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Professional Identity Development of Prospective Mathematics Teachers

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The study explores the self-narratives of three male teachers of color, and traces shifts in their teacher professional identity as they moved through their studies in a teacher preparation program and as fellows of the support NYC Men Teach program. It analyzes transformations in the prospective teachers' professional identity and the process of its realization and does so in the context of Dialogical Self Theory, which provides an epistemic and analytic lens through which to consider those processes and to compare their teacher professional identity trajectories. The study draws conclusions about the characteristics of the process of professional identity development and the assistive structures that might support such development.

Keywords: Teacher professional identity, prospective mathematics teachers, Dialogical Self-theory.

Introduction

Teacher professional identity has been explored through various theoretical lenses, several of which are featured in education research on the concept, e.g., Holland et al. (1998), Sfard and Prusak (2005), and Wenger (1998). Following on Lev Vygotsky, Mikhail Bakhtin and Pierre Bourdieu, Dorothy Holland et al. (1998) conceive of identities as resulting from processes in which people are both agents and subjects of simultaneously culturally constructed and socially imposed worlds. Similarly, Wenger's sees identity as developing through "negotiated experiences of self" through dialogue in communities of practice (1998, p. 150). He understands identity formation as a *learning trajectory* in which "the past and the future [are] in the very process of negotiating the present" (p. 155)—a theoretical approach that emphasizes identity continuity and malleability. Finally, a substantial number of identity studies in mathematics education have adopted the conception of identity as based on narrative (e.g., Kaasila, 2007; Monereo, 2022; Sfard & Prusak, 2005).

Previous studies on pre- and in-service teacher identity predominantly describe changes in identity but have not provided sufficient explanation about the mechanisms that account for them. This study attempts to add this information through analyzing the retrospective self-narrative of three pre-service male mathematics teachers of color. The study will focus on the subjects' self-narratives, and trace shifts in their teacher professional identity as they moved through their studies in their teacher education program and as fellows of a support program for male teacher candidates, New York City Men Teach (NYCMT). As such, I aim to analyze changes in pre-service teachers' professional identity, and to do so in the context of Dialogical Self Theory, which provides us with an epistemic and analytic lens through which to consider those processes. In particular, I will examine to what extent, if any, the preservice teacher's participation in the NYCMT program may have contributed in the formation of their teacher professional identity.

Theoretical Framework

Dialogical Self Theory (DST) (Hermans & Hermans-Konopka, 2010) understands selfhood as multi-voiced and intrinsically dialogical, composed of a dynamic multiplicity of varied internal narratives—"I-positions"—representing multiple perspectives of the self. Each I-position has a voice and is in dialogue with other I-positions, all of which reflect different relationships with independent others. The self is comprised of both internal and external I-positions. Internal positions reflect aspects of the individual's identity (e.g., Korean, prospective mathematics teacher, immigrant, daughter, friend, etc.). In addition, any current set of I-positions includes, not only those existing in the present, but may incorporate past positions as well—for example "I- as insecure as teacher"—as well as external I-positions that represent the opinions and attitudes of people seen as significant in one's life—a parent, teacher, good friend or boss, for example (Hermans & Hermans-Konopka, 2010). Past and present I-positions may speak in conflicting voices, and to present ideas that contradict each other, which puts the self in a position of struggling to reconcile the different views in a coherent narrative.

As Bakhtin (1986) argued, the utterance of an individual positioned in a certain way is not coming from an isolated, decontextualized space. Rather, individual voices of the I-positions are deeply influenced by specific experiences in time and space, by the culture of groups and institutions in which they participate, power differences, and ideologies. In terms of DST, power differences between the collective voices in a particular community are internalized, and reflected as power differences or power struggles between I-positions in the self and, at the same time, are responded to by counterpositions in the self, which may agree or disagree, conform or not conform to these powerful external voices.

For DST, the self is both stable and dynamic, always undergoing reorganization of positionings, and making meaning of experiences old and new. In fact, in Herman's and Hemans-Jansen's words "the self is an organized process of meaning construction" (1995, p.14). As part of this process, we construct our self-narratives. Some voices may be potentially disruptive to the dominant self-narrative and represent a possibility for the emergence of new I-positions, and for a self-narrative reconstruction. They "announce" a potential emergence of new positions, which may bring forth a different dynamic between I-positions, as well as new dominant I-position(s).

Narrative Inquiry

Teacher professional identity is here understood in terms of the narratives persons tell in order to situate themselves not only in relationship to subject content, pedagogical theories and their lives and experiences as current or prospective teachers (e.g., Connelly & Clandinin, 2000; Kaasila, 2007; Kennedy, 2022; Monereo, 2022; Sfard & Prusak, 2005), but also in relation to significant persons, groups, or cultures (Hermans & Hermans-Konopka, 2010). I consider the notion of the "extended self" (Hermans & Hermans-Konopka, 2010), to be a further development of George Herbert Mead's concept of the "generalized other" and Lev Vygotsky's (1962) internalization of cultural and individual voices. All three approaches suggest that teacher professional identity includes not only one's view of oneself as a teacher, but also the internalized voices of one's peers, teachers, parents, and other significant others. As such, in analyzing the following case study, I use a polyphonic dialogical conception of identity, which acknowledges its extension to include real or imagined voices

(views) of those others. Teacher professional identity is plural, and made up of multiple I-positions in continual dialogue (Hermans & Hermans-Konopka, 2010).

Here I examine the case of three undergraduate preservice teachers completing their teacher preparation and degree coursework and explore their shifting identities as teachers. I reflect on the changes in their retrospective self-narratives, tracing their trajectory, and in particular the extent to which these narratives have been affected by the subjects' belonging to the NYCMT support program and peer community. I use DST to identify changes in the relations of authority between internal and external I-positions, reflect on the emergence and dynamics of a coalition of positions, and their significance in the realization of the ongoing reconstruction of their teacher professional identity.

Methods

Design

A descriptive-interpretative multiple-case design was adopted for the study. This design was deemed the most appropriate as it allowed us to thoroughly analyze the individual cases. The cases reflect the transition from being a teacher candidate to becoming teacher. They offer a wide overview of different transition experiences, the role that the NYCMT played in helping them develop a professional identity. The analysis uses Dialogical Self-theory (DST) as an interpretive framework and illustrates the emergence and dynamic of I-positions during this transition.

Context

New York City Men Teach

In 2015, New York City launched NYC Men Teach-- an audacious initiative aiming to “put an additional 1,000 men of color on course to become NYC public school teachers over the next three years” (NYC Men Teach, 2022). The initiative aimed at addressing the growing mismatch between NYC teachers' diversity and the diversity of New York City classrooms. In New York City, over 85% of public school students are racial/ethnic minorities, and only 40% of teachers are non-White, of whom only 8.3% of them are non-White men teachers (New York City Department of Education, 2015). NYC Men Teach is a singular effort to change the racial gap between NYC students and teachers, men teachers of color specifically by focusing its efforts on recruiting men of color to become teachers in NYC schools and providing financial and academic support, mentoring, professional development, career support and networking.

Participants

The participants in the study were teacher candidates and current students or graduates of an undergraduate teacher preparation program in one of the many campuses of a large urban university in north-east of US. They were selected as having been fellows of the NYCMT program. The first participant is a prospective teacher and a current NYCMT fellow. The second, has graduated four years ago and is currently a full-time teacher in a charter school. The third graduated three years ago and is also a full-time teacher in a public school. One of the participants is Asian, and the other two are Latinx.

Data Collection

All participants were interviewed, and each interview took about 75-90 minutes, starting with an invitation to talk freely about their experiences as pre-service teachers and NYCMT fellows, as well as their experiences as members of the campus NYCMT community. The interviews were semi-structured, which allowed for follow up questions. The interviews were recorded and transcribed.

Analysis

In line with the aim of the study—to describe and analyze the participants’ trajectories towards becoming teachers and developing a professional identity, I used open coding (Creswell, 2006) to identify different I-positions as found in their retrospective narratives. Adopting methods from narrative analysis (Polkinghorne, 1995), I sought to divide the interview transcripts into episodes reflecting narrative shifts related to subjects’ experiences as preservice teachers. Two distinct episodes were demarcated in the narratives—the time before they joined the NYCMT program and the period after they joined. Each episode was further divided into segments, each of which was associated with a specific I-position. Based on a comparison of the segments within and across interviews, I developed codes for the I-positions relevant to the episodes in the self-narratives. Furthermore, I reviewed all identified I-positions, selected the ones that involve self-reflection and observing one or more of the other I-positions, and coded them as meta-positions. Similarly, I identified promoter positions, which initiated the emergence of new positions, actions, thought, and feelings. The positions in each narrative episode were analyzed in terms of configurations: are there many different I-positions speaking in single “voices” or are they forming a coalition of voices that speak as a “choir,” and how are these configurations related to the subjects’ self-narratives and their positive or negative self-identification as teachers.

Findings

We offer a detailed analysis of three of the cases.

Nico’s Case

Nico is Korean American. At the time of the data collection, he was a prospective teacher with two semesters left to graduation. Nico’s position “I as aspiring teacher” is a core position in his personal position repertoire. His I-position as aspiring teacher aligns with his I-position as a learner of the art of teaching. Nico became a NYCMT fellow in his second year in the teacher preparation program. In response to his participation in the NYCMT program, Nico deployed a new core position, I as a NYCMT fellow. His positioning as a NYCMT fellow has become a promoter position, which encourages and offers opportunities for expanding his learning. The coalition of his I-as a learner and I as an aspiring teacher positions seems to have grown stronger, as it has been supported by a constellation of positions: his I-position as a NYCMT member, the external positions of his mentor-supporter, the NYCMT peer community, his I-positions of newcomer and father, and his meta position of being aware of how all these positions converge. It seems that what appears as a strong alliance of positions has weakened Nico’s I-position as fearful of teaching, and has helped him develop a strong I-position as a confident aspiring teacher who is convinced that he is experiencing good preparation, and is already planning his next steps.

Table 1: Nico’s I-positions deployed as a teacher candidate

Nico’s I-positions before entering the NYCMT program	Nico’s I-positions after entering the NYCMT program
Internal I-positions	Internal I-positions
I as ... <ol style="list-style-type: none"> 1. aspiring teacher 2. learner of teaching 3. confident about knowing mathematics 4. not confident/fearful of teaching 5. Korean-American 6. immigrant 	I as ... <ol style="list-style-type: none"> 1. aspiring teacher 2. NYCMT fellow (promoter) 3. learner 4. Korean -American 5. immigrant 6. cultural newcomer (meta-position) 7. aware and awakening to social justice issues (meta-position) 8. experiencing challenged conceptions about schools and education (e.g., inequity and segregation) (internal) 9. activist (internal) 10. confident about getting a good teacher preparation
External (inner-other) I-positions: My children	External (inner-other) I-positions: NYCMT peer community NYCMT mentor-supporter (promoter)

Ronaldo’s Case

Ronaldo is a Latino male, who currently works in a NYC charter school. Table 2 shows the range of his I-positions as a prospective mathematics teacher before and after he joined NYCMT and before he graduated. Ronaldo joined the NYCMT program in his last year of study, close to graduation. According to his narrative, he did attend a few seminars offered by NYCMT, which discussed teaching careers. However, he observed, “I honestly wasn’t a big part of it. I just attended a few things. I didn’t understand what NYCMT was about. I didn’t know how to use it.” Ronaldo’s position in the NYCMT community of fellows is liminal, exhibiting limited engagements with events, peers, or education related discussions and issues. As such, he occupies the I-position of a marginal NYCMT member, with sub-positions manifested as misconstruing the program and thus noncommittal among the NYCMT community of peers.

Table 2: Ronaldo’s I-positions deployed as a prospective teacher

Ronaldo’s I-positions before entering the NYCMT program	Ronaldo’s I-positions after entering the NYCMT program
Internal I-positions	Internal I-positions
I as ... <ol style="list-style-type: none"> 1. aspiring teacher 2. learner of mathematics 3. insecure/unable to see myself as a teacher 4. Latino 	I as ... <ol style="list-style-type: none"> 1. aspiring teacher 2. Latino 3. marginal NYCMT fellow (limited engagement) 4. learner

	<ol style="list-style-type: none"> 5. unable to apply knowledge for teaching 6. unable to connect with students 7. feeling out of place as a student teacher
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Andres' Case

Andres is a Latino male, who is currently a full-time mathematics teacher in a NYC public school. Table 3 shows Andres' I-positions before and after he joined NYC Men Teach and before his graduation. Andres' positioning as an NYC Men Teach program fellow, which connected him to the NYC Men Teach peers were essential in countering challenges and difficult moments throughout his teacher preparation. His I-positions are closely linked and worked as a coalition in responding to the challenges he faced and the anxiety they caused. This coalition of internal and external I-positions seems to have successfully countered his I-as anxious position, and produced a third position--I as persevering and "pushing through" the challenges. His meta-positional view evokes the key theme of "all sticking together", which most likely created the conditions for the counterbalancing and centering of the self.

Table 3: Andres' I-positions deployed as a prospective teacher

Andres' I-positions before entering the NYCMT program	Andres' I-positions after entering the NYCMT program
Internal I-positions	Internal I-positions
I as ... <ol style="list-style-type: none"> 1. aspiring teacher 2. learner of teaching 3. Latino 4. confident (about teaching, achieving my graduation goals) 	I as ... <ol style="list-style-type: none"> 1. aspiring teacher 2. NYCMT fellow (promoter) 3. learner 4. Latino 5. anxious about certain classes 6. persevering (third position) 7. experiencing challenged conceptions about schools and education (meta-position) 8. awakening to social justice issues 9. confident (about teaching, achieving his goals)
External (inner-other) I-positions:	External (inner-other) I-positions:
Program peers	NYCMT peer community My NYCMT program manager (promoter) Program peers

Discussion and Conclusions

Professional learning involves transitions into and between different learning contexts and educational practices. The negotiation of such transitions is crucial to professional learning and are likely to involve changes in and among perspectives, assumptions and beliefs. These in turn imply shifts in positioning, and the necessity to adapt to changes and challenges encountered in new contexts. Often such adaptations are not smooth, and prospective teachers experience conflicts. In response to novel and diverse situations, the individual's positional repertoire tends to become more complex, and this entails high incidents of positional difference, tensions, conflicts and contradictions

(Hermans & Hermans-Konopka, 2010). This is particularly the case as prospective teachers transition to student teaching and then to their own classrooms. Such transitions, known as “boundary crossings,” usually require formidable changes of context and positioning and more extreme “position leaps.”

In boundary crossings, encounters with novel situations can trigger decentering movements within the self. Decentering forces require counterbalancing by centering forces that ensure stability and continuity. As such, professional identity development depends on the self-organization of I-positions as a balanced system, in the interest of productive professional learning in preparation for becoming a teacher. In the case studies explored above, we have identified the I-positions present in the personal positional repertoires of three prospective male teachers of color, and traced the dynamics of the emergence of new positions and their systemic reorganization as they completed their teacher training. As the participants became NYCMT fellows, their positioning toward their imagined future as teachers changed: while Andres positioned himself as confident about teaching and achieving his graduation goals, Nico was fearful about transitioning to teaching and Ronaldo was unable to see himself as a teacher.

In all three participants we witness the development of an I-position as a NYCMT fellow, an I-position as supported by the NYCMT community, and a consequent expansion of the I-position as a learner. Two of the three participants—Nico and Andres--developed a strong internal I-position-- I- as supported by the NYCMT community--and a strong external I-position through internalizing the “voice” of the supportive and caring campus program manager, who became a “go to” person and mentor. For these two participants, the three I-positions created a coalition supporting the I-positions of learner and aspiring teacher, and this coalition acted to counterbalance his I-position as “anxious about certain classes.” The positioning as a NYCMT fellow and the program manager seemed to have acted as promoter positions, which provided motivation and direction for the reorganization of the participants’ identity systems. The promoter positions helped these two participants find the support and security of “local niches” (Adams, 2004) in their NYCMT campus community and in their program manager, and to reposition themselves as “persevering”. While Nico and Andres seem to have successfully repositioned themselves out of anxiety and uncertainty, Ronaldo does not seem to have repositioned substantially towards understanding himself as a more accomplished learner and a more confident aspiring teacher. In contrast to Andres, his positioning as a marginal NYCMT member does not seem to have allowed him to deploy the internal or external positions of someone who is supported by the NYCMT community or program manager. Until his graduation and even after he began working as a teacher, Ronaldo seems to have continued to hold conflicting positions (e.g., awkward, unable to apply knowledge).

As mentioned earlier, challenging experiences, changing perspectives, and the recognition of problematic dimensions and ambiguities may represent a broad new range of possibilities for personal and professional learning and identity development, but as decentering forces, they might also bring uncertainties and anxieties about one’s future, and act as disorganizing and counterproductive elements in the self system. To counter these potentially destabilizing forces and to tame strong decentering tendencies, support programs or other mechanisms are needed to scaffold the process of identity development. Such scaffolding is enabled by the conjoined internal and external support

positions that aid teacher candidates in positioning themselves as learners and aspiring teachers, and act to facilitate the emergence of meta- and promoter positions, which are critical to the development of professional identity.

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