epistemic agency in epistemology feels a bit like pitting David against Goliath without a slingshot. Miller et al.'s (2018) definition of epistemic agency is underdeveloped compared to

everything that has been explored about epistemic agency within epistemological investigations. Nevertheless, while the field of epistemology has a great deal of conceptual richness to offer epistemic agency in educational psychology, the relationship is not solely one sided. What educational psychologists investigating epistemic agency can offer is empirical data and corresponding methodology to be able to contribute to a naturalistic description of epistemic agency in the classroom and in systems of education.

Chapter 3 – Methods

The purpose of this research is to explore a new definition of epistemic agency in educational settings, one with the capacity to complexity with which epistemologists theorize about epistemic agency. This project aims to carry out the first two phases of Onwuegbuzie, Bustamante, and Nelson's Instrument Development and Construct Validation (IDCV) process—conceptualizing the construct of interest and identifying and describing behaviors that underlie the construct (Onwuegbuzie et al., 2010).

For the first phase of the IDCV process, Onwuegbuzie et al. (2010) suggest conducting an extensive literature review followed by focus group interviews of subject matter experts in order to define the construct. The literature review can be found in chapter two, and this dissertation project will involve a series of focus group interviews with experts in the fields of epistemology and educational psychology. These focus group interviews will be a means to elicit the expertise of the epistemologists and educational psychologists about epistemic agency in educational contexts. These expert insights and opinions will be integrated with the literature about epistemic agency to build a construct definition of epistemic agency.

These two groups of experts are by no means the only scholars writing and thinking about epistemic agency. As a concept, epistemic agency is broad, with branches that reach into multiple disciplines including anthropology (Ahearn, 1999), sociology (Anyon, 2017), and economics (Sen, 1985). However, scholars in these other fields discuss epistemic agency in circumscribed ways, as something that emerges when human agency intersects with epistemic

contexts or arrives at epistemic ends. For this study, I selected experts in epistemology and educational psychology because these are the scholars who study epistemic agency directly.

Phase two of the IDCV process will also engage these focus group interviews, leveraging the expertise of epistemologists and educational psychologists as well as their lived experience as teachers and learners to identify the dimensions of epistemic agency in educational contexts and the behaviors associated with those dimensions.

Research questions

This research is guided by 3 research questions informed by the guidelines of the IDCV process:

1. How do epistemologists and educational psychologists define epistemic agency?
2. What are the dimensions of epistemic agency?
3. What behaviors underlie the dimensions of epistemic agency?

Researcher Beliefs

Onwuegbuzie et al. (2010) recommend that researchers clarify their personal belief systems about their world views and perspectives, research philosophy, and construct specific beliefs before engaging in the process of construct development. It is particularly important to understand the ways in which researcher beliefs and values can impact construct development. In this section, I will reflect upon and unpack my own positionality and beliefs in these three areas. In addition, I will discuss how my beliefs may impact the construct development process.

Overall worldview

In my overall worldview, I subscribe to a realist ontology and a constructivist epistemology (Crotty, 1998). That is to say that I believe elements in the world exist in a given time and space with specific properties, and that existence and those properties persist regardless of how they are perceived. However, once those elements are perceived by an agent, representations of those elements come to exist in the mind of that agent. Those mental representations may closely approximate the elements as they actually exist or they may not, and agents can employ measurement instruments and cognitive tools to bring their mental representations closer to reality.

Take, for example, two people tasked with estimating the weight of a large but porous rock without the aid of a scale. The first person takes a cursory look and decides that, due to the size of the rock, it is likely quite heavy. They estimate the rock to be well over 50 pounds. The second person examines the rock more closely. They attempt to lift the rock. Finding it lighter than expected, the second person compares its weight to similarly weighted objects such as a gallon of milk or a large sack of potatoes and estimates the weight of the rock to be a little less than five pounds. If neither of these people revisit this task or this rock, neither will have reason to amend their perceptions of its weight. For the first person, the rock will exist in memory as a heavy item, in spite of the reality of its weight. The second person's perception of the rock will be more closely reflective of its actual weight.

For these two agents and for (likely) all other epistemic agents, there is often little critical judgement of the gap between perception and reality. As a result, that which is becomes

inextricable with that which is known. This has two significant consequences. The first is that, despite the existence of an objective reality, people largely experience separate, subjectively rendered realities. The second consequence is that people also socially determine and experience subjective and collectively rendered realities, which, in turn, impact individual lived experiences.

Socially determined perceptions of truth call into question matters of epistemic power and privilege. Which people and groups have greater persuasive power to determine the beliefs of other people and other groups. Additionally, which beliefs translate to action, generating a cycle by which epistemology shapes reality and vice versa?

Research philosophy

My research philosophy emerges from my ontological and epistemological beliefs and serves to answer the purpose and possibility of inquiry in light of those beliefs. To reiterate, I believe the nature of reality to be objective but also that reality can only be known in a subjective manner.

If the purpose of inquiry is to arrive at knowledge, it must be said that knowing is perceptual, experiential, and social. We come to know through our experiences, through what we learn, through what we are told, and through networks of connections and meanings that we build through all of our experiences. As a result, knowing and meaning making is also intensely idiosyncratic. The knowledge that we come by whether it be through our lay or scientific machinations and interpretations are provisional truths.

Inquiry can seek those provisional truths at any intersection of reality and experience. As a researcher, I can attempt to uncover characteristics of natural phenomena, the multiple ways in which people experience that phenomena, which traits and characteristics result in (or correspond to) variation in experiences, the ways in which peoples' experiences of that phenomena inspire them to behave, or the ways in which this behavior impacts the surrounding environment, and on and on. Through all research endeavors, it is important to consider the subject of inquiry (e.g., reality, lived experience, causes of variation), and the instrumentality or utility of its outcome.

Additionally, I believe that the value of inquiry lies in its ability to generate instrumental and useful conceptions of reality that aid in creating good or increasing well-being for living beings. In order to do so, appropriate inquiry necessarily takes into consideration context and perspective not only of the subject of research but also of the research itself because the notion of what is good and useful will vary according to context.

Construct specific beliefs

Epistemic agency is a complex construct. Unlike many of the things we study in educational psychology such as achievement, belonging, or motivation, more is not necessarily better. Epistemic agency should be considered in terms of ecological balance rather than in terms of amount or degree. Moreover, epistemic agency ought to be considered at the individual level across time and contexts as well as at the societal level across groups.

Let me clarify what I mean. At the societal or community level, I think the chief concern with epistemic agency is epistemic justice or the idea that people or groups of people ought to have equitable ability to engage as epistemic agents both in meaning making (hermeneutical justice) and in distributing knowledge (testimonial justice). To enhance epistemic justice, one cannot simply work to increase the epistemic agency of all community members. In chapter 2, I drew upon the example of Tom Robinson from To Kill a Mockingbird to demonstrate testimonial injustice. In that case, if Tom's epistemic agency and testimonial power were enhanced, and his accuser's epistemic agency and testimonial power were similarly enhanced, Mr. Robinson would still have met an unjust end. Rather, the key is balance--seeking to compare each person's or each group's level of epistemic agency relative to other people or other groups and to reduce the differences.

At the individual level, a wholesale increase in epistemic agency regardless of context can also have undesirable effects. For example, my four-year-old child has appropriately limited levels of epistemic agency. Earlier today, frustrated at the slow pace with which we were moving through traffic, he explained to me that we could simply use the other side of the street where there were fewer cars. It did not occur to him that if we did as he suggested, those cars would be driving headlong into ours. Luckily, his testimonial power is limited in driving related contexts.

My point is that matters of epistemic agency are extremely sensitive to context. Assessing appropriate epistemic agency within overlapping contexts requires not only understanding of those specific contexts but also understandings of our beliefs about those contexts as well. For example, in the political space, my beliefs lean to the left. I know through reflection that I am

more likely to believe that people with right-wing beliefs arrived at their conclusions through in-apt or limited applications of epistemic agency. Perhaps they got lost in their social media echo chamber? Perhaps they've unquestioningly adopted the ramblings of right-wing radio and news personalities as truth? Or perhaps they've arrived at their conclusions through careful consideration of the information they have access to in conjunction with their values? Without understanding my own biases regarding political thinking, I would have a difficult time assessing epistemic agency of people engaging in political discussions and decision making. Thinking about epistemic agency must be accompanied by intense reflection of the social and epistemic context, our place within that context, and our beliefs about that context.

Methods

Research Design

This study was designed as a generic inductive qualitative model (Maxwell, 2005) and was originally intended to take part in three waves of data collection. The first wave would involve a focus group interview with a group of epistemologists and would serve as a pilot study as a part of my predissertation project prior to my prospectus. Additionally, this first focus group helped sharpen methods of focus group moderation and the focus group discussion protocol. The second wave would involve a focus group with a group of educational psychologists with expertise in epistemic cognition or on the construct of epistemic agency. The third wave was meant to bring the two expert groups together for a final focus group discussion.

However, due to some life changes, the timing of the study stretched out far longer than had originally been intended. The pilot focus group with the group of epistemologists was

conducted in 2021. The focus group with the group of educational psychologists was conducted in 2022, and by the time I was ready to enter into the third wave involving the cross-disciplinary focus group with epistemologists and educational psychologists, it was already 2025, five years after the initial focus group.

In an effort to account for change and evolution in the participants' work and beliefs regarding epistemic agency, as well the dramatic changes in the socio-epistemic context in the period between 2021 and 2025, I added an additional wave of data collection before the final cross-disciplinary focus group. This new wave of data collection involved short, individual semi-structured interviews with the participants from the first two focus groups. I call this wave the touch back interviews.

Table 1

Timeline and structure of study

Year	Phase of study
2020	Phase 1 - epistemology focus group (pilot)
2022	Phase 2 - educational psychology focus group
2025	Phase 3 - longitudinal touch back interviews
2025	Phase 4 - cross-disciplinary focus group

Participants

This project utilizes a theory based purposive sampling strategy (Palinkas et al., 2015). I recruited participants based on their expertise with different aspects of epistemic agency in educational contexts. Additionally, I limited my recruitment to scholars of epistemic agency and epistemic cognition partly in adherence with the IDCV process (Onwuegbuzie et al., 2010), which calls for focus groups or interviews with experts on the construct under investigation, and partly due to the nature of epistemic agency itself. The lived experience of exercising epistemic agency is rife with blind spots, and while it will undoubtedly be useful to explore the manifestations of epistemic agency of students, teachers, and other educational stakeholders, I felt this initial exploration would benefit from more of a bird's eye view of epistemic agency, which would be more effectively derived from a scholarly perspective.

Moreover, I chose to conduct focus groups with just one group of epistemologists and educational psychologists due to the logistical challenges of conducting the cross disciplinary focus group, combining the scholars from the epistemology focus group and the educational psychology focus group. If I had held multiple focus groups of epistemologists and multiple focus groups of educational psychologists, making sure that they all had opportunities to interact would have necessitated multiple cross disciplinary focus groups and an even greater demand for the participants' time. As a result, I opted to conduct a single focus group within each discipline, which called for just one cross disciplinary focus group, and I asked my participants' permission to reach out individually if I needed clarification or additional responses.

Recruitment procedure. With the aid of an epistemologist who ultimately became one of my participants, I composed a list of ten researchers with expertise in epistemology in educational settings, epistemic agency, social epistemology or a combination thereof. Among educational psychologists, I put together a list of ten researchers with expertise in either epistemic agency or epistemic cognition. Because the focus on epistemic agency in educational psychology literature is more narrow than in the epistemology literature, I sought scholars who study various facets of epistemic cognition and agency in order to foster robust discussion.

The list of prospects were then ranked according to the degree of relevance of their work to epistemic agency in educational settings, and I began sending recruitment emails starting with the five most highly ranked scholars on the prospect list and continuing until between five and seven scholars had agreed to participate in the focus group interviews (Breen, 2006).

For the touchback interviews, I reached out to the participants from the first two focus groups to request a short, 20 minute conversation via Zoom to probe changes in their work and views on epistemic agency.

Epistemologist participants. Five epistemologists joined as participants for the pilot focus group discussion on epistemic agency.

Will - Will is an epistemologist whose work centers on the epistemic value of knowledge. He is currently engaged with work on epistemic community.

Holly - Holly's work in epistemology deals with epistemic virtues and vices, arguing that epistemic vices can be logical responses to a non-ideal epistemic context, decoupling the

epistemic assessment of epistemic vice from a moral assessment of epistemic vice. Her current work involves normative contextualism of epistemic virtues and vices.

Camilla- Camilla is known for her defense of understanding as a central epistemic achievement rather than knowledge. She argues that representations of knowledge need not be perfectly true to be epistemically valuable because they contribute to understanding. Her recent work deals with the ecology of epistemology.

Andrew- Andrew takes on a naturalistic, agent-centered perspective of virtue epistemology and grounds his work in cognitive science.

Lorelai - Lorelai's epistemological focus is not on answers and knowledge so much as on questions and inquiry, turning the traditional focus of epistemic work on its head. She argues there is a connection between questioning and power structures.

Educational psychologist participants. Four educational psychologists joined as participants for the focus group discussion on epistemic agency.

Ned- Ned's work in educational psychology centers on epistemic cognition and self-regulated learning, particularly in areas of digital literacy. He argues that learners' beliefs about knowledge and their ability to engage in self-regulated learning is mediated by contextual elements.

Henry- Henry's educational research deals with epistemic cognition, primarily in science education. His work explores how students engage with evidence in complex and controversial topics such as climate change or health policy.

Rachel- Rachel's research in educational psychology explores epistemic beliefs and motivation as well as how teachers' epistemic beliefs shape learning and instruction. She argues that work and research to improve education must focus not only on students' beliefs and knowledge but teachers' beliefs and knowledge as well.

Aaron- Aaron's research in educational psychology explores epistemic cognition and its role in scientific inquiry and science learning. He argues that students' difficulty with learning science stems not from a lack of content knowledge but from an underdeveloped epistemic understanding of science.

Data Collection

Due to participants' time and location constraints, focus group discussions took place on a digital meeting platform such as Zoom. Participants were provided with focus group discussion questions one week prior to the discussion session. Participants were asked to consider their answers to the questions. Additionally, they were asked to provide commentary or ask clarifying questions in the case that interview questions require revisions.

The first two focus group discussions followed this structure: the welcome, an overview of the topic and structure, discussion of focus group rules, informed consent and consent for recording, discussion questions, and closing (Breen, 2006). The focus group discussions lasted two hours and were both audio and video recorded. The video recording was reviewed for participants' reactions to one another as well as to clarify moments when it is difficult to determine which participant is speaking (Kidd & Parshall, 2000). The audio recording was

transcribed orthographically, reproducing not only spoken words but sounds as well. Pauses, hesitations, and cut offs was indicated using a dash (-). Laughter was indicated using (laughs). Long pauses were indicated using (pause), and strong emphasis was indicated with an underscore (Braun & Clarke, 2012).

Transcriptions were completed using the service TranscriptionPanda and were reviewed by me in conjunction with the video recordings. This review allowed me to screen the transcriptions for accuracy and to make note of significant interactions between participants. After my review of the transcriptions, the video recording was deleted and participant names were coded with a pseudonym on the transcription to preserve participant anonymity. At this point, the transcript was sent to participants for member checking.

The touchback interviews were conducted as semi-structured interviews (Flick, 2021). They were audio-recorded but not video recorded as the purpose of video recording during the focus groups was to analyze participants nonverbal interactions with one another. Touchback interviews were transcribed utilizing the same transcription methods and transcription service as was used to transcribe the first two focus group discussions. Touchback interviews were also reviewed by me after transcription and sent to participants for member checking.

The final focus group discussion brought together participants from the first two focus groups. In addition to the discussion questions, participants received summarized analytical results from the first two focus group interviews one week before the focus group discussion. This third focus group discussion followed a similar format to the first two with two key differences. After the welcome, I presented a summary of key insights from the first two focus

group discussions. Additionally, there was not need to collect participant consent because all participants from the third focus group were in attendance during the first two focus groups and had previously consented to follow up interviews and focus groups. The final focus group discussion underwent the same recording and transcription procedures as the first two focus group discussions.

During all focus group discussions, I served as the moderator, adopting an emic perspective as a fellow researcher with experience thinking about and interrogating the topic of epistemic agency in educational contexts. However, by using a semi-structured discussion format guided by predetermined questions, I maintained the option to guide the flow of discussion in response to participants' questions and interests that extended and added to the purpose of the focus group (Ryan et al., 2014).

In all focus group discussions, a second researcher was present to take notes and gather insights. Oftentimes, the pace of a focus group interview will be too quick for the moderator to take field notes (Barbour & Morgan, 2017), so the presence of the second researcher is greatly helpful. I introduced this researcher and made her presence and role known in each of the focus groups, but she did not participate beyond a quick greeting. In addition to sharing her notes with me, she and I spoke directly after the focus groups, sharing impressions and insights and continued to discuss the data and analysis throughout the course of the study.

Data Analysis

Focus group data was analyzed on two levels: content and interaction levels (Ryan et al., 2014). The content of the focus group data was analyzed first (Rothwell 2010) according to Braun and Clarke's (2012) thematic analysis procedure, which involved six phases: getting to know the data, generating initial codes, grouping codes into potential themes, generating a "thematic map" for analysis, defining and naming themes, and generating a report.

For the first step, getting to know the data, I immediately began to write memos after concluding the focus groups. These initial memos helped me to capture my thoughts and impressions of the focus groups that occurred to me while I was moderating. Additionally, I synthesized the insights of the second researcher with my own by reading through her notes and including her thoughts in this initial memo. Transcription of the audio files through the transcription service took approximately five to seven business days. During this time, I rewatched the video recordings of the focus groups and continued to write memos about new thoughts that came to me during the watching and listening back of the focus groups.

Upon receipt of the transcript from the transcription service, I began the second phase of thematic analysis, generating initial codes. For this, I used the qualitative analysis software Dedoose, which allowed me to select excerpts of text and apply inductively selected codes to those excerpts. What this means is that the codes were generated from my impressions of the data itself rather than from a previously determined set of codes drawn from the literature. Additionally, the excerpts were selected as semantic units, meaning that they were selected because they expressed a complete thought or idea.

While generating inductive codes for the second phase of the thematic analysis procedure, the semantically coded excerpts were also assigned a code from the Rothwell's Emotional Group Culture Categorization System (EGCC) (2010). The EGCC involves eight categories for classifying small group interaction: dependency statements, counterdependency statements, fight statements, flight statements, flight-pairing statements, pairing statements, counter-pairing statements, and unscorable statements. These codes are intended to indicate the tenor of the interactions between participants, and I used them to characterize the dynamic of interactions for each group of participants.

For the third step of thematic analysis, grouping codes into potential themes, I first conducted an audit of the codes already assigned to determine the appropriateness of those codes. During this audit, some codes were modified to better fit the data. This modification sometimes took the form of changing the name of the code to better fit the data, merging codes that were not sufficiently distinct from one another, or adding additional codes. Some data excerpts were labeled with a single code. Some data excerpts were labeled with multiple codes. After the audit, I began to group similar codes together, finding patterns within the codes. For example, for each focus group, I coded many data excerpts filled with interactional content that was not relevant to epistemic agency—these were jokes, greetings, interruptions, comments about technical difficulties, introductions, or consenting procedures. These were all collected into a single grouping. After establishing broad groupings of codes, I began to distinguish additional patterns within the groups to create smaller groups with greater degrees of specificity. Once I completed this process of patterning and splitting the data excerpts into groups, I began to look for patterns between the groups, pulling them together into potential themes and subthemes.

For the next step of analysis, generating a "thematic map," I moved my analysis into another piece of software called Miro, a web-based tool for visualizing content. I used it to create a conceptual map of the data. I created notes for each excerpt and labeled the excerpts with their assigned code. Miro allows the user to move the notes around as you would sticky notes on a wall, so within the interface, I recreated the groupings I made within Dedoose. This allowed me to visualize the prelimary themes I had generated and to see the excerpts together with more clarity than I could within Dedoose. The capacity to both visualize the excerpts and code groupings together coupled with the capacity to drag and move the notes on which the excerpts were housed allowed me to both finely modify the themes and subthemes and to add labels and notes about the groupings themselves which assisted defining and naming the themes.

For the final step in analysis, I synthesized the content and interaction analysis by analyzing the prevalence of EGCC codes within each theme to determine the degree of consensus and conflict that accompanied the discussion of each theme.

Aggregating the data

For each phase of the study, I completed the steps of thematic and interaction analysis before engaging in data collection for the next phase. Then, when conducting analysis procedures for the next phase of data, I attempted, as best I could, to bracket my conclusions from the previous data, especially for the educational psychology focus group. I attempted to characterize the insights on epistemic agency from each discipline separately at first and then to pull the two sets of data together to examine areas of convergence and divergence. This pulling together

involved comparing codes, subthemes and themes from the completed sets of analysis to identify patterns across focus groups.

The longitudinal touchback data was collected and analyzed in two waves as well to reflect the collection and analysis of the epistemology and educational psychology focus group data. Touchback interviews with the epistemologists were conducted, transcribed and analyzed first, and the analysis of this data helped to inform the protocols for the touchback interviews with the educational psychologists.

The analysis of both sets of touchback data were aggregated with the analysis of the previous two sets of data from the focus group by looking for patterns in codes, subthemes, and themes across data sets. Additionally, I looked for stability or change in patterns across time. The results of this data aggregation and synthesis served to inform the protocol for the final focus group.

Data from the final focus group underwent thematic and interaction analysis and then was aggregated with all the rest of the data for a final picture of the participants' views of epistemic agency across all waves of this study.

Validation efforts

In qualitative research adhering to constructivist, critical theory, or participatory research paradigms, validation efforts help to determine the trustworthiness and authenticity of research findings, not according to external criteria determined by the greater scientific community but according to criteria determined through a balancing of the perspectives of the research

stakeholders (Lincoln et al., 2011). In other words, validation efforts must ask whether research findings are congruent to the experiences and beliefs of the research participants, to my own experiences and beliefs as the researcher, and to the experiences and beliefs of the readers and reviewers (Creswell & Poth, 2018).

My first strategy for establishing trustworthiness and validity involved regular reflexive practice. As the researcher, because I was the primary instrument of data collection and interpretation, I continually interrogated my explicit and implicit thoughts, feelings, and beliefs regarding the data and the emergent themes. This goes beyond the baseline ontological, epistemological, paradigmatic and construct specific beliefs outlined here in this chapter. I also regularly engaged in reflection to understand how the content of my thoughts shifted as they reflected and refracted through the incoming data (Creswell & Poth, 2018). I did this by engaging in active note-making and memo writing through each step of thematic analysis (Braun & Clarke, 2012).

The second strategy I used for establishing trustworthiness and validity involves soliciting active participant feedback about the credibility of the data, findings, and interpretations. To do this, I shared the concept maps I created in Miro with my participants so that they could not only visualize the results of my analysis but they could see how the analysis evolved across the phases of the study. A QR code linking to the Miro board is included in the appendix. This is a strategy called member checking. In doing so, I sought a balance between authenticity of the research interpretations from my own perspective and authenticity from the perspectives of the research participants (Creswell & Poth, 2018). Member checking was

conducted with participants after each phase of data collection and after each phase of data analysis. Participants were given opportunities to offer feedback on both transcripts and analysis. However, I received minimal comments on both.

The final strategies for maintaining trustworthiness and validity involved providing opportunities for external readers and reviewers to engage with the research data. I did this in two ways: first, I engaged in investigator triangulation, seeking confirmation of my research interpretations from members of the research community who have relevant expertise but who are not directly related to this research project. Second, I reported my research findings with thick and rich description, providing readers and reviewers opportunities to engage with pieces of source data in addition to my interpretations of that data.

Chapter 4 – Main Study Results

Pilot study Results

The pilot study focus group with epistemologists was conducted in June 2021. At that time, it had been just over a year since the onset of the COVID-19 pandemic, and the United States was transitioning toward reopening while expanding COVID-19 vaccination access to adults and adolescents. Many universities at this point, had not conducted in-person classes since the onset of the pandemic in March of 2020.

The session took place via Zoom videoconference. From the outset, the discussion had a convivial and engaged dynamic. Participants, many of whom had long-established professional relationships—demonstrated enthusiasm for exploring issues of epistemic agency.

Thematic analysis of the focus group data revealed three primary themes: framing the construct, epistemic context, and epistemic agency and education.

Framing the construct

The data corresponding to the theme framing the construct centered on participants' questions and assertions regarding the conceptualization of epistemic agency. This theme encompassed three sub-themes: foundational assertions, how epistemic agency works, and how to talk about epistemic agency.

Foundational assertions. Under the subtheme of foundational assertions, participants offered the following key claims regarding epistemic agency: who qualifies as an epistemic

agent, where does epistemic agency live?, the boundary between the epistemic and non-epistemic, and the nomological network surrounding epistemic agency. There was strong consensus and a high degree of certainty among participants on these points.

Participants agreed that epistemic agents can include both individuals and groups. However, the possibility of collective epistemic agency was mentioned only briefly, with no further discussion or exploration of its nature or functioning. Across their examples and explorations of epistemic agency, the epistemologists focused predominantly on individuals as epistemic agents.

The epistemologists also agreed that epistemic agency was not a phenomenon that could be understood by examining "some poor kid's head. You've got to ask about what is the epistemic environment like?" (Camilla) This is to say that the epistemologists considered epistemic agency as something that lives and must be examined within the cognitions of the epistemic agent but also in the epistemic environment and in the interactional space between.

The third assertion the epistemologists made dealt with the boundary between the epistemic and non-epistemic. In other words, answering the question, "what makes it epistemic?" Epistemologists agreed that for cognitive agency to be considered epistemic, the actions or cognitions in question need to have a normative dimension. There must be "a criterion of rightness there." (Camilla) In contrast, an investigation of cognitive agency without consideration of the epistemic dimension would only need to be concerned with the constraints upon cognition, not with whether the end products or cognitive processes are reliable or correct.

In their early attempts to define epistemic agency, the epistemologists drew connections between epistemic agency and concepts like autonomy, control, intention, deliberation, and curiosity in the epistemic domain, building a nomological network for epistemic agency.

How epistemic agency works. The second subtheme of the framing the construct theme is called how epistemic agency works. This subtheme deals with aspects of how people engage with epistemic agency. This subtheme also deals with aspects of how the exercise of epistemic agency operates and interacts with both the internal and external contexts of the epistemic agent. The aspects here include desirable and undesirable epistemic agency; the social nature of epistemic agency; epistemic agency and cognition; and nondeliberative engagement with epistemic agency.

Desirable and undesirable manifestations of epistemic agency. Participants agreed that there are both desirable and undesirable manifestations of epistemic agency. However, what behaviors and cognitions constitute "good" epistemic agency and "bad" epistemic agency were less clear. Participants assessed manifestations of epistemic agency according to reliability, accuracy or by degree. Assessments of reliability or accuracy were termed either apt or in-apt and were discussed with more certainty than assessments of degree which were discussed as excessive or insufficient manifestations of epistemic agency. Participants tended not to question, expand upon, or explore exceptional cases in the discussion of in-apt epistemic agency. Epistemic agency as a matter of degree, however, inspired more curiosity, questioning, and exploration.

One epistemologist named Holly wanted to clearly express that "exercise of epistemic agency can also be in-apt." Holly and Camilla describe in-apt epistemic agency as exercise of epistemic agency either by unreliable means or exercise of epistemic agency that results in inaccurate or untruthful ends. An agent may engage in an epistemic task with "bad underlying motivational structure," (Holly) "go in for wishful thinking all the time," or "take everything [the teacher says] as gospel." (Camilla) These are examples of in-apt epistemic agency where the agent engages in an epistemic task via unreliable means.

Epistemic agency may also be deemed in-apt according to whether the outcome of epistemic engagement is correct or incorrect or whether the epistemic achievement adds substantial value to the epistemic context whether that value is truth, contribution of knowledge to a collective understanding, perhaps, or, in a similar vein, contribution of a question to a line of inquiry.

Participants also characterized desirable and undesirable epistemic agency in a matter of degree, meaning that epistemic agents can exercise epistemic agency in a continuum between excessive or insufficient agency. As previously noted, there was a lack of consensus and understanding as to the criteria by which to assess the degree of epistemic agency being exercised. The epistemologists deemed insufficient epistemic agency as analogous to servility to elements in the agent's epistemic context whether those elements are the epistemic norms within the context or something or someone with authority within the context. Therefore, the criteria for insufficient exercise of epistemic agency seems to fall entirely upon the process by which an epistemic agent arrives at their epistemic end and not upon whether that epistemic end is

appropriate or correct. For example, if an agent were to defer blindly to the expertise of a particular expert but was able to acquire correct conclusions and knowledge by this method, this would still be considered an example of servility or insufficient exercise of epistemic agency.

On the other hand, the epistemologists assessed excess exercise of epistemic agency with more complexity than they did insufficient epistemic agency, bucketing excess epistemic agency into two categories—one that uses appropriate epistemic processes in inappropriate amounts, resulting in incorrect epistemic ends, another that uses inappropriate epistemic processes, regardless of the epistemic ends achieved. The question that follows, however, is how the epistemologists determine the threshold between just right and excessive. Camilla says that "one of the things we want to be good epistemic agents...is to know the limits within which we should be thinking about this," and in the epistemologists' focus group session, the thinking about these limits is illustrated by two examples: that of the extreme skeptic and the peeping Tom.

In the case of the skeptic, we have an epistemic agent who is exercising epistemic virtues in such excess that the exercise of those virtues crosses a limit and becomes maladaptive or undesirable. Camilla says of extreme skeptics, "[they're] doing exactly what [they] were supposed to do, but maybe too much. It wasn't that you cut any corners or anything. You didn't overrate your abilities. You just said not good enough." Here, the criteria for evaluation of the limit between just enough and excessive epistemic agency is a matter of truth or reliability of the epistemic outcome—how close or how far beyond the truth has the skeptic's epistemic processes landed them?

The case of the Peeping Tom differs from the case of the skeptic because the criteria for evaluating the degree of epistemic agency being exercised has less to do with the truth and more to do with the social acceptability of the epistemic processes in use. According to Lorelai, an epistemic agent who is "inquiring too far, looking into the back neighbor's window," is also an example of a typical epistemic virtue in excess—the virtue of curiosity. If the Peeping Tom were to discover something truthful about their neighbor by looking into the neighbor's back window, their actions would still be deemed excessive. In this case, the limit between just enough and too much is a matter of normative social propriety.

Camilla brings up another example of excess epistemic agency, which illustrates the intersection of these two criteria of excess—that of truthfulness and social propriety and how the two are not always easily distinguished. This example is something of an edge case regarding arrogance and excess epistemic agency. Up until this point in the discussion, the epistemologists tended to agree that a display of arrogance or an arrogant disposition can be seen as an example of excess epistemic agency. However, Camilla brings up a curious case of perceived arrogance that challenges this notion. According to her, Michael Jordan once said that he felt sorry for his children because they would never do anything as great as he had done. Upon first hearing this, a listener would likely perceive this as an expression of arrogance, or an over exaggeration of Mr. Jordan's achievements. However, Camilla notes that this statement is not an over exaggeration. Michael Jordan is largely touted as the greatest basketball player of all time, which is a tremendous achievement and one not likely to be surpassed. In terms of the dimension of truthfulness, Mr. Jordan's statement cannot be considered an excess exercise of agency. However, this statement strikes the listener as offensive because it outstrips the social norms of

epistemic comport. As Lorelai said, “if you’re quiet about it, maybe an excess of agency wouldn’t be so bad,” which supports the idea that assessment of epistemic agency by degree must be considered in terms of two separate dimensions: one of truthfulness and the other of social impact, which suggests that epistemic agency cannot be fully understood without accounting for its social nature.

Social nature of epistemic agency. The epistemologists within this focus group agreed that the exercise of epistemic agency was intrinsically social. Will noted that while epistemic agency was a uniquely first person phenomenon, there was no real way to talk about the way that epistemic agents engage their agency without talking about what he referred to as the “embedded cognitive ecosystem,” or the web of social norms, ideals, and networks that influence what we know and the ways in which we come to know it as well as the ways in which we interact with and within that web.

Participants felt that there was not a theory of epistemic agency that sufficiently accounted for the ways in which epistemic agents do or should defer to and seek out the epistemic resources that reside in other people. Nor was there a theory that sufficiently accounted for how we ought to contextualize epistemic agency considering an agent's social epistemic context. Will said,

> like in this current kind of social situation, um, you know, people, uh, who are, uh, polarized, opposite sides of some controversial issue. And each side is saying to the other, think for yourself, you know, or quit being a sheep, or all that kind of stuff, it really

> brings to the fore this, this question of what is it to be, uh, in sort of, in control of your own thinking, right?

In other words, how can we determine the level or degree of someone's epistemic agency if their agency is seemingly circumscribed by a social media echo chamber and an excessive deference to the opinions that arise from that echo chamber? How can we determine the level or degree of someone's epistemic agency if the people and voices that they surround themselves with are varied and measured but that person adopts a contrarian and skeptical response to all of it? Attempting to account for an agent's "embedded cognitive ecosystem" introduces an extremely high level of complexity into attempts to understand and assess a person's epistemic agency.

Most of the discussion of the social nature of epistemic agency was descriptive in nature: describing the contemporary state of theory on social epistemic interactions or the social epistemic interactions themselves. However, a few comments ventured into discussions of normative epistemic performance in social situations--how agents ought to optimally navigate their embedded cognitive ecosystem. Will suggested that “maximal” epistemic agency involved deep knowledge of one’s own tendencies, weaknesses and biases as well as intentional “niche construction,” or building a social epistemic environment that serves the robustness of one’s epistemic agency by challenging those internal biases. He said,

> Like surround yourself with, you know, figure out as best you can, what influences you're most subject to that you don't like, and then build your environment in ways that sort of push against that. So if you know that you're inclined to sort of fall in love with your own ideas, um, then have, have lunch with people who are skeptical, right? Uh, these are not,

> these are not things we can do alone. Um, we have to, we have to take advantage of both our inner others and our outer others, (laughs) to eek out as much, you know, control as we can. (Will)

Related to this idea of seeking out social resources to challenge ourselves is the idea of deliberating which resources we ought to defer to and which we ought to challenge. This is something that is, perhaps, even more relevant to the epistemic context of students in conventional school environments where the knowledge and social resources available to a student may be intentionally curated by faculty and administrators, leaving students with fewer opportunities to shape their own cognitive ecosystems.

Epistemic agency and cognition. The next point within this subsection, how epistemic agency works, deals with the interplay of epistemic agency and cognition. Engaging one's epistemic agency within a social epistemic context requires the activation of several cognitions. The focus group discussion amongst the epistemologists touched on four primary points related to epistemic agency and cognition. First, the epistemologists agreed that epistemic agency is a higher order cognitive skill, something akin to metacognition or executive functioning in that epistemic agency refers to the managing of a number of smaller cognitions such as the perception and interpretation of inputs. Part of this higher order management is the management of the normative aspects of the epistemic. In other words, an epistemic agent must consider not only the matter of correctness of their epistemic ends and processes, they must also take into account the degrees of rightness or wrongness or "fittedness" of the epistemic ends and processes applied within a specific context.

Next, the relationship between epistemic agency and epistemic virtues and vices such as open-mindedness/closed-mindedness, epistemic humility/epistemic arrogance, etc, was generally unclear for the epistemologists in the focus group discussion. Lorelai, musing about the relationship between the two said,

> Or is it something or humil, intellectual humility or pride or arrogance or civility, is agency something in addition to those things that manages them all? Or is it manifested in each of those things, but maybe not necessarily something independent from them?

Andrew was very interested in the relationship between epistemic agency and attention, particularly with curiosity as a mediator between the two. His thinking was that when we "selectively attend to something for the purpose of satisfying a curiosity," it creates a situation where we are directing our cognition with intention as a sort of "paradigm case" of agency. As we will see in the next topic of this subtheme, the epistemologists note that many if not most of the instances in which we engage our epistemic agency may be characterized as "nondeliberative" or lacking full intentionality. This begs the question of how best to consider epistemic agency in either case. Should a fully intentional exercise of epistemic agency, such as an instance in which an agent puts much deliberate thought into researching an upcoming purchase, be assessed in the same way as a less intentional exercise of epistemic agency such as casually selecting an item off the shelf of a big box store? And if we are thinking about honing the epistemic agency of students in educational settings, should we be aiming to improve students' ability to engage in these intentional, deliberative interactions or improve the average, more common nondeliberate epistemic interactions that people tend to have more often?

The fourth topic is a brief discussion of the relationship between practical wisdom or phronesis and epistemic agency. Schwartz and Sharpe (2006) refer to practical wisdom as a sort of master virtue, an executor that orchestrates action in accordance with the needs of the context. Camilla notes that "agency involves the capacity to do something, so there's already a practical element," suggesting that there is a relationship between epistemic agency and practical wisdom without clarifying what that relationship is exactly. In my own thinking—epistemic agency would be considered a component of practical wisdom because there are certainly elements of acting in practical wisdom that do not involve the epistemic.

Nondeliberative engagement with epistemic agency. The final topic of the how epistemic agency works subtheme has to do with the epistemologists acknowledgement that for all the talk about the connection between agency, autonomy, and control, that much of the epistemic cognitions and interactions that epistemic agents engage in are largely automatic and not fully deliberated in an intentional way. Accompanying this is an acknowledgement that "we need a much more nuanced understanding of" (Will) the epistemic cognitions that we don't have full control over.

How to talk about epistemic agency. The final subtheme of the theme, framing the construct, is titled how to talk about epistemic agency, which is most directly related to the framing of the construct of epistemic agency. This subtheme involves discussion of the measurement of epistemic agency, ontological considerations for epistemic agency, and ways to approach defining epistemic agency.

Measurement of epistemic agency. Out of all the epistemologists, Will was the only one who discussed issues related to the measurement of epistemic agency. He noted that most questions surrounding epistemic agency had to do with how agency was being manifested in a single context. However, he said,

> I've come to think that's like one of the least interesting questions to ask because in the moment, really, even if you're being sort of fully conscious and deliberating, you can still be constrained, um, as, as Camila was saying, by all sorts of things inside and outside, um, such that, uh, you know, there's not much room, uh, for agency in that moment, or what you do in that moment, this wasn't very telling about you, right?

And this raises the question about what the unit of measurement ought to be when we are measuring epistemic agency—is it agency manifested by an agent during a single task? Or a set of tasks? Or is it the capacity and overall ability of an agent to manifest epistemic agency across contexts? According to Will, if the unit of measurement is the latter, then the measurement of epistemic agency ought to involve "diachronic evaluation" (Will) or the repeated evaluation of epistemic agency over a period of time.

Ontological considerations for epistemic agency. However, a related topic of discussion adds an additional need for nuance in the question of measurement—the question of the ontology of epistemic agency. What is it that we are talking about when we talk about epistemic agency? The epistemologists unproblematically discuss epistemic agency both as a capacity for the exercise of epistemic agency and as the exercise of epistemic agency itself, until, at the end of a discussion of excess epistemic agency, one of the epistemologists, Lorelai, points

out that "we're possibly conflating agency as a capacity versus someone's exercise of that capacity." She says,

> "It struck me from the discussion of the question. You know, uh, is there such a thing as excess, um, uh, agency, and I realized I was a little confused as to what the question was and it struck me as odd, maybe sort of, maybe not a category mistake, but sort of a strange question to ask about capacity, but not a strange question to ask about somebody's exercise of that capacity." And this question about capacity versus exercise calls back to Will's comment about what questions we ought to be asking about epistemic agency for the purpose of measurement. Should we be asking about expression of agency in the moment, which is something akin to what Lorelai refers to as the exercise of epistemic agency? Or should we be asking about something greater and more telling about the agent overall, whether that something is the agent's capacity for epistemic agency or the agent's expression of epistemic agency across time and context, which may be considered a proxy for capacity?

In addition to this question of capacity to exercise versus exercise of epistemic agency, comes the idea that epistemic agency is "something that occurs in interaction rather than something people do or don't have." This notion that epistemic agency emerges from the space between the agent and the context when the two interact is found in the literature on epistemic agency in educational psychology. This is a notion that would be more closely related to exercise than capacity to exercise.

How to approach defining epistemic agency. The final point that arose out of the epistemologists discussion with a bearing on how to talk about epistemic agency was a question about whether coming to a definition would be the appropriate way to approach epistemic agency at all. Camila expressed concern that epistemic agency was too complex with "too many tendrils spreading out from it" to harness it with a definition. She felt that a definition might cause researchers to "blind [themselves] to dimensions that you need to pay attention to if you're too focused on, well, how am I going to get that in [to a definition?]." and that perhaps a preferable approach that could better handle the complexity of epistemic agency would be "something like a theory."

Holly conceded that while definitions can be troublesome, the task of attempting to measure a phenomenon requires "something like a working definition," but that it would be helpful to generate a specific focus. She said, "the idea would be to think about what are the important facets that you want to focus on, um, either just because of your own interests, which is in education or because whatever we say about education has feedback loops for the good of man," highlighting that definitions are instruments that are sensitive to context and objective.

Epistemic context

The theme of epistemic context deals with an epistemic agent's broader epistemic environment. The conversations and comments surrounding epistemic context within the epistemologists' focus group discussion explored aspects of external epistemic context, internal

epistemic context, and the ways in which elements of the epistemic environment impact the epistemic agency of agents.

External epistemic context. When discussing the external epistemic context, the epistemologists discussed the material environment, social epistemic structures, and epistemic communities. Conversations about the material environment were limited and dealt with curation of information and epistemic agents' access to information, noting that information ecosystems created by search engines and social media algorithms were particularly troubling features of the material environment because those algorithms act as constraints on epistemic agency, circumscribing the amount and type of information presented to an agent, without the agent's full awareness.

When discussing the social structures within an epistemic context, the epistemologists talked about the hierarchical structure of epistemic power and status. Holly said that people's social identities were often signifiers of their epistemic status whether their identities placed them on the "marginalized" or "dominant" end of the spectrum and that the epistemic norms that maintained these sorts of social hierarchies are "involved in impacting and influencing education," so that these social signifiers of epistemic status are perpetuated within the epistemic hierarchy. Camilla brings up Paolo Freire's banking model of education "where the powers that be just pour into your head what they want you to know." She says that much of the discussion surrounding Freire's banking model focuses on the negative impact for the disempowered and disenfranchised. However, there are social norms at all levels of epistemic power that can

constrain epistemic agency. "If you think about it," Camilla says, "it's equally bad for the people in power because they didn't get to think for themselves either."

Epistemic communities are a category of social epistemic structure. However, the conversation surrounding epistemic communities was sufficiently robust and separate from that of the epistemic hierarchy that epistemic communities warranted some dedicated notes. First, the epistemologists agreed that epistemic communities were necessary. Will and Camilla talked about the fact that acting alone as an epistemic agent was both dangerous and ineffective. Will went further to say that he didn't think it was possible to engage epistemically alone. Second, epistemic communities shape the ways in which epistemic agents operate and the ways in which they develop a self-concept as agents. Agents are cast into specific epistemic roles within the community and these roles can be defined by social identity markers. Heather says, "[agents] may not even be viewed as having any epistemic agency, uh, may not even be included as members of the epistemic community or thought to be able to make any kind of contribution." These external designations of epistemic value can translate into epistemic dispositions and behaviors such as epistemic arrogance or a lack of intellectual pride, which can translate into what the epistemologists called "withering on the vine" intellectually, a situation in which an epistemic agent has the capacity to engage but doesn't because they have been discouraged over time.

Finally, epistemic communities shape and are shaped by epistemic agents. The norms and messages of a community shape the behavior of epistemic agents, but the behavior or agents in turn shape the norms and messages of an epistemic community. Camilla says that part of agency

is "an awareness" of the epistemic community to which an epistemic agent belongs and an ability to accept or reject the products of the community. "It doesn't mean you have to believe what they say," she says. Beyond that, Camilla says that epistemic agents can and should "go from just the passive question, you know, do you have, are you in a community to have a question about, um, what kind of community you want, we have to ask, what's necessary to have the sort of community whose inputs could be valuable to me as an epistemic agent." Presumably, that epistemic agent would then have the ability to engage in a way that changed their immediate community to better serve them. Will brought up the example of surrounding oneself with people who push back against your ideas. Lorelai offered a more immediate example by steering the focus group in a way that answered her question instead of mine. She had "taken control of the conversation," and assumed a different epistemic role in the community.

Internal epistemic context. The next subtheme of epistemic context deals with the internal epistemic context of epistemic agents. The epistemologists in this focus group talked about internal epistemic contexts as involving intellectual temperaments, internalized beliefs about intellectual ability and efficacy, and internalized beliefs about one's epistemic position and behavioral norms relative to those positions. Will discussed intellectual temperaments as a sort of innate cognitive disposition towards information. Some people, he says, "are attracted by shining bits of knowledge and information and, who, you know, have a low bar to sort of becoming committed, uh, to the versus people who have a more skeptical temperament." He also says that some people are naturally curious and seek out information while others are more content with the information that comes their way.

Heather drew a connection between intellectual temperaments to the internalized beliefs that epistemic agents develop about their epistemic abilities such as epistemic arrogance or a lack of intellectual pride. However, it seems that the intellectual temperaments that Will talks about differ from these internalized beliefs in how they develop within an epistemic agent because these internalized beliefs are shaped by external experiences. Camilla brings up an example of a hypothetical classroom environment that values conformity,

> that is think the way I do, and you will do well in my class, think for yourself and you'll get detention and imagine a whole, you know, a series of years of that, and then you have withering on the vine because any capacity that you once had has been systematically pulverized.

It is exactly this situation that Camilla talks about that leads to the final element of internalized epistemic context: internalized beliefs about one's role within an epistemic power structure. Camilla mentions another classroom context, one that she says can be prevalent in Asian countries where teachers are epistemically positioned as absolute authorities and students are "unwilling to challenge" the teachers and "just do whatever the teacher wants."

How context impacts epistemic agency. The final subtheme of epistemic context deals with the influence that the epistemic context has on an individual's epistemic agency. What we see here is that the epistemologists draw many connections between elements of the external epistemic context and elements of the internal epistemic context, which can impact an individual's capacity for or exercise of epistemic agency. For example, social experiences within an agent's epistemic community can impact the trust that an agent has in their intellectual

abilities and subsequently the quality of epistemic agency that they are able to exercise. Holly brings up the example of students who "lack trust in their abilities," and who think "I'm never going to be good at school. School is not for me" because of their previous experiences. Camilla emphasizes this, saying, "You can just have been the kid who was picked out as not all that bright in first grade and gossip did the rest." However, the internal epistemic context is not always a clear predictor of the ways in which epistemic agency manifests. Lacking a sense of intellectual self-efficacy, a student may act any number of ways. They may choose to save face and disengage from the classroom. They may choose the path of servility and passively accept most information provided to them from an epistemic authority. They may gradually build their skills until they develop a strong sense of intellectual pride. In any case, internal epistemic context is not a clear predictor of how an individual exercises their epistemic agency.

The epistemologists also draw connections between epistemic power structures, internal epistemic context, and epistemic agency. Holly points out that visible "social identity markers" may make an epistemic agent susceptible to epistemic injustice and those experiences with epistemic injustice may lead to decreased intellectual pride and epistemic servility. Camilla, however, notes that higher epistemic position does not necessarily translate into better manifestations of epistemic agency. As discussed earlier, she says that epistemic power structures are "equally bad for the people in power because they didn't get to think for themselves either," that there are expectations and norms for how to think at every level of the epistemic hierarchy that stymie people's ability to engage in epistemic processes that are appropriate and reliable. There may be a more direct relationship, however, between epistemic position and degree of epistemic agency. Aaron says that someone with greater epistemic privilege may be granted

"credibility systematically, uh, you know, across multiple contexts of their lives," which may translate to epistemic arrogance and excess epistemic agency.

In this focus group discussion, the epistemologists point to the material environment and immediate social context as having a direct impact on the manifestation of epistemic agency. They focus on the ways that things like access to information, social networks, and social norms can constrain or facilitate the manifestation of epistemic agency. Aaron points out that when we are engaging in social media, our attention is so intentionally curated by the platforms that we use that depending on the various ways that we engage, our epistemic agency can be extremely impacted. In a similar vein, Will talks about how our own curation of our social networks can constrain our epistemic agency. If we place ourselves within an information echo chamber whether those information sources are people, news media, or books, we can engage cognitively and intensely within that echo chamber without exercising much epistemic agency.

Epistemic agency in schools

The theme of epistemic agency and education can be separated into two subthemes. The first subtheme—epistemic environments in schools deals with exploring and describing environmental factors that may constrain or facilitate students' epistemic agency. These environmental factors include aspects of the material environment, social environment, and classroom curriculum. The epistemologists pay special attention to the differences in curricular constraints in the domains of the humanities versus science and math, and they discuss how those constraints may impact the expression of epistemic agency in those courses. The second

subtheme deals with practices in schools that may foster or stunt the development of epistemic agency.

Epistemic environment in schools. In discussing epistemic environments in schools, the epistemologists center their focus on the topics of the material environment, social norms and curricular norms. Both Holly and Camilla emphasize the accessibility of information both in terms of what is accessible to students and how easily those resources are able to be accessed. They mention, "how big is the library and what books are in it?" while issuing a reminder that "the library has already been curated to leave stuff out." Camilla also notes that an element of the material environment that is relevant to epistemic agency is not just the accessibility of verbal information but also the accessibility of visual information. Does the school have art on the walls directing students' attention? What and who are featured in that art? Lorelai suggests that the environment can serve as a conduit for social interactions and as a tool for preserving social norms. She talks about the way that the arrangement of chairs and desks in a classroom can influence "the flow of information around the space in the way, and like, how easily you can access it." Students sitting in desks arranged in a row, facing the instructor, do not have intuitive access to their classmates as epistemic resources. Moreover, this arrangement establishes students as epistemic agents with diminished epistemic power as compared to the power of the instructor. In contrast, students sitting in desks facing each other are encouraged by the space to utilize their classmates as epistemic resources and are then positioned as an epistemic agent with some degree of power as well.

The tableau of epistemic power and privilege in a classroom is all "vivid in setting up the context of epistemic agency" in schools (Lorelai). Lorelai talks about the fact that there is an epistemic and power hierarchy in the classroom that determines and is determined by "how much access [students] have to [their] teacher and how much access [students] have to [their] peers." How much latitude do they have to pursue epistemic ends that interest them as students. These are all things that allow for a greater capacity for epistemic agency. In the discussion, this scenario is contrasted by Camilla's depiction of a type of classroom where students regard their instructors as an extreme epistemic authority and are unwilling to challenge what instructors say. This, she says, is "really alarming" in how it hinders students' epistemic agency.

The other element that epistemologists discuss is aspects of the curriculum and assessment that impacted the epistemic environment in schools. Holly notes that curating of information doesn't just happen on the library shelves. It also happens at the curricular level. "Things end up in the curriculum, they get curated out of the curriculum. Right?" Camilla remarks that the assessment systems that reward performance in schools serve to reinforce epistemic processes and values, sometimes in undesirable ways. She says,

> I think the people actually just are taught that school is about learning what other people want you to think? And there you go. And, you know, the people who end up doing well are the people who are really good at learning, figuring out what other people want you to think.

The students in these systems develop diminished capacity for epistemic agency, at least within the context of the school because agency is only rewarded insofar as it mirrors the goals of the teacher.

The epistemologists engage in a somewhat contentious exploration of the curricular demands in different domains such as humanities or math and science. This point of contention lands on whether activity in the STEM domains hinder the exercise of epistemic agency because the available processes and epistemic ends from which to choose are more limited in math and science activities than in activities in the humanities. Aaron talks about how when composing a humanities essay, there is a choice to be made in almost every detail of the composition, but the choosing is "less robust" when writing a math exam or a science lab, which results in a "more limited kind of thin way of expressing a cognitive agency." Camilla argues that epistemic agency in math and science is exercised differently than in humanities, but not necessarily in a diminished way.

> If you're talking about formulating a problem and formulating a science project and going to joint effort to do this and that and the other, that's, I think that's really right up there, um, with what you might do in the humanities and the constraints on proving a theorem are like the constraints on writing a sonnet.

And she says that even in learning to do more basic math and science tasks, which allow for less choosing and less creativity, there is still room for the exercise of epistemic agency. She says, "but even, um, ordinary stuff. Um, I mean, if you came up, most of, you, if you have a good math

teacher and you come up with a novel way of solving a problem you will be appreciated [...] even just saying, 'I know how to do this. This is how to do it.' That's developing agency."

How schools foster or constrain epistemic agency. The second subtheme has to do with practices in teaching that can either support or hinder the exercise and development of students' epistemic agency. The topics that are grouped into this subtheme deal primary with curriculum, assessment and pedagogical knowledge. Lorelai says that there is a distinction between active and passive learning and for instruction to be conducive to the development of epistemic agency, it should invite active participation from students. Several of the epistemologists talk about the ways in which different types of assessment tasks can support epistemic development. They mention that assessment tasks that require or encourage students to respond in novel ways can increase the exercise of epistemic agency as well as tasks that require students to display their own thinking and put the answer in their own words. On the other hand, tasks that require students to adhere to a narrow standard of correctness or that penalize novel ways of thinking are likely to hinder exercise of epistemic agency. Camilla mentions that these sorts of less desirable assessment schemes may be a matter of intentional design but they may also be a matter of a lack of pedagogical knowledge or a lack of subject matter knowledge. She says, "You might have a rotten math teacher who has no clue how to solve the problem except the way the book says, in which case you're in trouble, but that's not about math." The implication is that the blame here rests with the teacher's knowledge or lack thereof, not with the subject matter. Will talks about how teacher's ability and willingness to accommodate and differentiate instruction for students' various intellectual temperaments is another element of instruction that that can support or hurt the development of students' epistemic agency.

Summary of findings

The tone of this first focus group with epistemologists was friendly and convivial. EGCC coding indicated that the vast majority of discussion yielded pairing or dependency statements, suggesting that participants engaged with one another affably, were amenable to the purpose of the focus group, and were generally in agreement with one another. Two topics yielded fight statements indicating brief disagreement. The first of these topics was the idea that the appropriate end goal of this project ought not to be a definition but instead a broader, wider reaching theory, which might be more capable of capturing the complexity of epistemic agency. The second of these topics was the idea that engagement in science and math domains was less creative than domains in the humanities like history or literature. Camilla disagreed saying that math and science required as much creativity but that the creativity in these domains looked different than the creativity required of students or scholars working in the humanities. In both these cases, Camilla was the source of the fight statements, perhaps indicating a greater willingness on her part to engage in contrarian thinking or to voice contrarian statements.

As previously detailed, the thematic analysis of this focus group yielded three primary themes: framing the construct, epistemic context, and epistemic environment in schools. The theme of framing the construct dominated much of the conversation as participants emphasized the social and contextual situatedness of epistemic agency—highlighting gaps in understanding in the field at the time, particularly in regard to the ways in which individuals engage with the wider socio-epistemic context. Participants also explored ways of distinguishing desirable (apt, reliable) manifestations of epistemic agency from undesirable (in-apt, excessive, insufficient)

manifestations of epistemic agency. Discussions highlighted different sets of assessment criteria for determining undesirable epistemic agency—one based on social norms of propriety and another based on epistemic reliability. Additionally, participants explored the interplay of epistemic agency and cognition, noting the roles of attention and metacognition in the exercise of epistemic agency. In the subtheme of framing the construct titled how to talk about epistemic agency, participants discussed how best to ontologically categorize epistemic agency (as an exercise or capacity), how to measure epistemic agency, and whether a theory or a definition would be the best tool to capture epistemic agency's complexity.

The theme of epistemic context examined the external and internal contextual factors that shape agency, highlighting the interconnectedness of the contexts themselves and the agency that manifests within those contexts. Participants talked about how environments shape epistemic agents and how epistemic agents in turn shape environments.

Epistemic environments in schools was the theme that captured the least of the participants' attention. It functioned as a sort of subset of the epistemic context theme because participants applied many of the concepts related to epistemic context to an analysis of the educational environment. However, because of the primacy of the content to the objective of this study, I set it aside as a theme of its own. The discussion regarding epistemic environments in schools revealed a careful balance of pessimism and optimism about the ways in which educational environments shape epistemic agents. On the one hand, many more examples of environmental constraints on epistemic agency were offered than environmental affordances of

epistemic agency, but participants were also able to offer many suggestions for how to develop students' epistemic agency.

Overall, the discussion underscored epistemic agency's inherently social, contextual, and normative nature, while revealing gaps in existing theories for fully accounting for how individuals do and should operate within the socio-epistemic milieu.

Second Wave Results – Educational Psychologist Focus Group

The focus group with educational psychologists was conducted in October of 2022. At this point in time, universities had resumed in-person classes. The session took place via Zoom videoconference. All the participants, including my advisor who attended as an observer and notetaker, had established professional relationships with one another. The mood was cordial and professional, and the discussion was productive.

Analysis of the data from the educational psychologists' focus group yielded three major themes: making sense of epistemic agency, epistemic agency: behavior, cognition, and affect, and epistemic agency in schools.

Making sense of epistemic agency

The text excerpts that comprise this theme: making sense of epistemic agency largely centered around the initial definitions of epistemic agency that participants were asked to pose. From these initial definitions rose additional questions, comments, and adjacent discussions. Making sense of epistemic agency is broken into three subthemes: initial definitions and related concepts, nature of epistemic agency, and questions about epistemic agency.

Initial definitions and related concepts. Three of the four educational psychologists chose to offer their own definitions of epistemic agency. Each of these emphasized different related concepts—epistemic agency and action, responsibility, self-regulation, or engagement. Henry, whose research focuses on science education and disinformation, gave this definition of epistemic agency: "We view agency as learners having the autonomy to recognize their role as

science knowledge constructors. And we also view agency as having two components, disciplinary agency and learning agency." Henry's definition connects agency to the act of science knowledge construction, highlighting the relationship between agency and action. This definition also highlights the relationship between epistemic agency and epistemic roles and identity—in that agency is not just a matter of learners having autonomy to construct knowledge but also learners recognizing their role as knowledge constructors, suggesting that in his view, this recognition is related to the ability to act.

Another of the educational psychologists, Rachel, offered this definition: "individuals taking ownership and an active role in all aspects of constructing knowledge and understanding in the classroom or the learning environment." Like Henry, Rachel underscores the connection between epistemic agency and action, specifically the act of knowledge construction. Rachel also includes in her definition, the element of ownership, that epistemic agency not only involves the ability to act but also responsibility for the action that the agent takes.

The third definition, offered by Ned, is conceptually the broadest of the three. He says, epistemic agency is "a student's ability, willingness, and socio historical contextual affordances and constraints all shaping their opportunities to know, build knowledge, critique and act on knowledge in personally and contextually supported ways." This definition acknowledges the variances that exist between epistemic agents' ability and inclination to engage their agency at any given moment. Additionally, this definition suggests that the sources of variance are both internal (i.e. level of skill, interest, or capacity) and external (i.e. opportunity to engage, epistemic trust, or testimonial power), and that an epistemic agent's exercise of epistemic agency

at any given moment emerges out of a complex interaction between these internal and external contexts. Ned's definition draws connections from epistemic agency to the self regulatory processes necessary for agents to navigate the interaction between internal and external contexts as well as to epistemic responsibility because the actions that an agent takes impact their external context and vice versa.

While Aaron declined to offer a definition himself, he did add that agency was "an interactional accomplishment more than like a feature of a person, uh, because it has to *do* (researcher emphasis)." Aaron's comments highlight the relationship between agency and action.

When discussing the link between epistemic agency and action, participants spoke primarily of normatively positive actions of epistemic agents. Ned said that epistemic agency meant "making things happen in an epistemic way," and doing this with a sense of autonomy. Henry commented that, as an explanatory analogy, he often referred to James Bond as an agent, having the "license to kill." Epistemic agents (in his area of study) were similar in that they had a "license to learn and do science." What is notable in this discourse is that the action that researchers connect to epistemic agency appears to be either normatively positive or neutral. While "making things happen" certainly allows for a range of both desirable and undesirable epistemic outcomes and processes, a "license to learn and do science" does not.

A question that remains is what we can make of epistemic inactivity, deliberate or not, or even epistemic viciousness such as prejudicial thinking, conspiratorial thinking, or dogmatism. If an epistemic agent does not act, is the lack of action still considered an exercise of epistemic agency? And what are we to make of instances in which an epistemic agent acts badly? Rachel

mentions epistemic disengagement of students in the classroom as a concern of hers, and Henry mentions the Duke basketball player Kyrie Irving who was vocal in his opposition to COVID vaccination. These are both examples that are emblematic of common epistemic issues that teachers must be able to address—the disengaged student and the student who has adopted malinformed perspectives.

Participants said that epistemic agency is related to but not the same as epistemic responsibility, which they defined as "evaluating the consequences of their agency." (Ned) Epistemic responsibility engages an epistemic agent on both a personal and social level because it involves being thoughtful about “their decision-making" but also about how they "engage in the world." (Ned) The conversation surrounding epistemic responsibility shed more light on how participants thought about the complexity and multidimensionality of epistemic agency. Henry said, "there is a difference between agency and responsibility," meaning that an epistemic agent can act agentically without acting responsibly. Ned drew a distinction between engaging in epistemic reliability and epistemic responsibility, saying "there's different kinds of agency.” Some types of agency help you make better decisions (reliability) while some types of agency help you engage in the world in the ways that you want (responsibility). He said, “both are kind of important, right?” As an example, Aaron cited Kyrie Irving, a basketball player who, at the time of the focus group, had been vocal about his opposition to vaccination for COVID-19 as well as his belief in a flat Earth, as someone who had "been granted too much agency," and was not acting with epistemic responsibility or reliability. This discussion about the relationship between epistemic agency and epistemic responsibility also reveals the need to engage with the

full range of normative outcomes and processes involved with epistemic agency—both the desirable and the undesirable.

Participants discussed self-regulation and self-control as another concept that was related to epistemic agency. Self-regulation and self-control helps epistemic agents exercise their epistemic agency in the service of achieving their epistemic goals in both collective and individual contexts. In context of collective agency, Henry said that ideally agents go beyond the traditional co-regulation tasks like planning, monitoring and evaluation in the completion of a collective goal and display additional autonomy and leadership in helping the group plan, monitor and evaluate group epistemic goals. Aaron talked about the need to engage in self-regulation for the achievement of personal epistemic goals, particularly in evaluating epistemic processes and outcomes. He also emphasized that self-control or "not doing what we would maybe do without some thought" was an important part of agency.

The final related concept that participants discussed is engagement, and this one is particularly interesting because of the way that participants drew a distinction between engagement and agency. Specifically, agency involves an external element that engagement does not. Henry says that a student may engage cognitively or epistemically without being granted the autonomy to engage agentically, suggesting that while engagement and agency are related and may occur together, they do not always do so. According to Henry, agency hinges on an agent's ability to act autonomously whether that ability depends on internal capacity or contextual affordances and whether or not an agent takes that opportunity. In a return to his previous 007

analogy, Henry says that while an epistemic agent may have a license or the autonomy to learn and do science, they may not engage and achieve those outcomes.

Nature of epistemic agency. The second subtheme in the making sense of epistemic agency theme is titled nature of epistemic agency, and participants touched on four aspects of the nature of epistemic agency within the focus group. First, epistemic agency is ecological and social. Second, epistemic agency often involves non-deliberative action. Third, there are multiple types of epistemic agency. Fourth, epistemic agency ought to be framed as the means to a goal rather than the goal itself.

Epistemic agency is ecological and social. An agent's capacity for and exercise of epistemic agency is not only determined by their internal volition and ability but also external "constraints and affordances." (Ned) If one is to try to understand epistemic agency, one must take into account that epistemic agency is an ecological sort of endeavor that cannot be decoupled from the context of the agent and the task. In other words, a measurement of an individual's capacity or ability to exercise epistemic agency is insufficient to understand that individual's epistemic agency because epistemic agency must be understood within the context of its use. That individual may be highly skilled and capable of exercising their epistemic agency but may be attempting to do so within a context that entirely constrains their agency. Similarly, observations of the epistemic context and the opportunities for the exercise of epistemic agency granted to epistemic agents within that context will be insufficient because each agent's internal capacity to exercise agency in that context will differ.

Rather, epistemic agency must be understood as an "interactional accomplishment," something that emerges out of the ways in which an epistemic agent intersects with the environment. The term interactional accomplishment, used by Aaron, suggests that epistemic agency is not only best understood by examining both the agent and their environment but that epistemic agency cannot be enacted without the environment. This becomes even more clear when we consider that the idea of an epistemic agent by themselves is an abstraction because people are never truly alone in an epistemic sense. What we come to learn and hold as true, even if we are physically alone, has largely come to us by way of other people and our perceptions of our context.

Another aspect of the social and ecological nature of epistemic agency is its dynamism. The instantiation of epistemic agency that emerges in the space between an agent or agents and their environment is something that is constantly shifting. For example, Henry talked specifically about how epistemic agency in the classroom environment is something that transfers between the teacher and the student. Much of the research about epistemic agency in the classroom discusses how teachers can organize instruction to grant students more epistemic agency (Ko & Krist, 2020) and how teachers can best navigate the flow of agency in the classroom between teachers and students (Stroupe et al., 2018). Aaron talked about an even more complex context in which the dynamism of epistemic agency refers not only to its transfer between epistemic agents within the context but also to the ways in which the instantiation of epistemic agency "can affect the climate in which knowledge happens and shape that climate accordingly. So there's this dynamism back and forth."

Epistemic agency is frequently non-deliberative in nature. In this discussion, the educational psychologists shared a recognition that the engagement of epistemic agency is frequently non-deliberative in nature. As Henry put it, "It takes energy--to [engage deliberatively], um, and we can't do it all the time." Other participants offered examples of instances in which they have both intentionally and unintentionally engaged in nondeliberative, automated epistemic processing. Aaron said that he had long ago decided to delegate knowledge of cars to others so that when he did need to deal with the inner workings of a vehicle, he needed only to engage with the selection of a mechanic. Aaron also said that when it came time to decide whether to get vaccinated for COVID-19, he didn't engage in much deliberative processing either because vaccination fell into a category of knowledge that he had previously deliberated to his satisfaction. Ned mentioned that the majority of decisions he made were non-deliberative, and the non-deliberative nature of much of epistemic engagement opened up questions about what is truly known about instances of agentic epistemic engagement in everyday context and how effectively can it be taught.

There are multiple types of epistemic agency. Ned made a statement that pulls together many of the threads of this data. He said, “There’s multiple kinds of agency.” Specifically, he was referring to the fact that epistemic agency involves both reliable and responsible epistemic engagement. However, participants throughout this focus group have discussed epistemic agency in multiple contrasting ways. Agency has been described as both individual and collective, as internally and externally determined, as a capacity and as an exercise. Ned’s comment helps emphasize that these contrasting descriptions are not necessarily

conflicting but rather that they are acknowledgements that epistemic agency is complex and multidimensional.

Epistemic agency is the means to the goal, not the goal itself. Aaron makes a point that epistemic agency ought to be framed "not as the goal maybe so much as the means" to that goal. The implication of this framing of epistemic agency as a means to a goal is that the "goals that you perceive education should try to get people to take up is gonna, is gonna matter for the forms of agency" that will be relevant to that context. For instance, a middle school science class studying ecology may find that students' epistemic agency focused on reliability may be most appropriate for achieving understanding of the academic objective. On the other hand, a high school civics class discussing voting rights may find both reliable and responsible epistemic agency to be appropriate.

Questions about epistemic agency. The third subtheme within the theme "Making sense of epistemic agency" has to do with questions that educational psychologists brought up about epistemic agency.

These questions had to do with 1) defining and measuring epistemic agency, 2) what is known about epistemic agency, and 3) what is at stake when we talk about epistemic agency.

Defining and measuring epistemic agency. There were three questions about defining and measuring epistemic agency that arose during the focus group. The first question dealt with how to handle the tension between the normative and descriptive aspects of epistemic agency.

Participants acknowledged that the most prevalent definition of epistemic agency within educational psychology is one that is positively normative. Aaron says, "We tend to define what we want to see right?" but he also characterizes this tendency, in the case of epistemic agency, to be a problematic one. "You've got to also account for the fact that people could make choices not to do certain kinds of things, right?" He noted that his preference was for a perspective that is "naturalistic and descriptive rather than normative."

However, among the group, there was a recognition that handling the tension between descriptive and normative epistemic agency is complex. And one of the complexities that arose within the discussion was the occasionally fuzzy line between what may be considered objectively true and what is not. The case of misconceptions was offered as an example, "how does anybody decide that something is a misconception, right? Those decisions are essentially collective." (Aaron)

The questions of 'what is the right way?' and 'who gets to decide' were questions that multiple participants brought up in discussion, and these questions are especially salient in the context of the power dynamics that participants noted were key to understanding how epistemic agency emerged in various situations. Who holds power within a particular context cannot only constrain and allow for the exercise of epistemic agency for a particular agent but can also determine the appropriateness of any given instantiation of epistemic agency. In other words, some epistemic agents or groups of epistemic agents hold the power to determine the right way or the correct outcome, which further highlights the problematic nature of a normative characterization of epistemic agency.

While this part of the conversation centered around questions rather than solutions, Aaron suggested that one potential solution to consider was that another dimension of epistemic agency, that of individual versus collective agency, might be key to navigating the tension between the descriptive and the normative, that perhaps an instantiation of individual epistemic agency may be better suited to descriptive characterization while an instantiation of individual agency situated with a collective would better fit a normative characterization.

The next area of questioning dealt with how best to frame the problem of epistemic agency. Participants suggested that the ways in which you frame the problem impact the ways in which you must subsequently frame and measure the construct. The educational psychologists warned against framing situations as problems that were not truly problematic. Aaron said, "we've got to be really careful about where we locate, we locate normativity and the ways that we talk about these things," suggesting that there was danger in pathologizing behaviors or cognitions that were really very normal such as automatizing or engaging non deliberatively in decision making or even in disengaging from scientific content or scientific thinking because of a lack of interest. Additionally, Ned suggested that discussions of excessive epistemic agency, particularly in a classroom setting, was not terribly relevant, saying, "it seems to me we actually have the opposite problem to solve right."

In the focus group, participants took a moment to ask questions and voice concerns about student epistemic disengagement in the classroom. Rachel was especially concerned with the prospect of students who were epistemically disengaged despite being in a classroom in which those students were positioned with a great deal of agency whether by the teacher or the

epistemic environment in the classroom or school. She said, "The context for agency is there. They're not picking it up. They're not perceiving it, um, and therefore, they're not...using that agency they are afforded." However, Henry and Ned suggested that the issue is not that disengaged students are not using agency afforded to them but rather that those students are exhibiting agency in the service of a goal, epistemic or otherwise, that does not match the prevailing goal that has been established within the classroom context. Ned says, "I think agency can be, um, handed back or abandoned, um, because of perceived misalignment in terms of what the epistemic aims are between, you know, knowledge producer, various knowledge producers in a context."

Ned and Henry's interpretation of student disengagement in the classroom is an endorsement of the importance of decentralizing the focal point in understanding epistemic agency as well as an endorsement of the perspective that epistemic agency ought to be seen as a means to an epistemic end rather than the end itself.

What do we know about epistemic agency? Another set of questions that participants raised in the focus group about epistemic agency centered around an acknowledgement that there was not a lot known about epistemic agency in naturalistic settings and not a lot known about how domain specific instruction that seeks to foster students' epistemic agency transfers outside of the classroom.

When it comes to epistemic agency in naturalistic settings, Aaron said that it would be great to have "more and better and empirical research on ways in which people actually do make these choices for themselves" or research on "how do people or whether alone or like in

community, how do they actually navigate, um, through a particular knowledge complex, right?"

Aaron also said that the research he was familiar with showed that when people encountered conflicting information "in the wild" their "behaviors don't always track in a clearly obviously inferential way from their thinking." But that in this area, there were more questions than answers. "We don't even know how to do those studies really well, right?"

When it comes to the transfer of epistemic skills outside the classroom, Henry said that there was not a lot of data to support whether epistemic education did or did not transfer outside of the classroom. "We've been operating under an assumption is that if we can scaffold this for students within a particular context and setting, that hopefully, they'll internalize that a little bit," but the question about if, how, to what degree, and under what contexts that those skills actually transfer is "still an area we need more work and support on."

What's at stake? In discussing the stakes for epistemic agency, participants were divided between thinking that epistemic agency was key to grand societal constructs. Rachel said "everything is at stake." While Henry said, "democracy itself" was at stake but admitted that was "probably overstated." In contrast Aaron offered a more tempered response, saying that he wasn't sure agency was "the magic bullet to solve all the potential ills" but that he believed what was at stake was students' ability to "make decisions for themselves" and "to have a sense of their own responsibility in relation to the other people that they live with, right, in that classroom, in their towns, in the country, in the world."

Epistemic Agency, behavior, cognition, and affect

The theme of Epistemic agency, behavior, cognition, and affect explores the behaviors, cognitions, and emotions underlying the exercise of epistemic agency. This theme is split into two subthemes. The first subtheme is titled epistemic cognitions, emotions and behaviors. The second subtheme is titled desirable and undesirable epistemic behaviors and cognitions.

Epistemic cognitions, emotions, and behaviors. Within the educational psychology focus group, discussion of epistemic cognitions, emotions, and behaviors was separated into two categories. Participants briefly referenced specific, discrete cognitions, emotions and behaviors that are involved when an agent exercises epistemic agency, and participants also discussed, at more length, specific contexts where epistemic agents may demonstrate more complex combinations of epistemic cognitions, emotions, and behaviors.

Discrete epistemic cognitions, emotions, and behaviors. Of the discrete epistemic cognitions, emotions and behaviors, participants referenced just two emotions: curiosity and interest. They mentioned attention on three separate occasions as an epistemically relevant cognition, and Henry offered a list of several other cognitive behaviors, "describing, identifying, defining, explaining and recalling evidence would be one, uh, categorizing, comparing, and classifying within the context of the, of the data and the, and the claims. Um, questioning, the questioning within scientific mode." He considered these examples of cognition to be examples of disciplinary agency, or epistemic agency specific to the exercise of agency within a specific discipline, in this case, science education. Henry also offered examples of epistemic behaviors that were examples of learning agency, or epistemic agency more broadly exerted in the service

of learning, such as "exert[ing] their competence or exert[ing] their relatedness, um, how they, how they took action to set goals or how they, um, thought about that." Additional examples he cited were actions such as taking leadership, asserting agency for themselves, or taking agency from the teachers, but he noted that these were actions that he and his research team struggled to categorize as either learning agency or disciplinary agency but nonetheless saw as epistemically productive behaviors.

Complex epistemic cognitions, emotions, and behaviors. The complex combinations of epistemic cognitions, emotions and behaviors arose out of talk about more complex epistemic contexts. Participants discussed personally experiencing emotional and cognitive conflict when grappling with epistemic contexts that were both rooted in previous experience and had novel and emotionally fraught elements like making a decision to get vaccinated with the new COVID vaccine back in 2021. Ned noted that these moments of emotional and cognitive conflicts may trigger an epistemic reassessment, which involve "Sarit Barzilai's idea of epistemic meta-competence and kind of knowing what you know and knowing what you've internalized and knowing what you've committed is knowledge and knowing when you can call on others and having the good wisdom to do that." (Ned). Aaron added that part of this idea of epistemic metacompetence was also the ability to recognize when it was appropriate to reassess your knowledge commitments and that the process of reassessment was a big deal. Revisiting the subject of COVID vaccination, he referenced the hesitance that Black Americans experience with regard to vaccination due to the history of Black Americans' healthcare experiences. With this example, he highlighted that revisiting prior knowledge commitments was not just a matter

of cognitively weighing information, it can be an emotionally laden process as well. “Navigating when you should kind of discount one bit of knowledge in order to try on a different bit of knowledge, that to me, is actually pretty, that's a big ask.”

Making novel contributions to an epistemic community was another complex epistemic context that participants discussed as involving epistemic metacompetence. Ned noted that there also seems to be a self regulatory component involved in making novel contributions, “Like you've got to kind of say, I’m going to inhibit, um, kind of what I think to me what is based upon my community and what I’ve learned and apprenticed in and I’m going to assert something novel." In this line of thought, participants also discussed the process of overcoming epistemic bias as one involving epistemic metacompetence because it involves awareness and inhibition of one’s one cognitive tendencies.

Another complex epistemic context is one that involves multiple or differing epistemic goals. Ned talked about a discussion he had with some journalists at his university who framed the goal of journalism as “mak[ing] sure that democracy works and works better…. But…many people in society think the goal of journalism is to present the objective truth.” Ned suggested that these differing goals arising from multiple stakeholders who find themselves interfaced with the same epistemic context can “lead to people making different, um, inferences about the quality of the epistemic products that journalists produce which can lead to disenfranchisement, right, so, or disengagement.”

Differing goals or disengagement may be related to another complex epistemically agentic behavior that participants discussed: choosing not to act. Participants noted that students

in the classroom occasionally choose to disengage from the epistemic context or from a particular instructional activity, and that this choice is an agentic choice that could potentially arise from a misalignment of epistemic or nonepistemic goals.

Next participants discussed how they have sometimes observed students' discomfort with epistemic uncertainty and fear of failure. Aaron mentioned his own child's struggles with the possibility that she could arrive at an incorrect answer in a given academic task. He considered his child's discomfort with uncertainty and sense that uncertainty is indicative of having "done something wrong," less than ideal in terms of epistemic agency. Noting that this is something that many students struggle with, he says, the "willingness to grapple with the uncertainty and to not knowing what the answer is and that there has to be that openness to figuring things out" is part of "the affective piece" of epistemic agency.

The final complex epistemic context that participants discussed was a collection of social behaviors with epistemic outcomes, and these behaviors were initially identified as behaviors that exert control within the classroom such as exerting leadership within a group of students or taking over leadership from a teacher. This could look like exerting competence, setting goals, planning, or introducing a meaningful shift in epistemic activity. It was also noted that more passive epistemic behaviors such as choosing not to take leadership or choosing not to engage were also expressions of epistemic agency.

Desirable and undesirable epistemic cognitions and behaviors. The second subtheme of desirable and undesirable epistemic cognitions and behaviors is split into two categories. The first is desirable and undesirable social epistemic behaviors. Here, participants

discuss how some behaviors, particularly in a group setting, can be perceived as both positive and negative. Rachel noted that some behaviors which may be perceived as more epistemically passive such as choosing not to take leadership or choosing not to share with a group could easily be misperceived. In other words, these behaviors may be active and intentional choices to offer agency to other students in the classroom or they may be intentional choices to listen and engage more quietly.

The second category of the desirable and undesirable epistemic cognitions and behaviors subtheme deals with desirable and undesirable epistemic processes and outcomes. Participants discussed instances in which individuals engaging in excess epistemic agency can result in unreliable thinking and poor epistemic outcomes. In particular, they referenced the basketball player Kyrie Irving as someone who had been granted too much epistemic agency and, as a result, was very vocal about beliefs that ran counter to communal or scientific consensus such as that the Earth was flat or that the vaccines for COVID-19 were unsafe.

Ned followed up this part of the discussion with a comment that while epistemic outcomes are easy to benchmark against the prevailing scientific consensus, epistemic processes are not. Or rather that, if the ways in which lay people construct knowledge is "not consistent with…with exactly how the scientific community does it. I'm not sure that, um, that that's necessarily a bad thing."

Epistemic Agency in Schools

The final theme is titled Epistemic Agency in Schools, and it is made up of three subthemes: goals for epistemic education, epistemic environments in schools, and what teachers are doing in the classroom to build epistemic agency.

Goals for epistemic education. The first section of the goals for epistemic education subtheme is about an assertion of the relationship between epistemic agency and epistemic goals and a question that follows that assertion. The assertion is that epistemic agency is a means to a goal, which means that "the goal is going to matter." (Aaron) The question that follows is then—what is the goal? And what is the role that the educator plays in determining the goal? As Aaron says, "are you trying to get people to exert agency in specific ways that you have decided?" Or are teachers trying to "create opportunities for young people where young people can exert their agency" in ways that they have decided for themselves?"

The second subject of discussion related to epistemic goals deals with the types of epistemic goals that participants considered to be relevant to epistemic education. This subject very closely parallels the conversation regarding what is at stake concerning epistemic agency. Whereas some participants felt that broad principles of society were at stake, saying "everything" was at stake (Rachel) or "democracy" was at stake (Henry), Aaron said that the stakes for epistemic agents were more modest, that it was more in line with the ability to make decisions for themselves.

The discussion about goals for epistemic education split along similar lines but what emerged out of this line of conversation that did not out of the other was that the goals related to decision making on the individual level appear to be connected to reliable epistemic engagement whereas the goals related to the broader societal principals appear to be connected to responsible epistemic engagement. Participants talked about wanting students to be good decision makers and to be able to engage reliable processes in achieving epistemic outcomes. Participants also discussed affective goals related to engaging in epistemic processes such as "feeling confident to make decisions for themselves" or "feeling that they can, um, have a contribution, make contributions, critique, and otherwise engage in the process of knowledge building." (Aaron) Additionally, they talked about dispositional goals for students such as developing curiosity and growing into "lifelong learners." (Ned) Here, the goals start to cross into responsible epistemic engagement. Ned says, "I think part of agency is being willing, as Henry was talking about, to kind of evaluate the consequences of their agency, right. Is it helping them, is it leading them to better decision-making? Is it helping them engage in the world the way they want to?" And Henry explicitly connects this sort of self-assessment to responsible epistemic engagement saying, "I also want them to have a sense of their own responsibility in relation to the other people that they live with" and that this sort of responsible epistemically engagement is involved in developing "good citizens" (Henry).

Epistemic environments in schools. The second subtheme called epistemic environments in schools touches on three topics. First, participants felt strongly that, for better or worse, schools occupy a uniquely powerful position in shaping students' epistemic agency.

Second, there are elements within the school environment which impact the development of students' epistemic agency. Third, designing instruction to foster epistemic agency varies by domain.

Participants talked about schools as environments that are uniquely powerful for shaping students' epistemic agency. On the one hand, Aaron talked about the fact that students often show up to school with "outrageous" degrees of epistemic agency, but often instructional practices and behavioral norms in school "tamp that agency down." However, the general attitude among the participants was a sense that when it comes to fostering and developing productive exercise of epistemic agency, "if we're not doing it there, where else is it going to happen?" Because schools offer "a sustained multi-year opportunity to orient people in particular ways" (Aaron).

When it comes to the elements of the epistemic environments in schools that impact the epistemic agency of students, participants discussed epistemic structures of power and privilege, epistemic classroom norms, and characteristics of individuals and groups of students. The epistemic structures of power and privilege that the educational psychologists talked about involved the social and historical determinants of students' epistemic status and "whose voices are valued in the classroom" (Rachel). They also discussed the differential opportunities that were available to some students that may result in differing capacities for epistemic agency. Aside from the determinants' of student agency, Aaron and Henry also expressed concern for the degree of agency that teachers are afforded within educational contexts and the support that teachers had in developing student epistemic agency.

Henry brought up the point that different students and different groups of students are going to engage with epistemic contexts differently. Referring to a personal experience with a class he had taught, he said, “the students in the class picked it up and ran with it. You could have another class and just, they don't know what to do or they're afraid to do anything or they just don't care to do anything.” The point being that different students or groups of students will have different past experiences and epistemic dispositions. The way those individual students or groups of students interact with the epistemic context may vary, and it is not only important to attend to the elements within the epistemic environment which may impact students’ epistemic agency but also important to attend to the way that students or groups of students may react or interact with that environment.

The final topic of discussion within the subtheme of epistemic environments in schools is a brief note that the issue of teaching for epistemic agency “varies disciplinarily” (Aaron). This is a problem that is going to look different according to the subject of instruction. As Aaron points out, the way that we want students to read and write and analyze texts in the classroom is rather similar to the way that people conduct those tasks outside of the classroom. In that way, teaching students the skills and tools to be agentic in those tasks is somewhat more straightforward than teaching students to be scientists.

What teachers are doing in the classroom to build epistemic agency. The final subtheme in the epistemic agency in schools theme is about the things that teachers do in the classroom to build epistemic agency, and for this subtheme, participants discussed two topics. The first topic that participants discuss is that teachers must strike a balance between keeping

and releasing control to students to optimize learning and agency. The second topic is that teachers must be able to frame epistemic opportunities so that students can both recognize them and feel motivated to act upon them.

Participants talked about teachers balancing the keeping and release of control in their classrooms as a way of offering more opportunities for students to exercise epistemic agency. Aaron notes that a "simple way to characterize" this balance is a movement from "teacher-centered to student-centered" instruction in the classroom, and Henry offers a good example of what this might look like. Further expanding on the teaching experience noted above in which he was teaching a group of undergraduate students with a particular instructional plan, Henry says, "And as I developed this line of where I wanted them to go or what my goals were," the students started raising questions that he hadn't included in his instructional plan. And at this moment, "they redirected" his instruction, he says, "because I allowed them to do that, and it made for a much better class learning experience. They...they really came up with something that...that I...I missed and that was really, really important.." As the instructor, Henry could have maintained his line of instruction and his instructional goals and disregarded the students' points. He could have briefly addressed the students' points and moved on with his own plan, or he could have done what he did, "relinquishing … control as the designer of the, of the experience, learning experience to [the students] afforded them the agency to do that and they took it." Each of these options represents a different balance of control between the teacher and the students, and affording students agency can often look like allowing them to take control.

However, participants also noted that giving students a measure of control over instruction and learning is not a simple thing, that maintaining this balance requires a great deal of skill and preparation on the teachers' part. Ned makes an analogy of throwing pottery on a pottery wheel,

> "you're making like a pot and it's spinning around and it looks real good and then you make one slip and the whole thing goes like..., right. Like a teacher could shake that framing or mess up that framing very easily if you're not careful."

Henry notes that the success he had in relinquishing control to his students was in part due to the work he had done to establish a careful structure in his class so that he could let his students take the lead and in part due to that particular group of students because those students had had the skills and knowledge to be able to take advantage of that epistemic opportunity whereas another group of students might not have been able to do the same. Relinquishing instructional control in the classroom also requires a great deal of flexibility and discernment. Rachel thought through a list of things a teacher should be able to consider in similar situations — "knowing how to respond or what is a good response to different points that are raised by the students, knowing when to give up that control, when to hang on to pieces of it to steer things in a way that's gonna be more fruitful, a more fruitful discussion." Successfully facilitating the shifting of control from a teacher to the students in an effort to afford the students a greater degree of agency in their learning is a matter of keeping in mind the structure of the class, the abilities and dispositions of your students, the content material, the way that all those elements interact and responding to those interactions on a moment to moment basis.

Participants also discussed the important work that teachers do to frame epistemic opportunities for students. They have to first be able to frame epistemic opportunities to help students be aware of the various types of epistemic possibilities. Aaron referenced a study by Joe Kohler done many years ago for which they looked at traditional AP calculus classes and what they considered to be more 'open' AP calculus classes. In the traditional classes, students' work and epistemic opportunities were directed primarily by the calculus textbook. Whereas in the open classes, students were afforded more creativity and agency in solving problems, they were asked for their input in how to solve problems, emphasizing multiple ways to arrive at the answers to the problems. Aaron says,

> "if you frame the work in a closed way or even in a very disciplinary way, it's essentially, kind of gonna limit the kind of agency that students are gonna perceive than if you frame it in an open way or if you frame your work as...as...as addressing something in the, in the world that the kids live in as opposed to the discipline that that they come with, then they're...they're gonna be more likely to...to act as agents, as like visible…visible positive agents."

Aside from framing different types or degrees of epistemic opportunities, Henry emphasized teachers' ability to frame opportunities to act with epistemic "responsibility to come up with ways to do the science that people practice."

Teachers also have the ability to frame opportunities to be epistemically agentic as welcoming and useful in order to motivate students to take those opportunities. In reference to the study of AP calculus classes, Aaron said that, by the end of the school year, students in the

open classes were more likely to see "math as as something that...that they could do, that was relevant to them, that appealed to them, right," and that if students were able to perceive that their agency was "a useful thing to exert in a context, they're just more likely to exert it." He referenced the DMV (Department of Motor Vehicles) as a contrasting example, as a place where individual agents are expected to follow a litany of established rules and procedures. At the DMV, individual agency tends to be unwelcome and not useful. He says in order to motivate students to act agentically, we want to frame our classroom environment to be places where students perceive that their agency is welcome and will result in positive outcomes.

Summary of Findings

The tone of this focus group with educational psychologists was cordial and professional. EGCC coding indicated that the entirely of the discussion yielded pairing and dependency statements. Unlike the pilot study with epistemologists, there were no fight statements. Participants did not voice disagreements with one another but rather voiced questions and built upon one another's comments and insights. For example, when Aaron raised the issue of the positively normative characterization of epistemic agency in many of the definitions posed by participants, he introduced the issue as a question to Henry, saying "I'm curious to how you would think about it, and I'm also curious at how everyone else would think about this." The lack of disagreement may suggest a lesser degree of familiarity among participants as compared to the group of epistemologists, but it may also suggest a preference for communicating with questions rather than disputes. There is further evidence of this as the subtheme of questions about epistemic agency yielded more data excerpts than any other subtheme in the analysis of

this focus group. Additionally, participants did not hesitate to offer personal anecdotes, suggesting a high level of familiarity among this group as well.

The thematic analysis of this focus group yielded three primary themes: making sense of epistemic agency; epistemic agency, behavior, cognition, and affect; and epistemic agency in schools. As with the epistemology focus group where the framing the construct theme dominated the discussion, the analogous theme in this educational psychology focus group—making sense of epistemic agency—made up the largest bulk of the discussion. I titled the two themes differently because the ways in which the educational psychologists spoke about the construct of epistemic agency felt a great deal more tentative than the way that the epistemologists talked about epistemic agency. For the epistemology data, I had identified a pattern of foundational assertions made about epistemic agency, but for the educational psychology data, I identified a pattern of questions about epistemic agency, which, notably, was the largest subtheme identified within the entire educational psychology focus group dataset. In this subtheme, participants discussed questions about how to manage the tension between the normative and descriptive aspects of epistemic agency, how to determine the 'right' way to direct students' epistemic agency, how to frame the problems underlying epistemic agency, and how to better understand transfer of epistemic agency outside of the classroom.

Another subtheme of the making sense of epistemic agency theme was the subtheme of initial definitions and related concepts. I began both focus groups by asking participants to supply their own definitions of epistemic agency. However, I was not able to cluster data around the definitions supplied by the epistemologists because their definitions were less developed and

because they declined to elaborate upon their definitions. The educational psychologists, on the other hand, took it upon themselves to expand upon the definitions they supplied and to organically follow threads from their definitions into discussions of related concepts such as action, engagement, responsibility, and self-control and self-regulation.

Like the epistemologists, the educational psychologists placed a significant emphasis on the social and ecological nature of epistemic agency as well as the non deliberative nature of many instances of epistemic agency.

The second theme of epistemic agency, behavior, cognition, and affect explored discrete behaviors, cognition, and affect as well as more complex combinations of behaviors, cognitions and affect that occur as agents exercise their epistemic agency. As the participants explored the complex combinations of behaviors, cognition and affect, they also explored some complex contexts in which people may be called upon to uniquely exercise their epistemic agency such as situations that call for the reassessment of prior knowledge commitments or situations where a cognitive assessment of data may conflict with an emotional assessment of the context. Within this theme, participants also discussed, though more briefly than did the epistemologists, desirable and undesirable manifestations of epistemic agency. In this focus group, the educational psychologists noted that epistemic behaviors, particularly in a group setting like a classroom, can be ambiguously assessed as either positive or negative depending on the assessor.

In the theme of epistemic agency in schools, many of the topics of discussion echoed the topics brought forward by epistemologists, particularly in regard to the epistemic environment in schools. The educational psychologists noted that epistemic agency manifested differently in

different academic domains and that classroom and instructional norms were aspects of the educational environment that affected the development of epistemic agency as were structures of epistemic power and privilege. Where the conversation about epistemic agency in schools differed is where the educational psychologists recognized that teachers must engage in a nuanced balance of maintaining control and releasing it to their students in order to develop student epistemic agency. Additionally, the educational psychologists noted that teachers are responsible for framing epistemic opportunities so that students can both recognize and feel motivated to take on those opportunities. Educational psychologists also engaged in a unique discussion about goals for epistemic education, noting that if we are to frame epistemic agency as the means by which individuals achieve their epistemic goals, the goals are going to matter, and participants discussed the dual goals of helping students be reasonable and reliable decision makers and helping students grow into good citizens with a sense of responsibility to their communities.

The educational psychologists' focus group and the epistemologists' focus group both dive into discussions of epistemic agency in educational settings with overlapping themes. They discuss the conceptualization of epistemic agency, the epistemic contexts both in and out of educational settings, and the interplay between epistemic agency, cognition, behaviors and affect. Both groups emphasize the multidimensional nature of epistemic agency, highlighting its social and ecological nature and the way it emerges from interactions between the internal capacities of agents and the internal and external contexts of agents that can either constrain or allow for the exercise of epistemic agency. Both groups addressed the distinction between desirable and undesirable manifestations of epistemic agency, noting the role that social and epistemic norms

play in the assessment of epistemic agency. In educational contexts, both groups underscore the role of schools in shaping the epistemic agency of students through environments, norms, and instructional and assessment practices.

Despite these convergences, the educational psychologists and the epistemologists differ in their areas of focus, influenced by their expertise and academic interest. Epistemologists emphasized the greater context in which epistemic agents exercised their agency, highlighting the relationships between the ways in which the broader socio-epistemic context influences the epistemic agency of individual agents and also the ways in which individual agents create the socio-epistemic context. Educational psychologists, on the other hand focused more extensively on the educational contexts of students' epistemic agency, offering a broader and yet more nuanced view of what teachers must do to support the development of students' epistemic agency. Epistemologists emphasized the complexity of epistemic agency and questioned the feasibility or wisdom of relying on definitions, and educational psychologists opened up lines of questioning about the empirical understanding of epistemic agency within scholarship.

Overall, the discussion with educational psychologists reinforced and built upon the conceptual scaffold of epistemic agency offered by the epistemologists in the first focus group, enriching our understanding of epistemic agency with greater educational specificity and calls for better empirical research.

Third Wave – Touch back Interviews

In the spring of 2025, I was prepared to begin the final phase of my study—conducting a cross-disciplinary focus group with the group of epistemologists and the group of educational psychologists together. However, a significant amount of time had passed since the first and second focus groups—four years since the epistemology focus group and three years since the educational psychology focus group. I wanted to be able to account for the ways in which the scholars' academic focus may have shifted or ways in which their views on epistemic agency may have evolved.

Beginning in the spring of 2025, I reached out to the epistemologists from the 2021 focus group to schedule 20 minute touch back interviews focused on changes in their academic work, evolution of their views of epistemic agency, and their attitudes about changes in the epistemic context within the previous five years. I was able to schedule interviews with Will, Camilla, and Holly. Andrew had since retired, and I was unable to reach him, and Lorelai had recently had a life event that made it difficult for her to participate.

What I found from these touch back interviews is that while the scholar's professional work had progressed, their views on epistemic agency had not changed so much as had become more deeply informed by increasingly nuanced understandings of the social nature of epistemology and epistemic agency. And these changes appeared connected to or informed by their perceptions of the contemporary epistemic context.

Epistemology touchback interviews

Will. At the time of the touchback interview, Will said that he was finishing up an anthology on open-mindedness and that he had "gone all-in with social epistemology," and the notion that we, as a species "had evolved to think collectively." He also discussed the ways in which the state of the field of epistemology had changed, saying that there was a dramatic shift of interest to the topics of "extreme beliefs, partisanship, uh, echo chambers, conspiracy theories," noting that epistemic agency was implicated in these phenomena.

On the topic of epistemic agency itself, Will noted that his views of the centrality of epistemic agency as a construct had evolved. While he still felt that epistemic agency was an important idea, for him and within the field, "there's been a sort of mini boom in...in talking about epistemic autonomy" because there is a problematic aspect of epistemic agency in that epistemic agency seems to suggest that "you sort of decide what you believe, right?" However, people don't just "decide." They "discover" or "figure out" what to believe "based on the evidence." Therefore, epistemic autonomy, balanced with epistemic dependence seemed a more apt way to capture the state of the individual epistemic agent, particularly the "individual in community."

This notion of epistemic autonomy was especially salient for Will because the main theme of his thinking at that moment was to try to define epistemic communities, which he referred to as a "placeholder term that nobody...that people use in all kinds of different ways" but was "really important because that's...that's the set of like people and influences and institutions and mechanisms within which our capacities operate and in...and in conjunction with and in

cooperation with." For him, getting serious about making sense of epistemic agency or epistemic autonomy meant getting serious about understanding epistemic communities.

Holly. In the spring of 2025, Holly was doing work on epistemic virtues and vices, particularly in the context of extremism and fundamentalism. One of her projects examined sincerity as a necessary component of humility, and another explored the virtue of closed-mindedness and humility as a response to extremism.

She said that she was thinking deeply about contextually situated epistemic vices and virtues, "arguing for descriptive accounts of traits like humility, arrogance, open-mindedness, closed-mindedness, and then trying to ask the question, 'Okay, once we can figure out how to define this thing descriptively, what else would we have to add to it that would turn it into a virtue or a vice?'" This work, she said, is called "normative contextualism," and is grounded in the idea that norms are established within a particular context and depending on the way that a behavior is framed in a context, it could be construed as either a virtue or a vice. While closed-mindedness is traditionally considered a vice, and in ideal epistemic contexts, it most likely operates as a vice, in an oppressive epistemic context which seeks to strip individuals of their epistemic agency and to convince those individuals of their lack of agency, perhaps closed-mindedness can operate as a virtue.

Camilla. When Camilla and I spoke, she was anticipating the publication of her new book. In this book, she makes the argument that the "individual, the community, and the epistemic context are interdependent." Epistemic agents must either meet or challenge

community standards, but that community standards are adaptive to the environment in which they are found.

Camilla also expressed concern about the general state of education in relation to epistemic agency, noting that a great deal of focus in education was about "getting kids to conform."

Summary of epistemology touch-back interviews. Will, Holly, and Camilla were all diving into the social and ecological nature of epistemic agency, particularly engaging with the sorts of interdependent relationships between epistemic agents and the communities and epistemic contexts that encircle the agents and their communities. Of the three epistemologists, Will had made the greatest evolution in his views, saying that now, he had "gone all-in with social epistemology."

Will and Holly also made reference to some ways in which their work or work within the field of epistemology was responding to contemporaneous epistemic contexts. Holly's work explored the epistemic underpinnings of growing movements of extremism while Will noted that the entire field had undergone a shift in focus to examine the growth in extreme beliefs, partisanship, and conspiracy theories.

Recognizing that the educational psychologists were also likely to ground their work in the epistemic context of the time, I modified the interview protocol to ask the educational psychologists not only about the changes to their work and views on epistemic agency but also

about how they were responding to the changes in epistemic context that had occurred over the previous three years.

Educational Psychology Touchback Interviews

After the touchback interviews with the epistemologists were collected, transcribed, and had undergone analysis, I began to reach out to the educational psychologists towards the end of the spring semester in 2025. I was able to schedule interviews with Ned and Henry and engaged in an email correspondence with Aaron. Rachel was unable to participate at the time due to her busy schedule.

I conducted these communications with the educational psychologists at the beginning of academic summer in 2025, and I asked them about their current work, how they were thinking of epistemic agency at the time, questions they were working on, and how they were responding to the epistemic context of growing extremism, algorithmic delivery of information, and artificial intelligence. While Will and Holly mentioned that the field of epistemology had shifted to focus on extremism, I knew that both Ned and Henry did work in the fields of digital literacy and combatting misinformation, so I chose to include mentions of artificial intelligence and information algorithms into the interview protocol to probe those aspects of the epistemic context that might be relevant to their work.

Aaron. In the email exchange that I had with him, Aaron's response exclusively had to do with his thoughts on epistemic agency and that his "thinking hasn't really changed much." He reiterated his belief that agency is "an interactional construct," and that "it's a big mistake to treat

[agency] as a statement of the person, like a trait, rather than as a statement of the person-in-situation." He also noted that this interactional nature of epistemic agency led to particular measurement challenges.

According to Aaron, in the case of epistemic agency, the task of measurement is going to be more complex than defining epistemic agency "with enough precision that we can develop measures." Rather, it is going to be "more about observing various manifestations of epistemic agency as they arise in particular situations and figuring out how to characterize the 'shape' of agency for the people in that situation." Self-report measures would be "nearly useless" because "we have ample evidence in psychology generally that such measures are very questionable."

Moreover, there are aspects of the exercise of epistemic agency that are obscured to general observation. For one thing, "the difference between one's perception of agency and one's exercise of agency could be vastly different." For another, it is difficult to make assessments of epistemic agency "without understanding their participation within the fuller context of interaction." A student who doesn't participate in a class discussion could be said to be lacking agency but could also be refusing to participate, which is "a pretty direct exercise of agency."

Aaron suggested a few more viable options for measurement or for observation were making assessments of an individual's epistemic agency "across a range of situations and empirically determine if, in fact, some people exercise agency consistently across a range of situations." Or to explore more narrow facets of epistemic agency such as "how someone's knowledge in a particular context affects their agency."

Aaron also raised a question of whether it was productive to frame epistemic agency as a separate construct from agency itself. He asked, "what does 'epistemic agency' give us that 'agency' doesn't?" At the very least, in the process of that justification, we could determine "what the adjective 'epistemic' is trying to delimit."

Ned. I had conducted an interview with Ned via video conference but due to an error on my part, the interview recording was not captured. Immediately upon this realization at the close of our interview, I wrote a memo based on my recollection of the interview and sent that memo to Ned so that he could confirm, correct or elaborate on my notes.

In the late spring of 2025, Ned's work involved the intersection of "digital literacy, self-regulated learning, and epistemic cognition." In his work, he had been "interested in how people actively respond to digital technologies like social media or GenerativeAI," as well as the "incidental learning" that people experience when they interact with these technologies. Because his work was so closely connected with epistemically relevant technologies, the question about changes in the epistemic context due to technological and social changes was especially relevant.

Ned said that changes in technology did not impact his views on epistemic agency. How he thought about epistemic agency itself had not changed, but he did think that the advent of information algorithms and generative AI posed some "unique challenges" to the exercise of epistemic agency such as its "veneer of authority, anthropomorphic language that may make it harder for people to adopt a critical stance toward it." However, many of the challenges that new technologies posed to the exercise of epistemic agency were familiar with familiar countermeasures. As with any information source, users must find ways to "assess the quality of

its output," using "the sorts of digital literacy and self-regulated learning strategies you would use for a google search."

Ned also noted that generative AI technology had unique strengths that could serve to enhance epistemic agency. For example, generative AI can "[provide] people with a helpful interface to powerful machine learning tools" that they might not otherwise develop the skills or inclination to access, enhancing their understanding of a particular subject matter. However, he cautioned that these "strengths and challenges are largely speculative, at the moment, given the existing literature isn't very rigorous."

At the time of our communication, Ned was thinking about the best ways to gather data to study generative AI usage in people because "there's not a lot of great data about that right now. These study rely heavily on self-report measures." He was also working on calibrating his attitude towards generative AI technology, determining how skeptical, how wary, how enthusiastic he ought to be. In his words, he is "neither a GenAI doomer (i.e., it is evil and will destroy the world) nor a boomer (i.e., it is the greatest thing ever and will positively change everything)."

Henry. When I met with Henry in the summer of 2025, he was working on a number of projects that did not deal directly with epistemic agency but were closely linked to it. Around 2022, he had completed a project parsing out students' discourse in the science classroom into "two different types of agency.…learning agency and disciplinary agency." Learning agency deals with learning more broadly and disciplinary agency is agency situated within a specific discipline. Out of this work, he completed a paper more recently in which he

and his colleagues framed active learning as something in which "agency is a principal component." He had also recently completed a project in which he and his colleagues had built a "developmental approach to how scientific thinking develops."

When asked about how changes in the social and technological epistemic context have impacted his views on epistemic agency, Henry talked about how the political climate at the time of our interview brought into focus some projects he was working on. The first was an investigation into using lateral reading frameworks and model-evidence link diagrams to drive "accuracy-driven reasoning." Henry and his colleagues were particularly motivated to "think about how to do that with both students in social studies classrooms, kind of the civically relevant and science classrooms in these scientific issues of civic relevance or scientific issues of social relevance." He said that this project was closely linked to work that he was doing with "the Democracy Initiative" where they think about how to "facilitate democratic engagement and democratic agency." Henry felt that while all of this work was related to work that he had done in the past, it was "now more targeted towards this process" of building "agents of civic engagement in a way that's productive and helpful to the communities in which these people are in and the way that it's democratic to bring all these thoughts to bear, to value all the thoughts and perspectives, and a way to move the collective forward meaningfully." His work in democratic civic engagement and his location highlighted for him the impact of changes in the epistemic context on "democratic processes and the real stressors right now on institutions, which |…| appear to be buckling."

While Henry did not explicitly detail what changes in the epistemic context he was referring to, it appears the impact that they have had on his views on epistemic agency are to strengthen the beliefs he expressed in the focus group in 2022 about the link between epistemic agency and "democratic principles."

Summary of findings. Of the three sets of touchback responses that I collected from educational psychologists, the response that I got from Aaron was notably different than the responses from Ned and Henry. Aaron's touchback communication was conducted through email rather than through video interview, and he addressed only his views on the construct of epistemic agency, saying that they had not changed since we spoke in 2022. This is not to say that he has not been engaged in work relevant to epistemic agency or that his work has not responded to the changes in epistemic context between the years of 2022 and 2025. On the contrary, in 2024 and 2025, he was involved with works examining science teachers' approaches to orienting their instruction around community issues of food justice and examining frameworks to help teachers communicate the link between climate science and social issues to their students. Suggesting that some of the questions garnering his attention have dealt with teachers' epistemological frames and how they respond to and help their students respond to their epistemic context.

Responses from all the educational psychologists suggested that they were deeply engaged with the social embeddedness of, if not epistemic agency itself, than the processes related to epistemic agency like incidental learning that occurs with use of generative AI technology (Ned) or engaging in "accuracy driven reasoning" when thinking about civic issues

or scientifically relevant social issues (Henry). In Aaron's response to me, he emphasized that epistemic agency could not be understood as an individual attribute but must instead be seen as a "feature of person-in-interaction." Moreover, that the degree of agency behind a person's actions cannot be characterized without an understanding of the "fuller context of interaction." Henry's work and Ned's work both deal directly with the reality of how people engage with the tools and information around them, and while they don't deal directly with epistemic agency, they examine cognitive processes and behaviors that are linked to epistemic agency.

When asked about changes in the epistemic context in the years between the educational psychology focus group (2022) and the touchback interviews (2025), Ned and Henry did not refer to changes in their views of epistemic agency itself. Instead, they talked about how those changes in epistemic context (generative AI technologies and political shifts) were impacting the ways in which epistemic agents exercised their epistemic agency. According to Ned, generative AI technologies have the potential to enhance epistemic agency but pose unique challenges to epistemic agency as well. According to Henry, changes in the political climate felt "pretty tough" both because of his physical proximity to those political changes and the context of his work examining how to enhance individual civic agency.

In contrast, two of the three epistemologists that I spoke to for touchback interviews—Will and Holly, expressed slight shifts in their thinking about epistemic agency itself, working to gain deeper and more nuanced understandings of epistemic agency. Will, at that point, had become fully committed to the social nature of epistemic agency and was engaged in working to get a better, instrumental understanding of epistemic communities. Additionally, he was

questioning whether epistemic autonomy, with its suggestion of epistemic dependence as a counterbalance, was perhaps a better characterization of how people engage with their epistemic context. Holly was engaged with "normative contextualism" not of epistemic agency itself but of epistemic virtues and vices, cognitive dispositions that contribute to epistemic agency. In other words, Holly was examining how our understanding and normative evaluation of epistemic behaviors ought to shift according to the relationship of those behaviors to the context in which those behaviors occur.

In comparison to the epistemologists, the educational psychologists Ned and Henry were working with narrower, more concrete questions that were embedded in real world contexts. They conducted empirical examinations of the ways in which people engaged with information and information technologies. The epistemologists were certainly engaged with real world contexts as well. Holly talked about work that she was doing to examine the epistemic humility in the context of the apologies issued after wars and other human atrocities. Camilla was working to pull from examples of human behavior to examine the ecological nature of epistemic agency. However, the contexts within which the epistemologists ground their analysis and the questions that they were asking were broader, less narrow than the questions asked by the educational psychologists.

A comparison of the touchback interview data for the epistemologists and the educational psychologists shows us that the participant scholars from both fields have continued deepening their focus on the social and ecological nature of epistemic agency.

These touchback interviews provide some insight into the construct of epistemic agency itself. Aaron offered some thoughts about assessment opportunities for epistemic agency given its interactional nature. Camilla and Holly both offered thoughts about how epistemic agency is so deeply grounded within the context in which it is exercised that the standards by which we characterize instances of epistemic agency will shift from situation to situation. Will suggested that epistemic agency may not be the best term to capture the balance of autonomy and dependency that we experience when engaged in epistemic endeavors.

The touchback interviews also provide insight into ways that people need to engage with their epistemic context in order to maintain their epistemic agency. Holly suggested that in some oppressive epistemic contexts, the behaviors and dispositions that we would normally consider to be examples of undesirable epistemic agency may be supportive of the epistemic agent. As she said, “Maybe the default for people who are being exploited is not honesty.” Rather it may be dishonesty or at the very least, “being very careful about what you reveal and what you don’t.” Ned talked about how people may be able to engage generative AI technologies and how they might need to guard against those same technologies to maintain their epistemic agency, and Henry talked about the relationship between accuracy driven reasoning and agentic civic engagement.

Overall, the touchback interviews highlighted the unique roles that these epistemologists and educational psychologists play in deepening understanding of epistemic agency. Both fields highlighted epistemic agency's social and ecological embeddedness, but the epistemologists

Camilla, Will, and Holly offered more conceptual refinements for the construct in their responses while the educational psychologists offered more empirical applications for the construct.

Literature and Methods Update

Because so much time had passed between the beginning of this project in 2021 and time when I was preparing the final phase of my study, I had to account not only for changes in the participants' thinking, but also for changes in the literature and for changes in my own thinking. This section serves as an addendum to the literature review in chapter two as well as an update to the methods that I used for the final phase of this study.

Literature review addendum

I examined the literature on epistemic agency from the fields of educational psychology and epistemology between the years 2020 and 2025. I focused on the topics of study, the ways in which the authors conceptualized or explicitly defined epistemic agency as well as the ways in which the authors operationalized epistemic agency in their experimental design or argumentation.

Within this period, educational psychologists are not operating with a great deal of theoretical consistency in their research on epistemic agency. There is not only a lack of consensus when it comes to how educational psychologists are defining epistemic agency, educational psychologists are also operationalizing epistemic agency in many different ways, which are not always congruent with their definitions.

Epistemologists, on the other hand, are conducting analysis of epistemic agency with the benefit of a greater degree of theoretical consensus within their field. While they explore different aspects of epistemic agency and make differing recommendations regarding how to

ameliorate epistemic agency for the broader population and for marginalized groups, epistemologists generally agree on the purpose and nature of epistemic agency.

Epistemic agency in educational psychology research 2020-2025

Objectives of study. In educational psychology, the literature from 2020-2025 falls into a handful of study designs and objectives. Researchers explore students' epistemic agency, teachers' epistemic agency, and how teachers are supporting students epistemic agency. For both student and teacher epistemic agency, researchers examine the impact of instructional interventions on the prevalence and quality of manifestations of epistemic agency (González-Howard & McNeill, 2020; Cheune, 2021; Zhang et al., 2022). Additionally, they employ case study and ethnographic designs to characterize the exercise of teacher and student epistemic agency (Dyer et al., 2021; Osborn et al., 2021; Cherbow, 2023). It ought to be noted that many of the studies on teacher epistemic agency examine preservice teachers rather than inservice teachers (Yang, 2021; Cacciamani et al., 2022) and make the assumption that improving teacher epistemic agency will translate into instruction that can lead to improvements in student epistemic agency (Heikkilä et al., 2023). Studies that directly examine the ways in which teachers support students' epistemic agency employ analysis of classroom observations (Alzen et al., 2020), instructional artifacts (Akcil-Okan & Tekkumru-Kisa, 2022), and interviews (Kelly et al., 2020) to interrogate teacher's actions and thinking about enhancing student epistemic agency.

Within my review of the literature, I also came across studies that examined contextual factors outside of instruction that impacted students' epistemic agency. Yan et al. (2025) presented a review of the literature on the impact of artificial intelligence technologies on

students in classrooms to argue that AI can boost creativity and access to knowledge but without careful guardrails, the use of AI can easily turn into a crutch that reduces the metacognitive awareness of their own thinking, resulting in a reduction in epistemic agency. Baze et al. (2025) examined intra-group power dynamics within collaborative group work in a classroom. Where most studies focus on the exchange of epistemic control between teachers and students (Cherbow, 2023) or on the knowledge building work in student groups (Murphy et al., 2023), Baze et al. (2025) examined how student interactions mediated by identity and relationships can work to both constrain and hinder the expression of epistemic agency.

The final category of work that I encountered in my review was a group of conceptual papers that argue for expanding the conception of epistemic agency in educational research. Zimmerman and Chinn (2020), Nieminen & Ketonen (2024), and Bae et al. (2025) advocate for a shift in educational epistemic research by embedding both cognition and agency into broader ecological and structural frameworks in order to enable analysis of the structural barriers and affordances of epistemic agency. Zimmerman and Chinn (2020) argue that epistemic injustices such as denying someone credibility or ignoring their knowledge contributions because of their identity or position in society, obscure the study of epistemic cognition by excluding the ways in which contextual forces may impact the enactment of epistemic cognition. They advocate for expanded models of epistemic cognition that integrate the study of social harms and epistemic injustice. Nieminen & Ketonen (2024) advocate for expanding models of epistemic agency to encompass a broader ecological frame. They argue that epistemic agency does not just involve training students to be accurate or reliable thinkers but also responsible epistemic agents capable of navigating a post-truth world, and that in order to accomplish this, the conception of epistemic

agency that we use to drive research and practice in education needs to accommodate the structural realities of that world. Similarly, Bae et al. (2025) issue a call to action for researchers to situate their research within epistemic structures and institutions in order to interrogate the ways that those institutions enact barriers and affordances for the exercise of epistemic agency.

Definitions of epistemic agency. It ought to be noted that researchers within this period directed their research towards both the study of epistemic agency and shared epistemic agency. Studies examining shared epistemic agency largely relied on the definition put forth in Damșa et al. (2010) where shared epistemic agency is an emergent collective capacity that allows groups to engage in collaborative, knowledge driven activities (Lee et al., 2020; Spence, 2022; Urbani, 2025; Yang et al., 2020; Yang et al., 2024). This capacity manifests within two dimensions, a regulative dimension in which agents engage in planning, monitoring, and evaluating collective epistemic efforts, and a disciplinary and epistemic dimension which involves generating and refining ideas (Damșa et al., 2010).

There is less definitional consistency among research looking at individual epistemic agency. For epistemic agency, researchers defined the construct based on six separate aspects, sometimes combining multiple aspects, sometimes defining epistemic agency by just a single aspect. These aspects are: responsibility or ownership of inquiry and knowledge advancement (Cacciamani et al., 2022; Shim et al., 2022; Zhang et al., 2022; Murphy et al., 2023; Kang, 2024; Nieminen et al., 2025), participating in the construction of knowledge in a community (Akcil-Okan & Tekkumru-Kisa, 2022; Brownlee et al., 2022; Cacciamani et al., 2022; Tan et al., 2022; Akgun & Sharma, 2023), determining epistemic norms and standards (Brownlee et al., 2022;

Resnick & Kolikant, 2025), generating and improving knowledge (Tan et al., 2022; Akgun & Sharma, 2023; Cherbow, 2023; Yang et al., 2024; Hontvedt et al., 2024; Resnick & Kolikant, 2025), directing and monitoring the knowledge building process (Taylor, 2022; Krist et al., 2023; McLaughlin & Farris, 2025; Conrad et al., 2025), being recognized as a knower and participant in knowledge building processes (Shellinger et al., 2022; Bautista & Davis, 2024; Baze et al., 2025), and being a recipient of distributed cognitive authority (Odden et al., 2023; Kang, 2024).

Nearly all researchers of epistemic agency and shared epistemic agency acknowledged that epistemic agency whether collective or individual was a construct that emerged out of interaction (Krist et al., 2023; Bautista & Davis, 2024) and that exercise of epistemic agency was significantly dependent on contextual affordances (Nieminen & Ketonen, 2024), but this acknowledgement of the social situatedness of epistemic agency was often operationalized incompletely or in a fragmented way.

Operationalizing epistemic agency. Because epistemic agency is incredibly complex and multidimensional and because many parts of epistemic agency are implicit, empirical research of epistemic agency is difficult to conduct, particularly if researchers elect to focus on visible or audible artifacts of epistemic agency such as discourse or assignment responses (Bae et al., 2025). However, I found that there was frequently a disparity between the theoretical complexity with which researchers defined epistemic agency and the evidence by which they determined the frequency or quality of manifestations of epistemic agency.

In my review of the literature, I found that researchers located evidence of epistemic agency in four areas—epistemic identity and epistemic roles (Taylor & Brand, 2021; Taylor,

2022), how students and teachers respond to assignments (Odden et al., 2021; Zhang et al., 2022; Gonzalez-Howard et al, 2024), how students engage with their peers during classroom work (Shellinger et al., 2022; Murphy et al., 2023), and engagement in the co-creation of classroom instruction between the teacher and students (Cherbow, 2023).

Researchers who operationalize epistemic agency as epistemic identity and epistemic roles or as co-creation of classroom instruction pair their analysis of these variables with additional analysis of participants' discourse and thinking moves. These two dimensions in tandem—the internal identity and roles and the external indicators of thinking—result in a fairly good match between the complexity of epistemic agency in theory and the operationalization of epistemic agency in practice. For example, Dyer et al. (2021) define epistemic agency as the ability of students and their peers to position themselves as legitimate knowers in collaborative math activities, and in analysis of interaction and discourse in a math classroom, they parse out the ways that the students are positioning their peers and themselves as knowers, actors, explorers, and investigators. In Niemenin et al. (2025), authors define epistemic agency as students' capacity to take responsibility for their learning by producing, evaluating and transforming knowledge. Through analysis of student portfolios, reflections, and interviews, they examine how students act as and perceive themselves as active learners, users and evaluators of knowledge, and as contributors to society through their work. Cherbow (2023) presents a case study which examines the ways in which a middle school teacher engages instructional improvisation to make space for students to co-create the instructional opportunities in the classroom. He defines epistemic agency as the collective responsibility of students to shape their own scientific understanding within the classroom, and he operationalizes epistemic agency by

analyzing the drivers of instructional content in the classroom, the building of collaborative knowledge objects like a driving questions board and an idea board, and student contributions to knowledge. While these studies operationalize epistemic agency in a way that simplifies and reduces the definitions they pose to observable and measurable evidence, the evidence is a good indicator of whether the subjects experience epistemic agency because it goes beyond how and what students are thinking and highlights student intentions, motivations, and sense of ownership of the knowledge building processes.

However, researchers who use student responses on assignments or student interactions during group assignments to determine the quality and presence of epistemic agency often adopt an approach that goes beyond simplification and begins to confound epistemic agency with epistemic cognition in collaborative contexts. The difference is this—collaborative epistemic cognition examines how groups handle epistemic tasks while epistemic agency combines the question of how groups handle epistemic tasks with questions about intention, volition, motivation, identity, and opportunity—all situated within a greater social and ecological perspective. Many studies fall into this pattern of theorizing about epistemic agency but operationalizing the study of epistemic cognition. In Lee et al.'s (2020) analysis of student discourse in a community forum over the course of their study, they determine that student communication with lower levels of epistemic complexity are indicative of less epistemic agency while higher levels of epistemic complexity indicate more epistemic agency. In Odden et al. (2021) students' computational essays are analyzed for signs of control, indicated by student driven revisions to the computational essays, and for signs of responsibility, indicated by students' justification of their choices. These indicators of control and responsibility are taken as

evidence of epistemic agency. Akgun & Sharma (2023) analyze video-recorded group interactions and determine the presence of epistemic agency by looking at observable behaviors that are indicative of idea generation and collaborative planning.

Another trend in the educational psychology literature on epistemic agency during this period is that researchers continue to define epistemic agency in positively normative ways. In most studies, researchers conspicuously neglect to mention any epistemically undesirable behaviors. However, in some cases, authors communicate that undesirable behaviors indicate that students are expressing *less* epistemic agency than when they engage epistemically desirable behaviors (Lee et al., 2020; Cheune, 2022; Akgun & Sharma, 2023)

Epistemic agency in epistemology literature 2020-2025

Within the epistemology literature, scholarly publications between the years 2020 and 2025 fall heavily within the camp of social epistemology, meaning that the authors assume knowing and knowledge creation to be socially embedded and relational (Goldman, 2011). The literature that I read can be bucketed into two topical themes. The vast majority fall into the category of analysis of epistemic context on epistemic agency. Within this group of contextually analytical pieces, authors are split on how they assign responsibility for epistemic rupture, reform, and repair. A smaller group within the literature analyzes disciplinary approaches to epistemic agency and epistemology, proposing updated frameworks for research and analysis.

These epistemologists who published analytical pieces on epistemic context and its impact on epistemic agency adopted various approaches to their analysis. Some authors put forth

arguments diagnosing and characterizing various types of epistemic injustice such as epistemic meta injustice (Catala, 2020) in which various types of knowing and knowledge expression are discounted in favor of verbal knowledge expression or explanatory injustice (Mitova, 2020) where knowers are denied rational control of their own thinking because others apply dismissive or stereotypical explanations to their thoughts. Some focused on the outcomes of various forms of epistemic injustice, making arguments that marginalized groups experience epistemic paralysis, feeling too shutdown to continue speaking up (Agra, 2020) or epistemic defanging, where activist voices are sneakily included within critical conversations but stripped of power (Medina, 2022). In a third category of response, epistemologists analyzed the impact of contextual forces on epistemic agency, looking at education (Nikolaidis, 2023), the attention economy (Smith & Archer, 2020), the internet (Gunn & Lynch, 2021), social media (Mattioni, 2024), fake news (Anderou, 2023) and generative AI technology (Coekelbergh, 2025). These authors argue that in the face of these contemporary contextual elements that have the power to both amplify and strip our epistemic agency, we, as individual agents, must be thoughtful and critical consumers. Moreover, they call for the producers of information based technologies to be transparent in how they design their algorithms so that consumers can be better informed about how to preserve their agency.

In this third category of response, there was contingent of epistemologists arguing that the responsibility for the diminishment of epistemic agency in the face of these contextual factors fell upon the structures themselves—our education systems, our digital information infrastructures, our epistemic norms. In the face of structural barriers, individual agents can enhance their agency through careful reasoning and conscientious consumption, but because the

issue is structural in nature, the solution would necessarily be structural as well. Similarly, other epistemologists, while not explicitly naming epistemic harm as structural, called for top down reforms—shifts in policy and epistemic practice from those in positions of authority (Brick, 2020; Catala, 2020; Anderson, 2021; Lackey, 2022).

Other epistemologists called for a bottom up resistance as a counterbalance to the systematic injustices perpetuated by epistemic norms. They urge collective grassroots strategies that allow marginalized and oppressed communities to reclaim their agency such as building epistemic spaces for themselves to get around the harms done by sneaky inclusions (Medina, 2022) or paralyzing exclusions (Agra, 2020) or explicitly calling out epistemic oppression and oppressors (Pohlhaus, 2020). These strategies of epistemic resistance call for collective pushback within communities of the epistemically disenfranchised (Medina, 2021) as opposed to the individual empowerment suggested by the epistemologists calling for structural reforms.

Another category of epistemology literature that I encountered dealt with the disciplinary and theoretical approaches to examining epistemic agency. All of the epistemologists in this category advocated for adopting a more socialized and ecological approach to the study of epistemic agency and epistemology. Miracchi argues that classical approaches to epistemology concerned with truth and knowledge are complementary to social approaches to epistemology concerned with real world issues like bias and injustice (2021). She advocates for integrating the two. Toole argues that standpoint epistemology, the idea that your personal history and identity impact how you know and how you are seen as a knower, ought to be more central to the study of epistemology (2022), and Amico Korby, Harrell, and Danks (2024) advocate for a more

ecological and environmental perspective for epistemology. Two author groups also promote modernizing and socializing the study of virtue epistemology. Alfano, Klein, and DeRidder (2022) along with Jarczewski and Riggs (2024) argue for contextualizing virtue epistemology in modern issues (Alfano et al., 2022) and for framing the exercise of virtue epistemology as relational and collaborative (Jarczewski and Riggs, 2024).

Within the epistemological literature within this period, especially in contrast to the educational psychology literature, there is a remarkable degree of theoretical consistency with which the authors conceptualize epistemic agency. Most view epistemic agency as an individual's capacity to seek, use and share knowledge. However, this capacity is relational and enabled and scaffolded by identity or social structures like epistemic norms, power hierarchies, educational structures, or technological and information infrastructure.

Methods update

When I began in 2021, I saw this project as the beginning steps of an instrument development process—conceptualizing the construct and identifying behaviors underlying the construct (Onwuegbuzie et al., 2010). I saw some deficits in the conceptualization of epistemic agency within education psychology research, and I wanted to bring epistemologists and educational psychologists together in conversation in an effort to enrich the concept of epistemic agency and glean the beginnings of a more comprehensive and cohesive understanding of epistemic agency. In the beginning, my research was guided by the following three research questions. First, how do epistemologists and educational psychologists define epistemic agency?

Second, what are the dimensions of epistemic agency? Third, what behaviors and cognitions underlie the dimensions of epistemic agency?

In the beginning, my chief complaint with the way that we were thinking about epistemic agency in educational psychology was that it insufficiently accounted for the degree and complexity of how embedded our epistemic agency is in the surrounding epistemic context. I hoped that the understanding of epistemic agency in educational psychology would benefit from the richer conceptions of epistemic agency from epistemology. I also had an inkling from the start that the core of my complaint was that I took issue with the framing of epistemic agency as something that was positively normative. As Aaron put it, "we tend to define what we want to see, right?" and educational psychologists were defining epistemic agency as behaviors and cognitions such as building, evaluating, and using knowledge (Tan et al., 2022). Moreover, they were framing epistemic agency in exclusively positive terms, as an emergent phenomenon that we *want* to see in students (Akgun & Sharma, 2023). But the positively normative conception of epistemic agency made it difficult to account for the types of behaviors and cognitions indicative of epistemic agency that we don't want to see such as refusing to engage in instruction or willfully ignoring evidence when drawing conclusions.

As I worked to analyze the first two focus groups, the core emphasis for the study began to shift. It became simultaneously more humble and more ambitious. Rather than attempting to conceptualize and identify behaviors underlying epistemic agency, I began to see the objective of this study as that of bringing together two disciplines in conversation about epistemic agency to ask and answer questions about epistemic agency. I no longer saw myself working towards a

well-articulated construct definition but rather a set of ideas, questions, and thoughts about epistemic agency and further avenues for study. I wanted, in particular, a descriptive agent-centered framework of epistemic agency that not only captures the wide-ranging varieties of agency but also explicates the situated nature of its enactment and aligns its manifestations with the normative standards operative within that context.

Going into the fourth wave of this study, the cross-disciplinary focus group, I generated an alternate set of questions to reflect the shift in my research objective and to guide the rest of the study. These questions were:

1. What are the driving questions and concerns about epistemic agency that the epistemologists and educational psychologists in this study find most important?
2. How do these questions and concerns shape the requirements for a robust theory of epistemic agency?

Fourth wave - Cross disciplinary focus group results

I was able to bring the some of the original group of epistemologists and educational psychologists together in the fall of 2025. I sent emails to the participants who joined the study for the first two focus groups, and five participants were able to return for this third focus group. Three of them were epistemologists—Will, Holly, and Camilla. Two of them were educational psychologists—Ned and Henry. The focus group was conducted over Zoom.

Before bringing the two groups together, I conducted a comparative analysis of the completed analysis of the first, second and third waves of data, examining patterns of convergence and divergence between them and compiled the results into a ten minute presentation that I gave at the start of the focus group, which I will detail below.

In the presentation, I gave overviews of the epistemology focus group, the educational psychology focus group, and tentatively offered some conclusions that I drew from my analysis of the two. At the time, I did not feel that the touchback interviews had much to add to the analysis of the first two focus groups, and I chose not to include those in my presentation.

My overview of the epistemology focus group included the following highlights from my analysis. First, epistemologists believe that epistemic agency is social and ecological. Second, classroom epistemic contexts can both promote and hinder student epistemic agency, but epistemologists expressed a particular concern about classroom norms that encourage compliance. Third, epistemologists debated whether it is better to think of epistemic agency as an exercise or as a capacity? They expressed that there were measurement implications to this

distinction. Fourth, epistemologists used epistemic processes and outcomes to assess whether manifestations of epistemic agency were considered apt or in-apt. However, they used two sets of criteria in their assessments—epistemic criteria and social criteria.

My overview of the educational psychology focus group included the following highlights from my analysis. First, like the epistemologists, the educational psychologists emphasized that epistemic agency is interactional and social. Second, educational psychologists raised the question of how we ought to balance the normative and descriptive aspects of epistemic agency with a note that the balance between the normative and descriptive aspects may be related to the balance between the individual/collective and reliability/responsibility aspects of epistemic agency. Third, in their discussion, the educational psychologists generated a throughline of epistemic goals, suggesting that the goals for building epistemic agency in students were to help them become better thinkers, decision makers, and democratic citizens. Moreover, they suggested that epistemic disengagement may be driven by a misalignment of epistemic goals and that epistemic agency can be framed as a means to a goal rather than the goal itself.

Much of the discussion protocol and subsequent discussion within the focus group arose as extensions of my analysis of the first three waves of this study. Rather than focus on broader conceptual definitions of epistemic agency, I chose to emphasize areas of uncertainty and tension that arose in the first three waves of the study. Additionally, I wanted to probe participants' thoughts about the positively normative definition of epistemic agency used in educational psychology research.

Unlike the first two focus groups where the participants all knew each other, the participants from the epistemology focus group and the participants from the educational psychology focus group were not familiar with one another. I began the focus group by asking participants to introduce themselves and the questions they were thinking about in their work or in their life. The focus group began with a tone that was cordial and gradually became more familiar and warm as the discussion continued.

Analysis of the cross-disciplinary focus group yielded three major themes: framing epistemic agency, building student epistemic agency, and epistemic context.

Framing Epistemic Agency

This focus group started with a presentation of data and insights from the previous two focus groups and much of the discussion protocol and subsequent discussion arose as extensions of the content of that presentation, which I have segmented into six categories.

The first category of content synthesized from the previous two focus groups is normative versus descriptive accounts of epistemic agency. This category involves the normative nature of many of the definitions of epistemic agency in use within education research as well as the idea that the exercise of epistemic agency at the individual level may be better suited for descriptive accounts than the exercise of epistemic agency at the collective level.

The second category of content is an account of how the scholars discussed what made manifestations of epistemic agency either desirable or undesirable — that the criteria for assessment was based on the accuracy of epistemic outcomes, the reliability of epistemic

processes, or the degree to which the outcomes and processes subverted or adhered to social epistemic norms.

The third category involves thoughts on the measurement of epistemic agency, that how you choose to measure epistemic agency is going to be dependent on the unit of analysis. The fourth category is the social nature of epistemic agency. Participants widely agreed that while epistemic agency is generally thought of as something that occurs on an individual level, it is also something that never occurs in isolation. Fifth is a laying out of the tensions within epistemic agency that emerged from the first two focus group discussions: the tensions between epistemic agency as a capacity or an exercise, as individual or collective, as centered on reliability or responsibility, and as individual or collective.

Finally, the sixth point is a through line of discussion about epistemic goals that arose out of the educational psychology focus group, which really highlighted the importance of epistemic goals when talking about epistemic agency. First, the psychologists discussed how epistemic disengagement may arise out of a perceived misalignment of epistemic goals. Second, was a reframing of epistemic agency as the means to an epistemic goal rather than as the goal itself.

Out of this theme of framing epistemic agency has emerged two subthemes. The first subtheme dealt with approaches defining epistemic agency wherein participants discussed different decision points for ways to define the construct and emphasized the idea that these aspects of the construct of epistemic agency are aspects of the construct that ought to be *chosen* with intention. The second subtheme dealt with how epistemic agency works in the world. For this second subtheme, participants discussed aspects of epistemic agency situated in real-world

contexts as they saw them. They noted that some of these aspects highlighted focal points that need to be chosen as well, for example, whether to focus on individual vs. collective agency in the process of defining the construct.

Approaches to defining epistemic agency. There are four topics that emerged under this subtheme: 1) normativity vs. descriptiveness in defining epistemic agency, 2) ideal/ non-ideal approaches to conceptualizing epistemic agency, 3) epistemic agency as a means to a goal or as the goal itself, and 4) determination of grain size and unit of analysis.

Normativity versus descriptiveness. The first topic, normativity versus descriptiveness in defining epistemic agency arose out of the same topic in my opening presentation where I discussed the problematic nature of many definitions of epistemic agency in educational psychology, which tend to define epistemic agency as the positively normative manifestation of the construct. There, I also expressed a desire to arrive at a definition that would offer an opportunity to capture a more descriptive account of epistemic agency rather than a normative one. In response, Camilla said that epistemic agency was unavoidably normative, "give me a non-normative theory of epistemic agency,' my answer is, 'I can't.'" She noted that it was best to be selective about the norms at play, that the norms ought "not to be so restrictive" that they don't allow a student to "have ends of her own." Additionally, the norms need not be moral norms but could instead be epistemic norms or "prudential norms", but in her mind, there was not a way to consider epistemic agency without also considering norms.

Holly offered a gently dissenting opinion, first noting that the epistemologist Ernest Sosa had made efforts to create an account of epistemic agency that was more descriptive in nature,

then stating that while she agreed that norms were unavoidable, she understood "why it is that you're trying to aim for an account that might be more neutral and descriptive, and then ask, like, what would make it...right, what would make the agency good or responsible or positive in some way versus what would make it negative or bad in some other way." This is a perspective from Holly that makes sense given her work contextualizing epistemic vices and virtues to argue that depending on the context, the norms that traditionally determine which behaviors and dispositions count as virtues and which count as vices can be flipped on their heads.

Ideal and non-ideal approaches to conceptualizing epistemic agency. The next topic in discussing approaches to defining epistemic agency is a duality of approaches that Will referred to as ideal theory and non-ideal theory. He talks about two ways to go about arriving at a definition. The first is simpler and straightforward. He says, "you might try and develop a...a general theory of epistemic agency and then try to devise, uh, materials and...and practices to inculcate that in students. And that's a kind of, I think, kind of an ideal theory," but he also suggests that this ideal theory approach ignores many of the complexities of epistemic agency itself and of fostering epistemic agency in the classroom. Implicit in ideal theory is an assumption that arriving at the right definition and determining the right instructional practices are all that are required to improve students' epistemic agency. Non-ideal theory, on the other hand, assumes that "probably lots of people are going to be hampered in their ability to, you know, achieve certain degrees of epistemic agency." Under this assumption, the right definition matters less than building a loose framework with which to explore "particularly acute challenges in the classroom."

Holly supported taking the non-ideal route, saying that epistemic agency was exceptionally complex and "getting an overarching view might be very hard."

Epistemic agency as the means to a goal or the goal itself. The third topic in discussing approaches to defining epistemic agency is a response to the framing of epistemic agency in my opening presentation as the means to a goal rather than the goal itself. Camilla responded that while epistemic agency certainly could be considered the means through which to achieve a goal, it should also be considered the goal itself. This was a perspective that was echoed by two other participants, highlighting the point that it was important not to lose sight of the fact that having and building epistemic agency is a consequential goal in and of itself. Holly said that, "the need to think of achieving agency as a goal gets thrown into relief in non-ideal epistemic contexts," particularly for marginalized populations. Educators must not take for granted that students have much epistemic agency to begin with, much less "virtuous or good" epistemic agency.

What is the grain size? The fourth topic in discussing approaches to defining epistemic agency echoes a brief suggestion from Aaron in the educational psychology focus group to define the unit of analysis. Camilla repeated Aaron's suggestion and extended it by saying that this work may require not only selecting a unit of analysis, but considering many units of analysis, saying, "you might also have to ask about what other units, you know? The...the, uh, fourth grade, the school, the teacher, the school system, um, all of these may have to have a certain type of agency as well." Henry seconded this idea, highlighting the need to be sensitive to these potential differences in epistemic agency at different grain sizes if I am to emphasize an ecological view of epistemic agency. He said, "And I'm not sure you can

completely divorce yourself to the...you can say the individual student or go to that student level in an educational context…But I think when we think about, like, an ecological frame as you've done with, you know, that...that the ecol...the ecology is so important, that classroom ecology is really important. Um, the school ecology is really important, um, for...for interacting here."

In this discussion, participants also extended the subject of unit of analysis by highlighting the possibility that different types of epistemic agency may be activated at different grain sizes. Henry suggested thinking, "about grain size, um, and...and […]where these things might be activated at a particular grain size as you go up in scale." In saying this, Henry was referring to the tensions about epistemic agency that I had identified in the participants' previous discussions: reliability and responsibility, autonomy and dependency, individual agency and collective agency, and agency as a capacity or as an exercise. He was highlighting that there would be nuance in how these tensions played out at different grain sizes. Aaron had suggested something similar in the educational psychology focus group, saying that focus on reliability in the exercise of epistemic agency may be more salient at the individual level whereas focus on responsibility in the exercise of epistemic agency may be more salient at a collective level.

Holly brought up the need to consider the ways in which epistemic agency at different units or "grain sizes" impact the epistemic agency of students. She questioned whether institutions, classrooms, or teachers needed to be capable of the type of epistemic agency that they were trying to foster in students in order to be successful in teaching students to act agentically in epistemically reliable and responsible ways.

`A common thread in all of the topics within this subtheme is that participants voice preferences for one approach or another, but don't suggest that a single approach is the right approach. The tone they most often adopt is one of a coach or a guide, suggesting that these are choices that need to be made in defining or refining the construct rather than choices that are either right or wrong.

How epistemic agency works in the world. The second subtheme that emerged under the Framing Epistemic Agency theme is titled "How epistemic agency works in the world," and the topics that fall under this subtheme have to do with participants' thoughts on what goes on when epistemic agency is engaged. As with the first subtheme "Approaches to defining epistemic agency," these topics arose largely in response to my opening presentation, and many of these topics run parallel to the topics of the "Approaches" subtheme.

The topics in "How epistemic agency works in the world" are: 1) tensions in epistemic agency, 2) individual vs. collective agency, and 3) social nature of epistemic agency, which is further bifurcated into two topics: a) how environments impact epistemic agency and b) epistemic agency and self-regulation.

Tensions in epistemic agency. The first topic in this subtheme, tensions in epistemic agency, involves participants responses to this topic in my opening presentation. I had said that these tensions of individual vs. collective agency, reliability vs. responsibility, dependency vs. autonomy, and exercise vs. capacity were tensions that arose out of the discussions in the initial two focus groups. Will opened this discussion by saying that he didn't really see these as tensions at all. He said, "you can either dissolve, uh, or just fairly easily

incorporate all the sides of your versuses...versuseses here." This was in part because of advancements in the literature concerning these topics. In particular, he said that the thinking about autonomy versus dependency in the field of epistemology had evolved to say, "'Look, that's just kind of a... We were just wrong about that...those things being particularly in tension. You've just got to find... It's just a balance, right?'" He had similar thoughts about reliability versus responsibility, that in practice, the two needed to be in balance.

Additionally, the ontological tension between epistemic agency as an exercise or a capacity was also a non-issue. "You can't exercise what you don't have a capacity for." (Will). Epistemic agency is both an exercise and a capacity. The question here is a matter of when each concept is useful to consider. "Sometimes you want to talk about it as a capacity, sometimes as something they've exercised" (Will).

The question about exercise and capacity, strays back to the previous "approaches" subtheme. In talking about epistemic agency as an exercise or a capacity, Will touches both on how epistemic agency works as well as approaches to defining epistemic agency because whether epistemic agency ought to be studied as an exercise or a capacity is a question with definitional and measurement relevance.

Individual vs. collective agency. I set aside the tension between individual and collective agency as its own topic within the sub-theme of how epistemic agency works because it captured so much of the participants' attention. Will noted that out of the four tensions that I had talked about, the only tension that seemed difficult to reconcile was that of individual vs. collective agency. Both Holly and Camilla agreed. The questions that participants touched on

here were 1) Who has agency? Individuals, collectives, or both? 2) How does the agency that a collective holds impact the agency of an individual within that collective? 3) Are there conflicts between collective and individual agency?

Participants expressed that they believe collectives have epistemic agency. Camilla illustrated collective agency with two examples. First, the American public takes the recommendations of the CDC seriously, suggesting that we collectively recognize the agency of organizations to disseminate knowledge and make recommendations. Second, Harvard University, earlier in 2025, was able to push back against the attempts of the Trump Administration to control the decision making of the university, that this was not a matter of individuals acting in tandem but of the institution itself, suggesting once again the exercise of agency of a collective.

Participants did not feel the need to explicitly discuss evidence of individual epistemic agency. However, their belief in individual epistemic agency was evident as much of the discussion centered around their belief in the importance of the agency of individuals as well as the importance of building epistemic agency in students. This question was a reiteration of a previous discussion in the epistemology focus group but with additional examples.

For the second question—whether an instructor or an educational institution needs to have a particular type of epistemic agency in order to build that type of agency in students—Holly said that she didn't believe they do. "Teachers can appeal to exemplars." They can lean on the epistemic virtues of others to teach their students and perhaps educational institutions could do the same.

For the third question of conflicts that rise up when you consider the intersection between the agency of educational institutions and the agency of individual students—Will said that, in the context of American public education in particular, there is, perhaps, a conflict of interest in how public schools seek to serve the needs of the student and the needs of the collective because those needs may sometimes diverge and the schools must make decisions about how best to fulfill their obligations to both.

Social nature of epistemic agency. The social nature of epistemic agency is a subtheme that carried through both the epistemology and educational psychology focus groups. Some topics from previous discussions were repeated here—that individuals and the world "jointly influence each other," (Camilla) and that there is an interplay of epistemic autonomy and epistemic dependence on the community around the individual. Some topics in this discussion were extensions of previous topics. For example, in this and in previous discussions, participants addressed the ways in which environments can impact the expression of epistemic agency. However, in previous discussions, participants gave examples of how material environments, instructional practices, internal contexts, and epistemic norms can affect epistemic agency.

In this focus group, participants noted the impact that environments can have on the epistemic goals that students set for themselves. In the context of high stakes college admissions, "failure may not be an option," (Camilla) and students may be more epistemically risk adverse. Students' socioeconomic status may foreclose upon options for study and impact "the lines of inquiry" (Camilla) they see as options for themselves. For example, a student who has to

prioritize earning income to meet their basic needs may not have the luxury of studying or writing poetry.

Participants also discussed how environments can foreclose on effective epistemic pathways to reliable and responsible expression thereby redefining the norms of assessment for the expression of epistemic agency—how if an epistemic agent consistently fails to achieve a reliable epistemic end, we must consider the possibility that the difficulty lies not with the agent or the epistemic processes they have chosen but may be with the environment itself. As Holly says, “Well, if we're in environments where we're ineffective," as Will was just suggesting, “right, well, then that would show that our environments are...are impeding our agency."

New to the subtheme of the social nature of epistemic agency was a mention of how poorly the concept of epistemic communities was documented in the field of epistemology. Will noted that trying to get a handle on what epistemologists mean when they talk about epistemic community was a big part of his work at the moment because the “epistemologists have been throwing around this term 'epistemic community' for a while because we didn't know what we were talking about, but we knew that we were talking about something and we wanted to point at it,” but now, he thought it was time to get a more precise array of notions through which to understand epistemic community.

While the need for a better definition of epistemic communities is not exactly something that speaks directly to the social nature of epistemic agency, the fact that Will opened up this topic here in a discussion about epistemic agency suggests that he sees them as very closely linked—that the lack of a precise, instrumental understanding of epistemic community is

standing in the way of a better understanding of epistemic agency itself, and this link does speak to the social nature of epistemic agency.

Also new to the framing of epistemic agency and the social nature of epistemic agency is a comparison made by Ned to self-regulation. He says that scholars of self-regulation talk about each moment of self-regulation as "dynamically manifest" between the student's skills and capacities, their lived experiences and socio-cultural-historical context and the "constraints, affordances of the context." Thinking in this way, self-regulation is understood as inherently social and making this analogy between the two suggests that epistemic agency is as well. Ned also notes that "In the self-regulation field, we talk about how we want to give students knowledge, skills, dispositions, and values that increase their capacity or likelihood for self-regulation," suggesting a similar approach to thinking about how to increase epistemic agency in students.

Building Student Epistemic Agency

The second theme to emerge from the data in the final cross-disciplinary focus group was that of "Building Student Epistemic Agency." This conversation differed slightly in tone from previous discussions, which focused more on elements of the classroom and school context that impacted student epistemic agency or what teachers were and weren't doing that had effects on student epistemic agency.

This later conversation seemed to focus more directly on participants' curiosities and points of interest on how to build epistemic agency with a few reprisals from previous conversations about what teachers ought to do in the classroom to foster student agency.

There are three sub-themes within this theme of "Building Student Epistemic Agency," which are: 1) Ways to build student epistemic agency in the classroom, 2) Goals for student epistemic agency, 3) Should epistemic agency be taught directly or indirectly?

Ways to build student epistemic agency in the classroom. The first sub-theme within the "Building Student Epistemic Agency" theme is centered on ways to build student epistemic agency in the classroom, and there were three topics of discussion that fell under this sub-theme: 1) autonomy supportive practices in the classroom, 2) differentiating for students' individual epistemic temperaments, 3) teaching content within a discipline. The first two are reprisals from previous focus groups while the third is a unique contribution.

For the first topic, participants touched briefly on the idea that autonomy supportive practices in and out of the classroom help to develop epistemic agency in students and children. Camilla made the point that the very act of granting a child autonomy of choice in something as simple as "the color socks he wears" is supportive of epistemic agency. Then, in the classroom, Camilla says the instructional and assessment moves that teachers can take to avoid what Paolo Freire called "the banking model" where "you, you know, basically, effectively just to get the kids to parrot back, whatever you said" are supportive of epistemic agency. The ways that teachers can communicate information to invite students to think a little further than what they

are told or the ways that teachers can invite students to tweak their work a little further than what they were doing before are also supportive of epistemic agency.

Will re-emphasized that what students are going to need in order to develop appropriate manifestations of epistemic agency is going to vary according to the epistemic temperament of the student. He said that he appreciated the analogy that Ned made to self-regulation because like his view of epistemic agency, the way that Ned described self-regulation was highly context-dependent and individual. Students are going to need to develop a balance of the right approaches to their environment. Some students are going to lean too heavily on skepticism while others too readily adopt the testimony of others as truth. Helping students develop this balance is going to require an understanding of their existing tendencies and adapting instructional practices to their needs.

Henry and Camilla opened a brief foray into a previously undiscussed avenue for building students' epistemic agency. As Camilla said, "one of the ways that agency develops…is just by education in a particular field. So you can think freely as a chemist if you know a fair bit of chemistry," whereas a lack of domain knowledge would hinder agency for work in that field. Camilla noted that developing student agency was not just going to entail helping them do anything and everything with agency but also "helping students to be an agent with regards to that material." Henry echoed this thought, saying as educators, "we have to think about agent of what?" They both noted that the same content, taught through different disciplinary lenses was going to have different instrumental value for learners. Students at a military college learning about the history of European wars are likely to focus on different features of the content than

students learning about the history of European wars at a liberal arts college. Through their learning, those students will develop divergent types of agency. This connects back to Henry's earlier discussion of his work differentiating learning agency from disciplinary agency. While the discussion in previous focus groups did not discern between the developing of students' learning and disciplinary agency, this topic speaks specifically to the development of disciplinary agency.

Should epistemic agency be taught directly or indirectly? Will asked of the group, "especially [to the] educational theorists in...in the room," whether they felt that epistemic agency ought to be taught directly or indirectly. There was broad agreement among the participants that epistemic agency ought to be taught indirectly. Will made a comment that he said was "a caricature" of what it might look like to teach epistemic agency directly, saying, "Okay, students, today, let us [laughs] develop your agency." Camilla said she couldn't "even imagine what the class on epistemic agency, per se, would be." Ned agreed, saying, "I don't think epistemic agency can be directly taught much more than saying, 'This is a desirable thing that we're going to try to help you gain.'" And Holly offered a specific suggestion for what it might look like to teach epistemic agency, albeit indirectly—to offer students structured opportunities to develop epistemic virtues—which she noted are most always inculcated indirectly as well.

One exception to this indirect teaching of epistemic virtue and character was Camilla's expressed desire to explicitly establish an environment that allowed for mistake making and playful experimentation with ideas, which is to say that students would be told to make mistakes and to push back against authority and norms. This led to a discussion of the importance of epistemic environments that were welcoming of mistakes and the importance of the mistakes

themselves to epistemic agency. Camilla says, “I would argue that students don't have agency in context where they feel like they can't make mistakes.” Ned agreed, saying, “I think students need the agency to iterate and be incorrect.”

However, what the participants talk about when they talk about mistakes is more complex than simply having the freedom to be wrong. Camilla says, “you don’t want [students] to think that one view is as good as another.” Maybe having freedom to make mistakes does allow for epistemic agency, but it doesn’t help students develop appropriate epistemic responses. Students have to have the opportunity to “learn from their mistakes,” to say, “ ‘Where did I go wrong? How did I go wrong? What was I misunderstanding?’” Additionally, students must “understand the disciplinary norms and kind of the norms of knowledge” in order to push against and challenge those norms.

Epistemic Context

The third theme to emerge from the data in the final cross-disciplinary focus group was that of “Epistemic context.” This is a theme that also came out of the epistemology focus group, yielding some discussion of the components of an epistemic environment—the material environment; socio-epistemic structures such as epistemic norms, epistemic power structures, epistemic communities; and internal epistemic context such as epistemic temperaments, epistemic position and identity, epistemic beliefs, and self-efficacy.

In the educational psychology focus group, an analogous theme did not emerge. However, discussion of school and classroom oriented epistemic context is found in the theme of

"Epistemic Agency in Schools" where participants explore elements of the school context that impact the development of epistemic agency such as structures of power and privilege, instructional and assessment practices that encourage specific intellectual products and processes, and practices in different academic domains.

In this cross-disciplinary focus group, the theme of "Epistemic context," repeats some mention of internal epistemic context from the epistemology focus group, but also explores some new territory: the impact of epistemic context on the setting of epistemic goals, a question of whether institutions and instructors need to have the same kinds of epistemic qualities that they seek to foster in their students, and a nuanced discussion of the ways environments make the epistemic agency that develops or occurs within them.

The first topic here is a discussion of the impact of epistemic context on epistemic goals. This was a topic of discussion that grew out of the conversation about whether epistemic agency ought to be conceptualized as a goal itself or as the means to a goal. The answer to that question, Holly suggested, was partially influenced by epistemic context as well because students in marginalized positions, who were less likely to have high levels of epistemic agency, were more likely to benefit from someone on their side who saw the building up of their epistemic agency as *the* goal. Camilla wanted to highlight ways in which students' economic contexts can impact their epistemic goals, particularly in post-secondary education because of the financial cost of a university education. Students who are "economically constrained" may not be able to "afford to major in poetry because you're going to graduate with a big debt," and so "you're not going to be able to think like a poet." Additionally, the assessment norms and barriers to entry to an

educational space can constrain the creation of epistemic goals. Secondary students working to gain entry into elite colleges "cannot afford to fail," and in a system of assessment that does not reward epistemic playfulness or epistemic risk taking, those students are likely to avoid riskier epistemic goals that may result in error or mistakes. Holly points out that "there's a connection between agency and the goals we set for ourselves, too, or there can be," suggesting that constraints on our agency results in constrains on our goals and constrained goals can result in constrained agency.

For the second topic—whether an instructor or an educational institution needs to have a particular type of epistemic agency in order to build that type of agency in students—Holly said that she didn't believe they do, but first, there was the matter of figuring out what type of epistemic agency institutions sought to build in their students. She said that educational institutions often tend to be "flawed and conservative," and avoid "pushing boundaries," but that they also often have "highfalutin'" mission statements like, "Developing the next generation of scholars," and while it was possible that they've subscribed to the banking method of education, she suspects that what they have in mind is "something more like agency." Will points out, as previously noted in the section on "individual vs. collective agency," that educational institutions tend to have competing commitments to their students and to "the public good," and balancing those commitments can be tricky. Regardless of the goals that institutions hold for their students, Holly suggested that the institutions themselves do not need to manifest the epistemic ideals they seek to instill in their students because the institutions, along with the teachers within them, "can appeal to exemplars." They can lean on the epistemic virtues of others to teach their students.

Third is a more nuanced discussion of how environments shape or make the epistemic agency that occurs within those environments. Previously, participants had discussed the ways in which socio-epistemic context can foster or hinder development or expression of epistemic agency. However, in this focus group, Holly led a discussion of whether the enactment of epistemic agency or epistemic virtue is, in part, created by the environment surrounding the agent. She used the example of closed-mindedness and asked whether an epistemic environment that had foreclosed several avenues of knowing or questioning could be constitutive of closed-mindedness of an individual. She also asked whether environments could impact the normative evaluation of an epistemic virtue or epistemic vice. As an example, she referenced open-mindedness in a context that was actively attempting to engage in epistemic oppression and asked whether in that context, open-mindedness to oppressive tactics might be seen as an epistemic vice or at the very least harmful to the epistemic aims and epistemic agency of an individual. The implication here for epistemic agency in schools is that there is a need to carefully evaluate the roles that the school environment plays in shaping students' manifestations of epistemic agency and a need for flexibility in normative evaluation of epistemic agency as well.

Summary of Findings

The group dynamic of this focus group was overall very positive. While the tone was professional and polite at the beginning, participants were joking with each other by the end. Of the excerpts that were coded with ECGG codes, 95 percent were coded as indicative of either

dependency (expressions of reliance or compliance with the group) or pairing (expressions of friendship, support, or intimacy).

However, of the three focus groups, this discussion was the one with the greatest number of fight coded excerpts (expressions of disagreement, criticism, or argumentativeness). There were eight fight coded excerpts in this focus group. Notably, seven of the eight expressions of disagreement or criticism were aimed at my choice of phrasing or topics in the discussion protocol. Five of those seven came from Will as he addressed the tensions that I asked about (individual vs. collective agency, reliability vs. responsibility, autonomy vs. dependence, and exercise vs. capacity), arguing that most of these were not truly tensions at all. Autonomy vs dependence had previously been considered to have been in tension, but evolution of the literature in recent years had generally resolved that tension. Reliability versus responsibility and exercise versus capacity were two pairs that perpetually coexisted. Camilla disagreed with the idea that reliability and responsibility were always in coexistence (the source of the eighth fight coded excerpt). Camilla also addressed the tensions I presented, saying "you shouldn't do this either/or stuff." She additionally expressed disagreement with the idea of epistemic agency as a means to a goal rather than the goal itself, saying that it was both.

The thematic analysis of this focus group yielded three primary themes: framing epistemic agency, epistemic context, and building student epistemic agency. The first theme, framing epistemic agency, was the largest, containing the most excerpts. This theme saw participants exploring definitional approaches to epistemic agency like exploring the feasibility and merits of framing a normative or a descriptive definition of epistemic agency, adopting an

ideal vs. non-ideal approach to defining epistemic agency, framing epistemic agency as the means to a goal or the goal itself, and determining the grain size or unit of analysis for epistemic agency. Within the theme of framing epistemic agency, participants also explored how epistemic agency works in the world, questioning the tensions I presented with a particular emphasis on the tension between individual and collective agency because that was the tension that was the "most difficult to reconcile" (Will). In the subtheme how epistemic agency works in the world, participants also discussed the social nature of epistemic agency, and explored a comparison between the exercise of epistemic agency to engagement in self-regulation.

The second theme, epistemic context, contained nuanced discussion of how epistemic environments shape epistemic agency, an exploration of how epistemic contexts shape epistemic goals, and discourse about how the goals and epistemic characteristics of teachers and institutions impact students. The third theme, building student epistemic agency, involved discussion of strategies that teachers can use to help students build their epistemic agency, a discussion of what building disciplinary agency looks like, an exploration of whether epistemic agency ought to be taught directly or indirectly, which led to a discussion of the importance of mistake tolerant environments for the development of epistemic agency.

The similarities between the themes gleaned from this focus group and the previous two focus group are notable. In the first two focus groups, there was a theme that dealt with framing the construct of epistemic agency, a theme that involved the intersection of epistemic agency and education, and a third theme that highlighted the disciplinary interests of the group. In this cross-disciplinary focus group, there was a theme that dealt with framing the construct of epistemic

agency, a theme that involved the intersection of epistemic agency and education (building students' epistemic agency), and a third theme—epistemic context.

Table 2

Themes Across the Focus Groups

	Epistemology Focus group	**Educational Psychology focus group**	**Cross Disciplinary focus group**
Theme 1	Framing the construct	Making sense of the construct	Framing the construct
Theme 2	Epistemic context	Epistemic agency: cognitions, behavior, and affect	Epistemic context
Theme 3	Epistemic agency and education	Epistemic agency in schools	Building student epistemic agency

The way the data clustered in the first two focus groups was not too much of a surprise because the themes largely reflected the structure of the discussion protocol. The protocol probed participants' thoughts about how they would define epistemic agency, the behaviors, cognitions, and affect that underlie epistemic agency, and the way that epistemic agency is impacted by environmental factors. Additionally, the protocol asked participants to focus on epistemic agency in learning contexts, so it isn't a surprise to see that theme of epistemic agency in schools emerged out of discussions of epistemic agency in learning contexts. Likewise, the theme of framing the construct emerged out of discussions of the definitions of epistemic agency, that the

theme of epistemic context emerged out of discussions of environmental factors, that the theme of epistemic behaviors, cognitions, and affect emerged out of discussions of those aspects of epistemic agency.

However, the similar clustering of data in this third focus group is notable because it does not much reflect the structure of the discussion protocol. In the third focus group, I asked participants to consider what a descriptive and agent-centered model of epistemic agency might look like as opposed to the normative and discipline centered conceptions of epistemic agency presently in play in education research. I also asked participants to think through the tensions that I had identified in my analysis of the first two focus groups. The alignment between this discussion protocol and the themes of the third focus group is much less clear than the alignment between protocol and themes in the first two focus groups, which may be indicative of a natural clustering of thought around the topic of epistemic agency in educational contexts.

Overall, the themes of this discussion followed a similar pattern to the analysis of the previous two focus groups, suggesting a pattern of focus that arises out of the subject matter itself. However, this cross-disciplinary focus group offered additional depth and new insights to the previous discussions. For example, there was much greater emphasis placed on possible approaches to creating a model of epistemic agency. Participants were able to dive deeper into questions about the ways epistemic context impacted not just the manifestations of epistemic agency but on specific aspects of epistemic agency like on epistemic goals. Moreover, the theme of building student epistemic agency, which looks at the intersection of epistemic agency and education, looked into additional aspects of how to go about building student epistemic agency

and what types of epistemic agency educators ought to try to develop (learning agency or disciplinary agency?).

Chapter 6 – Discussion, summary, conclusions, implications

Early on, the aim of this study was to facilitate conversation between the two different disciplines of epistemology and educational psychology for the purpose of gaining understanding of epistemic agency and generating a construct definition for epistemic agency that could account for the mechanisms underlying epistemic agency, epistemic context, and both desirable and undesirable manifestations of epistemic agency. I had longer term ambitions for this study to serve as the first steps of an instrument development process to build out an assessment framework for epistemic agency. As the study progressed, the aim shifted so that I no longer sought to arrive at a construct definition for epistemic agency. Rather, the aim of this study became this—to facilitate discourse between epistemologists and educational psychologists so that knowledge from each respective field could complement and enrich the other. The purpose of this discourse was to generate insight and questions to guide the next steps to framing a contextually situated, agent centered, and descriptive model of epistemic agency.

Why the shift

There were a number of insights from the data that emerged in the first three waves of the study that led me to the shift in both my research objective and discussion protocol going into the final cross disciplinary focus group. To begin, insight from the first two focus groups pointed to a complex understanding of epistemic agency which indicated that manifestations of epistemic agency fell on a spectrum between virtue and vice and aptness and in-aptness. Moreover, the epistemologists and educational psychologists addressed the complex contextual embeddedness of epistemic agency and the fact that epistemic agency involved both engaging in reliable

processes to achieve accurate knowledge commitments and in responsible consideration of the epistemic context surrounding the agent. These findings confirmed my belief that the conception of epistemic agency being operationalized in educational psychology research was insufficient to capture the full complexity of epistemic agency. However, they also suggested to me that the research questions that I had formulated to guide my study were also insufficient to capture this emerging picture of epistemic agency.

In addition to this, data from the epistemology focus group and Aaron's touchback correspondence called into question the feasibility of both a tidy construct definition or a traditional assessment framework for epistemic agency. Back in 2021, Camilla warned that epistemic agency was a "hugely big question" and trying to sum it up into a definition may "blind [you] to dimensions you need to pay attention to." Additionally, in our touchback correspondence, Aaron wrote that he "[doesn't] think it makes a lot of sense to measure epistemic agency," first because he felt that epistemic agency was a "feature of a situation rather than of individuals," and if this was the case, it made more sense to figure out "how to characterize the 'shape' of agency for people in that situation," than to try to define epistemic agency for the purpose of creating a measurement tool. I had had a sense of this from the beginning—that the complexity of epistemic agency would be a challenge for measurement and that ontologically, it might be more appropriate to categorize epistemic agency as a complex system rather than a construct (Davis & Sumara, 2006). This idea was strengthened by what I learned and heard from the study participants in the first three phases of the study, and I felt a need to shift the approach that I was taking to the research in order to reflect the idea that epistemic agency ought to be treated as a complex system.

I had also begun to think more seriously about the reasons underpinning the need for a more descriptive framework of epistemic agency. I understood the reasons for the positively normative conceptions of epistemic agency at play in education research. As educators and researchers interested in education, we want to promote positive cognitive and learning outcomes, and therefore, it is tempting to study just those positive outcomes. However, normatively defining epistemic agency not only risks oversimplification but it necessarily centers those with the epistemic power to set epistemic norms and decenters the agents themselves. This is potentially problematic, but also potentially not if those with epistemic authority only act with the best interests of the agent in mind. However, this unrealistically assumes an ideal epistemic environment. In reality, students can encounter educators who imperfectly assess what they need to be successful. Students can also encounter epistemic injustice in oppressive environments where authorities cannot be trusted to guard their best interests. If we want to be able to consider epistemic agency with a lens towards epistemic justice, we have to be able to account for non-ideal epistemic contexts. Hearing Holly speak about her work in normative contextualism strengthened my belief about the need for a descriptive account of epistemic agency. However, I also agree with Camilla who insisted that epistemic agency is inescapably normative. It is important to account for both.

Finally, the discussion of goals from the educational psychology focus group helped me to see epistemic agency in educational psychology research as a goal oriented construct that centers the goals that educators establish for their students. In the educational psychology focus group, Ned and Henry discussed a mismatch of epistemic goals as a driver for epistemic conflict or epistemic disengagement. First, they offered the example of the production and consumption

of journalism. Journalists may see the goal of their work as a mechanism to preserve democracy while news consumers engage with the goal of uncovering facts about current events. Ned suggested that this unspoken discrepancy in the epistemic goals of the news producers and news consumers led to dissatisfaction and disengagement on the part of the consumers. Aaron also suggested that students who are disengaged in the classroom may be students who "wish to work very hard against that normative agentic climate," noting that that sort of agentic behavior sometimes had positive outcomes and sometimes very negative ones.

Recapping the data theme by theme

Framing the construct. The framing of the epistemic agency construct in the epistemologists' and educational psychologists' focus groups revealed many parallels, albeit with subtle differences. I'll address first the epistemology and educational psychology focus groups together. Then separately, I'll recap the cross disciplinary focus group.

For both epistemology and educational psychology groups, three subthemes emerged. Both groups worked to establish a basic understanding of epistemic agency. Epistemologists addressed foundational assertions while educational psychologists shared initial definitions and discussed related concepts. Next the groups explored how epistemic agency operates, offering commentary and insights into its manifestations in practice. Finally, the discussions delved into various approaches to framing epistemic agency. In the epistemology group, this subtheme was titled "how to talk about epistemic agency," while in the educational psychology group, it was labeled "questions about epistemic agency," reflecting a tone marked by inquiries and acknowledgments of how little is empirically known or understood about the construct.

Key highlights from this framing the construct theme across both groups include the following insights. Epistemic agency is inherently interactional, with instances occurring in the dynamic space between the epistemic agent and their context. Additionally, it is fundamentally social and ecological in nature. However, much engagement with epistemic agency also tends to be non-deliberative. Related concepts encompass autonomy, control, responsibility, action, engagement, and self-regulation. Moreover, manifestations of epistemic agency span a spectrum from desirable to undesirable, or apt to inapt, with assessments often based on the accuracy of epistemic outcomes, the reliability and appropriateness of epistemic processes, or the underlying social propriety of the instance within its context.

In the cross-disciplinary focus group, the theme of framing the construct was narrowed and more targeted. Instead of three themes, only two emerged: approaches to defining epistemic agency and how epistemic agency works. The first subtheme, approaches to defining epistemic agency, echoed the themes of how to talk about epistemic agency and questions about epistemic agency in the epistemology and educational psychology focus groups respectively. However, in this cross-disciplinary focus group, the topics were more targeted, focusing almost exclusively on approaches to defining epistemic agency, and notably, participants framed these approaches as choices to be made in the approach to framing epistemic agency. The second subtheme, how epistemic agency works, was largely directed towards the topic of tensions in epistemic agency, prompted by my discussion protocol. However, participants also spent a significant amount of time discussing the social nature of epistemic agency—in particular, they were able to dive into more nuanced perspectives about how epistemic agency is impacted by the environment in

which it manifests as well as the similarities between the constructs of epistemic agency and self regulation.

Key highlights from this theme in the cross-disciplinary group include the following insights. First epistemic agency is grounded in normativity, and it may not be realistic to develop a model without incorporating norms (Camilla, 2025); alternatively, there are advantages to first creating a descriptive account and then addressing norms that distinguish positive from negative agency (Holly, 2025). Participants further noted that certain approaches to framing epistemic agency assume specific environmental conditions. An ideal approach suggests that a fully articulated model suffices as a prerequisite for fostering agency in learners, whereas a non-ideal one recognizes environmental barriers to building learners' epistemic agency and instead advocates for a "good enough" model of epistemic agency to identify acute classroom challenges (Will, 2025). Additionally, epistemic agency ought to be framed as both the goal and the means to epistemic ends, rather than one or the other. Finally, framing a model requires careful selection of the unit of analysis, as this has implications for the type of epistemic agency in question. For instance, the epistemic agency of a group may operate differently than the epistemic agency of an individual.

In summary, across all focus groups, the framing of epistemic agency highlighted its interactive, social, and normative nature, while underscoring the need for flexible approaches that account for environmental and definitional nuances.

Epistemic context. The theme of epistemic context emerged in both the epistemology focus group and the cross-disciplinary focus group, highlighting the role of the epistemic environment in shaping agency.

In the epistemology focus group, participants examined the epistemic context through its external and internal dimensions, as well as the relationships among these elements. As a part of the external epistemic environment, the epistemologists considered the material environment and social epistemic structures, including epistemic norms, power hierarchies, and epistemic communities. As a part of the internal epistemic environment, they explored how agents internalize beliefs about identity and epistemic hierarchies, intellectual ability and pride, and intellectual temperament.

In the cross-disciplinary focus group, epistemologists and educational psychologists revisited and expanded on these ideas. They returned to the concept of intellectual temperament, analyzed how epistemic contexts influence the types of epistemic goals agents set for themselves, and discussed the ways in which teachers' and institutions' own epistemic goals and characteristics shape the opportunities available to students. Participants also emphasized that epistemic contexts do not merely constrain possibilities for epistemic agency; they actively reshape the norms and standards that define those possibilities.

Across both the epistemology and cross disciplinary focus groups, epistemic context was framed as having both external and internal dimensions and as deeply influencing the scope, direction, and normative evaluation of epistemic agency.

Epistemic agency - behaviors, cognitions, and affect. The theme of epistemic agency - behaviors, cognitions, and affect emerged only out of the data from the educational psychology focus group. While the epistemologists also discussed the cognitive underpinnings epistemic agency, the discussion was brief and did not warrant its own theme. Instead, it was incorporated into the framing the construct theme in the epistemology focus group. The epistemologists identified attention as a key cognition underlying epistemic agency (Andrew, 2021), and mused that epistemic agency involves higher order metacognitive skills such as managing the normative epistemic dimension of cognition and epistemic inputs and outputs (Camilla, 2021).

In the educational psychology focus group, the behaviors, cognitions, and affect theme was divided into two subthemes. The first subtheme focused on identifying and exploring the behaviors, cognitions, and affects themselves, along with illustrative examples. Participants outlined discrete behaviors and cognitions such as paying attention, describing, identifying, categorizing, questioning (Henry, 2022). They also discussed more complex incidents of behaviors, cognitions, and affect, including the elements within the epistemic context that prompt those incidents. For example, they shared personal experiences of emotional and cognitive conflicts related to COVID-19 vaccination (Henry, 2022) and discussed how many Black Americans reevaluated their cognitive commitments in the context of vaccination decisions (Aaron, 2022). The second subtheme involved the evaluation of manifestations of epistemic agency as desirable or undesirable, with assessments based on the reliability of epistemic processes or the accuracy of resulting conclusions. Participants also noted that observations of epistemic agency could easily be misinterpreted without understanding of the full context in

which the instances of agency occurred (Rachel, 2022). For example, a student who chooses to withdraw from discussion may not be pulling back from epistemic engagement. Rather, they may be intentionally influencing the epistemic context by allowing other classmates to engage.

This theme sheds light on some of the internal components of epistemic agency, showing how behaviors, cognitions, and affect interact with contextual factors to influence instances of epistemic agency. These insights also highlight the importance of deep and thorough contextual understanding in order to accurately assess manifestations of epistemic agency.

Epistemic agency in schools. The theme of epistemic agency in schools emerges out of the data across all three focus groups but each introduced their own variation on this theme. In the epistemology focus group, participants primarily focused on examining the epistemic environment in schools, particularly the material environment and social structures that can impact the epistemic agency of learners. They also discussed instructional and assessment practices that either hinder or foster epistemic agency. The educational psychologists also examined the epistemic environment in schools with different areas of emphasis. Like the epistemologists, they addressed epistemic norms and power structures in schools. However, they avoided specifics on instructional or assessment methods. Instead, they highlighted the delicate balance teachers must strike in managing control—knowing when to relinquish it to students and when to reassert it to optimize student learning and agency. The educational psychologists also underscored teachers' roles in not only framing epistemic opportunities but also in motivating students to seize those opportunities. The educational psychologists additionally placed a distinct emphasis on epistemic goals. First, Aaron explored the implications of framing epistemic agency

as the means to a goal—saying that teachers must be intentional and explicit about their goals for students if this was the case. Second, the educational psychologists outlined two distinct goals for students as epistemic agents—that they be reasonable and reliable decision makers and that they be good, democratic citizens with a sense of responsibility to their communities.

In the cross disciplinary focus group, the theme emerged in yet another form. Here, epistemologists and educational psychologists focused on ways to build students' epistemic agency. They reiterated the value of instructional and assessment practices that support student autonomy and that account for individual intellectual temperaments. Some previously unexplored ideas emerged as well such as how building students' domain specific knowledge could enhance their disciplinary agency. They also asked whether epistemic agency was best taught directly or indirectly. Without exception, participants voiced their opinion that epistemic agency ought to be taught indirectly. However, Camilla and Aaron discussed the extreme importance of establishing error tolerant environments for the building of epistemic agency, saying that if there was anything that should be explicitly established, it was this condition.

These focus groups collectively suggest that epistemic agency in schools is being heavily influenced by the environment but most of all, by teachers' efforts in the classroom.

Interpretation

The cross-disciplinary insights gleaned from bringing both epistemologists and educational psychologists together in conversation show epistemic agency to be a multifaceted and messy phenomenon, inextricably linked to the context from which it emerges. What also surfaced out of the bridging of these two disciplines were some new theoretical pathways to

guide educational psychology research not only to understand epistemic agency, its role in education, and how to promote it in the classroom but also to connect the study of epistemic agency to liberatory practice.

Epistemic agency is interactional, social, and ecological. Both the epistemologists and educational psychologists in this study consistently foregrounded the relational dimensions of epistemic agency over the individual cognitive, affective and behavioral aspects of epistemic agency. This underscores a pivotal insight—that epistemic agency is fundamentally interactional, social, and ecological. While it can also be understood through the lens of the internal cognitive and affective mechanisms that underlie the enactment of epistemic agency, the conceptualization of epistemic agency is incomplete without the relational piece. This is an understanding that suffuses the epistemology literature. However, analysis of the relational and contextual nature of epistemic agency is limited in educational psychology.

Epistemic agency is interactional. Epistemic agency is not something that arises out of the capacities, cognitions, or behaviors of an individual agent. Rather, it emerges in the moments of interaction between the agent and the context in which they act. As Aaron says, epistemic agency is a "statement of the person-in-situation" (2025). Camilla says, too, that you can't think of epistemic agency as something inside some "poor kid's head. You've got to ask about what is the epistemic environment like?" (2021). The key insight here is that epistemic agency must be characterized by looking at both sides of this equation. In order to understand the shape of the epistemic agency that a person is exercising at a given moment, you have to understand the internal context of that person—their capacities, their knowledge, their identity, their history—

and how that interacts with their external context--the task, the place, the climate, the norms. Too much research in educational psychology places the analytical focus on the artifacts that come out of the interaction: discourse, discussion forums, assignment responses, and take those artifacts as evidence of epistemic agency (Tan et al., 2022; Zhang et al., 2022; Cherbow, 2023). However, agency cannot be fully understood without a full accounting for the internal and external context of the agent (Aaron, 2025).

Epistemic agency is social. During the epistemology focus group, Will talked about the notion that epistemic agency is characterized by paradox because it is very often regarded as a individual phenomenon, but the act of knowing is so inherently social that we really can't do it alone. Both the epistemologists and the psychologists described the exercise of epistemic agency as involving a continuous negotiation between epistemic dependency and autonomy (Will, 2021) or between what we already know, what we're hearing from other people, and our needs in the moment (Ned, 2023). This process of social epistemic negotiation involves a great deal of metacognition (Ned, 2023; Holly, 2021) in order to assess or reassess prior knowledge commitments and to be able to push back against our biases (Henry, 2023) and epistemic temperaments (Will, 2021; 2023). In the epistemology, this type of social negotiation is discussed in the literature about epistemic autonomy and dependence (Elgin, 2013; Kawall; 2024; Matheson, 2021; Mattioni, 2024). However, it is insufficiently addressed in the body of work surrounding epistemic agency and epistemic cognition in educational psychology.

The social nature of epistemic agency is not just about how people socially negotiate knowledge and truth but also about the social determinants of the roles that people play as

knowers. The central premise of epistemic injustice is that the capacity of epistemic agents to know and to be credited with knowledge is inequitably determined according to identity and power (Fricker, 2017). In Anyon's study of the sociology of work in upper and lower class schools, we see how children are socialized into their identity as knowers (1980). In the focus groups, the epistemologists spend a great deal of time discussing how the material, instructional and assessment environments in schools can often negatively impact students' capacity to know. The body of work on epistemic oppression and injustice in epistemology explore a number of epistemic harms committed against people's ability to be taken seriously as knowers within their epistemic contexts (Catala, 2020; Catala et al., 2021; Lackey, 2022; Medina, 2021, 2022; Mitova, 2020).

In this area, research in educational psychology focuses primarily on the epistemic opportunities provided to students in the classroom. Educational psychologists explore how teachers employ instructional flexibility, scaffolding and tools to afford students opportunities to determine the direction and methods of inquiry in the classroom (Cherbow, 2023; González-Howard & McNeill, 2020

) and to provide students opportunities to build the skills to be agents of science—with a license to do science (Henry, 2025). To a lesser extent, researchers are also exploring how interactions between peers, mediated by relationships and identity, are shaping students' ability to engage in knowledge production and to be credited as knowers (Bae et al., 2025; González-Howard & McNeill, 2020). Researchers are also exploring the ways in which students collaboratively produce and evaluate knowledge by investigating the regulatory and disciplinary

moves that students engage when they work in groups in the classroom (Tan et al., 2022; Zhang et al., 2022), which helps to shed light on the skills and behaviors that underlie the productive engagement of epistemic agency within a community. However, research in epistemic psychology falls behind in their investigation of epistemic injustice and how epistemic injustice may impact students' exercise of epistemic agency (Zimmerman & Chinn; Bae et al.)

Epistemic agency is ecological. Epistemic agency is ecological. Henry was the first to frame it this way in the cross disciplinary focus group, referring to the nested ecological frames of the classroom and the school. However, in the earlier focus groups, the epistemologists and educational psychologists both talk about nested layers of epistemic context that shape epistemic agency even though they don't explicitly name them as an epistemic ecology. In the epistemology focus group, Will goes into great detail about how he sees the person to person interactions that are involved in the exercise of epistemic agency. Camilla and Holly pull this back one layer to talk about some of the immediate epistemic contexts that people find themselves in—classrooms, schools, and libraries. Then Will zooms out even farther to talk about epistemic communities, and Camilla and Holly zoom out once again to explore epistemic structures and institutions including norms and standards. The educational psychologists don't go into such detail about the nested layers of the epistemic context. However, Ned discusses how "socio-historical context" interacts with individual epistemic capacities to create space for epistemic agency, and all the psychologists talk about the ways in which people's personal and cultural histories and identities influence the way they think and feel in complex epistemic situations.

The literature on epistemic agency in epistemology and educational psychology follows a familiar pattern in regard to the ecological nature of epistemic agency. Epistemologists are fairly well versed in talking about epistemic ecologies and how they impact epistemic agency (Anderau, 2023; Gunn & Lynch, 2021; Nguyen, 2022)), but insofar as it is reflected in the literature, educational psychologists fall behind. While they recognize the importance of context to the enactment of epistemic agency, and many even acknowledge the importance of framing epistemic agency as ecological, research in educational psychology really lags when it comes to operationalizing this aspect of epistemic agency. Taylor and Brand (2021) examine students' exercise of epistemic agency in instructional activities that are rooted in their communities. Nieminen et al. (2025) analyzed students' identities and sense of contribution in relation to their local communities as a part of their epistemic agency. However, there is a lot of potential for the empirical investigation of epistemic ecologies that has not yet been met.

Epistemic agency is messy and we should think of it that way. If you read the literature on epistemic agency in educational psychology, it would be easy to come away thinking that the only students who count as epistemic agents are the students who excel academically—the ones who are engaged, who think in advanced and complex ways, who don't get things wrong or are quick to correct themselves, and who collaborate well with others. These are the behaviors that get highlighted in the research (Tan et al., 2022; Zhang et al., 2022). However, in the focus groups on epistemic agency, it was clear that neither the epistemologists nor the educational psychologists in this study think about epistemic agency in this way. In the focus group data, the exercise of epistemic agency sounds messy. According to the scholars in

this study, people exercise epistemic agency when they get things right, and when they get things wrong (Henry, 2023), when they lean too hard into skepticism and deny belief in anything (Camilla, 2021), when they too easily believe all the things they are told (Will, 2021), when they refused to engage in particular activities or areas of knowledge (Aaron, 2023), and when they get things right in the wrong way (like looking into their neighbor's window) (Lorelai, 2021).

According to the discussions in the focus group, there are many different ways to engage in epistemic agency and many different ways to assess and talk about epistemic agency. Participants sometimes referred to people as exercising excess epistemic agency or as lacking epistemic agency where a deficit of epistemic agency is indicated by servility and an excess of epistemic agency is indicated by arrogance or a refusal to defer to evidence, standards, or norms. They characterized the exercise of epistemic agency as apt or in-apt, referring to the epistemic processes used to arrive at a particular epistemic end where aptness would be used to refer to the utilization of an appropriate process and in-aptness would be used to refer to an inappropriate process. Additional ways that participants characterized the exercise of epistemic agency were: as virtuous or vicious, referring to the engagement of epistemic virtues or vices, and as responsible or reliable. These different ways of speaking about both the desirable and undesirable manifestations of epistemic agency all indicate different facets of epistemic agency.

Compare the language used in educational psychology to describe the exercise of epistemic agency. In the educational psychology literature, epistemic agency is described in levels—low or high to describe the level of epistemic complexity exhibited when students exercise epistemic agency(Tan et al., 2022), as limited or enhanced when students are given

traditional or authentic assessments(Nieminen & Ketonen, 2024), and as more or less when students are positioned with or without control in the classroom (Cherbow, 2023; Zhang et al., 2022). The limitations of the language used to assess epistemic agency in educational psychology reflects the limitations of the conceptualization of epistemic agency that is being operationalized in educational psychology research. More empirical investigation is needed to better understand the different dimensions of epistemic agency.

Epistemic agency is normative but we should think of it descriptively. In the first focus group, Camilla distinguished epistemic agency from cognitive agency by highlighting epistemic agency's normative element. She said, "there's gotta be something more there in, in, um, in terms of norms of correctness, where those norms would be related to getting things right about the subject." She reiterated this idea that epistemic agency is normative in the third focus group, saying "you say, 'give me a non-normative theory of agency.' My answer is 'I can't.' Uh, it's going to be normative." We see this as well in the various ways that the epistemologists and educational psychologists are talking about and assessing manifestations of epistemic agency as excessive, in-apt, vicious, or irresponsible. There are many ways to transgress against the norms ingrained into epistemic agency, and yet, looking at the research on epistemic agency in educational psychology, we see how leaning too far into positive normativity can be problematic because it can blind us to much of the complexity of epistemic agency. Therefore, in working to create a model of epistemic agency, norms are inescapable, but there are some compelling reasons to work toward a descriptive model.

A theory that distinguishes the descriptive elements of epistemic agency from the normative ones can act as a tool to guard against the harms enacted by a dominant normative epistemic climate against epistemically oppressed populations. The epistemological literature offers so many examples of this type of harm—metaepistemic injustice (Catala, 2020), explanatory injustice (Mitova, 2020), epistemic neglect (Brick, 2020)—that it shouldn't be taken for granted that it occurs. Additionally, Holly, in the third focus group and in her touchback interview, talked about the work that she is doing in normative contextualism of epistemic virtue, asking whether epistemic environments are constitutive of the norms underlying epistemic habits that we typically see as virtuous or vicious. In other words, she has been asking whether the norms and standards by which we judge epistemic agency may shift as we consider the position of the epistemic agent within their epistemic context. If an agent denies the evidence presented to them, they may be exhibiting epistemic arrogance. If an agent denies evidence presented to them by an epistemic oppressor, they may be exhibiting something else—perhaps a sense of epistemic preservation? A descriptive theory may ease the friction of analyzing the exercise of epistemic agency separately from the norms by which we assess epistemic agency.

Moreover, Holly's suggestion that we first attempt to outline a neutral or descriptive account of epistemic agency and then layer on a normative account is consistent with the phased model for theory building proposed by Carlile and Christianson (2005). Carlile and Christianson argue that robust theories must first be descriptive before layering on a normative element. In other words, in order to appropriately understand the phenomenon underlying a theory, you must first understand what it is before understanding what it ought to be.

What is epistemic agency? In the focus groups and in the touchback interviews, Camilla and Aaron highlighted the definitional and measurement difficulties that go along with trying to define and measure epistemic agency. Camilla expressed concerns that a definition would necessarily reduce epistemic agency to something less complex than it actually was. She suggested instead, working towards a theory. Aaron expressed concerns about trying to measure epistemic agency because of its emergent and interactional nature, saying he didn't really think that it made sense to try to empirically measure epistemic agency but rather that it seemed more appropriate to "characterize the 'shape' of agency" for people in a particular context.

We see these definitional and measurement difficulties reflected in the educational psychology research as well. Researchers struggle to capture a definitional account of epistemic agency that captures the complexity that emerged out of the discussions in this study. Moreover, researchers struggled to operationalize epistemic agency in ways that captured even the complexity of their definitions.

Because of all this, I would like to tentatively propose that these challenges may be due to a misclassification of epistemic agency as a construct when it would be better understood as a complex system (Davis & Sumara, 2014).

Implications

This study demonstrates the benefits of cross-disciplinary discourse between educational psychology and epistemology. This sort of cross disciplinary referencing benefited the work of

theorizing about the dimensions of epistemic cognition (Chinn et al., 2011; Chinn & Rinehart, 2016), but even more theoretical bridge building can and ought to be done for epistemic agency.

This series of focus groups uncovered a significant gap between the complexity with which the participants have been thinking about epistemic agency and how epistemic agency is being investigated by educational psychologists. The literature on epistemic agency in educational psychology suffers from a lack of theoretical clarity and consistency. We see scholars using different definitions of epistemic agency across the field and operationalizing epistemic agency in ways that are not always consistent with the definitions being employed. Moreover, in educational psychology, epistemic agency is being conceptualized and empirically investigated in ways that belie the complexity and depth of epistemic agency that was revealed during the expert discussions in this study.

Fostering more cross-disciplinary discourse on epistemic agency like the focus groups in this study can help guide the building of a theory of epistemic agency. There is much work to be done to generate a fuller and more robust theory of epistemic agency that captures its messiness and its interactional, social and ecological nature, and that work can in turn provide empirical grounding for the field of epistemology.

Furthermore, establishing a more robust theoretical grounding for epistemic agency has practical implications for the classroom. If we can develop a model of epistemic agency that can help practitioners understand how epistemic agency develops and how it is influenced and impacted by epistemic context, then teachers can begin to apply that knowledge in order to positively influence their own epistemic agency as teachers and their students' exercise of

epistemic agency. Moreover, because I argue here that epistemic agency is interactional and ecological, a thorough understanding of epistemic agency necessitates an understanding of epistemic context, which can help teachers curate their classroom environments to foster positive exercise of epistemic agency.

Another practical implication of this work is the potential for more inclusive epistemic practice in the classroom. If we can understand all students as epistemic agents rather than just the students who are engaging in the normatively prescribed knowledge building activities, then we can begin to understand student epistemic behavior as either adaptive or maladaptive to their goals and their context, and we can also begin more nuanced attempts at epistemic education that center the goals of the agent rather than the goals of the dominant epistemic climate.

Directions for future research

In this study, I've proposed some elements and characteristics of epistemic agency not currently represented within the educational psychology literature, which represent opportunities for enhancing theoretical clarity and depth. Additionally, I suggest exploring an ontological reclassification of epistemic agency as a complex system rather than a construct. A potential direction for future research may be engaging in the foundational empirical work for building a theory of epistemic agency.

Drawing on the cycles of theory building outlined by Carlile and Christensen (2005), future research should first seek to build a descriptive theory of epistemic agency in educational contexts—beginning with systematic investigation of the nested levels of epistemic agency in a

number of different educational situations. These investigations can consider the internal contexts of an epistemic agent, the observable manifestations of epistemic agency in-situ, the immediate and structural elements of epistemic contexts, and the ways in which all three interact. Once a robust descriptive theory is established, researchers can begin normative theory development, exploring ideal and non-ideal contexts for the manifestation of epistemic agency.

To operationalize this process, Glaser and Strauss's (1967) grounded theory methodology provides an inductive framework for theory development. Grounded theory research adopts an inductive approach. It starts with open-ended data collection and employs constant comparative analysis to generate categories from the data rather than from existing ideas. Methods of inquiry continue to evolve as researchers iterate through rounds of data collection, adapting to questions that arise out of analysis. This method allows theories to emerge directly from the data with a lessened burden from preconceived notions of epistemic agency. By building out a robust theory of epistemic agency, future studies can bridge the gap between theoretical complexity and empirical measurement in order to inform practical interventions that address structural inequities in epistemic agency.

In the meanwhile, in the absence of a more robust theory of epistemic agency, the conception of epistemic agency that emerges from this study can serve as a starting point for additional threads of research about epistemic agency. One particularly fruitful avenue of study may be ethnographic investigation of the epistemic environments and epistemic ecologies that impact students and teachers in the classroom. In our current moment, it would be particularly interesting to fold digital contexts into those investigations to examine how the digital tools that

teachers intentionally bring into the classroom and the tools that students seek to supplement their education both formally and informally impact students' epistemic contexts and teachers' perceptions of those contexts. Branching beyond this suggestion, researchers may also examine how students and teachers are making sense of their epistemic contexts and how their interactions within their epistemic environments in the physical classroom and the digital world influence their epistemic behaviors and dispositions. Another avenue of study may be to examine how teachers frame unproductive or counter-normative manifestations of student epistemic agency and how teachers respond to those manifestations of epistemic agency in the classroom.

Limitations

The clearest limitation of this study is the limited amount of time and subsequently, the limited number of iterations planned for focus groups. Ideally, iterations of focus groups would be conducted until data saturation is achieved. However, planning a focus group requires coordination of multiple schedules across multiple time zones. Out of respect for participants' busy lives, I did not schedule additional focus groups. Instead, I returned to individual participants for member checking of results and themes, asking for further elaboration.

The sampling of this study poses another limitation. Epistemic agency in educational contexts involves many varied stakeholders in varied educational contexts. Limiting the participant pool of this study to epistemologists and educational psychologists necessarily limits the perspectives that can contribute to the data. While these participants play the roles of scholars, teachers, and learners in their academic and personal lives and have a wide range of experiences from which to draw upon, those experiences are by no means exhaustive and are

likely, to some degree, homogenous due to their positions as university faculty. Teaching and learning in a higher education setting are different than teaching and learning in a k-12 setting.

However, I had intentionally chosen to limit the participant pool to epistemologists and educational psychologists rather than to include other educational stakeholders because this study was intended to be a preliminary exploration of the behaviors, cognitions, and affective experiences of epistemic agents in educational contexts, not a comprehensive one. Moreover, the complex nature of epistemic agency is such that much of the epistemic experiences of the epistemic agent are implicit and therefore incommunicable. I suspect that attempts to uncover epistemic agency at the level of the individual agent would run into many experiential blind spots or hermeneutical lacunas (Fricker, 2017). In response to this anticipated difficulty, I have designed this study to leverage the theoretical expertise of scholars who can provide something like a "bird's eye view" of epistemic agency that can build a foundation for future study.

Conclusion

In the beginning, I had hoped that this study would culminate in a construct definition for epistemic agency. I wanted to find the limits of the construct, to lay out the dimensions, and to enumerate the behaviors, cognitions, and affect underlying the exercise of epistemic agency. The ultimate goal was to build out a systematic framework of assessment. I thought, if we could measure epistemic agency, examine how it varies in different contexts, determine mediating variables like epistemic identity, self-efficacy, epistemic goals, and motivation, this could be a contributing step to figure out some ways to address epistemic injustice in education.

However, the data showed epistemic agency to be messier and more complex than I had anticipated, than even the literature had led me to anticipate. The data resisted definition, and the participants resisted defining epistemic agency as well. In response to the data I shifted the focus of the study to examine instead the questions and insights of the participants themselves. If I brought these two groups of experts together in conversation about epistemic agency, one group whose methodological expertise falls in theory and argumentation and one group whose methodological expertise falls in empirical investigation—what driving questions and concerns about epistemic agency do they unearth? And how can those questions and concerns guide theorizing and research about epistemic agency in the future?

The key findings from this study underscore the complexity of epistemic agency and the need for a more robust theoretical foundation for empirical work on epistemic agency. First, epistemic agency is embedded in interactions and nested layers of an epistemic ecology in ways that are insufficiently reflected in education research. Second, the exercise of epistemic agency

unfolds in many unexpected ways both desirable and undesirable, an aspect of epistemic agency that, again, education research is currently unequipped to examine. Third, a theory of epistemic agency needs to be both descriptive and normative to capture both the inherently normative nature of epistemic agency and all the underlying cognitive processes of epistemic agency, not just the ones we want to see out of students in the classroom. Moreover, because of the threat of epistemic oppression and epistemic injustice, an account of epistemic agency ought to have the capacity to hold separate the dominant normative epistemic climate from the mechanisms of enactment. Finally, the complexity of epistemic agency resists definition and poses a number of measurement difficulties, which together may call for a reconsideration of the ontological categorization of epistemic agency. Should we think about it as a construct? Or as complex system? Either will have implications for its empirical study.

The implication of these findings is that in the educational sciences, there is a critical gap between our understanding of epistemic agency and the reality of the phenomenon, and there is a real need to engage in the foundational work of building out a theory that fully captures the complexity of epistemic agency. However, these theory building efforts can be significantly guided through engagement across the disciplines of educational psychology and epistemology. Ultimately, an empirically founded robust theory of epistemic agency can open up the potential for liberatory pathways to epistemic justice.

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Appendix A - Code Book

EGCCS Codes

Code	Description	Example
1.0 EGCCS Codes		
1.1 Pairing	Expressions of sincerity, friendship, support and/or intimacy	Camilla is incredibly wise on this, and I completely defer and think that's fantastic. But I also would like to give a shout out for definitions, which I personality love
1.2 Fight	Expressions of criticism, hostility, agitation or argumentativeness	Um, I guess, I mean, part of my thinking, somebody else said it too, but I think there might be a problem with thinking about agency as having components.
1.3 Dependency	Expressions of reliance, desire for direction, or compliance with the group	I think that what you're pointing out A is really important, which is that, um, these different power structures that can result in servility, can result in servility often via epistemic injustice or forms of epistemic injustice, right? And that's something that Diana is interested in as well.
1.4 Unscorable	does not fit under any of the other EGCCS codes	Well, a smaller kind of, uh, perspective on it. Maybe distinguishing yourself from artificially intelligent, um, systems?

Codes for the Epistemology Focus Group

Code	Description	Example
2.0 Epistemology codes		
2.1 Theme: Framing the construct	Code grouping refers to different ways of thinking about epistemic agency, different ways of framing the task of thinking about epistemic agency, and some questions about epistemic agency that loom large.	
2.1.1 Early definitions	Initial definitions for epistemic that participants offered when asked	dispositions and traits that enable us to perform intellectual and epistemic actions, broad enough to include dispositions and traits that are good and bad and somewhere in between.
2.1.2 Subtheme: How epistemic agency works	Code grouping that deals with the mechanisms of how agency manifests and is perceived in the world	
2.1.2.1 Epistemic agency and cognition	what is cognitively occuring during the exercise of epistemic agency	it also makes me think about ways in which epistemic agency is going to be connected to other metacognitive qualities like practical wisdom or something like that.
2.1.2.2 Social nature of epistemic agency	discussion of how epistemic agency is social	that's a really interesting question because managing the dependence and the interdependence is a lot of what kids are expected to do, grown ups too, but we'll worry about us later. Um, and I, so I think that that's a really lovely way of thinking about what, what a mess you've got to deal with.

2.1.2.3 Desirable and undesirable epistemic agency	Discussion of ways in which epistemic agency can be good/ bad, excessive/insufficient, apt/inapt	might be bad in a very sort of different way in the sense that they might lead us down lines of inquiry that aren't going to be helpful, or that are going to get us large, that aren't going to contribute to understanding or anything that we might find epistemically valuable in any way.
2.1.2.4 Nondeliberative engagement	presents a picture of epistemic agency which is more automatic and not deliberate	I do worry about the kind of psychological plausibility of an overly intentional, fully deliberate account of it because I don't do that too often. And I don't know that most people don't do that full, the full thing too often.
2.1.3 Subtheme: Foundational assertions	Asking and answering basic questions about epistemic agency	
2.1.3.1 What's at stake	describes what is at stake if epistemic agency goes well or poorly	The possibility of human flourishing in the Aristotelian sense of the term.
2.1.3.2 What makes it epistemic	indicate ways of differentiating epistemic agency from cognitive agency	You might have some cognitive end where you try to figure something out, but you don't much care, and you don't much care about whether your methods are any good, but if you're going to be, if you say an epistemic end, um, then I think you definitely want to have some sense that this is a right way of thinking about this.

2.1.3.3 What counts as an epistemic agent	how we should be thinking about the locus of epistemic agency--should we think of it as housed in individuals or within groups?	But then I think that epistemic agency in students, um, can be enabled by structures or impeded by structures including occasional structure say, and that groups, um, of inquiring people, teams, like research teams, like this team could themselves have agency too.
2.1.3.4 Where does epistemic agency live	speak to epistemic agency emerging from not just the head of an agent but also from the environment.	Yeah. So you're, you're speaking about agency existing, um, in, uh, in, not insubstantially within the person, but as in a system, including the person's social environment. Is that right?
2.1.3.5 Nomological network	talking about constructs that are related to epistemic agency either as synonyms or like close relations	another word that often comes up in this context is control or responsibility.
2.1.4 Subtheme: How to talk about epistemic agency	ways of talking about/thinking about epistemic agency.	
2.1.4.1 Ways to approach defining epistemic agency	discussing the best approach to creating a definition for epistemic agency.	Yeah. So in that, right, so in that case you might, you might need something like a working definition.

2.1.4.2 Measurement of epistemic agency	Discussion of useful ways of measuring epistemic agency as well as questions about the measurement of epistemic agency	Um, whereas I think we need to expand if I like to say in space in time, our notion of, um, epistemic evaluation, and epistemic agency, uh, time meaning diachronic evaluations, are going to be much more, I'm thinking is going to be much more telling measure of our agency, not what did I come to believe in that moment, but over time, how do I tend my epistemic garden? Right? Like how do I make, uh, changes and attend to the things that I should be attending to over time?
2.1.4.3 Ontological considerations for epistemic agency	questions about whether epistemic agency should be considered a trait, a state that speaks to an agent's capacity, a disposition, or exercise of epistemic agency within a specific context and instance.	Well, a specific capacity, we definitely could draw a clear distinction. Right? Um, Michael Jordan has the capacity to, you know, do all sorts of things on the basketball court, and he could just choose not to. Right. Um, but the more general the capacity is, I think, the more this worry emerges,
2.2 Theme: Epistemic context	grouping of codes that collectively talk about things that make up an agent's epistemic context.	
2.2.1 Impact of environment on epistemic agency		
2.2.2 Epistemic environment		

2.2.2.1 External environmental context	Discussion of elements of the epistemic context external to the agent	Um, I mean, we go to Paulo Freiri who, you know, he talked about, um, the banking model where the powers that be just pour into your head what they want you to know. And he was talking about it about how terrible this was for the disenfranchised and the disempowered. But if you think about it, it's equally bad for the people in power because they didn't get to think for themselves either.
2.2.2.3 Epistemic communities	discussion of epistemic communities	Um, and, and the idea would be that you have to have as part of your agency an awareness of the, call it the community you're a part of, or the community that's operative in a given context, something or other like that, because I'm perfectly happy to flip communities, but it doesn't mean you have to believe what they say.
2.2.2.3 Internal epistemic context	Discussion of elements of the epistemic context internal to the agent	Yeah, lot's of pride. Yeah. Um, so, so that's one, one, one way, one sort of context that I think can impact students, um, that impacts them even before they arrive in the classroom.

2.2.2.4 impact of epistemic environment	ways in which the epistemic environment directly impacts or mediates impact on epistemic agency	Good. I think this is good, but I think that there, there are a couple of other things that need to be said. One is, it doesn't have to be anything about social markers. You can just have been the kid who was picked out as not all that bright in first grade and gossip did the rest. So, so we don't have to say, and it's because you were a member of some class of people, other than people who aren't all that bright that we need to talk about.
2.3 Theme: Epistemic agency and education	a grouping of codes that touch on conversations specific to epistemic agency and education	
2.3.1 Epistemic environment in schools	things that contribute to the epistemic environment that you find in schools	So what, you know, where can you go to find stuff out? Um, and if, I mean, you know, if all the books were, um, certified by the Texas board of education, you're never going to find out what happened in the civil war. Um, and yes, you know, you said you could go to the library and find things out, but the library has already been curated to leave stuff out

2.3.1.1 Epistemic agency in different domains	refers to the way that epistemic agents may engage differently within different academic domains like math, science or ELA	It just seemed like there's some kind of, I don't, I don't know if I put it right, but some kind of interesting tension between manifesting agency in these two different kinds of educational context, uh, fields and, you know, with the math case, it could kind of strike us as a, a more limited kind of thin way of expressing a cognitive agency.
2.3.2 How to/how not to foster epistemic agency in schools	talk about the attitudes and instructional practices that can either inhibit or foster students' epistemic agency in schools	Um, and so I think there are ways of structuring classrooms and educational systems that can result in, you know, damaged sorts of versions of epistemic agency. I think there's still agential, just not the good kind of agential. Yeah. Yeah. But, but I think, I think, look, if you add that little bit in, I think that's friendly amendment, you know,

Codes for the Educational Psychology Focus Group

Codes	Description	Example
3.0 Educational psychology codes		
3.1 Theme: Making sense of epistemic agency	Insights and questions about the framing of the construct of epistemic agency	
3.1.1 Subtheme: Initial definitions and related concepts	Initial definitions offered by participants and discussion of related concepts	we view agency as learners having the autonomy to recognize their role as science knowledge constructors. And we also view agency as having two components, disciplinary agency and learning agency.
3.1.1.1 Agency and reliability	Discussion of the relationship between epistemic agency and reliability	At the same time, I also want them to understand reliability, right, and...and be willing to engage with reliability um, you know.
3.1.1.2 Agency and self-regulation	Discussion of the relationship between epistemic agency and self regulation	It doesn't necessarily mean they will take leadership but...but...but exerting that or having the autonomy to do that. So, and so, those things are more kind of related to, you know, you think about like traditional self-regulation or [Inaudible 00:20:27], planning, monitoring, you know, helping the group plan on, helping the group monitor, helping the group evaluate.
3.1.1.3 Agency as action	Discussion of the relationship between agency and action	It's like making, um, making things happen, right, in an epistemic way, specifically acting on knowledge.

3.1.1.4 Engagement and agency	Discussion of the relationship between epistemic agency and engagement	So, engaging cognitively, engaging, you know, epistemically, um, may not necessarily mean that that person is exerting their agency or has the autonomy to do that. So...so, there's some difference, so, there's some differences there that, um, that probably are worth exploring, I think.
3.1.1.5 Agency and responsibility	Discussion of the relationship between epistemic agency and responsibillity	One of the reasons I like Catherine Elgin's definition of agency, epistemic agency is because she defines it in terms of responsibility, right. So, to me as much as the agency, responsibility [Inaudible 01:33:52]. And so, that's something that...that I've been thinking of.
3.1.2 Subtheme: Nature of epistemic agency	Discussion of some of the inherent or foundational aspects of epistemic agency	
3.1.2.1 Interactional aspect of epistemic agency	Discussion of what makes epistemic agency interactional	So, that, that's really the main thing for me, as I think of it more, as like something that occurs interaction rather than something people do or don't have.

3.1.2.2 constraints for epistemic agency	Discussion of environmental factors that can constrain epistemic agency	Yeah. So, when... And Ned and Rachel did a good job of thinking about kind of... So, people talk a lot about identity, forming an identity within like, you know, [Inaudible 00:18:09] science identity but without having the agency to...to act on that identity, and there's, so, these…these constraints, there's these barriers in place and but even if the barriers are in place, an agent may still, may still either act or…or has the autonomy to act.
3.1.2.4 messiness of epistemic agency	Discussion of unexpected or undesirable manifestations of epistemic agency	agency can lead to outcomes that we want as educators and outcomes that we don't want as educators in terms of behavior but what about, you know, um, learning outcomes, right? So, what if you've got a student who is exhibiting all of the agentic behaviors that we want from them but they still come to, you know, an inappropriate learning outcome?
3.1.2.5 nondeliberative nature of epistemic agency	Discussions of nondeliberative manifestations of epistemic agency	Because I think I agree with Henry that this kind of stuff isn't deliberative and even, you know, like just, and this is always a bad form of reasoning but I'll use myself as an example.

3.1.2.6 structure of epistemic agency	Discussion of distinctions of framing of epistemic agency	I would completely sign on to that actually, right, that there's a distinction between sort of... I think it, like the way you got me thinking about this, Ned, is that there's a difference in agency and responsibility, right.
3.1.3 Subtheme: Questions about epistemic agency	Questions that rise up about epistemic agency	
3.1.3.1 Tensions between individual and collective agency	Questions about how to think about the difference between individual and collective levels of epistemic agency	Um, but I don't know, I was just wondering if it might help to think about descriptive and normative aspects of the agency of both the individual and collective levels.
3.1.3.3 What is the right way?	Questions about who gets to and who should get to decide what the “right” way to express epistemic agency is	Like I think... So...so I’m not engaging in any, you know, what Clark Chinn would call a reliable... I mean, maybe it's... Well, it happens to be reliable but it's not exactly a deliberative process. I just was like, "Yeah, sign me up." So...so, I can't now point to someone who's done a similar process and come to the opposite conclusion, I can't really say they're doing it wrong, right, you know what I mean?

3.1.3.4 How do we find out?	Discussion of how we go about empirically answering questions about epistemic agency	And, you know, one of the things coming up that I've been worried about this for a long time and haven't made any progress about it, which is like how...how would you even answer those questions about whether anything that kids have done in school especially in school science, they actually take with them and use outside of school?
3.1.3.5 Normative or descriptive	Discussion of the normative and descriptive aspects of epistemic agency	Um, but I don't know, I was just wondering if it might help to think about descriptive and normative aspects of the agency of both the individual and collective levels.
3.1.3.7 What do we know?	Discussion of what has been empirically demonstrated about epistemic agency	Um, so, just, go back to Aaron point earlier in terms of is there evidence that things learned in school are transferring? I think that's still an area we need more work and support on, um,
3.1.3.8 What problems are we trying to solve?	Discussion of framing the driving problems of epistemic agency	So, I guess what I'm really trying to get is I'm trying to caution you from conceptualizing this notion of agency in terms that would make normal people doing normal things seem somehow like pathological or like at least suboptimal. Like I just, I don't want you to walk down that road. I don't think it's gonna be helpful, right. All of us make decisions all the time to just close off certain areas of knowledge and continue with our lives, right.

3.1.3.9 Who are epistemic agents?	Defining who counts as an epistemic agent	You've got, um, students and specifically, I like how you say individuals, um, thinking about, um, learners as people that may not necessarily be traditionally defined as students too, right, if we think about epistemic agency in a learning context, um, thinking about students and even teachers in an educational context as epistemic agents too.
3.2 Theme: Epistemic agency in schools	Areas of consideration for how epistemic agency manifests in school settings	
3.2.1 Subtheme: Goals for epistemic education	Discussion of goals for epistemic education	
3.2.1.1 Goals for epistemic agency in education	Discussion of the goals underlying epistemic education broadly	So, I...I think that if you wanna have democratic principles in the classroom, then we need to think about increasing students' agency and teachers' agency.
3.2.1.2 What we want for epistemic agents	Hopes for individual agents	and so, what I want is I want young people who feel confident to make decisions for themselves, right. That's really what I want. I think that's what school, for me, that's what school ought to be about.
3.2.2 Subtheme: Epistemic environment in schools	Exploration of how epistemic environments in schools are shaped	

3.2.2.1 Epistemic environment in schools	Description of elements making up the epistemic environment in schools	I was just gonna say, so, a classroom, very different, right, because the classroom situation is actually an opportunity. It's a very unique, it's a...a series of what...it's a sustained multi-year opportunity to orient people in particular ways, right.
3.2.2.2 Epistemic agency in different domains	Discussion of how epistemic agency manifests within different academic domains	And you could simply think about, I don't wanna teach science and math, whatever else so that people get an epistemic education if they find it useful, right. And I...I do think that this problem varies disciplinarily, right, because, at least in my own personal experience, I don't think English has this problem in ways that...that science does, you know.
3.2.3 Subtheme: What teachers are doing to build epistemic agency	A look at actions teachers take in regards to their students' epistemic agency	
3.2.3.1 Teachers and epistemic agency	What teachers are doing and thinking about regarding students' epistemic agency	Um, so, I think that the knowledge and skills on the part of the teacher, knowing when to give up or relinquish control, when to hang on to tangents of it, um, but also, the skills and knowledge of the peers in terms of what to do with the affordances provided. Um, so, it's just a lot of different layers and angles to be thinking about.
3.3 Theme - Epistemic agency, behavior, cognition, and affect	Examination of the behaviors, cognitions, and affects that underlie epistemic agency	

3.3.1 Subtheme – Epistemic cognitions, emotions, and behaviors	A look at epistemic cognitions, emotions, and behaviors	
3.3.1.1 Discrete cognitions, emotions, and behaviors	Descriptions of well-defined, individual cognitions, emotions, and behaviors that are enacted with the exercise of epistemic agency	
3.3.1.1.1 Epistemic agency and cognition	Discussion of cognitions that are connected with epistemic agency	Well, they have to pay attention. That's a cognitive process
3.3.1.1.2 Epistemic agency and affect	Discussion of emotions that are connected with epistemic agency	And then the affect then is, you know, interest or at least curiosity, um, things like that.
3.3.1.1.3 Epistemic behaviors	Discussion of behaviors that are connected with epistemic agency	But then in the learning agency, we saw students, um... Um, how they how, they like exerted their competence or exerted their relatedness, um, how they, how they took action to set goals or how they, um, thought about that. So, things like that.
3.3.1.2 Complex cognitions, emotions, and behaviors	Descriptions of complex combinations of cognitions, emotions and behaviors that are enacted with the exercise of epistemic agency	
3.3.1.2.1 Epistemic goals	Discussion of epistemic goals and the behaviors, cognitions and affect that relate to epistemic goals	Um, so, I think agency can be, um, handed back or abandoned, um, because of perceived misalignment in terms of what the epistemic aims are between, you know, knowledge producer, various knowledge producers in a context. I'm probably really far afield that's. Probably very afield to what you want.

3.3.1.2.2 Epistemic disengagement	Discussion of epistemic disengagement—what it looks like and what leads to it.	Well, I don't think so, um, Ned. But, uh, I mean, but Aaron said that, you know, they are exerting agency by not acting, right. They maybe have the means to act and not wanting to act. Or maybe they just choose not to act because they're tired or they wanna go to the CVS or whatever
3.3.1.2.3 Epistemic bias	Discussion of the precursors to, consequences of, and cognitive, behavioral and affective underpinnings of epistemic bias	So, overcoming a my-side bias means being able to look at things from an alternative perspective, looking at multiple lines of evidence, thinking about how multiple lines of evidence weigh with alternative claims. So, and I'm talking too much.
3.3.2 Subtheme - Desirable and undesirable epistemic behaviors and cognition	Grouping of codes describing various manifestations of epistemic agency that could be considered desirable or undesirable and the nuance involved with this	
3.3.2.1 Desirable/ undesirable social epistemic behaviors	Discussion of social epistemic behaviors that are determined to be either desirable or undesirable	As Henry was talking, I was, I can certainly see the positive role of taking leadership in that situation but I could also see the negative in terms of shutting down other voices or taking leadership wrong or not using the correct...not correct but, um, not engaging in a way that we would like students to engage.

3.3.2.1.1 Desirable/ undesirable EA	Discussion of manifestations of epistemic agency that are either desirable or undesirable	So, uh, you actually got me thinking of a particular person, right, the basketball player, Kyrie Irving, who has both claimed that the…the earth is flat and refuses to get vaccinated for COVID, right. That, that's a case of a person who's been granted way too much agency, right.
3.3.3.2 Epistemic outcomes	Discussion of the outcomes of the exercise of epistemic agency	So, just take an extreme example, if a person engages in a lot of agency and decides that the earth is flat, I mean, that's...that's gonna lead to some probably unreliable thinking and outcomes for that person.

Codes for Touchback interviews

4.0 Touchback codes		
4.1 Epistemology touchback		
4.1.1 Theme: About this study	Discussion of the study itself	
4.1.1.1 Research background	Discussion of the history, structure, and timeline of the study	Yeah, it wa...it was a while ago, and I'm sorry it's been so long. Um, and then I did the, uh, focus group with the psychologists, uh, shortly after the, um, we did my exams, my generals. So, that was in 2022, so.
4.1.1.2 Research purpose	Discussion of the objectives of the study	Okay, well, just to get started, I wanted to see... Our conversation back in 2020 was about epistemic agency in educational contexts. The basic premise of the study, just to give you a bit of a refresher, is to bring two fields together, educational psychology, which is my field, and epistemology.
4.1.1.3 Research next steps	Discussion of the next steps of the study	So I wanted to bring the two fields together, and bring you guys together in conversation is the ultimate goal, which I'm hoping will happen in the fall, and see what kind of headway we can make towards that or just towards more understanding.

4.1.2 Theme: Social nature of epistemic agency	Discussion of the social nature of epistemic agency and the elements and aspects that elaborate on the social nature of epistemic agency	
4.1.2.1 Social nature of epistemic agency	Direct description of the social nature of epistemic agency	And so, community, individual, and the environment are all crucially implicated in...in epistemic agency.
4.1.2.2 Epistemic communities	Discussion of epistemic communities	And, um, I argue this applies in, um, epistemology as well, but where does that imperative come from? Well, it is constructed by legislating members of the kingdom of epistemic ends, which is to say, a community of inquiry. So, the social and the personal come together, and you can't be autonomous, or in any serious way, without either satisfying or challenging community standards.
4.1.2.3 Epistemic standards	Discussion of the standards that people hold and establish for epistemic processes, goals and outcomes	So, it's not just that any cult that makes up its own standards would be okay. You have to be able to, um, define and realize standards of evidence or good reasons.

4.1.2.4 Epistemic virtues	Discussion of virtuous epistemic dispositions and behaviors	Exactly. Yeah. So that's what I've been grappling with. I've been thinking about the context really broadly. So I've been, in part, because I'm coming at this from virtue theory, so I'm thinking about it in terms of, like a lot of virtue theorists, at least the Aristotelian ones, when they start out thinking about virtues, they have a very idealized picture of virtues, and what the world might look like.
4.1.2.5 Epistemic context	Discussion of elements and consequences of epistemic context	Right. So my attitude is, "Okay, let's think about these different contexts. We can think about these ideal contexts or think of our world as being not so far away from the ideal, and maybe in that context, being open-minded about everything is going to be good." But that's not the context we're in, right?
4.1.2.6 Epistemic traps	Discussion of the use of the term epistemic traps—as a trend within the field.	Um, and the thing about echo chambers is, uh, part of the trap is that once you start talking to these people, and of course, they're often online, right? Um, part of...you find people that you agree with, and you sort of share that bond. And...and then...but part of the kind of party line that you share is a distrust of other sources, and in particular, any source that casts doubt on whatever the particular kind of echo chamber this is, right? And so, it epistemically insulates itself.

4.1.3 Theme: The field and what they're working on	Discussion of the field of epistemology and what each of the scholars are working on	
4.1.3.1 How the field has changed	Discussion of changes in the field of epistemology	I mean, like my thinking has progressed a lot and just the state of the field on those topics has shifted, interestingly.
4.1.3.2 What I'm thinking about now	What participants are working on or thinking of at the moment of the interview	Um, so, I've gone all in with social epistemology now.
4.1.3.3 Questions I'm asking	Questions that participants are thinking of at the time of the interview	So I've been thinking about how to really grapple with that, and what's good about it, what's good about the idea that in different contexts... Well, contexts are pretty broadly defined. In different contexts, the same descriptive trait might count as virtue in one context, but a vice in another, right?

4.1.3.4 Exercise or capacity	Responses to the question of whether epistemic agency is a question or a capacity	Um, so part of the story of these recent changes is I think people thinking more carefully about that question. So, for example, I think we have all these sort of innate capacities, uh, that, again, we've evolved as social beings to be dependent on other, to interact with others in particular, to trust others, to gain, you know, to...to gain and give information. Like, that's just a part of...of our human nature, right? That's part of the...the...the capacities we're born with. Um, but what's become pretty clear is that, um, how that works out for you depends a lot on the environment that you're in. Um, and, uh, so, and again, I'm, I mean, I'm still very much in the midst of thinking about all this, so I...I don't...and...and so is everybody else.
4.1.3.5 Epistemic autonomy	Discussion of how the field is thinking about epistemic autonomy as perhaps a more apt substitute for epistemic agency	So, it's funny. When...when we were talking before, epistemic agency was the term that I thought was like kind of central to my thinking. And I...I mean, I actually still think that's the best term, but what's happened in the literature is that there's been a sort of mini boom in...in talking about epistemic autonomy...
4.1.4 Theme: About epistemic agency in education	Discussion of epistemic agency in educational contexts	

4.1.4.1 Worry about education	Expression of concerns about the way epistemic agency is handled in educational practice	And I mean, I don't think that that's being fostered, if the kind of standard education is just a matter of doing what you're told.
4.1.4.2 Epistemic education	Discussion of what epistemic education ought to be	Right. Right. Yeah. And it's not, you know, often the best way to...to educate people about something isn't sitting them down and lecturing them...to them about it. Right?
4.1.4.3 Goal of epistemic education	Discussion of the goals of epistemic education	Mm-hmm. Absolutely. You know, um, in this...in...in the work that's being done, there's this tension, I feel, between, um, you know, a...a broader view of an epistemic agent as a...as a...as a critical thinker, being able to engage and reason with the information that's...that's presented to them. And the goal of, [Clears throat] you know, the...the goal of the science educator, which is not to create, uh, an epistemic agent, but to create a scientist, the idea that...
4.1.4.4 Fostering epistemic agency	Discussion of things that would optimally foster epistemic agency	So, one of the things you'd want to do, if you wanted to really foster epistemic agency in a science class, would foster critical reasoning and challenging assumptions.
4.2 Educational psychology touchback		
4.2.1 Theme: Thinking about epistemic agency	Thoughts related to the specific concept of epistemic agency	

4.2.1.1 Issues with defining epistemic agency	Discussion of the difficulties in defining epistemic agency	2. In trying to define a construct like 'epistemic agency' it seems like the crucial tasks are: a) to decide what the qualifying adjective 'epistemic' is trying to delimit and b) how that delimitation is useful for characterizing people's behavior in particular ways (i.e., what does 'epistemic agency' give us that 'agency' doesn't?)
4.2.1.2 Measuring epistemic agency	Thinking through measurement implications for epistemic agency	Again, though, I think it is probably more immediately useful to observe how agency manifests in particular contexts, and if we're interested in epistemic agency specifically, then one facet to understand would be how someone's knowledge in a particular context affects their agency.
4.2.1.3 Nature of epistemic agency	Discussions of the nature of epistemic agency	My thinking hasn't really changed much. I think that agency is, inherently, an interactional construct: people choose to exert agency depending upon a whole host of situational factors and while we can say, in some situations, that this or that person "doesn't have agency" I think it's a big mistake to treat that as a statement of the person, like a trait, rather than as a statement of the person-in-situation.
4.2.2 Theme: Where this research is going	Discussion of this research project and its next steps	

4.2.2.1 Research background	History and objective of this research study	but specifically, I suppose my chief concern was that the construct definition that we have had in epistemic agency is primarily normative. And so grappling together of how do we look at it in a more descriptive way and do a full accounting of the sorts of epistemic agency and outcomes that we don't necessarily want to see in the classroom.
4.2.2.2 Research next steps	The next steps in the research	Yeah, yeah, yeah, yeah. But I'm hoping that in the fall, I can pull everyone back together for a conversation, the epistemologist and you guys, the educational psychologists, all together to have a conversation about findings so far and questions that you guys have, that you can discuss together about epistemic agency.
4.2.2.3 What I want to ask	What participants are interested in finding out in the final focus group	I just would like to know what they think about epistemic agency, what their thoughts are.
4.2.3 Theme: Manifestations of epistemic agency	Discussions of various manifestations of epistemic agency and what the implications of those manifestations on the concept of epistemic agency	

4.2.3.1 How epistemic agency manifests	Discussion of the ways and contexts in which epistemic agency manifests	To illustrate: 1. If I'm discussing topics of epistemic cognition with someone, I assert a lot of epistemic agency because I am confident my knowledge here is very high. This is partly b/c I study this area specifically but also b/c it's a sub-domain of my field generally and I have a lot of experience now with both the concepts and the epistemic practices that are involved.
4.2.3.2 Epistemic agency in classrooms	Discussion of how classroom epistemic climate engages with epistemic agency	This is especially germane in classrooms, where the official authority to grant agency lies with the teacher but where it is also always true that students exert their agency all the time, even if it is only in resistance to the official script. A student who doesn't participate in a class argument cannot be unequivocally said to lack agency without understanding their participation within the fuller context of interaction. They may be refusing to participate, which is a pretty direct assertion of agency. They may hold the argument itself to be stupid, which is, at least potentially, an epistemic judgment that may inform that assertion. That very same person, however, might argue quite vociferously about the same topic in a very different context, MAYBE because they feel more agency or maybe because they are just more interested during this other interaction.

4.2.3.3 Epistemic agency in our digital context	How things like information algorithms and generative AI impact epistemic agency	Questions whether generative AI should be treated as a unique threat to epistemic agency or whether it really is similar to other digital tools like a google search. Ideally, the sorts of digital literacy and self regulated learning strategies you would use for a google search are the same sorts of strategies you would use in an approach to generative AI, but generative AI does seem to have some characteristics that change the way that people interact with it. It projects a unique sort of authority that promotes epistemic trust and can prompt a need for more caution.
4.2.4 Theme: Previous and current projects	Discussion of the participants' prior and current academic projects	
4.2.4.1 What I was working on	What participants have been working on in the previous three years	Right on. And I forgot where we touched base in 2022. I was working on a study then that was published in Discourse Processes called Discourse and Agency in Science Learning.
4.2.4.2 What I'm thinking about now	What participants are thinking about and asking at the time of the interview	And then what is most recently of interest probably to you is I've kind of been thinking about these different things that agency is, that I developed a proto theory with Gail Sinatra and Janelle Bailey and Luke Butler, and it's a developmental approach to how scientific thinking develops.

Codes for the Cross-Disciplinary Focus Group

Code	Description	Example
5.0 **Cross-disciplinary focus group codes**		
5.1 **Theme: Framing epistemic agency**	Discussion of the concept of epistemic agency, how to frame it for study in educational contexts.	
5.1.1 **Subtheme:** Approaches to defining epistemic agency	Discussion of various definitional approaches for epistemic agency	
5.1.1.1 Normativity in epistemic agency	Discussion of how to deal with the normative nature of epistemic agency	Um, I think...first of all, I think that's right, but I don't think that it's not normative. I think you've got norms interwoven into it.
5.1.1.2 Framing epistemic agency	Discussion of how to frame the concept of epistemic agency	Um, but then there's also a question about whether, um, not just whether environments and social features might not only causally impact agency, but might constitutively or as parts, um...as...as components of an account of agency, be part of an account. Um, so I think that's a potential analog here.
5.1.1.3 How to talk about epistemic agency	Ways to approach framing epistemic agency	So, for example, you might try and develop a...a general theory of epistemic agency and then try to devise, uh, materials and...and practices to inculcate that in students. And that's a kind of, I think, kind of an ideal theory.

5.1.1.4 You have to decide	Discussion of decision points in concept formation that just need someone to decide them.	So it...it seems to me... And again, it doesn't have to be either/or, um, but it just in...in...in your conversation, in your presentation about how complicated it is and there's all these different elements to epistemic agency, getting a...a kind of overarching view might be very hard, um, I think still that...that might be enough to go the non-ideal route. So that's...that's all I had.
5.1.1.5 Agent centered epistemic agency	Attempts to signal importance of centering the concept of epistemic agency around the agent.	So...and that to me is...is a normative and...and not an agent-centered model. So what might a normative and a descriptive and agent-centered model look like? Uh, and what do we need to...what does it need to account for in order to support productive epistemic education?
5.1.2 **Subtheme:** How epistemic agency works in the world	Discussion of the ways that epistemic agency manifests in practice and what that looks like	
5.1.2.1 Tensions in epistemic agency	Discussion of some tensions about epistemic agency that arose in the first two focus groups	Um, so I...I think you can either dissolve, uh, or just fairly easily incorporate all the sides of your versuses...versuseses here. Um, again, I...I...I...I do think the individual versus collective one might pose some difficulties of the sort that we've been talking about.

5.1.2.2 Epistemic goals	Discussion of epistemic goals and their relationship to epistemic agency	So the kind of research questions that, um, they might consider or develop might be, um, different from ones that they would have developed had their agency been facilitated, um, in...uh, at various levels of education. Um, so I think there's also a connection between agency and goals we set for ourselves, too, or there can be.
5.1.2.3 Collective/individual agency	Discussion of the tensions that can arise between collective and individual agency	But I'm just saying, you know, um, it's...it's not clear that what's good for the student, for each student, is always what's good sort of at the collective level. And it seems like an educational institution has got obligations to both. Um, and that could be tricky.
5.1.2.4 Agency and self regulation	Discussion of the similarities between epistemic agency and self-regulation	And so it's this dynamic interaction that can lead to the likelihood of agency being something someone feels like they can do or that they are able to do, and what the outcome is. And I think that is kind of similar to what we're talking about here, that it is this dynamic interaction of both what someone brings with them as well as what the context affords or constraints.

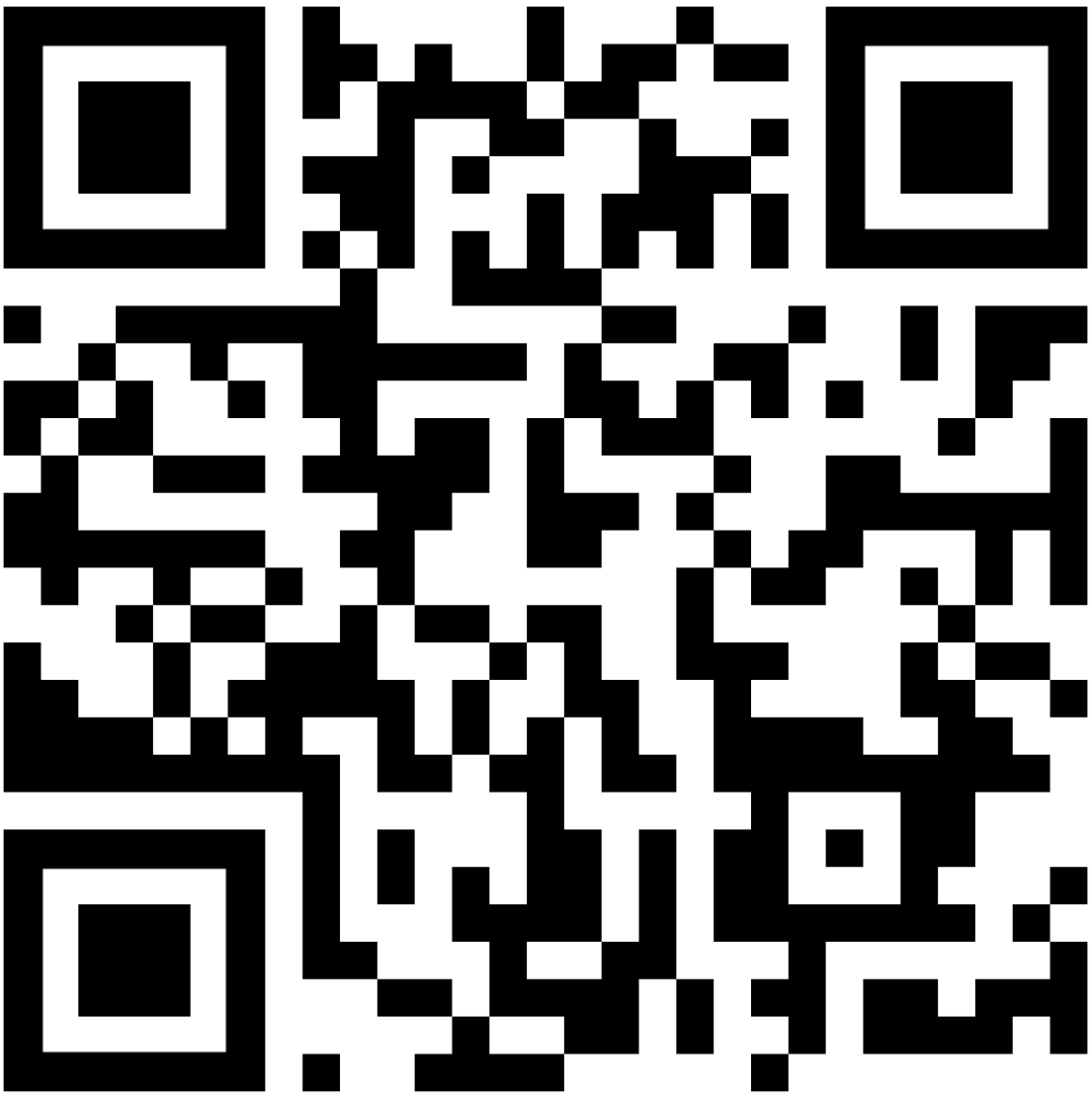
5.1.2.5 Social epistemology	Discussion of discourse in the field of social epistemology	And in my view, epistemologists have been throwing around this term 'epistemic community' for a while because we didn't know what we were talking about, but we knew that we were talking about something and we wanted to point at it
5.1.2.6 Social nature of epistemic agency	Mention of the social nature of epistemic agency	So it's not just as maybe standard epistemologists have said that what the epistemic agent is trying to do is figure out how things are. I'm claiming there's also...it's a mutual adjustment involved,
5.1.2.7 Epistemic autonomy	Discussion of epistemic autonomy and it's relationship to epistemic agency	Yeah, there's...there's so much to this and...and so many interesting things being said. One thing that's getting a lot of play recently in epistemology is, um, the notion of epistemic autonomy. And it sort of seems to be falling out that, um, you know, there's a kind of older notion of autonomy that really focuses on, um, self-efficacy, um, like all by yourself, right? Um, and all this...this sort of social move in epistemology has been pushing back against that.
5.2 **Theme: Epistemic Context**	Discussion of epistemic context and how that context impacts the manifestation and development of epistemic agency	

5.2.1 **Subtheme:** How epistemic environments shape epistemic agency	Discussion of how epistemic environments impact the manifestation and development of epistemic agency	
5.2.1.1 Environmental impact on epistemic agency	Discussion of the ways that the epistemic environment impacts epistemic agency	So that's what I'm thinking about. And I think there's a parallel here with what Diana is working on because Diana is interested in thinking about the ways in which environments impact agency. And so one related question is whether environments impact agency causally. And I think the...the ans...I think the answer to that is pretty clearly a yes.
5.2.2 **Subtheme:** Goals and characteristics of institutions	Discussion of how the goals and characteristics of institutions can impact epistemic agency	
5.2.2.2 Epistemic agency in schools	Discussion of what epistemic agency looks like in schools and the implication of the ways in which schools operate on epistemic agency	But, um, I think educational settings have a particular problem here because, you know, yes, teachers teach individual students, but they're... Let's...let's talk about a public, uh, school sort of system, like we kind of have in the U.S. Um, you know, they're...they're a public good, right? So there's a sense in which the institution is...is, um, you know, is held to, um...to bring about the...what the...what the public goods are, right?

5.2.3 **Subtheme:** Impact of epistemic context on epistemic goals	Discussion of how epistemic environments can impact the setting and achievement of epistemic goals	
5.2.3.1 epistemic context	Discussion of the ways that epistemic context impact the making and achievement of epistemic goals	Um, but one of the things that may happen with, uh, differentials in education, I'm thinking at the moment of economic differentials because that's what one of my students wrote about, um, you're economically constrained that you can't afford to major in poetry because you're going to graduate with a big debt.
5.3 **Theme: Building student agency**	A collection of excerpts that discuss educational practices that serve to build student epistemic agency	
5.3.1 **Subtheme:** Ways to build student epistemic agency	Discussion of educational practices that build student epistemic agency.	
5.3.1.1 How epistemic agency develops	Discussion of the developmental aspect of epistemic agency	So, it just seems to turn out that, you know, the...the...the desired, um, trait, right, is not so, uh, straightforward, and it requires a balance. It requires a balance that depends crucially on the traits of the individual, and so on. Um, and that seemed more relevant to this conversation when I started, but I do think that's [Laughter] [Inaudible 00:39:15] important element of it all.

5.3.1.2 Epistemic temperament	Discussion of individual epistemic temperament	And so, um, I think one of the things that makes this hard to...to...to imagine how to, you know, inculcate this or promote this in...in individuals is that what people need, even on that one sort of, uh, axis is very different.
5.3.2 **Subtheme:** Goals for epistemic agency	Discussion of goals for the teaching of epistemic agency	
5.3.2.1 Teaching epistemic agency	Discussion of goals for the teaching of epistemic agency	Well, I have a...a question that occurred to me, um, during your...your presentation. Um, and I'm wondering what, you know...what the especially educational theorists in...in the room, uh, think about, you know, suppose we got clear on a...a...a notion of epistemic agency. You know, this is...this is a...we've got a handle on what...what we'd like to help people achieve.
5.3.3 **Subtheme:** Should epistemic agency be taught directly or indirectly?	Discussion of whether epistemic agency ought to be taught directly or indirectly	
5.3.3.1 Teaching epistemic virtue	Discussion of the teaching of epistemic virtue and how it relates to the teaching of epistemic agency.	But...but we might still, um, in our own classrooms or in our own curricula, in our...in our departments, in our colleges, even...even in some of our universities, university-wide, um, try to encourage, um, for instance, humility, right? Recognition of mistakes, working through, you know, what we did wrong, perseverance, right?

Appendix B - QR code access to the concept map representation of the thematized data



Appendix C- Epistemology focus group discussion protocol

1. How do you define epistemic agency? (if you can, come with a particular definition in mind)
2. If there are multiple components/dimensions of epistemic agency, what are they?
3. What are the components of a students' particular context that would impact the expression and manifestation of their epistemic agency?
4. What is at stake in terms of a student's epistemic agency? What does the presence of or the lack of epistemic agency mean for a student? their community? Society?
5. Returning to some of the definitions that you all brought into this discussion, are there definitions that you all feel like are sufficient for capturing the concept of epistemic agency? Are there definitions that can be modified to capture the concept of epistemic agency?

Appendix D - Educational psychology focus group discussion protocol

1. How do you describe the concept of epistemic agency within an educational context?
2. What are some behaviors that arise from the expression of epistemic agency?
3. What are some of the internal cognitive or affective processes involved when a student engages as an epistemic agent?
4. What are the components of a students' particular context that would impact the expression and manifestation of their epistemic agency?
5. What is at stake in terms of a students' epistemic agency? What does the presence of or lack of epistemic agency mean for a student?
    a. the students' epistemic community?
    b. the greater society in which the student lives?
6. Returning to the conceptions of epistemic agency that you brought into this discussion, were there any of those descriptions that you feel were sufficient for capturing the concept of epistemic agency?
    a. anything that you'd like to add?
    b. anything that you'd like to change?

Appendix E - Touchback interview protocol

Epistemology touchback interview protocol

1. What have you been working on since our focus group in 2021?
2. Have your views on epistemic agency evolved since then?
    a. If so, how?
3. What questions are you asking right now?
4. Do you have any questions for me?

Educational psychology touchback interview protocol

1. What have you been working on since our focus group in 2022?
2. Have the changes in the epistemic context (examples: generative AI, social epistemic trust, ubiquity of content delivery algorithms) impacted your views on epistemic agency?
    a. If so, how?
3. What questions are you asking right now?

Appendix F - Cross disciplinary Focus Group Protocol

1. What should a descriptive and agent-centered model of epistemic agency account for in order to support productive epistemic education?

    a. How might such a model distinguish between epistemic agency that is epistemically responsible and agency that is epistemically problematic?

2. Our prior discussions of epistemic agency have revealed a number of components or dimensions that appear to be in tension with one another. How might these be understood or integrated within a critical, agent-centered model?

    a. Exercise vs. capacity

    b. Individual vs. collective dimensions

    c. Reliability vs. responsibility

    d. Autonomy vs. dependency