Room for Everyone? Identification Processes in Crafting

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Abstract: Studies attempting to address the relative absence of women and girls from the STEM pipeline often focus on deficits in the girls themselves, or—slightly less often—on the shortcomings of culture and context. This early-stage interview study starts instead from a positive space of persistence in the mathematical practices of textile crafting and examines the local negotiation of identification processes as compared with those in K-12 math classes.

Introduction

Despite significant gains in K-12 achievement, females[1] in the United States continue to be underrepresented in careers related to science, technology, engineering, and mathematics (STEM) (State of Girls and Women in STEM, 2016). While some studies that address this observation focus on individual traits such as "grit" or "persistence", other scholars seek to understand how women are systematically excluded from STEM-related spaces (e.g. institutions of higher education, tech companies). Such analyses have shown that gendered social processes contribute to women routinely being told, often tacitly, that they do not belong in these spaces (Seron et al., 2016). These analyses shift the onus for change from individual women to institutions, but they still document failure, starting culturally valued spaces and showing how they exclude the participation of women.

In response to these deficit analyses, we offer the counter example of textile craft. Even in the modern day such communities tend to be dominated by—though not exclusively available to—women; furthermore textile crafting practices themselves have been shown to involve mathematics (e.g. Hebb, 2003). These speaces therefore provide a context that potentially shares some similarities with STEM-related careers (i.e. doing math) while presumably avoiding the gendered practices that systematically exclude women.

Furthermore, analyses of these broader gendered social processes often rely on assumptions of cultural uniformity. This assumption is rejected by poststructuralist and intersectional perspectives, which emphasize an individual's position in multiple social streams. Thus, in an attempt to account for the heterogeneity of women's experiences, we start from an interactionist perspective and examine the process of identification more closely. Specifically, we take a view of identification as an interactional achievement (Cobb, Gresalfi, & Hodge, 2009), looking at how *personal identities*—the extent to which a person identifies, complies, or resists—develop in relation to prevailing *normative identities* in a given social context (Cobb, Gresalfi, & Hodge, 2011). Finally, though the theorized site of underrepresentation is in STEM careers, the process of identification with a discipline begins much earlier; thus, we contrast stories of crafting with stories of K-12 experiences.

The current study looks at the experiences of six women as reported in hour-long interviews. Beginning with the identification framework mentioned above, we explore the opportunities to participate in school mathematics and in craft that are described by our participants, and the extent to which individuals come to identify with, comply with, or reject such forms of participation.

Methods

The six interviews included in this analysis were identified as potentially representing a range of identification with mathematics (three answered "yes" to the question "Did you enjoy math in school?" and three answered "no") and are confined to knitting and crochet—two crafts that had overlapping practices. Semi-structured interviews were conducted by one of the first two authors over the phone, audio recorded, and later transcribed by a third party. Transcripts were reviewed by all three authors in four distinct phases of inductive coding.

Table 1: Case Comparisons

Participant	Lucinda	Olympia	Caroline[2]	Mica	Marlo	Paula
Math norms	logical, pattern-driven, sense of a single right answer	concept-driven, sense of mathematics as a constellation of connected topics	sensemaking, particularly to overcome dyscalculia	as a student—rote, repetitive; as a teacher—problem-solving, multiple pathways	solitary, black and white, confusing, anxiety-provoking	speed, natural ability, no clear path

Identification	full identification	full identification	rejected some aspects but identifies with the discipline	ambivalent	full rejection	rejected math, though identified with math-in-science
Crafting norms	seeing things fall into place; putting in the time; using judgment	process-focus; skilled iteration; flexibility	balance; flexibility; fuzziness; fluidity	goal-oriented; crafter as final authority; expertise takes time	many ways to engage; fluid movement between practices	process-oriented; lots of resources; expertise shows in product

Discussion

Across all six interviews, we find remarkable within-person consistency across the contexts of mathematics and crafting. It is not the case, for example, that each woman was performing in one way in math class and in a completely different way in her crafting community. Rather, in each case, the personal preferences that the women described as the basis for their identification, compliance, or rejection of the normative identity was consistent, whether for math or for craft. Participants brought something they felt personally committed to—be it a focus on process, a love of logic, or a deep need for deliberate sense-making—and that was measured against the local normative identity. As regards school mathematics, in two of the cases women rejected the local normative identity of mathematics, resulting in disidentification with mathematics as a discipline. In three cases, individuals identified with the practices of the class. In a final case, one woman was able to carve out her own space in which to identify with mathematics, despite embodying certain conflicts with the local normative identity. As regards crafting, by contrast, all participants were able to carve out their own spaces, without in any way making a less clear commitment to being a certain-kind-of-crafter. Rather, in this space, multiple identities were recognized and valued, and many women even moved fluidly between those practices, while still maintaining a commitment to a dominant preference. Thus we find, in crafting there is remarkable consistency across the normative identities available precisely because those identities are themselves heterogeneous, allowing for the legitimate participation of many different kinds of crafters.

Limitations and next steps

We acknowledge that this is a preliminary sketch. In particular, future work will compare these findings to the larger corpus. Most importantly, however, the specific contribution of gender—to say nothing of race or other identities—is itself undertheorized in this preliminary analysis, largely due to constraints of the data. We see this commitment to outline these higher-level norms as honoring the post-structuralist call to pay attention to within-group differences as a way of resisting dominant narratives of sex-based traits. Still, more work is needed to investigate and document how these identification processes intersect with the social construction of gender and other identities, both within and across these different settings.

Endnotes

(1) We follow Leyva (2017) in using the terms ‘females’ and ‘males’ to denote sex or sex categories, and ‘women’ or ‘girls’ and ‘men’ or ‘boys’ when denoting gender categories. Whilex we aim analytically to focus on notions of gender as a discursive social production, where statistics are based on sex-categorization we acknowledge such through diction.

(2) All names save this one are pseudonyms.

References

Cobb, P., Gresalfi, M., & Hodge, L. L. (2009). An interpretive scheme for analyzing the identities that students develop in mathematics classrooms. Journal for Research in Mathematics Education, 40-68.

Gresalfi, M. S., & Cobb, P. (2011). Negotiating identities for mathematics teaching in the context of professional development. *Journal for Research in Mathematics Education*, *42*(3), 270-304.

Hebb, K. (2003). The Mathematics of Quilting: A Quilter's Tacit Knowledge of Symmetry, Tiling and Group Theory. In Meeting Alhambra, ISAMA-BRIDGES Conference Proceedings (pp. 511-520). University of Granada.

Leyva, L. A. (2017). Unpacking the male superiority myth and masculinization of mathematics at the intersections: A review of research on gender in mathematics education. Journal for Research in Mathematics Education, 48(4), 397-433.

Seron, C., Silbey, S. S., Cech, E., & Rubineau, B. (2016). Persistence Is Cultural: Professional Socialization and the Reproduction of Sex Segregation. Work and Occupations, 43(2), 178-214.

State of Girls and Women in STEM. (2016). Retrieved April 24, 2017, from https://ngcproject.org/statistics.