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ORIGINAL ARTICLE

"To Tia with love": Chilean mathematics teacher identities after professional development

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Abstract
It is not easy for teachers to re-author their professional identities to incorporate change after participation in professional development (PD). In this article, we seek to understand Chilean teachers' collective identity performances after PD into collaborative problem-solving mathematics. We undertook a classical thematic analysis of semi-structured interviews held with 10 primary school teachers 18 months after their participation in PD. We present an innovative report of our findings by combining the interview analysis into a movie synopsis and creating a fictional protagonist, Tia ('aunty' in Spanish), who represents the common findings from the ten teachers. We found the attractive identities performed by teachers, in particular the 'mother-saviour' and the 'successful' teacher, conflicted with their understandings of the teacher role promoted by PD. We argue the unique method of combining data allowed for reporting findings with both breadth and depth and this enabled us to see the way in which identities are culturally and contextually produced. We suggest PD needs to cater to these attractive teacher identities in order to be successful and sustainable in the long term.

Keywords Identity · Professional development · Narrative · Fiction · Discourse

1 Introduction

> "There isn't a teacher in this room who isn't doing everything he possibly can..."
> "I'm not, I could do more,"
> [...] "What do you need Mr. Escalante?"
> "Ganas… all we need is ganas…" Staffroom conversation in *Stand and Deliver*, 1988[1]

> "You gonna save me from my life?" […] "Ain't no other teacher gonna…" *Dangerous Minds*, 1995

> "If you're prepared to work hard, you can do almost anything. You can get any job you want. You can even … change your speech if you want to" Mr. Thackeray in *To Sir with Love*, 1967

The teachers in these movies quoted above epitomise cultural understandings of the ideal teacher. Facing huge contextual constraints, or opposed by principals or senior staff and difficult students from difficult backgrounds, these ideal teachers nevertheless overcome many issues to give us success stories, having gained their students' devotion and respect. Using the case of *Stand and Deliver*, Appelbaum (1995) discusses how such portrayals craft the discourse that it falls to the teacher to solve the 'crisis' of education, "valorizing the individual and making 'inconsequential' institutional and social contexts of teaching" (p. 66). This feeds the fantasy that school systems can be transformed if only teachers cared enough (Mac and Blum 2013).

As researchers in mathematics education we also maintain focus on the individual teacher as both an object and subject of research (Avalos 2011), although we may acknowledge their institutional and social contexts. Yet the academic world recognises differently the ideal teacher than does the world of movies; the ideal teacher is one who responds to reform calls, enacts change after professional development (PD), and incorporates innovative and socially just methods of mathematics teaching and implements new curricula. Both these teacher ideals (portrayed in movies

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[1] Ganas is a Spanish word referring to desire or motivation to do something.

and research) are presented in opposition to the traditional teacher, who maintains the status quo.

Congruent with the discourses of teachers in need of change, worldwide mathematics curricular reforms and market-forces (Gellert et al. 2013) require teachers to develop new skills and roles and take on "new identities that cohere with these roles" (Graven 2012, p. 127). This 'need' to change is reflected in the growing field of professional development (PD), defined here as programs for in-service teachers. Improving teachers' practice requires more than content learning, it requires motivation and belief that the effort is worthwhile (Gresalfi and Cobb 2011), and requires opportunities for teachers to make sense of their identities related to PD and classroom practice (Battey and Franke 2008).

Following the difficulty to enact new identities, some studies have shown how in the long term teachers tend to abandon new practices and identities (e.g. Gellert et al. 2013). This article reports on a study in which ten primary teachers were followed for 18 months after they participated in a year's PD for teaching collaborative, problem solving mathematics. We found that while most teachers praised the PD and talked about how they valued the teaching perspectives and practices it encouraged, they discussed limited up-take of these practices. The teachers did not integrate the pedagogy into their regular mathematics teaching, and after a year, most only occasionally used the problem solving approach encouraged by the PD.

As we will discuss later, many studies in professional mathematics teacher identity look in depth at individuals' identities to understand teachers' PD uptake, but in doing so only provide an understanding of the specific case. In order to give a more comprehensive understanding, we feel it is essential to look at a broader conception of teacher identity. By understanding identity as socially and culturally produced, and existing outside of the individual, we may appreciate how societal discourses, that are available for teachers to use in their identity performances, could explain teachers' willingness (or lack thereof) to take up new mathematics teaching practices.

In this article, we offer a fictionalised *narrative collage, a* text that does not belong to one individual teacher, but that aligns closely to their narrated stories and identity statements during interviews held at the end of the study. We combine these interviews together into one movie synopsis, incorporating Denzin's (2001) method; conceptualising interviews as narrative performances and as fictions. We use the genre of the movie in order to emphasise the cultural production of these narratives. This form of data presentation allows us to examine common societal discourses (present in most interviews), revealing possible explanations for the difficulties teachers had incorporating and reconciling the ideals of the PD with those identity scripts they found attractive or useful in their own narratives. We suggest looking at collective identities is useful to provide insight into how PD could be made successful and sustainable in the longer term. The specific research question we attend to in this article is: *How do Chilean primary school teachers enact cultural identities as mathematics teachers after PD in teaching student-centred problem solving?*

2 Conceptualization of mathematics teacher identity

We understand identity as a socially produced way of being or of becoming, enacted and recognised in a given context (Darragh and Radovic 2018). Here, this "way of being" relates to the act of mathematics teaching and may be recognised in the classroom, staffroom, PD course or during interview. Following this, individual teachers experience and recognise identities, but they do not belong to the individual; we see identity as existing in social discourse available for individuals to attach themselves to, or use, in a particular context and for a particular audience. In this sense, identity is a form of argument people use to justify, explain and make sense of themselves (MacLure 1993) and is constructed using these social discourses.

A discursive understanding of identity is taken up by many authors in mathematics education (e.g. Mendick 2005; Chronaki and Matos 2014; Walshaw 2013; Hardy 2009). Discourses are "the multiplicity of meanings that attach to (and divide) the people, spaces, objects and furniture that comprise its focus [... and] the passion and the politics that are inevitably woven into those meanings" (MacLure 2003, p. 12). As put by Walshaw (2013):

> Functioning like unwritten rules, discourses actively constitute social entities and relations, sketching out ways of being in the world, defining the possibilities, as well as the limits, of meaningful existence. They shape our thinking, our viewpoints, our beliefs, and our practices. They tell us what it means to be, for example, a teacher or a student at a particular time. Their effect is to produce truth and since they are the means by which reality can be read, discourses are extremely powerful (p. 102).

Two relevant characteristics of identities derive from this conceptualization, Firstly; identities are fluid (Stentoft and Valero 2009, p. 63). Secondly, identities are a continuous struggle, or *identity work*, in which individuals need to negotiate a *personal* story within wider/dominant discourses (Mendick 2005). Some have suggested this fluidity and struggle are full of contradictions, where individuals are pushed to simultaneously impossible positions (Holland et al. 1998). Accordingly, the way researchers operationalize

identity is important (Radovic et al. 2018) as it must be a form which can attend to the fluid, multiple, and contradictory identities at play.

3 Identity, change and mathematics PD

Lately, within mathematics education, the concept of identity has been utilised by researchers to document change or to understand differential success of PD for individual teachers. For example, Gresalfi and Cobb (2011) understand teachers' motivation to change their practice in terms of identity development. They examine the contrasts between institutional and PD contexts as influencing how participants see 'good teaching'. Similarly, Battey and Franke (2008) use identity as a way to differentiate how teachers' implement PD ideas in their classroom practice. These authors see identity as a tool mediating action; via *identity*, teachers decide which aspects of PD make their way into the classroom. This suggests successful PD may need to provide identity development opportunities. Like Gresalfi and Cobb, Battey and Franke (2008) also consider how local communities (and context) may limit the available teaching practices.

Graven (2012) suggests "PD failure" may be a result of seeing teachers as deficit, which "leaves teachers trapped between two conflicting and imposed identities" (p. 131)—those current and those required by PD. Graven argues instead for positioning teachers as co-learners to enable space to re-author new identities within supportive communities. Andersson's (2011) study provides an example of co-learning: a partnership between researcher and PD participant that led to change. In particular, the teacher's identity shifted from the caring "curling"[2] teacher to a teacher who still cared, yet allowed students to think more for themselves.

In general, this body of research emphasises individual identities in local contexts. The PD ideal teacher may contrast with that which is promoted by the institution, and an individual's identity may also limit uptake of new practices. PD may position teachers as deficit, creating or 'designating' (Graven 2012) new identities that may be impossible considering both local context and individual's ideals. Within this field, we found PD research attends less to notions of identity as constructed in the wider social, cultural and political context. Two counterexamples are Gellert and colleagues' (2013) and Chronaki and Matos (2014). In these studies the authors followed teachers professional development and depicted how change was a fragile process, connected with political curriculum reforms (Gellert et al. 2013) and with market politics of mathematics and technology in consuming societies (Chronaki and Matos 2014). These two examples show how the process of change is full of contradiction, with knowledge, beliefs and identity usually disconnected from the PD and strongly related with the wider sociocultural environment and political contexts.

In this study we align with Graven's (2012) non-deficit view, and like others (Chronaki and Matos 2014; Gellert et al. 2013) consider more than the institutional context interacting with identity to explore lack of uptake of PD. By considering the cultural and discursive production of desirable teacher identities and the political and social realities of the wider context, we may understand conflicts between the aims of PD and teacher practice.

4 Context

Chile's educational system is characterised by marketised schooling (Bellei and Cabalin 2013), where parents may choose to send their children to a private, subsidized, or public school. Chile's wide socio-economic stratification is reproduced in this system: private schools enrol 8% of students from the richest population, public schools 36% of students, usually coming from the poorest backgrounds, and subsidized schools enrol about 55% of the population.[3] Studies have shown that these schools tend to vary a great deal in terms of the socioeconomic background of their students, but within the schools they tend to be highly homogenic in this respect, creating socioeconomic niches for working class families (Mizala and Torche 2012) and segregating disadvantaged students (Elacqua 2012). Teachers, particularly in public and subsidized schools, have never held a real professional status in the country (Nuñez 2007). This relates to perceptions of teaching as an undervalued profession, with consistent reported concerns about low salaries (Bravo et al. 2005).

Further, education in Chile is in a state of almost constant reform, including organizational, structural and curricular and classroom related reforms (Avalos and de los Rios 2013). Curricular reforms have been particularly oriented towards increasing emphasis on problem solving skills (MINEDUC 2012), requiring teachers' implementation, despite their having limited authorship of the changes (Avalos and de los Rios 2013). In addition, teachers in Chile are not accustomed to teaching methods that utilise problem solving (Felmer et al. 2013). They typically teach mathematics using a very teacher-centered or 'traditional' approach,

[2] Curling is a sport similar to bowls, played on ice. Two members of the team sweep the ice to influence the path of the stone, thrown by another team member.

[3] Statistics from Ministry of education available at: http://junarsemantics.s3.amazonaws.com/mineduc/BigData/Visualizaciones/VZ1/dist/index.html.

retaining control of the mathematics learning through giving demonstration lectures and providing notes (Preiss 2010; Gellert et al. 2013). Following this, reforms have required Chilean primary school teachers to change considerably their teaching practices (Gellert et al. 2013).

The local context for this study was a 1-year program of PD delivered by university academics, to promote teachers' use of collaborative, non-routine problem solving in the classroom. The PD design drew from current literature about what makes an "effective" program of PD (Desimone 2009; Sztajn et al. 2017). Namely, there was a focus on content, active and collective participation from teachers, and it was of long duration. The PD involved monthly meetings in which teachers solved non-routine problems and developed these problems for their own classroom use, trialling them between workshop sessions.

The PD required a significantly different teacher role than usual; the focus was on student-centred learning with teachers only asking questions to spur continued, independent problem solving within groups of three students. A background role for the teacher was promoted through the idea that the children would solve the problems for themselves. At the end point of the program the teachers reported changed beliefs about mathematics and problem solving and associated student-centred pedagogies (Cerda et al. 2017), but as mentioned before, the teachers participating in this follow-up study reported limited uptake in the long term. Considering that the field lacks research that examines the sustainability of PD over time (Zehetmeier 2015), it was in part to address the gap that the study reported here was motivated.

5 Methods

The data draws from a larger study that investigated teachers experiences following their participation in the PD described above.

5.1 Data collection

Ten primary school teachers (grades 1–8) in mid to low socioeconomic public or subsidized schools volunteered for this investigation. They completed the PD in 2015 and then interacted via email with Lisa to explore their experiences post PD. Informal observations of mathematics lessons were conducted during 2016 and 2017, and finally in 2017 Lisa and Darinka together conducted in-person interviews with each teacher. The interview purpose was to understand teachers' personal mathematics teaching stories and to consider how their PD experiences intersected with their enactment of teacher identity. This paper draws primarily on the interview data with these ten teachers.

During interviews, we asked teachers their stories of how they came to be a teacher, important people in this process and key experiences as a student and student–teacher. We also asked: "If someone were to make a movie about your teaching, what would this movie be about?" We followed by asking for a synopsis, about main and supporting characters, the complication of the movie and about the ending. We used this movie metaphor in order to elicit narratives and to focus the responses on key aspects of their teacher stories. Other questions centered on what each teacher felt to be the characteristics of good mathematics teaching and personal adaptations of the PD program. We aimed to elicit personalised stories about experiences in the teaching of mathematics and problem solving.

5.2 Operationalizing identity through narratives and fictions

To operationalize identity we used two main methodological approaches: the use of narratives and fictions. Recently narratives have been one key way researchers in mathematics education conceptualize (Darragh 2016) and operationalize identities (Radovic et al. 2018). Different researchers have seen narratives as identities; stories do not tell about identity, rather they are the identity/ies (Sfard and Prusak 2005). As performances of self in society, they are not a description but an action (Denzin 2001). One consequence of this operationalization is that researchers inevitably engage in *re-storying*, in which his/her insights into data are interwoven in the story and represented in the research report (Nardi 2016). In this sense, interviews are not a 'measure' (Clough 2002) for gaining access to the 'true voice' (MacLure 2003) of the participants. Rather, it is an opportunity for the participant to perform identity and for the researcher to recognize and co-author these identities in interview and subsequent analysis.

Following the discursive conceptualization of identity we take in this paper, we operationalize both acts of telling stories (the one that happens in the research interview and the one that happens when re-storying this in the analysis and construction of the research report) as acts of positioning against social discourses. We follow Denzin's (2001) *reflexive interview* here, understanding this positioning as fiction. He states that "we write culture, [and] writing is not an innocent practice. We know the world only through our representations of it" (p. 23); and suggests when an interview is performed it "creates the world" and in this perspective it is a "fabrication" or "fiction" (2001, p. 25).

Fictional presentation of data is a device previously used by some authors in mathematics education for many different purposes, including challenging stereotypical mathematical discourses (Pickhard-Smith 2018) and using fictionalized data to offer new ways of exploring and presenting research (de Freitas 2004; Hannula 2003). For example, de Freitas

(2004) and Hannula (2003) presented fictionalized interior voices of a teacher and a student respectively, attempting access to emotional voices. They both argued these fictions allowed them to question notions of validity, representation, and researcher–participant relationship. Nardi (2016) created a fictionalized dialogue between a mathematician and a mathematics education researcher, grounded in research data derived from interviews with 20 mathematicians. She used this format to create a *third space* where the mathematics and the mathematics education communities can bring together competing discourses and transform conflict in collaboration.

In our case, we decided to present the narrative of a fictionalised character to explore identities as performed in the interview context and taking into account the cultural production of these identities. We argue fictionalizing narratives enhances communication (see Hannula 2003; Nardi 2016), fully acknowledges the degree of authorship of data which comes from us, and, most importantly, emphasizes the *collective* aspects of individual identities. The combination of interviews into a single narrative provides the depth that we may see in a case study, yet also gives breadth due to the incorporation of multiple voices. Through creating one *narrative collage* (a movie as cultural resource) based on the narratives of the 10 teacher participants (using a similar method to Nardi 2016), we intend to divorce data from the individual, allowing us to consider the wider identity scripts available for Chilean teachers to attach themselves.

5.3 Analysis and re/presentation

Because of the unusual way we planned to present our data, we established several verification strategies to ensure rigor of the different steps of our analysis including (1) the identification of shared stories in individual interviews, (2) the construction of a fictionalized movie synopsis as a presentation of results and (3) the analysis of this synopsis. We tried in each step to be mindful of how the differences in our backgrounds drew our attention to different aspects of the interview texts and how our position could have influenced teachers' answers. Lisa was once a primary school teacher in New Zealand and is white and middle class. Darinka has worked with Chilean teachers for at least 10 years, but has never taught a primary class. Both of us are doctors in education and worked at a prestigious university in Chile, a social position that at times appeared to be somewhat intimidating for the teachers.

To identify shared stories we followed typical methods from qualitative research, analysing transcripts via a process of coding and theme development. Firstly, we each read the transcripts and conducted open coding, meeting regularly to discuss each transcript. Specifically we coded the micro stories in the data, how initial teacher education and family influenced the teaching career, motivations to enter teaching, PD impact as evident in the interview responses and how teachers interpreted 'good' teaching. Regarding their movies and stories, we identified for each teacher the main plot of the story, complications, additional characters, how they imagined their story to continue, and the main identities they enacted in their stories. Secondly, to check how each teacher was represented in our developed analysis, we created an excel file with the main codes on each of these topics and verified in the transcripts which of these codes were present in each teacher. It became clear that most teachers shared certain plots and identities in their telling of stories.

After checking representation of the developed codes in all transcripts, we each wrote a movie synopsis in English, the language change being for publication purpose. We wrote these thinking how the shared themes we identified could work together, building a whole from the parts using general plots and identities, and concrete examples from different teachers' stories. We met and compared our movie synopses and noted the key elements in these narratives. To further verify that these elements were representative of the group of teachers, we returned to the ten interview transcripts to compare the extent to which they appeared to align with our created movie. Finally, we combined the agreed elements to form a final movie synopsis narrative that we agreed would be generally recognisable to teachers.

After we created the synopsis, we watched movies centred on teachers (these we found using a google search for "teacher movies" and excluding comedies), including: *Blackboard jungle* (1955), *To Sir with Love* (1967), *Stand and Deliver* (1988), *Dead Poets Society* (1989), *Dangerous Minds* (1995), *Mona Lisa Smile* (2003), *Freedom Writers* (2007) and *Detachment* (2011). For each we briefly analysed the plot lines and the teacher characters' motivations and development. We did this in order to analyse the ways in which these movies were similar or different from that which we created from the interview data. This further helped us to understand how the Chilean primary mathematics teacher may draw from typical or specific societal discourses in their identity performances. Taking together the synopsis, which provided a single text for analysis, cultural productions of teacher identities, including those in movies about teachers and in relation to the expectations of the PD, and our knowledge of the Chilean political and educational context, we identified the main themes that structured our synopsis and analyzed the positions afforded for teachers along these themes. Then we compared these themes and positions to those depicted in Hollywood movies to show similarities and contrasts.

In addition to the several verification strategies we implemented in our analysis, we sought participant corroboration in a variety of ways. Interview transcripts were sent to the participants for comment. We sent summaries of the

findings, including those related to teacher identities. The participants and the PD providers were invited to attend a seminar in which results of this investigation (and others) were presented. We received feedback from other Chilean teachers and the PD team after presentations; many indicated that the identities we presented had authentic resonance, lending validity to our findings. Finally we seek corroboration from the reader, drawing from Denzin (2001, from Dillard), "we do not ask if the representation is true. We ask instead, is it probable, workable, fruitful, does it allow us to see things differently and to think differently?" (p. 31).

6 "To Tia, with love": a movie synopsis

From the opening scenes of the movie the audience view is concentrated tightly on the teacher and this perspective continues throughout. The camera zooms out from the teacher's face to show her balanced upon a stool, perhaps a metaphorical pedestal, as she reaches up to pin something high above the board. Children surround her, calling out for attention, for hugs, one child holds out a paper crown for her teacher, her queen. As the teacher glances down, she begins to topple and with this potential fall the camera spins—taking us back in time to the teacher's own childhood. We arrive at a key moment in the teachers' life; her father has received bad news, his factory will close and the family's socio-economic status is set to plummet. Tia, the teacher as a child, will have to change schools and attend the local free public school. She enters a playground filled with intimidating students and dubious parents hanging around the outside—Tia does not recognise the drug deals happening on the edges of the frame, but as the audience we do and we understand the nature of the school Tia now must attend. Fortunately for Tia she has a dynamic and caring mathematics teacher, who protects her, realises her intelligence, and as the years go by provides motivation to attend university. Tia does not plan to be a teacher, she considers options such as nursing, but instead finds herself accepting a place to study pedagogy. Somehow, she falls into teaching. "You'll die of starvation!" say her parents as she enters this career, but it appears she has a vocation.

The years fall by and we catch up with Tia again as she accepts a teaching position in the very same public school she attended as a student. The film continues with a montage of teaching moments, again very centred on Tia as she motivates and entertains her students. The lessons appear to be mathematics, but we do not see the children engaged in mathematics learning, rather they are focused on their teacher, who sometimes delivers her lessons with music and games. Tia appears to go above and beyond the call of duty, buying her needy students shoes and providing them hot drinks in the mornings. They clearly love her, their saviour. As the film progresses we gain glimpses of the teachers' life behind the blackboard, she does yoga, she teaches folk dancing at the community centre, and she leaves the poverty of the neighbourhood in which she teaches for a comfortable apartment in the middle class suburbs. The main complication throughout the film appears to be her relations with jealous colleagues who are unable to inspire these children from difficult backgrounds. Meanwhile, Tia's students succeed, she tops the district for exam results and many past students visit to talk about their important careers with their teacher, her eyes shining with pride. The movie ends at the teachers' gravesite—she taught to the very end. Having never had children, she is surrounded instead by her students, many generations, and loving her right to the end.

We emphasise that we *compiled*, rather than *invented* this synopsis. Every image in this synopsis was taken directly from interview transcripts, for example: falling from the pedestal, the father's factory closing, going to a public school, hot drinks for students, teaching folk dancing, jealous colleagues, and the gravesite scene, were each featured in different teachers' stories and/or their movie description. Further, the synopsis reflects the themes we found in the majority of teacher interviews and we provide counts of the number of teachers who contributed these ideas in our reporting of these themes below. In other words, the teacher Tia is fictional, but *all* of her story is from the interviews—the only changes we made were for the genre and language of presentation.

7 Chilean teacher identity

Like all teachers in the interviews, Tia performs many identities in the movie. She is a professional, dynamic and intelligent teacher and she is successful. She is caring and in return is beloved. She is also an instructor of yoga and dance. It is worth noting the identities Tia performed were typically general teacher identities rather than mathematics teacher identities (as depicted by the invisibility of mathematics). Relatedly, primary school teachers typically subsume specialist subject identity to general teacher identity (particularly in contexts where teachers teach more than one subject, like primary schools in Chile). In addition, these multiple identities also include the intersection of social identities (social class and gender evoked in the notion of a vocation in a caring profession). In the following sections, we wish to draw the reader's attention to three broad themes in the data: the relevance of social class/socioeconomic status (SES) in the teacher story, the notion of vocational service, and of success. These themes from our movie synopsis come directly from the interviews. We discuss each with reference to the individual identity narratives teachers performed. Finally, we compare and contrast these with Hollywood

movies and discuss implications for the expectations of the teacher through PD.

7.1 Social class/SES

One theme evident in the data relates to SES and/or social class of both teachers and students. Eight of the ten teachers talked explicitly about social class during the interviews, six of these teachers having come from a lower SES background themselves. Five teachers presented low SES of their students as paired with danger, drugs and violence. The description of the context where Tia goes to study when her parent loses his job and where she will teach later attends mainly to these characteristics. It is worth noting that such depictions omit stories of effort and personal overcoming on the part of the students.

Secondly, we observed a tension related with class and SES in becoming a teacher in four interviews; we depict this in Tia's decision to become a teacher: "You'll die of starvation", said the parents of one participant. To be a teacher places one in a certain social class and defines one's SES group. Although teaching provides a profession—as opposed to a job—and to have a profession in Chile designates one as at least middle class, teachers in public or voucher schools are not paid well, and correspondingly have low status (Bravo et al. 2005). In Tia's case, the fall into teaching mirrors the fall into poverty in her childhood and the metaphoric fall from the stool (pedestal) at the movie's beginning.

Finally, another evident issue in relation to SES is how students and teachers are depicted as from contrasting SES and how this difference is sustained throughout the movie/lives of them. Three teachers mentioned explicitly a sharp contrasting SES background in their interview, which allow them to recognize and feel for the difficult life their students have to face in their homes. We depicted this SES contrast in the movie through Tia's plummet to poverty (a situation mentioned by two teachers), her parents' perception of teaching as a low SES profession (mentioned in four interviews) and in how Tia could leave the low SES community of the school in the evening when she returned to her own home (two interviews). The contrasting social class positions, together with the poverty seen by teachers in their school communities, contribute to a discourse of deprivation and from this may emerge the notion that the students are therefore in need of salvation.

7.2 Vocational service

Another tension evident in Tia's movie is the idea of teaching as a vocational service. Seven teachers talked about the relevance of having or discovering a vocation—despite most of them not having planned to become a teacher in the first place. Some teachers mentioned that their first option was studying nursing or medicine, other typically female professions also associated with care roles and vocation (three teachers). "I just fell into teaching" was said more than once—yet the teachers did not seem to see the inherent contradiction in these 'accidental' and 'vocational' narratives.

Providing acts of service are closely related to a vocation in a caring profession. The acts of buying shoes and providing hot drinks depict a kind, caring teacher who services her students (seven teachers mentioned giving something to their students). We recognised this caring performance in all the teachers we interviewed, and we received feedback from other teachers during presentations that this is a vital part of the Chilean teacher identity.

The acts of service we portrayed in Tia's movie go both ways. The opening scene depicts all the children crowded around their teacher—she is even up on a pedestal, positioned as a throne when a student hands her a crown. They are all beneath her—taking on the typical positions of servitude. The teaching scenes center on the teacher, indicating that perhaps the children are actually serving Tia in some way. We wrote the synopsis in this way due to many instances in the interviews when teachers spoke about their students in terms of what they provided for them (eight teachers explicitly mentioned what they received from their students). A few of the teachers further on in their careers had not had children of their own, and it seemed as if their students had filled this gap—at least they would perhaps provide mourners at the funeral—as stated by one teacher and incorporated into Tia's movie. With this in mind, we may consider the motives of teachers working in such 'difficult' and 'deprived' communities—likely, the teacher receives some status through their seemingly selfless act of teaching in such conditions.

7.3 The successful teacher

The teachers in our study appeared motivated to portray themselves as successful mathematics teachers; for example, seven teachers were quick to discuss their class' results in the nation-wide standardised test or told us about awards they had received in their careers. Tia's success is noted in topping the district for exam results. Alongside this discourse was the story of jealous colleagues, mentioned by three of our participants. Yet these success stories were not perceived as related with agentic actions to develop themselves into "better teachers". In fact, most of these teachers did not act as needing personal or professional development to achieve their success and consequently did not mention PD opportunities in their stories as teachers. In addition, even though all teachers interviewed were volunteers for this study, indicating at least some level of desire to continue their professional learning in student-centred pedagogy and to reflect about themselves as teachers, only three teachers consistently

demonstrated perseverance in the longer term by occasionally using student-centred problem solving methodology in their mathematics lessons. When pressed to describe their use of the PD learning three teachers mentioned instead the way they had adapted it to other subject areas and at least five focused their answers in different contextual difficulties that had made the PD impossible to use in the long term. We have tried to capture this absence in Tia's movie through depicting a mathematics context without active mathematics involvement by students. This is further emphasised with the camera focus centred on the teacher, a deliberate metaphor for the teacher-centred pedagogy maintained by the majority of teachers despite PD efforts.

Following how success and professional development were depicted in our data, we see that success appeared recognised according to a neo-liberal agenda of exam results and competitive awards, or, through the love and popularity students afforded. Successful implementation of new pedagogy was not similarly valued. Success for the teachers was certainly not associated with the breaking of teaching traditions, and here Tia's movie contrasted with those of Hollywood.

7.4 Comparison with movies

The collective identities of primary teachers in Chile are culturally and discursively constructed, considering both local Chilean and wider international discourses. Consequently, in the analysis we found many similarities between Tia's movies and the Hollywood movies we watched but also many sharp contrasts.

For example, portrayal of low SES paired with drugs and violence was very evident in many movies we watched. *Blackboard Jungle, To Sir with Love, Stand and Deliver, Dangerous Minds, Freedom Writers*, all include similar depictions, usually in the opening credits, and unproblematically present these as almost natural pairings with low income areas. Other issues related to SES also feature in movies. In *To Sir with Love*, we see a tension related to the low status of teaching—finally he could have chosen a better job with higher pay. *Freedom Writer's* wealthy father initially disapproves of his daughter's career choice in a similar way to Tia's parents ("You'll die of starvation!"). In most of the teacher movies, the teacher was middle class and the students were working class, sometimes even living on the street, except in the case of *Mona Lisa Smile* and *Dead Poets Society*, where the situation is the reverse and the middle class teacher is other to their wealthy students. In all these examples, we see tension in the contrasts.

The SES contrast is also presented in the movies as supporting the teachers' motivation to help students, resourcing their identity of a caring teacher—usually more caring than their colleagues (sometimes a source of professional jealousy), and often going above and beyond the teacher role (see also Mac and Blum 2013). In *Freedom Writers* the teacher takes on an additional job to provide luxuries for her students and in *Dangerous Minds* the teacher pours considerable resources into her class. These portrayals further the individual teacher responsibility to include the physical wellbeing of the child, in addition to teaching (c.f. Appelbaum 1995). In Chile the very term 'Tia' (Aunty), which is a common name used in schools (especially public schools), helps to produce the caring teacher.

Another similarity is the performance of identities of success. Discourses of exam success and competitiveness amongst colleagues are formed within a neoliberal system that evaluates teachers based on student success in these exams, discourses that are common in Western societies. However, this success was performed by the teachers in our study with relatively no connection to the performance of professional identities, a disconnection that contrasts with the movie teachers. All of the Hollywood movie teachers tried new and unconventional pedagogies that were not in line with other teachers' traditional (and failing) methods. At one point in *To Sir with Love*, the teacher ceremoniously throws out the textbook and really begins to interact with his students—a key turning point of the movie. The teachers in our study, by contrast, were not so quick to throw out traditional pedagogies; they implemented problem solving teaching from PD, but only in addition to, rather than integrating into their usual teaching. Whilst the majority of movie teachers experienced some moment of revelation, our teacher participants presented uncomplicated narratives of teaching. When we asked, "what is the complication of your movie?" this appeared to be a difficult question to answer. The opportunity to talk about how the PD generated a pedagogical conflict was missed; they recognised good teaching qualities in themselves, although these were not typically aligned with the PD nor with any type of innovative pedagogy.

By comparing the movie teacher to our Tia, we can see some generalities in the teacher identity, particularly in lower socio-economic contexts. Specifically, to be caring, successful, and a saviour are strong narratives which discursively construct what it means to be a teacher. However, we can also see some key ways in which the Chilean teacher differs from these movie teachers. The movies all portray teachers who break with traditional practices, whereas the teachers in our study did not. Furthermore, in these movies there was much more attention to students motivation and *ganas* than in the narratives of the teachers in this study; many of them even pointed out motivating their students was the main (and difficult) part of their job.

8 Discussion and implications

In this section we explore firstly one key identity 'script', strongly evident in our interviews (and in the movies), then secondly we explore the ways in which this script may be used to resist taking up new pedagogies.

8.1 The mother-saviour identity

Whilst Tia performed many identities in the presented narrative, it is the identity which we label *"mother-saviour"* we wish to explore more fully. We borrow this term from Mac and Blum (2013) who review teacher portrayals in the media as being predominantly: teacher as mother, teacher as saviour, and teacher as villain—although the mother and saviour portrayals tend to be conflated into one, as we saw with our own data.

The teacher as mother image incorporates sacrifice and care beyond all else. The savior image portrays the miracle worker who finds a creative way that happens to also involve a tremendous amount of care and sacrifice, to enable students to beat the odds and succeed despite the system's unfair policies or treatment of students' ability and culture. This "higher calling" and moral purpose draws attention away from a system marked with inequity and focuses instead on the role of the teacher to care, nurture, and mother as the path to success (Mac and Blum 2013, p. 50).

We feel this mother-saviour identity captures key themes of caring and servitude (or vocation) which emerged in all teacher interviews, together with many teachers' consideration of their students being deprived and in need of salvation. As suggested by Mac and Blum, these identities are typically seen together. The students need new shoes and hot drinks, they need to exit the cycle of deprivation their families are caught within and escape the neighbourhood into a profession, they need to obtain good exam marks, and above all else, they need the teacher to help them in this, they need to be *saved*. All the teachers in the study performed this identity to some extent and five of the ten teachers drew upon this identity frequently.

Considering this identity is not something fixed internally to each teacher, but culturally produced as an identity script to be used in an individual identity performance, it is necessary to consider the social and political context making this production possible. The neo-liberal political context of Chile and low-income schools in which these teachers work are implicated in such identity scripts. The quotes beginning this paper "All you need is ganas" and "If you're prepared to work hard, you can do almost anything" perpetuate a typically neoliberal and meritocratic discourse of individual responsibility for leaving the cycle of poverty. Yet the realities of living in a country with a gaping chasm between the rich and poor and an educational system that reproduces this stratification (Mizala and Torche 2012) highlight how escape from poverty requires help; here steps the teacher.

Similarly, Martin (2007) argues that the construction of African–American (and poor) children as deficit has led to the production of two teacher types—the missionary and the cannibal. The former suggesting the teacher who must save the children from themselves and their culture. This resonates closely with our own data, however with the notable absence of race. We have not included race in our portrayal of teacher Tia because race was not mentioned once in any of our interviews. This is somewhat surprising as in Chile the situation for immigrant and indigenous students intersects with issues of class in education. We suspect that whilst not mentioned, race and nationality are a hidden factor contributing to the teachers' stories.

When interrogating why teachers may feel attracted to this identity we must also consider the low status of teaching. In Chile low status and low pay (Avalos and de los Ríos 2013) requires identity work by teachers to justify their decision to enter such a profession. By drawing on the messianic identity of mother-saviour and by reinforcing this identity with the notion of strong vocation these teachers may gain back some perceived loss of status from being in a profession widely recognised as being lowly paid. How then, does this attractive identity fit with programmes of PD?

8.2 Connecting teacher identity to sustainable PD

Tia's story captures something of what it is to be a Chilean primary mathematics teacher in a lower socio-economic demographic. She draws on a range of identity scripts that are discursively produced in global and local contexts. Discourses of deprivation generate a narrative of salvation and create an identity of a saviour. The historical position of being 'Aunty' to the children and gender discourses of care create the mothering, caring identity. Global, neoliberal discourses generate narratives of competitiveness and accountability through exam success, producing the successful teacher as one who wins these competitions and obtains good evaluations from students' exam results without portraying the process of change and work: In this sense, success was not reached through PD.

How, therefore, might these identity scripts be performed in the context of sustainable change after PD? The key tenet of the PD was to promote student-centred mathematics learning. Made explicit during PD sessions was a background role for the teacher, leaving students to solve the problems for themselves. We suggest that the identity of mother-saviour as enacted by the teachers in

our study may appear to teachers to be incompatible with the PD as presented during program workshops. Leaving students to struggle on their own does not cohere with the mother-carer role because it means students do not need their teacher to solve their problems for them (nor to save them). Yet collaborative problem solving mathematics teaching does not necessarily conflict with the idea of caring for students. Collaborative student-centred problem solving may certainly be taught by a caring teacher, as demonstrated in the change experienced by Elin in Andersson's (2011) study. Furthermore, it is of course possible to produce successful exam results via collaborative problem solving pedagogy. Clearly, there is need for PD to communicate better these possibilities.

Our findings have important implications for the development of programmes of PD. We suggest that for PD to be effective in the longer term, attention must be paid to the identities to which teachers attach themselves. It may be necessary to interrogate these identities and discuss with teachers during the PD what are their motivations as teachers and how the mother-saviour identity may be problematic in the context of mathematics teaching. Firstly, concern with being caring may lead to teachers helping students to the point that all the challenge is removed from the mathematics learning. We certainly saw evidence of this during observations of lessons. Secondly, the saviour role denies students the space to save themselves, to show *ganas* to lift themselves out of poverty, or at least to succeed in mathematics on their own merit. It would likely be worthwhile for teachers to do further identity-work during PD, in this case to consider how the saviour identity may be a classed (and racialised) identity and how student-centred methodology may be more beneficial to students in the long term (catering to a need for 'saving' the students). Currently the PD emphasises student-centred learning and states that teachers must take a background role. Without an interrogation and reconciliation of attractive, potentially contrasting, teacher identities it is unlikely the PD will be successful and sustainable in the longer term.

To conclude, this study has provided an in-*depth* presentation of teacher identity, which also incorporates some *breadth*, by combining multiple stories. We posit the identity of mother-saviour highlights a culturally produced script that is attractive to teachers collectively. These insights into what it means to be a teacher of mathematics in a particular socio-political context gives us an understanding of possible reasons for lack of PD uptake. Such an insight helps to give direction to programs of PD delivered to teachers who work in similar contexts. Specifically it demonstrates the importance of interrogating the attractive identities to which teachers may become attached so as not to prohibit their taking on board new pedagogy.

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