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Research paper

How do teachers exercise relational agency for supporting migrant students within social networks in schools from Scotland, Finland, and Sweden?

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ABSTRACT

This study examines how teachers exercise *relational agency* - working flexibly with other actors in their social networks to support migrant students. Teachers and other staff members from 7 schools in Scotland, Finland and Sweden participated in social network surveys (n = 1116), online logs (n = 275) and interviews (n = 82). A mixed-method social network analysis shows how networks facilitate relational agency as teachers reach out to others to mobilise resources and tacit knowledge within their school communities. The findings point to the critical role of professional collaboration and suggest that social networks shape how teachers work with specialists to support migrant students.

1. Introduction

The unprecedented flows of migration highlight the importance of schools as sites for integration. Teachers are among the key actors responding to the increasingly diverse student populations (Florian & Pantić, 2017). To what extent they feel able to support migrant students among others largely depends on the systems of support and expertise available to them, and on the (inter-)professional collaboration to remove barriers and facilitate opportunities for students' academic success, socialization, and developing a sense of belonging in their school communities (Lund & Trondman, 2017; Tajić & Lund, 2022). Given that the diversity of student populations has become a common feature of schooling today, new approaches are needed to study how teachers respond to student diversity as an integral part of their work, rather than as an additional demand.

The present study examined how teachers and other school staff exercise a form of *relational agency* - purposeful interactions with other actors, such as colleagues and specialists - within the institutional contexts that shape how they understand and address barriers faced by migrant students, for example whether migrant students are supported by extending what is ordinarily available to all learners, and/or through specialized responses (Florian & Black-Hawkins, 2011). Such relational agency reflects teachers' beliefs about their professional roles, as well as the assumptions that underly the structures and discourses of their work contexts (Edwards, 2017; Eteläpelto, Vähäsantanen, & Hökkä, 2015). Teachers' work is embedded in the institutional structures at meso- or school community level, where they access support through networks of professional collaboration, as well as in the macro-level education policies that provide support systems which shape what teachers see as possible in their practice (Bronfenbrenner, 1979; Vongalis-Macrow, 2007). Their ecological environment includes social interactions in the microsystems (Bronfenbrenner, 1979) through which teachers exercise their relational agency to access support. However, we lack a detailed and comparative understanding about the role of relational agency for supporting migrant integration relative to the structural conditions within different schools and policy settings. Teacher agency has commonly been studied in qualitative case studies that explore its interactions within particular organizational settings while the social and institutional factors that enable or hamper such agency across contexts has been underexplored. To address this gap, our study aims to

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understand the role of social networks in supporting and constraining teachers' and other school staff members' relational agency across 7 school sites in Scotland, Finland, and Sweden. We examined the interaction between teachers' relational agency and their social networks, asking the following research questions.

1. How do teachers and other school staff exercise relational agency for supporting migrant students? [*teacher level*]
2. How do school social networks shape teachers' relational agency for supporting migrant students? [*school level*]

The next sections introduce the main concepts of the study: relational agency and social networks. Then the new methodological approach presents the analysis of social networks in conjunction with qualitative data to uncover how teachers and other members of school staff exercise relational agency to exchange knowledge and expertise, and mobilise resources for supporting migrant students. This approach enabled us to examine how teachers support migrant students within the social and institutional contexts of their work. The study makes a contribution to the knowledge on teachers' agency, and especially an emerging area of research on the transformative agency that involves interactions within teachers' networks for addressing challenges and promoting innovation (e.g. Ehren et al., 2021; Reinius, Kaukinen, Korhonen, Juuti, & Hakkarainen, 2022). Our literature review covers the period of the last two decades (2002–2022) focusing specifically on the relational aspects of teacher agency. We found few studies that apply the concept of agency to teachers' work around supporting migrant students specifically, but included studies that focus on inclusive education more broadly.

1.1. Relational agency

This study uses the concept of *relational agency* as an analytical lens for examining how teachers and other school staff members work together with each other and with specialists involved in supporting students with migrant backgrounds (Florian & Black-Hawkins, 2011; Pantić & Florian, 2015). Relational agency has been described as professionals working purposefully and flexibly with others, aware of the resources they could bring to bear - a process of 'attuning' professional purposes in order to solve professional problems together (Edwards, 2007, 2009, 2017). For example, relational agency unfolds when teachers work collaboratively with other professionals to give consistent support to children and young people at risk of exclusion or other forms of marginalisation (Edwards, 2007; 2010; Pantić & Florian, 2015). In this study we adopt a socio-cultural perspective of agency, understood in terms of an interplay between teachers' beliefs and the work context in which their (inter-)actions are embedded (Eteläpelto, Vähäsantanen, Hökkä, & Paloniemi, 2013). Thus, we examine how teachers exercise relational agency for inclusion of migrant students by working purposefully with other relevant actors within their everyday social contexts. The study examines teachers' and other staff *interactions* both within and beyond schools, which reflect their underlying beliefs, embedded in the social and institutional work contexts.

How teachers exercise agency for supporting migrants is likely to depend on their own understanding of their role and a sense of professional identity for particular purposes and practices (Lasky, 2005; Sannino, 2010; Stillman & Anderson, 2015). For example, inclusive practice can be understood as a way of responding to differences by extending what is ordinarily available to all, as opposed to doing something 'additional' or 'different' for some (Florian & Black-Hawkins, 2011). In this approach, including learners with migrant backgrounds in the receiving schools relies on the capacity of school systems and the actors within them to cater for all students, while avoiding the risks of marginalisation of some learners and/or groups such as students with migrant background, who may be experiencing specific barriers related to language or cultural differences, or other intersecting barriers (Florian, 2009). Applying the relational agency framework in this context (Pantić & Florian, 2015) allowed us to explore how teachers' beliefs and relational contexts interact in their individual and collective practices for supporting migrant students among others. For example, Pantić et al. (2021) identified more or less inclusive ways in which teachers sought advice from colleagues and teaching assistants to support all students. Attuning purposes and practices in this context meant that actors were able to focus on solving an issue or barrier that a student was facing (Edwards, 2009).

Previous studies also point to the dynamic and temporal nature of teacher agency informed by the underlying sense of purpose and beliefs about their professional roles (Biesta & Tedder, 2007; Lipponen & Kumpulainen, 2011; Pantić, 2015, 2017; Priestley et al., 2015; Vähäsantanen, 2015). For example, teachers might perceive their roles as implementers of their school or authorities' policies, as well as 'step up' above and beyond the perceived expectations of their roles (Buchanan, 2015, p. 710). Villegas and Lucas (2002) regard teachers' beliefs about schooling and their roles as a continuum between views of teachers as 'technicians' who apply rules and procedures uncritically accepting standard school practices, and those of teachers as 'agents of change' who see schools as potential sites for promoting social equality (Villegas & Lucas, 2002, p. 54). These underlying beliefs may shape teachers' actions and how much effort they are willing to invest in dealing with issues faced by migrant students to the extent that they perceive such effort as part of their roles. Teachers' perceptions of their roles can simultaneously align to those of 'agents of change' and 'role-implementers', for example when they see the current policy agenda or organizational structures as aligned to their own commitments (Lane & Sweeny, 2018; Pantić, 2017). This is why our analysis explores how teachers might display agency differently (i.e. agents of change or role-implementors) in different situations, and across different school and policy contexts. One of the key aspects of teachers' relational agency is their ways of working with others to mobilise support within their social contexts and networks, given levels of autonomy and interdependence with other agents (Lane & Sweeny, 2018; Pantić, 2015, 2017). Thus, it is important to focus on teachers' and other school staff members' social networks to elaborate their relational agency in school contexts.

1.2. Social networks in schools

Teachers' social networks represent their immediate social environments within which they are able to exercise agency through interactions with other actors. Social network analysis (SNA) has been applied to understand how teacher agency is embedded in their social contexts (see, e.g. Penuel et al., 2010). Derived from the same basic assumption as SNA - that educational practice is a socially embedded process - relational agency fundamentally depends on the structure of teachers' social networks, which provide teachers with opportunities to access resources by mobilizing their social connections. Research indicates, for example, that frequent interactions with close colleagues foster an environment conducive to innovation and improvement by reinforcing constructive school norms of formal support, mutual help, and shared responsibility for students (Bidwell & Yasumoto, 1999; Penuel et al., 2010). Our study builds on the insights about transformative agency, for example in dealing with disruptions and innovation (Ehren et al., 2021; Reinius et al., 2022) and uses network approach to capture those interactions that facilitate agency for inclusive practice specifically.

SNA approaches can help uncover teachers' networking behaviour and examine how it shapes their commitments and practices (Baker-Doyle, 2012). For teachers, social networks are a source of information, social support, access to resources, sense-making, normative pressures

Table 1
Description of 7 school sites.

Schools	Size	Neighbourhood	Proportion of migrant students	Most common foreign languages	Attainment levels
Finland: Two schools are located in big- and middle-sized cities.					
Downy birch	About 800 students	In the area that has higher unemployment rate and slightly lower socioeconomically status than the average in the city	Slightly over 10 % (including those who migrated to Finland themselves and/or one or both of their parents migrated)	Russian, Estonian, Arabic, English, Somali	N/A
Silver birch	About 400 students	The neighbourhood consists of several socio-economically diverse smaller areas	Slightly over 10 % (including those who migrated to Finland themselves and/or one or both of their parents migrated)	Russian, Estonian, Arabic, English and Somali	N/A
Scotland: Three state-funded schools are located in different neighbourhoods of a city, with students from mixed socioeconomic backgrounds.					
Beech	About 980 students	N/A	10–20% (students with English as an additional language)	Polish, Spanish, Arabic	around the national average
Juniper	About 830 students	Mostly impoverished households	20–30% (students with English as an additional language)	Polish, Spanish, Arabic	Slightly below the national average
Rowan	About 890 students	Least impoverished households	0–10% (students with English as an additional language)	Polish, Spanish, Arabic	around the national average
Sweden: Both schools are located in one of the biggest cities, representing very different sites for migrant integration.					
Magnolia	About 240 students	Located in an ethnically and socio-economically mixed neighbourhood	95% (including those born outside Sweden and those with both parents born outside Sweden). Only halal food is served at school.	Somali, Turkish, Arabic	Around 85% of the students finish compulsory education with grades that allow access to a vocational high school
Pine tree	About 440 students, in a school of 700 with primary students	Located in a socioeconomically affluent area with majority of students coming from a Swedish background	Around 7% have a migrant background (i.e., a lower number of newly arrived migrant students compared to other schools in Sweden)	Arabic, Persian, Turkish, Russian, English, Tigrinya, Spanish, Ukrainian	95% high school acceptance rate for vocational programs

and influence (Coburn & Russell, 2008; Frank, Zhao, & Borman, 2004; Moolenaar & Sleegers, 2010). An SNA study of teachers' networks for inclusive practice indicated that they involved more frequent and more diverse interactions in situations when teachers acted as agents of change than in those that involved role implementation (Pantić et al., 2021). Teachers' relational agency has been associated with a higher propensity to seek support and greater diversity of interactions with various other actors within their networks both within and beyond their schools (Lane & Sweeny, 2018).

Previous studies have recognized the importance of institutional contexts and an interplay between the personal and contextual factors for agency in school communities (Van der Heijden, Beijaard, Geldens, & Popeijus, 2018; Lane & Sweeny, 2018; Pantić, 2017; Vähäsantanen, 2015). Teachers and other school staff exercise of agency varied given social opportunities to learn from each other in a given institutional or cultural setting (Pantić, 2017; Riveros, Newton, & Burgess, 2012). Recent studies point out that agency is socially-embedded and exercised through relationships and networks (Reinius et al., 2022; Vähäsantanen, Paloniemi, Räikkönen, & Hökkä, 2020). This study aims to understand how social networks facilitate or hamper relational agency focusing on teachers' and other staff interactions around migrant support.

2. Methodology and methods

2.1. Study design and contexts

Our study uses a cross-country design and a Mixed-Method Social Network Analysis (MMSNA) to collect data from seven school sites in Scotland (3), Finland (2) and Sweden (2). Tables 1–3 presents the similarities and differences in the schools' demographic composition and other characteristics (Table 1); relevant differences in country-level setting (Table 2) and the total numbers of participants across counters for the different tools (Table 3).

MMSNA enabled us to simultaneously collect data on actors' relational agency and the school social structures in three waves over two years in order to examine how they interact to shape migrant support practices across different school sites embedded in the different institutional contexts and migrant support structures (see Table 2 for overview).

The three countries also differ in the ways teachers are selected and prepared. Finland's teacher profession is known for its high status that reflects in the selectiveness - it is difficult to get into teacher education. Teachers are regarded as academic professionals and they have considerable pedagogical autonomy. There is no heavy assessment via

Table 2
Support systems for migrant students in three countries.

Country	Major approaches to assist migrant students
Finland	Newly arrived migrant students are initially educated in preparatory classes that involve learning Finnish or Swedish (Finnish and Swedish are both official languages in Finland), and different subjects such as mathematics, social studies, and natural sciences, tailored to the needs of each student, taking into account their previous education and language skills. The preparatory education is free of charge and typically lasts for one year but can be extended based on students' individual needs. In some cases, the students with migrant background attend regular classes together with Finnish-speaking students. The students are also supported by services such as counselling, tutoring, and integration services designed to help the students integrate into the education system and Finnish society as smoothly as possible.
Scotland	Public schools are governed by a local authority that employs all staff and support staff, including English as an Additional Language (EAL) teachers, who advise teachers on classroom practices, assess the levels of English of newly arrived students, and generally support the wellbeing, equality, and inclusion of EAL and ethnic minority pupils. Schools are organised into Departments, most of which map onto curricular subjects (e.g. Social Subjects, Modern Languages), while the "guidance" department is concerned with students' pastoral needs, and "Support for Learning" department is responsible for students' additional support for learning.
Sweden	In Sweden, schools can opt for separate preparatory classes, as well as have the newly arrived migrant students attend mainstream classes supported by multilingual assistants, who speak their language. The latter is the case in Magnolia School, while Pine Tree School places newly arrived migrant students in a separate class which is led by the Swedish as a second language teacher. At the same time, they are also assigned to a mainstream class, to which they transition in time. Newly arrived migrant students are also given multilingual classroom assistants who speak their mother tongue.

Table 3
Summary of research tools and participants per country.

Research tools	Number of participants		
	Finland	Scotland	Sweden
Online logs	85	134	56
Interviews	15	32	35
Social network survey	299	608	209

external evaluations or school inspections in Finland. Teacher education is research-based and a master's degree is required for a teaching qualification. The need for teachers' pedagogical thinking and engagement as researchers, are also emphasised in Sweden and Scotland. Although master level qualification is not required it is highly desirable in Sweden and increasingly promoted in Scotland. The career-long commitment to professional learning and development is emphasised in all three countries, while collaborative teacher development is part of routines in the Swedish school. Scottish policies explicitly position teachers as agents of change. However, in all three countries whole-school development programmes around issues of inclusion and diversity are variable even thought these topics are increasingly covered in teacher education programmes.

2.2. Data collection tools, participants and analysis

The data was collected with online logs, interviews and social network survey. The overall numbers of participants in each tool are presented in Table 3. The composition of the participants in each tool is presented in more detail in the subsections on each tool below.

Below we present the data, participants and analysis employed for each of these tools. All participation was voluntary and anonymous. Participants consents were obtained after providing information about each tool, as well as sessions in each school in which staff could ask questions before deciding whether to participate.

2.2.1. Online logs

An online log for Teacher Reflection on their Agency for Change (TRAC), designed to collect data on relational teacher agency was adapted to focus on migrant student support specifically. TRAC log consists of three sections that reflect aspects of the relational agency including: the purpose of interactions (1-WHAT was the problem or situation that actors sought to address), the role of the actors they interacted with (2-WHO they reached out to seek support) and reasons why (3-WHY they reached out and how they were supported), including a reflection on the outcome. In particular, the log asked staff to describe in detail a "time (over the past 6 months) when they reached out to someone to support or help a migrant student".

The data was analysed for the aspects of relational agency that underlie the log sections, including: beliefs about professional roles; nature of the interactions, and the perceived barriers and enablers of agency when supporting migrant students. Following the above theoretical framework, the coding scheme distinguished between instances of staff working proactively and flexibly with others when supporting migrant students coded as 'Agents of Change', e.g. where a teacher approached "many different persons to get help with the student's issues", and those coded as 'Role-implementers' when staff reported implementing existing policies and procedures, e.g. "Home were notified but students behaviour remained the same and declined". Importantly, given the situational nature of relational agency, acting as agents of change or otherwise is attributed to particular situations rather that the actors themselves, as the same teacher might act as an agent of change in some situations/contexts and not in others. Table 4 Shows the number of logs coded as 'Agents of Change' in the total number of logs.

All staff in each school were invited to fill out the log at least once in each wave of data collection. The data was collected during the Covid-19 pandemic (2020–2022) and was considerably affected by the school closures during some waves and more so in some schools and countries than in others, resulting in variable participation across schools and waves (see Table 5).

2.2.2. Interviews

A sub sample of staff were interviewed in each site if they expressed a wish to be interviewed when filling out the log and survey. The interviews covered practices, collaboration and institutional arrangements around supporting migrant students and were coded and analysed for the aspects of relational teacher agency framework above with the help of NVivo (in Scotland and Sweden) and Atlas. ti software (in Finland). The interview data is used to illustrate the content and contexts of interactions and networks captured with the TRAC log and staff social network survey. The samples in each site include diverse range of roles, men and women, different age, years of experience and in some sites staff who have migrant background themselves. The roles are defined variously across the three countries and grouped into teaching (various subjects such as languages, mathematics, technology and design, sports), management (head teachers and deputy leaders, heads of departments) and specialist roles (e.g. psychologist, student support, support for leaning such as special educators and teachers of English/Swedish/Finnish as additional/second language, or welfare officers), sometimes with overlapping specialist/management and teaching positions, as well as administrators and janitors.

2.2.3. Social network survey

All staff in each school were invited to fill out an online social network survey designed to map their school social networks of collaboration for migrant support, among others. In each school, the survey displayed a list of staff who worked in the school, and asked staff members to nominate colleagues with whom they had interacted in specific ways in recent months. In social network terms, a nomination represents a 'tie' between two actors from the actor nominating to the actor nominated. Staff also could nominate actors outside the school that they interacted with. In particular, it asked staff to indicate if they had "collaborated closely with this person (e.g. regularly shared teaching

Table 4
Participants in logs across schools and waves of data collection, and number of interviews in each site.

Schools	N logs			Number of logs coded as 'Agents of change'/total number of logs	N interviews
	Wave 1	Wave 2	Wave 3		
Finland					
Downy birch	48	5	6	44/59	10
Silver birch	4	6	16	22/26	5
Scotland					
Beech	12	33	21	42/66	11
Juniper	9	13	17	24/39	12
Rowan	11	11	7	16/29	9
Sweden					
Magnolia	15	2	2	10/19	19
Pine tree	27	8	2	6/37	16

Table 5
Participants in staff survey, response rates by country and wave.

Schools	Waves	N	Response Rates	% Teachers	% Migrants	% Females
Finland						
Downy Birch	Wave 1	69	77.5%	68.1%	1.5%	73.1%
	Wave 2	59	63.4%	66.7%	1.9%	75.9%
	Wave 3	41	42.3%	59.5%	0.0%	70.0%
Silver Birch	Wave 1	43	71.7%	65.1%	4.8%	61.9%
	Wave 2	46	73.0%	68.1%	6.5%	63.0%
	Wave 3	41	73.2%	70.7%	4.9%	65.9%
Scotland						
Beech	Wave 1	62	51.7%	53.7%	16.9%	74.6%
	Wave 2	92	80.7%	54.3%	16.9%	69.7%
	Wave 3	74	63.2%	57.9%	19.2%	67.6%
Juniper	Wave 1	53	54.6%	63.0%	25.5%	65.4%
	Wave 2	74	77.1%	55.3%	26.8%	73.6%
	Wave 3	71	76.3%	58.9%	25.4%	74.3%
Rowan	Wave 1	50	51.5%	52.8%	18.4%	71.4%
	Wave 2	73	72.3%	52.1%	23.6%	61.6%
	Wave 3	59	55.7%	47.5%	30.5%	67.8%
Sweden						
Magnolia	Wave 1	33	68.8%	63.6%	90.9%	63.6%
	Wave 2	36	75.0%	54.1%	94.3%	61.8%
	Wave 3	31	68.9%	77.4%	93.1%	55.2%
Pine Tree	Wave 1	49	79.0%	74.0%	38.6%	64.4%
	Wave 2	36	58.1%	66.7%	39.4%	64.7%
	Wave 3	24	39.3%	79.2%	40.9%	73.9%

resources, led extra-curricular projects together, regularly shared a classroom …)" to map the general networks of collaboration and knowledge exchange among others; and for migrant support specifically if they "turned to this person for support in matters concerning students from migrant backgrounds". Data on these nominations, obtained through the survey, was used to construct the whole school networks of each school, such that a tie was said to exist between staff member *i* and staff member *j* in each network (i.e., close collaboration and/or migrant support) if *i* interacted with *j* in the ways mentioned above.

The survey also asked about staff roles and demographic information, e.g. migrant background and gender (see Table 5). The survey was administered through Qualtrics in dedicated sessions on staff development days. The response rates ranged from 51,5% to 80.7 % in Scotland, 39,3 % to 79% in Sweden and 42,3 % to 77,5 % in Finland (see Table 5).

The staff network data were analysed using Gephi software (Bastian, Heymann, & Jacomy, 2009) to visualize the general collaboration and migrant student support networks (see e.g. Fig. 2) using data from the wave that had the highest response rate for each school. We produced the sociograms using the ForceAtlas 2 algorithm (Jacomy, Venturini, Heymann, & Bastian, 2014).

Stochastic Actor-Oriented Modelling (SAOM) was implemented using the Simulation Investigation for Empirical Network Analysis software package in R (Ripley, Snijders, Boda, Andras, & Preciado, 2023) to analyse ties formation and network evolution mechanisms that enabled us to examine to what extend actors' attribute (such as their role) were linked to actors' behaviours in reaching out to colleagues when supporting migrant students (RQ1) and how networks shape the interactions (RQ2). Stochastic Actor-Oriented Models (SAOM) is a statistical routine that takes into account the dependence in network data to estimate the parameters that explain the formation and evolution of a network through an iterative process involving micro-steps. Each step is the possible creation or dissolution of a tie (i.e., interaction) between actors. The model assumes that in-between two (or more, three in the case of this study) observed measurement points, each actor has had several chances to add, dissolve or leave unchanged ties with other actors in the network. These changes are purposefully done by actors in the network to achieve certain goals (e.g., receiving information about a student with a migrant background). The SAOM procedure simulates these changes until getting as close as possible to the observed network at the second (or third) measurement point. These simulations are called "micro-steps". Performing a large amount of these micro-steps enables the model to estimate the contributions of the chosen parameters (structural effects, actors' attribute effects, and multiplex effects) in the network formation and evolution by comparing simulated networks and observed networks. Table 6 illustrates these effects. A positive significant coefficient for an effect can be interpreted as a tendency of ties formation corresponding to this effect (e.g., a positive significant coefficient for the alter effect 'having a migrant background' means that actors in the network tend to reach out to actors having a migrant background).

We entered effects in the model step by step, starting with the structural effects (outdegree density, reciprocity, transitive triplets, indegree popularity, outdegree popularity, and outdegree trunc1, as

Table 6
Illustration of the SAOM effects.

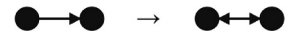
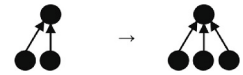
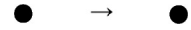
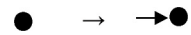
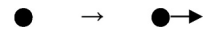
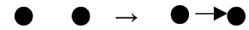
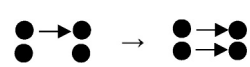
Structural Effects	Illustration
outdegree (density)	
reciprocity	
transitive triplets	
Outdegree activity	
Outdegree popularity	
Indegree popularity	
Outdegree trunc1	
Attribute effects	
Alter effect	
Ego effect	
Homophily effect	
Multiplex effect	
Network 1 → Network 2	

Table 7
Descriptive network statistics of log ties according to how logs were coded. "No log" means that respondents answered the staff survey but did not fill in a log.

Schools	Diversity of alters			Outdegree (ties sent in the Migr network)			N Ties outside school		
	Log coded AoC	Log not coded AoC	No log	Log coded AoC	Log not coded AoC	No log	Log coded AoC	Log not coded AoC	No log
Finland									
Downy Birch	1.62	1.87	1.25	5.74	5.53	4.87	0.80	0.60	0.83
Silver Birch	2.29	2.20	1.55	9.52	8.60	4.64	0.71	1.00	1.04
Scotland									
Beech	1.35	1.17	0.90	4.40	2.57	2.79	1.51	1.04	0.79
Juniper	2.17	1.88	1.38	6.96	6.44	4.56	0.87	0.88	0.48
Rowan	1.62	1.23	1.09	3.88	2.15	3.14	1.25	0.46	1.04
Sweden									
Magnolia	1.33	2.06	1.55	1.67	4.94	4.77	1.00	0.50	0.44
Pine Tree	2.17	1.65	0.79	6.33	3.94	2.16	1.83	0.45	0.46

illustrated in Table 6 above); then the attribute effects (alter, ego and homophily for variables of interests - roles of staff members,[1] having a migrant background, teaching department[2]; and control variables - gender; seniority in the school; working part of full-time; and finally, the multiplex effects – which correspond to the mutual influence of the migrant support network and general collaboration network. All final models converged (i.e., t-ratios <0.1; maximum overall convergence ration <0.25) and were estimated using 10,000 iterations in phase 3. Model goodness of fit was assessed against the observed networks' indegree, outdegree and triad censuses distribution (Lospinoso & Snijders, 2019). This allowed us to compare to what extend these characteristics for a number of simulated network (created with estimations from our previously run models) are similar to the characteristics of the observed networks.

In addition to the SAOMs, we calculated descriptive network statistics for individuals who sent log ties, and for dyads (pairs) of individuals involved in log ties, according to how logs were coded. We compared individuals who sent log ties that were coded as Agents of Change; those who sent log ties that were not coded as Agents of Change; and those who responded to the staff survey but did not send log ties, according to the number of ties they sent in the Migrant Student Support network; the diversity of the alters they reached out to in this network; and the total number of individuals outside of their school they reported reaching out to (see Table 7). Meanwhile, dyads of individuals involved in log ties were compared according to whether they were more or less structurally equivalent in the migrant support network, i.e., the extent to which they tended to reach out to, and receive ties from, the same colleagues in this network (see Table 8). Structural equivalence was measured by calculating product-moment correlations between the ties that the individuals involved sent and received. We thus compared whether log ties sent from i to j tended to overlap with network ties that were also sent from i to j, and whether log ties tended to occur between individuals who were more or less structurally equivalent.

Finally, to examine the interactions between relational agency and social networks, we analysed the quantitative results arising from social network data in concert with qualitative data from staff members' logs. The log content was inspected in relation to the actors' position in the network and the colleagues they reached out to, in the migrant student support networks (see Fig. 1 for an example). We examined the roles of actors, including whether they had formal responsibility for supporting migrant students; how many ties they had in this network; and whether they tended to interact with the same colleagues in this network. We engaged in iterative analysis of qualitative and quantitative data for corroborating or non-corroborating evidence of network features in the qualitative data, while the network analysis (see results of the SOAM modelling above in the Appendix) was used to identify patterns in the log data. The research teams from the three countries extensively discussed the preliminary findings and analysis in regular meetings to ensure the analytic procedures were aligned to produce comparable results across the different settings.

Table 8
Descriptive statistics of log ties according to how logs were coded. "No log" means that respondents sent a tie in the Migrant Student Support network but did not fill in a log.

Schools	Structural Equivalence (having the same colleagues)		
	Log coded AoC	Log not coded AoC	No log
Finland			
Downy Birch	0.168	0.286	0.203
Silver Birch	0.280	0.200	0.270
Scotland			
Beech	0.232	0.181	0.172
Juniper	0.211	0.224	0.243
Rowan	0.254	−0.012	0.232
Sweden			
Magnolia	0.234	0.250	0.243
Pine Tree	0.222	0.173	0.187

3. Results

Findings from log data exemplify instances of how agency is exercised (RQ1), and the social network data is used to show the patterns in interactions within the social structures (RQ2). We use interview data to provide contextual information.

3.1. How do school staff exercise relational agency to support migrant students? (RQ1)

A general pattern that can be discerned across all schools is that teachers' relational agency for supporting migrant students is characterised by a tendency to reach out to colleagues and specialists whom they perceive to have information or knowledge relevant for supporting the students with migrant backgrounds. A staff member from Finland shared an example of seeking knowledge about students:

> In multicultural work, knowing the student is often very important in everyday life … According to my own experiences, the following questions are certainly challenging for a staff member who doesn't know the student: Do we understand each other with the student?.. How do I communicate things to [the student's] home so that the recipient also understands the situation.' (Arvo, Finland, Silver Birch, log ID 457)

SAOM showed that these interactions often involve going to people in designated roles or with specific expertise. In all countries, we found evidence that staff tend to interact with English/Swedish/Finnish as additional language teachers regarding migrant student support (e.g., see significant "Migr: EAL-alter" effect in Juniper School and in Rowan

[1] Roles were teacher, support staff member, or management.
[2] Not exhaustively math, social studies, modern languages, ICT, artistic, etc.

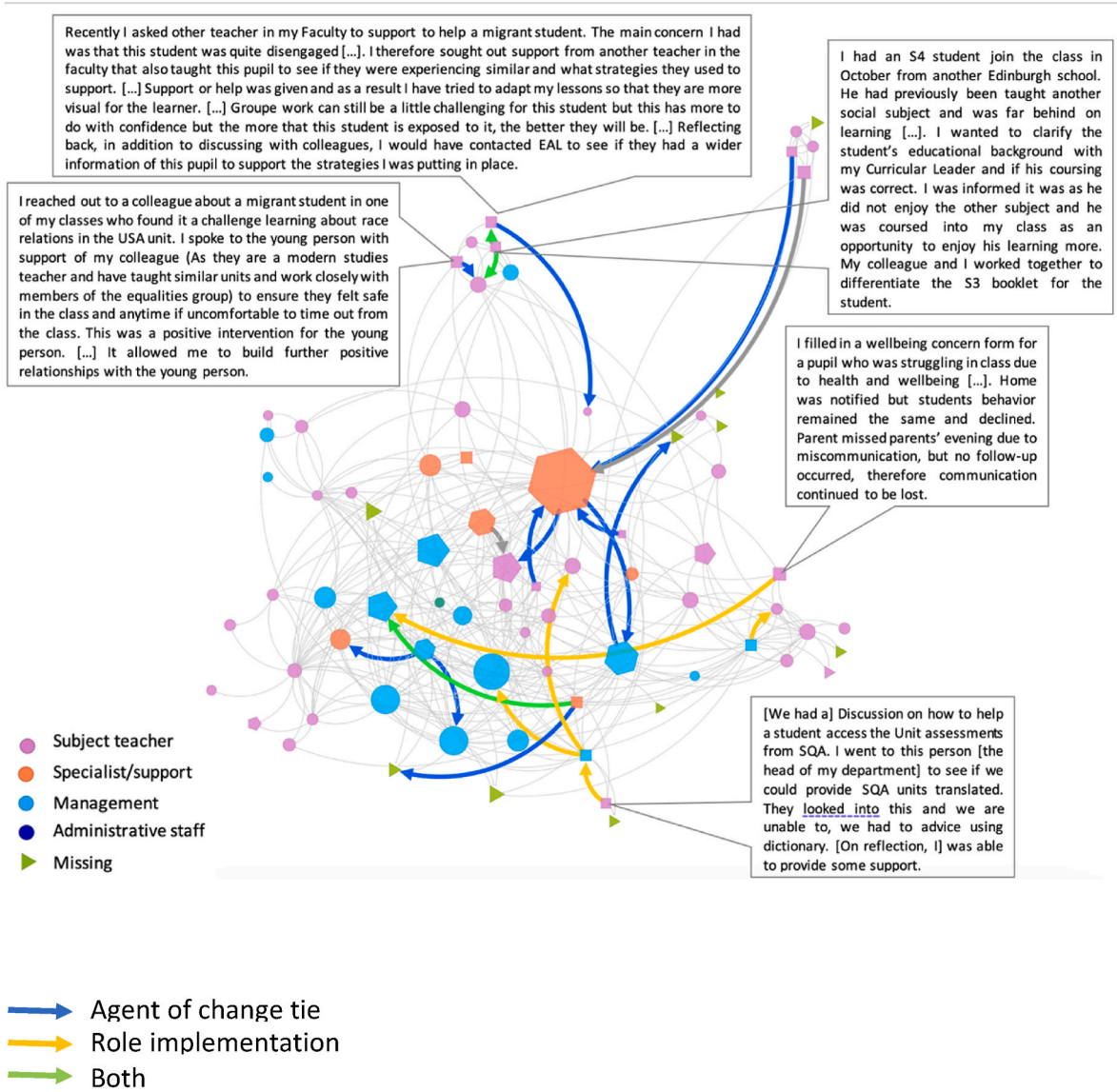


Fig. 1. An example of the contents of the log interactions embedded within the whole school migrant student support network (Juniper School, Scotland).

School in the Appendix). In Scotland and Sweden, staff members are also going to other student support staff (e.g. see significant "Migr: Role-sup alter" effect in Juniper School).

Those interactions reported in the logs that have been coded with 'Agents of Change' (hereafter AoC) codes tend to report going to a more diverse range of actors who are recognized as a resource regardless of their formal roles in the school, e.g. colleagues who speak the same language as a student, and in other ways proactively seeking to mobilise knowledge and support for migrant students. In Scotland and Sweden, staff members having themselves a migrant background tend to be reached out by their colleagues (e.g., see significant "Migr: MigrBack1 alter" effect in Pine Tree School in the Appendix), while the Finnish sample had only 2 staff members with migrant background in each school.

The ties reported in the logs coded as AoC also tend to involve reaching out to more colleagues (i.e. having greater outdegrees) in the migrant student support network, in all but the Swedish Magnolia school (see Table 7). In the Scottish Beech and Rowan schools and both Swedish schools the logs coded as AoC also reported a slightly higher numbers of situations in which staff reached out to the actors outside school.

Examples of interactions coded as AoC are prevalent in the qualitative data (see Table 4) and illustrate how teachers used their relational agency to support migrant students. The situations reported in the WHAT sections of the log) include examples of seeking to enable access and overcome language barriers, or to understand the cultural background, home situations, dealing with issues around different expectations and norms, and sometimes attendance or behaviour problems. Supporting newly-arrived migrant students often involves helping them to navigate an unfamiliar system. A leader from the Scottish Juniper School related a situation of enrolling a student where neither she nor the family spoke English:

> 'I translated the course choice form, arranged an interpreter to be at the meeting and arranged for the EAL teacher to be at the meeting. I was concerned about the pupil not being able to settle well into the school so arranged two buddies, one of whom speaks the pupil's mother tongue. […] [The EAL teacher] provided cultural background information for me. She supported the pupil during their settling in period and continues to support. She assessed their level of English and put that information out to class teachers. (Senior leader, Scotland, Juniper School, logId 112)

The type and nature of the interactions reported in the WHO section of the log show that ties coded as AoC commonly describe information and advice sought from specialists such as EAL teacher in Scotland or

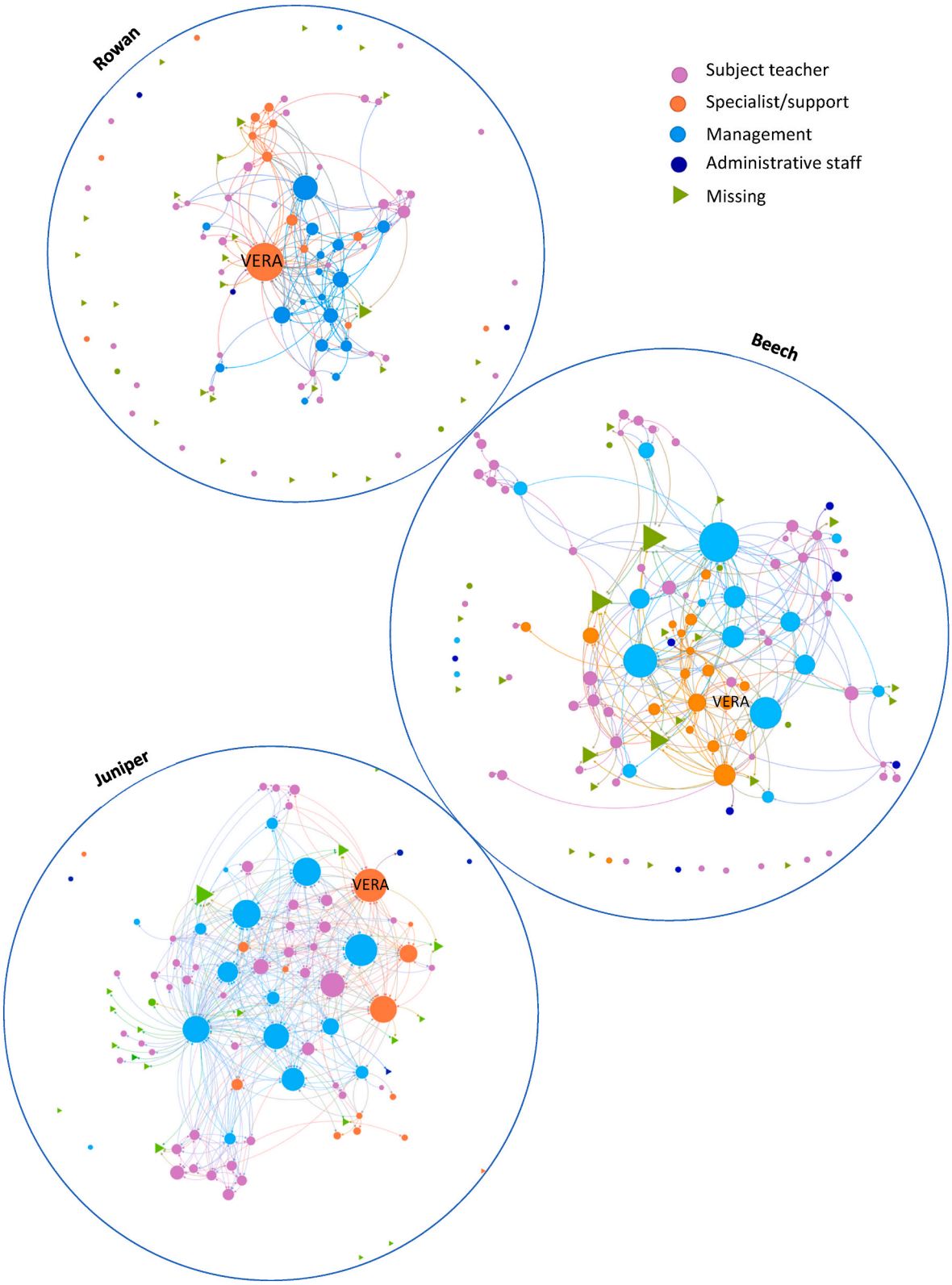


Fig. 2. Position of the same EAL teacher (i.e., Vera) in migrant student support networks at Wave 2 in three schools in Scotland.

Swedish and Finnish second language teachers or special educators in Finland, but often it's because they (also) have a particularly strong relationship with the student/family, or because they understand students' cultural backgrounds particularly well. This understanding could come from their cultural, migration, or linguistic background which they shared with students, or simply teachers who had a relatively strong relationship with the students concerned. For example, a member of staff from the Swedish Magnolia reported an instance of working with a colleague outside of school time to understand a student's family situation and address a poor attendance, because "she is my co-mentor and

knows about the student more than me. She also lives close by and knows the family much better" (Jörgen, Head Coach, Sweden, Magnolia, log ID 100).

The tendency for interactions coded as AoC to involve actors in more diverse roles is illustrated by a teacher form Finland who related a range of actors they reached out to for different resources and expertise to address students' needs and behaviour challenges:

> 'I have contacted child protection, police, the school nurse, the head teacher, the student's guardians, the special education teacher, the student's class instructor. I have arranged meetings and discussed with the student, as well as with his/her network … (L2 teacher, Finland, Silver Birch, log ID 218)

In several schools, logs that are coded as AoC report having greater numbers of professional interactions with people outside school than individuals who send logs that are not coded as AoC (see Table 7). The interactions reported around supporting migrant students reach far beyond the support for learning. For example, Gunilla from Pine Tree school in Sweden related how she helped a student by involving social services outside school:

> 'I contacted social services. Student was worried that the money he will get from his summer job this summer will be taken by his/her guardian. The school informed social services about the student's concern that the guardian would take the money and therefore I wrote and asked the social services to talk to the student and arrange for him/her to have access to his/her own money'. (Gunilla, school welfare officer, Sweden, Pine Tree, log ID 131).

The headteacher from the same school reported that she contacted a municipality in another region in Sweden where two of newly arrived students, two siblings, would move to: "I tried to ensure that they received a good reception and that one of the siblings who went to year 9 and needed special support would receive it." She noted that it required a lot of phone calls and chasing people and expressed a wish that "there was a collaboration between the social service in our municipality which is responsible for establishment of newly arrived families and the school to facilitate and improve school transitions." (Sophia, headmaster, Sweden, Pine Tree, log ID 137).

In their reflections on the outcomes of interactions in the WHY section of the log staff commonly expressed that collaborations around migrant support require a lot of time and effort in that teachers need to go beyond the requirements of their role in supporting a student, as in this log example from a teacher in Finland:

> 'I have had to ask for help from many different persons to get help with the student's issues. So, the progress has been very demanding work … I have felt it difficult that so much work is needed to get support and to know about support possibilities and to be able to demand help … So very challenging and time and energy consuming as well as too bureaucratic'. (Teacher, Finland, Downy Birch, log ID 100).

On the other hand, the most commonly perceived enablers of migrant student support are aspects of school culture where collaboration is a common feature of daily routines. For example, a member of staff from Swedish Magnolia school related how they support their students by being available, listening and responding even outside school:

> 'In many cases, the support is generally based on how our school works with trust and relationship building. In other words, we support our students by being accessible, attentive and welcoming even outside school. (Aya, Development leader and study and career counselor, Sweden, Magnolia, log ID 109)

The role of social environments in relational agency is also reflected in our social network data as follows.

3.2. *How is relational agency shaped by the school social networks? (RQ2)*

Combining log data with the social network analysis allowed us to examine the interactions that reflect relational agency against the backdrop of the social networks that enabled them to access resources, expertise and advice for supporting migrant students, and to compare the similarities and differences across sites. The complementary interview data provided contextual information that we used to interpret the underlying organizational structures and norms around migrant integration. Fig. 1 Illustrates how the log data was mapped onto the social network visualisations in one Scottish school.

Close inspection of log data within and across school networks indicated that interactions coded as AoC were more likely to be situated within teams where collaboration around migrant students was more common in the social network. Thus, in the example of Juniper school where most logs were coded as AoC, such interactions were often directed at an EAL teacher and middle leaders in the Social Studies department, among which information and advice sharing was particularly prevalent with several migrant student support network ties (see Fig. 1). These logs implied that a habit of information sharing and collaboration were instrumental in supporting migrant students:

> 'I reached out to a colleague about a migrant student in one of my classes who found it a challenge learning about Race Relations in the USA unit. I spoke to the young person with support of my colleague (As they are a Modern Studies teacher and have taught similar units and work closely with members of the Equalities group) to ensure they felt safe in the class … ' (Teacher, Scotland, Juniper School, Log Id 304)

These logs also emphasise the importance of obtaining information about newly arrived migrant students, and of availability of colleagues being asked for help regarding migrant students that would not have been sought if it was not usual for staff members to reach out to colleagues for information in this way. These logs indicate that habits of collaboration and information sharing facilitated interactions coded as AoC.

In contrast, out of the three logs shown on Fig. 1 that were coded as role-implementation, two occurred in the same department among whose staff members there was a relative dearth of migrant student support ties, while another log was sent by a teacher who was on the periphery (in network terms) of her department. These logs suggest that, while some support was provided, more could have been done, as in this example:

> I filled in a wellbeing concern form for a pupil who was struggling in class due to health and wellbeing […] Home were notified but students behaviour remained the same and declined. Parent missed parents' evening due to miscommunication but no follow up occurred therefore communication continued to be lost. (Teacher, Scotland Juniper school, log Id 299).

Comparison of interactions coded as AoC across sites show that, while reflecting the different roles of their institutional settings, they share an essential feature of collaboration for sharing the knowledge about students and creating a safe atmosphere, as this staff member from Finland described:

> 'The student had lost his things and … in my work role it is natural to help based on the needs, and in the situation, there were no adults closest to him/her [the student] present. The situation ended well, but it emphasized the importance of knowing the student in terms of the whole situation. Reaching the adults closest to the student – made it significantly easier to sort the situation out. [Colleague who knew the student] helped to form an overall picture and certainly supported in creating a safe atmosphere (Arvo, Finland, Silver Birch, log ID 457).

Examining the log data within social networks across sites, we identified patterns in their structural equivalence properties and differences between situations coded as AoC, compared to other interactions, summarised in Table 8.

In each site we could identify pockets of collaboration that enabled staff to exercise their relational agency to access resources and knowledge available to them. The higher structural equivalence of interactions coded as AoC in Rowan and Beech in Scotland, Pine tree in Sweden and to a small extent in Silver Birch in Finland indicate that in these sites groups of colleagues are more involved in collaborations with the same designated actors around migrant support, which is also corroborated by the qualitative findings. For example, Stina, who is the Swedish as a second language teacher in Pine Tree, is involved in most of the interactions regarding migrant support network. In her role she is seen as the main person to deal with newly-arrived students because they need to learn Swedish. For example, a mathematics teacher reported approaching Stina to get information about student's prior knowledge, so she knows where to start, got recommendation on suitable materials, word lists in student's mother tongue, and contact details for the student's multilingual classroom assistant (Teacher, Sweden, Pine Tree, log ID 115).

Comparisons of the social networks across sites also uncovered how the same support roles can be used differently in different schools. For example, migrant support networks show how the same (English as Additional Language) specialist, Vera, who supports all three schools in Scotland, was sought after differently across the three sites. In Rowan school, Vera is by far the most central actor in the school's migrant student support network, in Juniper she is one among several very central actors, while in Beech school, Vera was relatively central, but not among the most central actors in the school (see Fig. 2.)

Together with the qualitative data these visualisations suggest that Vera was utilised very differently in the three schools. In Rowan school, she is actively approached by some staff members. In Juniper, she is actively used but the responsibility for migrant students is spread among staff, while in Beech school she is relatively marginalised and not more prominent than other staff. This picture is reflected in her own words in an interview:

> 'Beech at management level are very committed to celebrating diversity and equalities, but […] I don't get much … interaction with the staff […] [Rowan] is definitely in the middle in that it wants to be better. I've been there for the longest, so I've managed to establish myself there, like everybody knows who I am, I've managed to do whole school training. […] Juniper School […] because it's so diverse […] I think just generally a lot of stuff's in place […] in Rowan and Juniper, [staff] do, they'll email and say, I've got so and so in my class, I don't think I'm managing to teach them, can you give me some advice' (Vera, interview).

The results from statistical network models also show a consistent trend in the differences between general collaboration networks (close collaboration and/or information and advice exchange) and those of migrant support. Overall, we can say that general collaboration networks are mainly shaped by the disciplines (teachers teaching the same discipline interact with each other), while migrant student support networks are largely explained by the designed role or specific expertise of the staff members. Although this tendency is generally more common in migrant support networks than in general collaboration networks, the two networks look more alike in the Scottish Juniper school, and especially in Magnolia in Sweden, which share a common feature of having more migrant student populations (see demographic info in Table 1.), as well as practices treat diversity as a common feature of their student makeup (Lund et al., forthcoming).

It is also interesting to note that interactions regarding migrant student support are mainly unidirectional with no reciprocity effects, meaning that staff members did not necessarily reach out to colleagues who reached out to them, e.g., see the insignificant effect of "Migr: reciprocity" in schools of Juniper, Magnolia and Silver Birch in the Appendix). This again suggests that the seeking of support in matters concerning migrant students tended to be targeted towards individuals who had the expertise or ability to help in particular instances.

Collaboration seems to be a common feature of both schools in Sweden, as well as Finland, and pockets of collaboration within departments in Scotland but the qualitative data helped us uncover how it also differs in response to the different migrant populations' needs, even within the similar institutional arrangements. For example, in Magnolia where most students are from migrant background but born in Sweden the needs for support are often related to growing in the disadvantaged area, e.g. related to poverty or risks of marginalisation due to ethnic background. The support focused on wholistic needs of the diverse student populations, in contrast to the focus on removing the barriers to learning for the newly–arrived. For example, when newly arrived students from Ukraine started studying at Pine Tree, they joined in the separate classroom with other newly arrived students. Sophia, the headmaster, reported in her log that she communicated with Anna and Stina whom she saw as "responsible for these students at the school and have the best insight on students' needs and wishes" and "I am proud of having such a nice staff at the school and I hope we succeed integrating these students in the best way and take care of the ones who need it mostly". In Magnolia school newly arrived migrant students are directly integrated into the classroom. At the school both staff and students speak many languages, which facilitates the communication between students and between students and teachers. The wholistic approach at Magnolia school can be illustrated by Jörgen, a staff member that was struck by the self-evident approach among the teachers, pastoral team as well as the school leadership to be there for everyone. He says: "When I came here, I noticed that everyone cared about the children. Everyone is fighting for the sake of the children, no one is here to just collect their salary." One way the school staff is doing the work of supporting the children is to form sustainable social relations with the students. In practice this means that "every student has someone to turn to".

Importantly, presence or absence of a tie itself does not qualify the nature of the interaction in terms of the quality of support for migrant students. Complementary qualitative data provides examples of interactions where teachers use specialist support to enrich their own knowledge rather than delegate responsibility for migrant students:

> 'In addition to helping transfer information between myself, the student and her family, she also helped with my understanding of cultural barriers, such as the best names for subjects, helping the parents understand why we ask for information about racial and religious background and helping the family to understand how the levels and stages here relate to their experience in their home country. […] (senior leader, Scotland, Juniper School, log Id 112)

In contrast, logs coded as 'role-implementation' often involve providing support that is expected within the existing structures. This could include making sure that students have additional time during assessments, checking the student management system for information on existing strategies to engage pupils, or providing students with the free travel card they are entitled to. In Pine Tree there are structures that are supporting the newly arrived students. Specialist, such as multilingual teaching assistants, work directly with the newly arrived students in order to support the students learning and well-being. This task can in itself vary from student to student. Sophia, the principal, explains: "Some students want a multilingual teaching assistant that is excellent in the school subjects and only focuses on that and where the student receive help with everything from home economics to natural science. (…) For other students, relationship building is more important." Sophia reflects upon that the "demands on the multilingual teaching assistants are really high". As there are rather few newly arrived students at Pine

Tree and a specific structure built around them, including a devoted headmaster with a strong interest in the support of newly arrived migrant students. Colleagues who have designated responsibilities for areas of support for migrant students are fulfilling the tasks they are supposed to do but also what they morally feel as the right thing to do.

4. Discussion

The present study considered how relational agency and social networks for supporting migrant students interact across different school settings.

In the context of including migrant students, exercising relational agency has involved seeking to better understand diverse students' experiences and cultural background, helping those newly arrived navigate unfamiliar school or social norms, and working with others who can help remove barriers such as language. In line with previous research (Van der Heijden et al., 2018; Pantić, 2017; Pantić et al., 2021), the examples shows that teachers tend to exercise agency when they seek to support students holistically, promoting their wellbeing and participation as well as learning. This also aligns with the findings of motivation research about the importance of teachers' work to support students' basic psychological needs, including the need for relatedness that concerns a sense of belonging and connection, especially given the diversity of learners (Ryan & Deci, 2020). The findings about the nature of teachers' interactions that reflect relational agency also corroborate those of previous studies indicating that they go to more actors in more diverse roles within and beyond the schools (Pantić et al., 2021). In addition, our study uncovered a tendency to recognise staff with migrant background as sources of relevant knowledge supports, which contributes new evidence in support of calls to diversifying teaching force (Menter, 2017; Pantić, Smith & Persson, 2022).

Regarding school contexts that enable relational agency for migrant support, our findings highlight the central role of relationships and collaboration for sharing knowledge and information. Across sites, staff tend to reach out to people who are seen to have good relationships with students and families, which can be linked to availability of access to such actors with their schools or smaller units such as departments. The pattern of going to specialists in migrant support networks indicates a tendency to see a small number of staff in designated roles as responsible for dealing with concerns related to supporting migrant students. This raises questions about the sustainability of such support when staff turnover is high and in light of limited resources in the current economic context. This study provided examples that illustrate how specialist support can be used differently in different schools, including how expertise and resources are used as a support for teachers themselves to increase their capacity to work with the diversity as a common feature of student populations in modern schools (Florian & Pantić, 2017). While these ways of working are not a common feature of collaborations for migrant support across all sites, they provide valuable insights in the factors that are instrumental in enabling relational agency that could inform more widespread collaboration around migrant support that empowers staff to use their knowledge and exchange resources between them as well as with specialists.

General collaboration is one of the main factors enabling collaboration around migrant support. For example, a tendency found in Juniper school for more staff members to accumulate many ties (i.e. to be sought after by many people) indicates that concerns and responsibilities for teaching students from migration backgrounds are shared at least among the staff members in some departments as well as English as an Additional Language staff. The responsibility is shared even more widely in the Swedish Magnolia school that shares high levels of diversity in the demographics of student populations that help explain the differences between schools, with more migrant students, understandably making the collaboration around migrant support a more common feature of collaboration. The almost identical general collaboration and migrant support networks in Magnolia can be interpreted as treating diversity as a common feature of the schools and supporting migrant students among others, rather than as an additional demand on teachers' time or expertise. This school also provided examples of practices that recognise migrants as a resource for all students that are discussed in more detail in another paper. For example, students help each other with language development and the diversity among staff and students makes it easy for newly arrived students' to speak their first language *and* learn Swedish as well as find friends (Lund et al. forthcoming).

Conversely, lack of time for collaboration is the common barrier stated by the teachers as a constraining factor in their work around migrant student support, even though educational policies in all countries encourage cooperation between teachers, between home and school, and multi-professional cooperation, e.g. with social workers and language specialist when supporting migrant integration. These findings highlight the need to create more structural opportunities for teachers to engage in collaboration around student support, that is emphasised in the literature around increasing diversity of student populations (Ainscow & Miles, 2011; Florian & Pantić, 2017). These findings point to the need for a greater focus on relationships in education policies and interventions that could support the development of positive relationships - a gap noted in other research too (Moè, Consiglio, & Katz, 2022).

It is also interesting to note the differences in the nature of support in the different contexts. For example in Sweden, policies of teachers' working collaboratively with each other and with other actors are supported institutionally through various forms of collaboration around pupil support, but implemented differently in the different contexts of Magnolia and Pine tree schools. Although both schools are focused on supporting academic success the support looks different for different needs of the different groups and within the different socio-economic and organizational settings, including different organizational structures supporting newly arrived students. In Pine Tree they have their own classroom to begin with, while transitioning to their mainstream class, while Magnolia utilizes the model of direct immersion, meaning that the newly arrived student enters their mainstream classroom on their first day at school. Both schools utilize multilingual teaching assistants but in different integrations models. One analytical point that can be made that the role implementer code does not need to be seen as a negative feature in teaching that matters for migrant students. Rather, at least in Pine Tree School it is a form of division of labour that ensure that the newly arrived students receive the support that they are entitled to but also to adjust this support in relation to every individual student.

The same kind of contrast is noticeable in Scotland between Juniper school, where staff are more sensitised to the diversity in the student cohort that intersects with other markers of diversity and vulnerability, and Rowan school where agency and collaboration for migrant support is primarily directed at removing linguistic barriers to access the curriculum. Commonly, the focus of collaboration between teachers seems to be on support for academic learning, while collaboration with support staff and other professionals encompasses a more holistic support for students' learning and wellbeing, including emotional support. These findings reflect the literature suggesting that meso-level school structures and cultures might be particularly consequential for the development of inclusive practices as they mediate other influences (Ainscow, 2005). At the same time relational agency and school collaboration around migrant support may reflect policies in Finland, Scotland and Sweden, in particular around professional autonomy and migrant support systems. For example, Finland is well known for its teacher policies that allow high levels of professional autonomy, which can be broadly seen as protecting professional agency, however, as noted by Manninen, Hökkä, Tarnanen, and Vähäsantanen (2022), Finnish school staff members have also expressed barriers for support processes of increasingly linguistically and culturally diverse students when school communities' old ways of doing are challenged. Professional agency was restricted by a strong tradition of pedagogical autonomy where the boundary between shared guidelines and staff members' own values was ambiguous (Manninen et al., 2022).

5. Conclusions and future research

Overall, how staff exercise relational agency for supporting migrant students can be related to the differences in the features of school contexts reflected in their social networks, and to some extent wider policy contexts. It is interesting that collaborative practices around supporting migrant students manifest both through exercise of agency where they go against the grain of general policy or practice, and as role-implementation where collaborative structures exist routinely, or where numbers seen to be needing support are small enough to be manageable by designated staff members (as in Pine tree). This distinction opens questions about the need for systems to capitalise on and nurture agency, but also create conditions for migrant students to be routinely supported with the regular structures that facilitate relevant exchanges.

Further research could examine how the different policy context impact on aspects of student integration outcomes and the mediating role of agency and collaboration. For example, complementary data about students' interaction outcomes could be used to examine the impact of the different arrangements within which support for migrant integration is located across the three countries, including those that deploy resources such as support for language learning within the mainstream educational provision (e.g. in Scotland) and those that provide additional resources targeted to address the needs of migrant students within a specific integration strategy (e.g. in Finland), or a combination of these approaches (e.g. Sweden). Future research could explore how they shape collaboration around migrant support, and ultimately the impact on their integration.

Our findings also have practical implications for teacher education. Even though the three countries differ in the ways teachers are selected and prepared, there is a common recognition of the importance of professional collaboration between teachers, and with other professionals. In Sweden, this is also part of the national policy that guides teachers' work. Yet, opportunities for such collaboration do not routinely feature teacher education programmes. The need for supporting migrant students is an example of the changing contexts of teachers' work that require preparation for flexible working with other actors in the system and for recognising the knowledge in the school community, including that of migrant students. While our study was not designed to examine the impact of the different teacher education programmes, it provided feedback to staff in each school as part of their professional development. Future research could look into the potential for professional learning from network feedback or other kinds of intervention that encourage collaboration around issues of inclusion and diversity.

CRediT authorship contribution statement

Nataša Pantić: Writing - review & editing, Writing - original draft, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Marc Sarazin:** Writing - original draft, Software, Methodology, Formal analysis, Data curation. **Thibault Coppe:** Writing - review & editing, Writing - original draft, Software, Methodology, Investigation, Formal analysis, Data curation. **Didem Oral:** Writing - original draft, Investigation, Formal analysis, Data curation. **Evelina Maninnen:** Writing - review & editing, Writing - original draft, Investigation, Formal analysis, Data curation. **Kaisa Silvennoinen:** Writing - review & editing, Writing - original draft, Investigation, Formal analysis, Data curation. **Anna Lund:** Writing - review & editing, Writing - original draft, Investigation, Funding acquisition, Formal analysis. **Hökkä Päivi:** Writing - review & editing, Writing - original draft, Investigation, Funding acquisition, Formal analysis. **Katja Vähäsantanen:** Writing - review & editing, Investigation, Funding acquisition. **Shupin Li:** Writing - review & editing, Writing - original draft, Formal analysis, Data curation.

Declaration of competing interest

We declare that there's no financial/personal interest or belief that could affect our objectivity.

Data availability

Data will be made available on request.

Appendix. Results of the SAOM analysis on the migrant support networks evolution across the school sites

Scotland							Sweden						Finland					
Schools	Juniper		Beech		Rowan			Pine Tree		Magnolia				Downy Birch		Silver Birch		
Effects	par.		par.		par.		Effects	par.		par.			Effects	par.		par.		
Structural effects																		
constant Migr rate (period 1)	20.050		24.019		17.228		constant Migr rate (period 1)	13.534		11.390			constant Migr rate (period 1)	16,678		17,057		
constant Migr rate (period 2)	18.647		19.156		15.796		constant Migr rate (period 2)	8.130		6.372			constant Migr rate (period 2)	26,052		12,25		
Migr: outdegree (density)	**−4.779**	***	**−2.252**	***	**−2.953**	***	Migr: outdegree (density)	**−3.820**	***	**−2.834**	***		Migr: outdegree (density)	**−1.808**	***	**−2.449**	***	
Migr: reciprocity	−0.033		**0.553**	*	0.352		Migr: reciprocity	−0.013		−0.260			Migr: reciprocity	**0,608**	**	−0.010		
Migr: transitive triplets	**0.066**	*	**0.228**	***	**0.258**	***	Migr: transitive triplets	**0.296**	***	**0.356**	**		Migr: transitive triplets	**0,095**	**	**0,115**	***	
Migr: indegree - popularity	**0.087**	***	0.028		0.009		Migr: indegree - popularity	0.048		−0.042			Migr: indegree - popularity	0,02		0,015		
Migr: outdegree - popularity	−0.017		−0.015		−0.046		Migr: outdegree - popularity	0.013		0.049			Migr: outdegree - popularity	0,022		0,071		
Migr: outdegree-trunc (1)	**−2.670**	***	**−3.470**	***	**−2.939**	***	Migr: outdegree-trunc (1)	n.a.		−0.573			Migr: outdegree-trunc (1)	**−3.996**	***	**−1.837**	**	
Attribute effects																		
Migr: Role-sup alter	**0.696**	*	0.244		0.373		Migr: Role-sup alter	−0.100		0.079			Migr: RoleStudentSupport alter	0,083		−0.085		
Migr: Role-sup ego	−0.260		0.289		0.144		Migr: Role-sup ego	−0.259		0.166			Migr: RoleStudentSupport ego	0,103		0,003		

(*continued on next page*)

(*continued*)

Scotland							Sweden						Finland				
Schools	Juniper		Beech		Rowan			Pine Tree		Magnolia				Downy Birch		Silver Birch	
Effects	par.		par.		par.		Effects	par.		par.			Effects	par.		par.	
Migr: same Role-sup	0.373		**0.433**	**	**0.757**	***	Migr: same Role-sup	−0.410		**0.477**	†		Migr: same RoleStudentSupport	0,055		0,118	
Migr: same Role-teach	0.013		−0.085		−0.074		Migr: same Role-teach	−0.030		−0.009			Migr: same RoleTeacher	−0.111		0,188	
Migr: Role-manag alter	**0.530**	**	**0.468**	**	n.a.		Migr: Role-manag alter	0.166		0.723			Migr: RoleManagement alter	n.a.		−0.653	
Migr: Role-manag ego	**−1.481**	***	n.a.		n.a.		Migr: Role-manag ego	−0.004		**1.887**	*		Migr: RoleManagement ego	n.a.		0,08	
Migr: same Role-manag	−0.048		−0.047		n.a.		Migr: same Role-manag	−0.391		−0.313			Migr: same RoleManagement	n.a.		−0.041	
Migr: MigrBack1 alter	0.167		**0.312**	†	**0.273**	†	Migr: MigrBack1 alter	**0.622**	**	0.938			Migr: MigrBack alter	n.a.		−0.364	
Migr: MigrBack1 ego	0.027		**0.267**	*	0.111		Migr: MigrBack1 ego	0.085		−0.416			Migr: MigrBack ego	n.a.		−0.286	
Migr: same MigrBack1	**0.326**	*	−0.209		0.208		Migr: same MigrBack1	0.056		−0.454			Migr: same MigrBack	n.a.		**−0.778**	*
Migr: same Gende	0.063		−0.069		0.019		Migr: same Gende	0.197		0.204			Migr: same Gender	0,107		0,104	
Migr: Seniorit alter	−0.030		0.009		**0.181**	***	Migr: Seniorit alter	0.142		0.232			Migr: Seniority alter	−0.059		**−0.228**	**
Migr: Seniorit ego	−0.020		−0.011		0.025		Migr: Seniorit ego	**−0.330**	*	**−1.025**	*		Migr: Seniority ego	**0,12**	***	−0.006	
Migr: Part–full alter	−0.166		0.176		0.204		Migr: Part–full alter	0.026		0.476			Migr: PartFull alter	−0.086		−0.168	
Migr: Part–full ego	−0.062		−0.113		0.016		Migr: Part–full ego	−0.045		**−1.371**	**		Migr: PartFull ego	0,068		0,407	
Migr: same Art-	0.216		0.084		−0.211		Migr: same Artistic-	**0.424**	†	−0.386			Migr: same SubArtPractical	0,079		0,247	†
Migr: same Art-Craft-	0.431		n.a.		n.a.		Migr: same Art-Craft-	n.a.		n.a.			Migr: same Art-Craft-	n.a.		n.a.	
Migr: same SocialStudies-	0.238		−0.032		**−0.256**	†	Migr: same SocialStudies-	−0.236		0.044			Migr: same SubSocialHealth	**−0.220**	†	0,025	
Migr: EAL- alter	**1.156**	*	−0.146		**3.903**	**	Migr: SwedishL2- alter	**2.432**	†	0.519			Migr: SubL2Languages alter	0,001		0,165	
Migr: EAL- ego	**1.461**	*	−0.451		n.a.		Migr: SwedishL2- ego	1.237		0.378			Migr: SubL2Languages ego	**−0.555**	**	1061	*
Migr: same EAL	n.a.		**−1.015**	*	−0.112		Migr: same SwedishL2-	1.467		0.556			Migr: same SubL2Languages	**−0.419**	*	0,019	
Migr: same HWB-	−0.268		0.125		0.139		Migr: same Sport-Healt-Life-	−0.072		0.735			Migr: same Sport-Healt-Life-	n.a.		n.a.	
Migr: same ICT-Enterprise-	**−0.626**	**	0.142		−0.155		Migr: same ICT-Enterprise-	n.a.		n.a.			Migr: same ICT-Enterprise-	n.a.		n.a.	
Migr: ModerLang-alter	n.a.		0.108		**0.564**	*	Migr: ModerLang-alter	−0.080		−0.206			Migr: SubOtherLanguages alter	0,098		−0.442	
Migr: ModerLang-ego	n.a.		−0.109		0.289		Migr: ModerLang- ego	−0.420		**0.899**	*		Migr: SubOtherLanguages ego	−0.081		−0.174	
Migr: same ModerLang-	n.a.		0.256		**0.426**	*	Migr: same ModerLang-	0.071		−0.029			Migr: same SubOtherLanguages	0,164		0,076	
Migr: LangLiteracy alter	−0.018		−0.030		0.054		Migr: same SwedishL1-	−0.175		−0.457			Migr: same Finnish L1	n.a.		n.a.	
Migr: LangLiteracy ego	0.118		−0.039		n.a.		Migr: LangLiteracy ego	n.a.		n.a.			Migr: LangLiteracy ego	n.a.		n.a.	
Migr: same LangLiteracy	−0.214		**−0.357**	†	n.a.		Migr: same LangLiteracy	n.a.		n.a.			Migr: same LangLiteracy	n.a.		n.a.	
Migr: Leader- alter	−0.033		−0.009		n.a.		Migr: Leader- alter	n.a.		n.a.			Migr: Leader- alter	n.a.		n.a.	
Migr: Leader- ego	**0.952**	**	n.a.		n.a.		Migr: Leader- ego	n.a.		n.a.			Migr: Leader- ego	n.a.		n.a.	
Migr: same Leader-	−0.334		n.a.		n.a.		Migr: same Leader-	n.a.		n.a.			Migr: same Leader-	n.a.		n.a.	
Migr: PupilSupport-alter	**1.189**	**	0.100		**0.462**	*	Migr: MultiLang-Assist- alter	−0.017		n.a.			Migr: SubMigrantNativeLang alter	0,241		0,786	
			−0.202		−0.205		Migr: MultiLang-Assist- ego	0.367		n.a.			Migr: SubMigrantNativeLang ego	**1111**	†	−0.335	
Migr: same PupilSupport-	**0.925**	***	−0.138		−0.107		Migr: same MultiLang-Assist-	−0.318		n.a.			Migr: same MultiLang-Assist-	n.a.		n.a.	
Migr: same ReligiousEduc-	0.201		n.a.		**−0.554**	**	Migr: same SubSpecialTeacher	n.a.		n.a.			Migr: same SubSpecialTeacher	−0.057		−0.284	
Migr: same Science-	**0.280**	†	**0.494**	*	0.190		Migr: same Scientific-	0.162		−0.425			Migr: same SubSTEM	−0.013		0,564	***
Migr: same Math-	**−0.581**	*	−0.022		0.275		Migr: same Math-	n.a.		n.a.			Migr: same Math-	n.a.		n.a.	
Multiplex effect																	
Migr: Collab	**3.813**	***	**1.617**	***	**1.605**	***	Migr: Collab	**1.888**	***	**2.219**	*		Migr: Collab	**1232**	***	**1454**	***

Note: †p < .1; *p < .05; **p < .01; ***p < .001; par. = estimates of parameters.

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