Does a relationship exist between the density of social networks in primary education teacher teams and teacher well-being?

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Abstract

The aim of this study is to examine the relation between the density of a social network in primary education schools and teacher well-being. The social network within a school and the perceived well-being of teachers were mapped through data obtained by an online questionnaire. This study explored social networks in organizations and in schools and teacher well-being. Social networks can be dense or centralized. According to previous studies, well-being increased due to social support, balance and relatedness. This study found no significant correlation between the density of an expressive or instrumental social network and teacher well-being. This study supports the claim that instrumental networks are more centralized than expressive networks, the management is a central actor within these networks. The privacy of the participants was a limitation before and during the study. For future research is suggested to conduct interviews to create a more complete social network and to study the different factors which could influence the social network.

Keywords: *social networks, density, teachers' social networks, expressive network, instrumental network, teacher well-being, school connectedness, teaching-efficacy*

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Introduction

Currently, there is a great focus on the well-being of teachers. Due to a high amount of perceived work pressure, 20 percent of teachers in The Netherlands, experiences burn out symptoms (De Volkskrant, 2017). Teacher well-being is at stake. Donders, Van der Gulden, Furer, Tax & Roscam Abbing (2003) state that literature shows that high work demands, low job control and low social support are risk factors for a positive perceived well-being. Solutions have to be found to decrease the perceived work pressure and increase teacher well-being. Teacher well-being is important for three reasons: 1) it creates a positive attitude towards reform, 2) it has a positive effect on socioemotional development of children, and 3) it fosters job commitment (Spilt, Koomen & Thijs, 2011). Social networks have, according to Antonucci (2001) a powerful effect on mental health. Golden et al. (2009) emphasize the importance of the social context in relation to psychological well-being. A social network analysis within a teacher team in primary education might be a possibility to influence the perceived well-being of teachers. A social network analysis can present the social (Heaney & Israel, 2008; Moolenaar, Sleegers & Daly, 2012) and the knowledge relationships in organizational settings (Cross, Parker & Borgatti, 2002; Moolenaar, Sleegers & Daly, 2012). Social networks can be viewed from several perspectives: the connectedness can be distinguished in a density or centralized network, the network can be formal or informal and the structure can be a whole or dyadic (Hite, Hite, Mugimu & Nsubuga, 2010). A dense network refers to the amount of relationships within a network, more connections equals a more dense network (Moolenaar, Sleegers & Daly, 2012; Cross, Parker & Borgatti, 2002). A centralized network is focused on one person within the network, 'the centrality informs about the relative centrality of a single actor' (Moolenaar, Sleegers & Daly, 2012, p. 256). Many persons value this person as important. These central actors have a central position in the network, and have access to and are able to affect the exchange of resources and knowledge (Nienke Moolenaar, personal communication, May 14, 2018). A formal structure is the skeleton of an organization, according to Krackhardt and Hanson (1993). It is designed and structured in organizational charts. An informal structure shows the formed relationships to complete a task fast (Krackhardt & Hanson, 1993). According to McGuire (2002), informal networks are on voluntary base, and help members with personal, work-related and social matters. According to Moolenaar (2012), a social network in schools

often deviates from a formal hierarchical structure (personal communication, May 14, 2018). A whole network exists of all the relationships in a network, and a dyadic network exists of relationships between pairs.

A social network helps improving collaboration, knowledge creation, the transfer of knowledge (Cross, Parker & Borgatti, 2002), strategies, information and resources (Hite, Hite, Mugimu & Nsubuga, 2010). The more connections exists in a network, the more exchange of knowledge and information takes place. This study considers the density of the mutual emotional and knowledge relationships among team members within a team, a social network.

Many studies study social networks in education and the relationship with student achievement, or teacher well-being. Nevertheless, few focused on the relation between a social network and teacher well-being on primary schools. This study aims to examine whether the density of a teachers' social network has a relation with teacher well-being in primary education in The Netherlands. A qualitative research is conducted and 6 primary schools in The Netherlands are studied via an online questionnaire.

The next section explains social networks in organizations, social networks in schools and teacher well-being. Social networks in schools and teacher well-being are linked. The method section contains the procedure to obtain the data. The results section presents the obtained data: a social network per school and the relationships with teacher well-being. Limitations and future research directions will be discussed in the discussion section.

Social networks within organizations

Social networks in organizations play a significant part in business activities: networks can be used to create opportunities, impact costs and engage in economic activities (BarNir & Smith, 2002). Large and diverse internal social networks are related to firm performance, it creates awareness of information sources within the organization to make use of (Collins & Clark, 2003). Social networks contain an enormous flow of knowledge between the network members (Brown & Duguis, 2001). Knowledge, information, advice and help is transferred through the connections in these networks. A social network consists of instrumental relations and expressive relations: instrumental relations refer

to the work-related network within an organization and the expressive relation refers to the personal related network among colleagues (Moolenaar, 2012).

Instrumental networks transfer task-related information, knowledge and advice (Moolenaar, Sleegers & Daly, 2012). The expressive relationships within an organization are considered more trustworthy and have a longer duration (Moolenaar, 2012). A social function of a social network is social support (Heaney & Israel, 2008). Social support can be emotional, instrumental, informational and appraisal, and is always meant to be helpful for the recipient. The help and assistance is exchanged via the connections within the social network (Heaney & Israel, 2008; Berkman, 1984). The more dense a social network is, the more social support could be exchanged.

The connectedness of a social network is measured in density and centralization (Moolenaar, 2012). The more dense a network is, the more information about reform, improvements and decisions is shared, because many people are connected to each other (Moolenaar, Sleegers & Daly, 2012). If a network is centralized, the exchange of information and knowledge is directed via one actor within the network. In this study, a more dense network will be perceived as a better social network, because more resources can be consulted to share information, knowledge, strategies and advice.

Social networks within schools

An emerging trend is the use of the social network theory to investigate how teacher relationships can support teaching, learning and educational change (Moolenaar, 2012). A network theory enables to provide an understanding in how the relationships influence educational processes and outcomes (Daly, 2010). According to the social capital theory, teachers with many social relationships are able to make use of many different resources to enhance student performance, but also gain advice and social support (Moolenaar, Sleegers & Daly, 2012). Expressive social networks transfer this social support, as well as friendship and personal advice. According to Moolenaar (2012), the density or centralization of a schools' overall network influences shared responsibility, efficacy and trust among team members. Schools with a more dense network show higher trust within the team (Moolenaar, 2012). Trust is a recurring concept in literature about social networks. Trustworthy relationships offer possibilities to exchange sensible information (Coburn & Russell, 2008). Trust plays a role in the development of maintaining well-being (Ward & Meyer, 2009). Kezar (2014)

names trust as one of the fundamental characteristics of relationships. This explains why social networks in schools often arise in subgroups: teachers connect in homogenous groups with colleagues who are similar to them and create balance and homophily (Moolenaar, 2012). Individuals are more attracted to people similar to themselves (Avery & McKay, 2006).

Spilt, Koomen and Thijs (2011) state that teachers have a basic need to relate to their students. Relatedness is one of the three basic psychological needs (Ryan & Deci, 2000). People have the need to form social attachments (Baumeister & Leary, 1995), and thus, want to connect with their colleagues.

Teacher well-being

Teacher well-being is important for three reasons, according to Spilt, Koomen and Thijs (2011). First, it contributes to the dissemination of intervention programs in school: well-being predicts teachers' attitudes towards school reforms and intervention programs. Secondly, teacher well-being has indirect significant effects on children's socioemotional adjustment and academic performance. Third, knowing teachers' well-being helps in creating a school environment that fosters their job commitment.

Teacher well-being can be measured with the Teacher Subjective Wellbeing Questionnaire (Renshaw, Long & Cook, 2015). The TSWQ contains five dimensions of teacher well-being: affective, cognitive, professional, social and psychosomatic. Mankin, Von der Embse, Renshaw and Ryan (2018) studied two positive aspects of the TSWQ: teaching efficacy and school connectedness. Teaching efficacy is defined as the perceived ability to successfully educate all children, and the feeling of support and relatedness to others defines school connectedness (Mankin, Von der Embse, Renshaw & Ryan, 2018). Teacher well-being is about the feeling of competence and the feeling of relatedness within a school.

Relation social networks and teacher well-being

Heaney and Israel (2008, p. 207) state: "Social networks influence well-being in various ways, including by facilitating the exchange of social support." Social support is a recurring topic in social network theories. Social support is helpful for the recipient, Siedlecki, Salthouse, Oishi and Jeswani (2015) state that life satisfaction can be predicted by social support. Expressive social networks

transfer this social support (Moolenaar, 2012). Kezar (2014) states that networks impact individuals and their decisions. Relatedness and supportive connections influence the well-being of an individual (Heaney & Israel, 2008). Social support at work affects how teachers deal with factors that influence well-being (Aelterman, Engels, Van Petegem & Verhaeghe, 2007). The available social support is transferred through the social network within a school and is related to the well-being of teachers.

Teacher subgroups are structured homogenous, because psychological discomfort can be reduced, according to Moolenaar (2012), by creating balance and homophily. Wallace and Shapiro (2006) mention that well-being can be achieved through mental balance. The lack of relatedness is linked to well-being: psychological and physical problems are common among people with deficits in social attachments (Baumeister & Leary, 1995). According to the TSWQ (Mankin, Von der Embse, Renshaw & Ryan, 2018), teachers with a high levels of efficacy, have better relationships with their students and teachers' feeling of belonging are related to school connectedness. Renshaw, Long & Cook (2015) suggest that teacher well-being is influenced by school specific contextual factors, like interstaff relationships. The perceived teacher well-being is related to the relatedness among team members within a social network.

Hypothesis

This study is aims to examine whether the density of a teachers' social network has a correlation with teacher well-being in primary education in The Netherlands. The research questions are as follows:

Does a relationship between the density of a social network and teacher well-being in primary education in The Netherlands exist?

Does a relationship between the density of an expressive social network and teacher well-being in primary education in The Netherlands exist?

Does a relationship between the density of an instrumental social network and teacher well-being in primary education in The Netherlands exist?

According to the literature, the hypothesis is as following: a positive correlation between a high dense social network and high perceived teacher well-being is expected. According to Moolenaar

(2012), a correlation between a schools' social network and teacher well-being, specified in teacher efficacy and school connectedness, is expected.

Method

Participants

Participants (N = 46) are teachers from primary schools (N = 6) in The Netherlands and included 9 males and 37 females. They work on different schools for different educational establishments, with different educational concepts. The schools were approached because of their different visions on education, their difference in city district and their differences in size. Participants were asked to participate voluntarily in the study.

Research Design

This research is a quantitative study. To examine the research question and the hypotheses, a questionnaire is used to gather data for social network analysis and teacher well-being. The social network analysis provides insights into the density of a network within a primary school in The Netherlands. It shows the mutual instrumental and expressive relationships within a team. A survey is used to question the well-being of teachers.

Materials and Instruments

The respondents were asked to complete three parts of a questionnaire, composed in Google Forms, which were: general information about the teacher, the social network within the school and the Teacher Subjective Wellbeing Questionnaire (TSWQ). All gathered data was presented anonymously.

G**eneral information.** General information was gathered through several questions concerning the school, gender and age of the respondent, years of experience in education, years of experience at the current school and their role in the school.

Social network. The data to create a social network per school was gathered through three questions, the first was their own name and the other two are based on Moolenaar (2012). With this data, an expressive and an instrumental network were formed per school. With the expressive network, a personal related advice network was represented: *Whom do you go to for guidance on more personal*

matters? With the instrumental network, a work related advice network was represented: *Whom do you go to for work related advice?*

TSWQ. The TSWQ focused on teacher efficacy and school connectedness (Mankin, Von der Embse, Renshaw & Ryan, 2018) and was used in this study. The TSWQ contained 8 items, divided in two subscales: school connectedness and teaching efficacy, see Table 1. The variables were rated in an interval scale ranging from 1 to 4 (1 = almost never, 4 = almost always). Items 1, 3, 5 and 7 belonged to *school connectedness* and items 2, 4, 6 and 8 belonged to *teaching efficacy*.

Table 1

Teacher Subjective Wellbeing Questionnaire

Subscales		**Item**
School connectedness	Item 1	I feel like I belong at this school.
α = .87	Item 3	I can really be myself at this school.
	Item 5	I feel like people at this school care about me.
	Item 7	I am treated with respect at this school.
Teaching efficacy	Item 2	I am a successful teacher.
α = .87	Item 4	I am good at helping students learn new things.
	Item 6	I have accomplished a lot as a teacher.
	Item 8	I feel like my teaching is effective and helpful.

Renshaw, Long and Cook (2015) explored the validity of the TSWQ and found 'adequate, interitem correlations and strong internal consistency' (p. 302) and their results indicated robust reliability. Mankin, Von der Embse, Renshaw and Ryan (2018) state that 'the current study demonstrates that responses to the TSWQ exhibit adequate structural validity' (p. 230) and a strong internal consistency. The current study measured a Cronbach alpha coefficient of .80 for school connectedness, and α = .73 for teacher efficacy. Both are considered acceptable (Pallant, 2016).

Higher levels of teaching efficacy and school connectedness means higher perceived well-being (Mankin, Von der Embse, Renshaw & Ryan, 2018).

Procedure

Participants were informed about the study by email and their principal. The data gathering took place online, the teachers had a month to respond, individually. The participants received an email with a link to the questionnaire. The first part of the questionnaire consisted information about the study and the informed consent, they had to click actively on the agree button. Thereafter, they continued the questionnaire. Secondly, the respondents had to fill in general questions about the school they are currently working at, their age, years of experience and the amount of years they work at their current school. Next, the participants had to answer the questions about the social network within their schools. Their responses were handled with great care to make them anonymously. Lastly, the TSWQ had to be filled in by the participants by choosing the most matching statement about their perceived well-being. Completing the questionnaire took 5-10 minutes per participant.

Data analysis

The data is analyzed with SocNetV 2.5 and IBM SPSS 24. With SocNetV 2.5, the social networks are mapped per school and the program represented the density per school. The different actors and relationships had an equal value and the connections were directed. The average perceived well-being, school connectedness and teacher efficacy were measured per school. Thereafter, a correlation analysis was conducted between the density of the expressive and the instrumental network, and teacher well-being, school connectedness and teacher efficacy within a school. A Pearson correlation was conducted to measure the degree of linear relationship (Gravetter & Wallnau, 2010).

In order to measure a Pearson correlation, the following assumptions had to be met: homoscedasticity and normality. The assumptions were not met, therefore, a Spearman rho correlation is conducted (Pallant, 2016). The level of significance that was used to determine a significant relationship between two variables was $p = .05$.

Results

The relationship between the density of a social network in a primary school and perceived teacher well-being was investigated using a Spearman rho correlation. Table 2 shows the means and

standard deviation for the different variables. The social network is divided in the expressive social network and the instrumental social network.

Table 2

Mean and standard deviation of the variables

	M	***SD***
Density expressive social network	.06	.01
Density instrumental social network	.07	.02
Score school connectedness	3.7	.43
Score teacher efficacy	3.4	.42
Score perceived teacher well-being	3.5	.38

Table 3 shows the means for the concepts in this study and represents an overview per school and total.

Table 3

Means per school.

School	**Gender**		**M_{age}**	**$M_{experience}$**	**$M_{current\ school}$**	**$M_{well\text{-}being}$**	**$M_{school\ connectedness}$**	**$M_{teacher\ efficacy}$**
	Male	**Female**						
1	1	8	37 years	17.6 years	13.3 years	3.6	3.8	3.4
2	1	10	40 years	21.1 years	10.9 years	3.6	3.7	3.5
3	1	4	41 years	22.6 years	9.8 years	3.7	3.8	3.6
4	0	4	22 years	6.3 years	3.5 years	3.5	3.6	3.5

5	3	4	38 years	14.1 years	10.6 years	3.4	3.5	3.3
6	3	7	33 years	16 years	7.6 years	3.5	3.6	3.4
total	9	37	37 years	17.1 years	9.9 years	3.5	3.6	3.4

Figures 1 to 12 represent the expressive and the instrumental social networks from the different schools. The expressive social network from school 1 (density = .07, N = 12) consists of four cliques, containing two dyadic relationships. The teachers in this school have different sources to gain advice from in the school. The instrumental social network (density = . 06, N = 13) is more centralized, management staff is mostly chosen to gain work-related advice from.

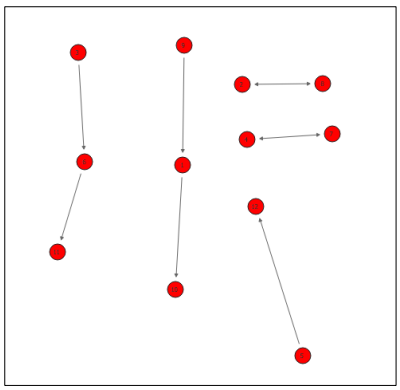

Figure 1. Expressive social network school 1

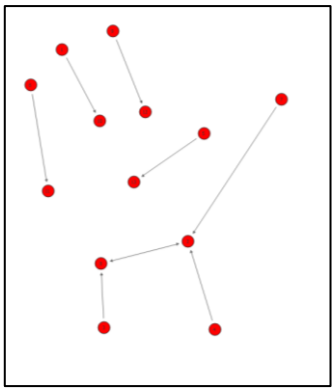

Figure 2. Instrumental social network school 1

Figure 3 and 4 show the social networks belonging to school 2. The expressive network (density = .05, N = 14) is centralized around one actor, a member of the management team. Almost all nodes in the network lead to this person, but the relations within in this school are spread. The same actor is the central figure in the instrumental social network (density = .05, N = 14). For work-related advice, teachers in this school will go to this person.

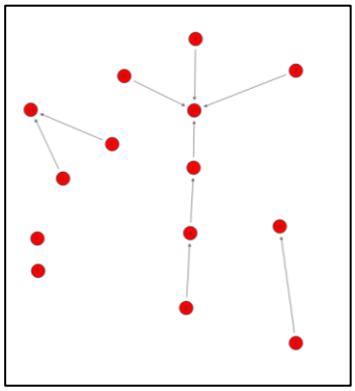

Figure 3. Expressive social network school 2

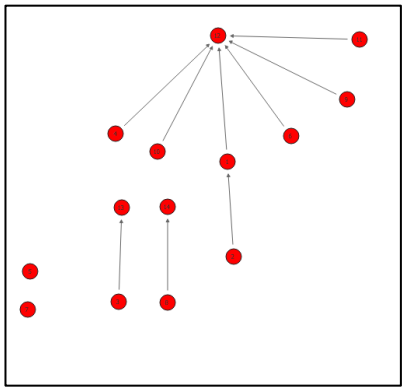

Figure 4. Instrumental social network school 2

School 3 has multiple sources were teacher gather their information and advice for personal matters (density = .10, N = 7), as can be seen in Figure 5 and 6. The instrumental network (density = .12, N = 7) is centralized, most teacher will go to their management for work-related advice.

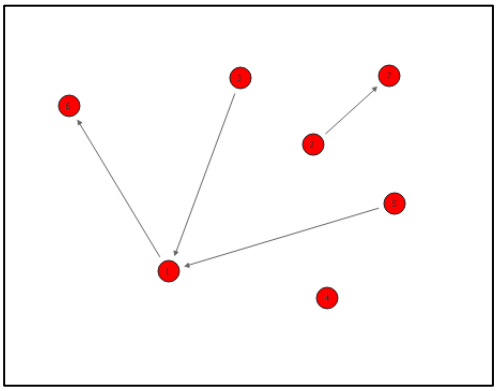

Figure 5. Expressive social network school 3

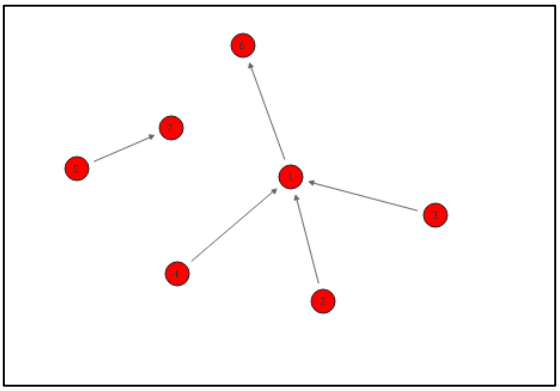

Figure 6. Instrumental social network school 3

Figures 7 and 8 represent the social network from school 4. All participants chose different information sources for personal related (density = .07, N = 8) and work-related advice (density = .07, N = 8).

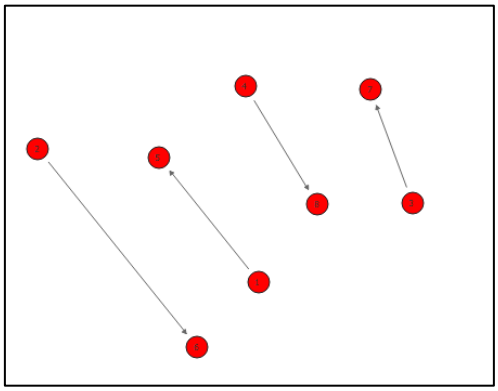

Figure 7. Expressive social network school 4

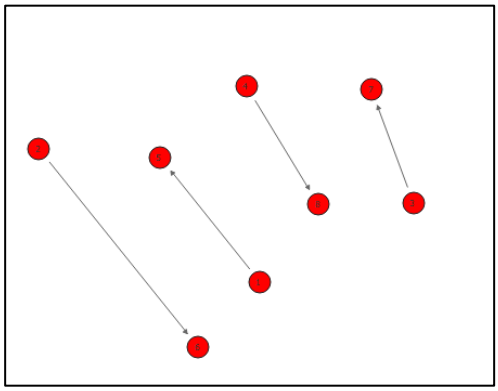

Figure 8. Instrumental social network school 4

School 5 contains cliques, concerning the expressive social network (density = .05, N = 11). Different teachers go to different colleagues for advice. The instrumental network (density = .05, N = 12) has the same structure: there are different sources for advice and information, as can be seen in Figure 9 and 10.

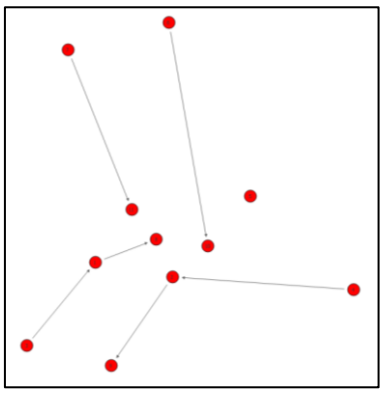

Figure 9. Expressive social network school 5

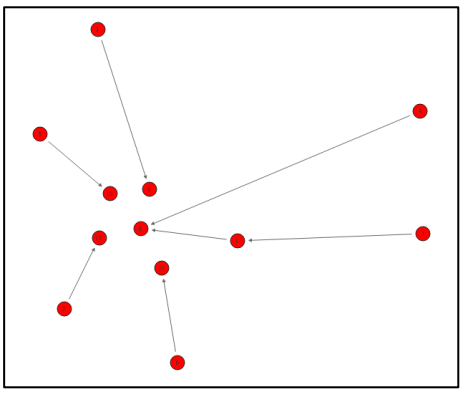

Figure 10. Instrumental social network school 5

Figure 11 and 12 show the social networks belonging to school 6. For personal related advice (density = .07, N = 12), teachers from this school go to 3 different actors. For work-related advice (density = .08, N = 12), these teachers direct to their management team.

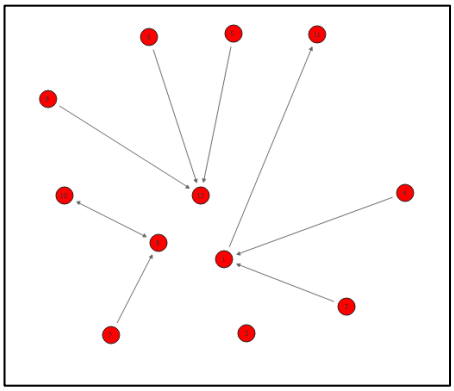

Figure 11. Instrumental social network school 6

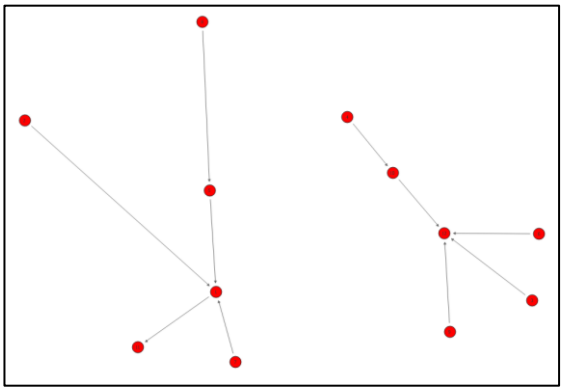

Figure 12. Expressive social network school 6

No rules of thump exist concerning the value of the density of a social network. The density of a network has a range between 0 and 1 (Moolenaar, Sleegers & Daly, 2012). Values close to 0 are considered low, values close to 1 are considered high. The density of the social networks in this study are considered low, Table 4 shows the density per school.

Table 4

Density per social network per school.

School	**Respondents**	**Density expressive social network**	**Teachers in network**	**Density instrumental social network**	**Teachers in network**
	N		***N***		***N***
1	9	.07	12	.06	13
2	11**	.05	14*	.05	14*
3	5	.10	7	.12	7
4	4	.07	8	.07	8
5	7	.05	11*	.05	12

6	10*	.07	12*	.08	12

**Note.* Respondents who participated in the questionnaire are taken into account in the social network (option b and c).

***Note*. Respondents who answered the questionnaire anonymously are taken into account in the social network (option a).

The number of participants differs at three schools: a) some participants filled in the questionnaire anonymously: their own name and the name of their colleague(s) were missing, b) some participants filled in the questionnaire anonymously: their own name was missing, c) some participants did not fill in a name of a colleague for personal related advice. Due to the anonymity, it is unclear why the participants filled in the questionnaire anonymously. All data is taken into account composing the social networks.

To study the relation between perceived teacher well-being and the expressive social network within a primary school, a correlation analysis was conducted. A very weak, non-significant negative correlation (*rho* = -.02, *n* = 46, *p* = .90) was found. It cannot be claimed that teacher well-being increases, when an expressive social network is more dense.

To study the relation between perceived teacher well-being and the instrumental social network within a primary school, a correlation analysis was conducted. A very weak, non-significant negative correlation (*rho* = .05, *n* = 46, *p* = .75) was found. It cannot be claimed that teacher well-being increases, when an instrumental social network is more dense.

In this study, no significant relationship is found between the expressive social network and school connectedness and teacher efficacy. School connectedness and teacher efficacy do not significantly increase when the density of the expressive social network increased. Besides, no significant relationship was found between the instrumental social network and school connectedness and teacher efficacy in this study. School connectedness and teacher efficacy do not significantly increase when the density of the instrumental social network increased. These results are summarized in Table 5.

Table 5

Correlations between the well-being and social network variables.

	Expressive social network			**Instrumental social network**		
	N	*rho*	*p*	N	*rho*	*p*
Perceived school connectedness	46	.06	.72	46	.04	.77
Perceived teacher efficacy	46	-.02	.90	46	-.05	.75
Perceived teacher well-being	46	-.02	.90	46	-.05	.75

**Note.* Significance $p < .05$

The social network analyses in this study showed the central role of the principal or the management team. Most of the teachers choose a member of the school board to gain advice for personal or work related topics. 35% of the teachers go to their principal with personal related matters and 65% of the participants go to their principal with work related matters. Table 6 shows the percentages of teachers who are going to their management for advice.

Table 6

Percentages of teachers who are going to the management team.

	Expressive social network	**Instrumental social network**
School 1	.33	.67
School 2	.25	.25
School 3	.40	.60
School 4	.45	.63
School 5	.29	.57
School 6	.30	.90
Total	.35	.65

Discussion

In this study, no significant correlation was found between a more dense expressive social network and perceived teacher well-being (N = 46, *rho* = -.02, p = .90), specified in school connectedness (N = 46, *rho* = .05, p = .72) and teacher efficacy (N = 46, *rho* = -.02, p = .90). And no significant correlation was found between a more dense instrumental social network and perceived teacher well-being (N = 46, *rho* = -.05, p = .75), specified in school connectedness (N = 46, *rho* = .04, p = .77) and teacher efficacy (N = 46, *rho* = -.05, p = .75). Helliwell and Putnam (2004) state that greater density, show higher levels of life satisfaction. The more connections exists in a network, the higher the average level of subjective well-being will be. Their study focuses on communities in a neighborhood, but might explain the absence of a correlation in this study, because the density of the social networks was low. Heaney & Israel (2008) also state that high density maintained the exchange of affective support and were most 'health-enhancing' (p.196).

Teaching efficacy is an individual factor, Renshaw, Long and Cook (2015) state that self-efficacy is 'one's behavior meeting environmental demands' (p. 291), and in that case less related to a specific school, this might explain the negative correlation that was found. School connectedness is a factor analyzed on a group level and measured the perceived relationships with the different and actors in a school (Renshaw, Long & Cook, 2015), this might explain the positive correlation because both factors are school related. The results in this study support this claim, the results show a higher correlation between school connectedness and the density of the expressive social network (*rho* = .05), than teacher efficacy and the density of the expressive social network (*rho* = -.02). And the correlation between school connectedness and the density of the instrumental social network (*rho* = .05) is higher than the correlation between teacher efficacy and the density of the instrumental social network (*rho* = -.05).

This study found centralized social networks, directed to member of the management team. Most of the teachers (65%) asked their management for advice about work related matters. 35% of the teachers approached their management for advice about personal related matters. The management is a central actor within the social networks, this is considered a centralized network (Moolenaar, Sleegers & Daly, 2012). Teachers receive, according to the findings of this study, most of the work-related

support from their management team. Moolenaar, Sleegers & Daly (2012) found a similar result in their study: 'on average, work related advice networks are slightly more centralized than personal advice networks' (p.257).

Theoretical implications

This study contributes to the field of educational sciences, because the social networks within schools are a major source of information for teachers and their management. The link between the density of a social network in a school, divided in an expressive and an instrumental network, and teacher well-being is created in the theoretical framework. Despite the non-significant results, a start has been made to analyze the relationship between these concepts.

The claim about the centrality of a work-related social network is endorsed in this study, an instrumental social network is more centralized than an expressive social network.

Practical implications

Due to the support to the claim of centrality in instrumental social networks, management teams can make use of or control their central role if advice is asked about work-related matters. For example, by sharing their work-related knowledge in meetings, or appointing a team member for work-related advice about a certain topic (e.g. mathematics, language, a project) to make a shift in centrality.

Limitations

Some participants filled in the questionnaire anonymously, this can result in a distorted representation of the actual social network. The reason why teachers did not fill in names is unknown, a possibility could be a privacy concern, or the absence of a connection within the network whom they can approach for advice. It is possible that these participants are mentioned by their colleagues and therefore perhaps represented twice in the social network. According to Lima (2010) and Wasserman and Faust (1998), a complete data set is very important to be representative (in: Moolenaar, 2012). Not all of the team members of a school team filled in the questionnaire, data is missing to map the complete social network in a school. In this study a school was represented by 4 teachers, and another school was represented by 11 teachers, this complicates the comparison between the schools and the drawing of conclusions. High response rates are needed to represent a valid and reliable social network

(Moolenaar, 2012). Another limitation is the use of choosing one colleague for mapping the social network. The current data does not show the whole social network within a school, and influences the representation of the density. The density is lower, because not all connections could be mapped, due to incomplete information. This is an interesting direction for future research.

Before the questionnaires were taken from the participants, several management teams were concerned about the privacy of their teachers. 'I think the questionnaire is way too personal to fill in for my team, because they don't know you. It is sensitive information, and I don't want to bring my team in an uncomfortable position.' 'I don't think it is desirable to let the teachers fill in names.' According to Matthews and Harel (2011), trust between the researcher and the respondent is important: if the respondent feels that their data is safe, they are more likely to respond (honestly).

Future research

To prevent missing data and to meet the needs for knowing the researcher, the questionnaire could be taken in a more personal way, for example with an interview. An interview is based on theories, gives the interviewer and interviewee space for narratives and gains insight in contextual factors (Galletta, 2013). The participants see who they give answers to, and on the other hand are able to describe a more detailed social network. This ensures a better representation of the social network in a school without missing data. An interview gains insight in the relationships among team members and can give information about the school context. Suggested is to have at least 8 teachers to represent a school.

Multiple factors might play a role in composing a social network and the perceived teacher well-being. For example, the years of experience of teachers could influence the relationship between the density in a social network and teacher well-being, as well as the amount of years a teacher is working at a school. Especially the work-related network might be influenced by these factors, experienced teachers could play a central role in a school team due to their knowledge and experience in the field. They have developed automatisms in their job through the many years of experience or the daily routines they have created: 'expert teachers developed self-regulatory processes as they engage in their activities' (Berliner, 2001, p. 464). These skills make them less dependent on colleagues, in comparison to novice teachers, which might influence the density and directions in a social network.

References

Aelterman, A., Engels, N., Van Petegem, K. & Verhaeghe, J.P. (2007). The wellbeing of teachers in Flanders: The importance of a supportive school culture. *Educational Studies, (33)* 3, 285-298.

Antonucci, T.C. (2001). Social relations: an examination of social networks, social support, and sense of control. In *Handbook of the Psychology of Aging*, 5th edn, Birren J (ed.). Academic Press: San Diego, CA.

Avery, D.R. & McKay, P.F. (2006). Target practice: An organizational impression management approach to attracting minority and female job applicants. *Personnel Psychology, 59*, 157-187.

BarNir, A. & Smith, K.A. (2002). Interfirm Alliances in the Small Business: The Role of Social Networks. *Journal of Small Business Management, 40*(3), 219-232.

Berkman, L.F. (1984). Assessing the physical health effects of social networks and social support. *Annual Review Public Health, 5,* 413-432.

Berliner, D.C. (2001). Learning about and learning from expert teachers. *International Journal of Educational Research, 35,* 463-482.

Brown, J.S. & Duguid, P. (2001). Knowledge and Organization: A Social-Practice Perspective. *Organization Science, 12*(2), 198-213.

Coburn, C.E. & Russell, J.L. (2008). District Policy and Teachers' Social Networks. *Educational Evaluation and Policy Analysis, 30*(3), 203-235.

Collie, R.J., Shapka, J.D. & Perry, N.E. (2012). School Climate and Social-Emotional Learning: Predicting Teacher Stress, Job Satisfaction, and Teaching Efficacy. *Journal of Educational Psychology, 104*, 1189-1204.

Collins, C.J. & Clark, K.D. (2003). The Role of Human Resource Practices in Creating Organizational Competitive Advantage. *Academy of Management, 46*(6), 740-751.

Cross, R., Parker, A., & Borgatti, S.P. (2002). A bird's-eye view: Using social network analysis to improve knowledge creation and sharing. IBM Institute for Business Value, 1669-1600. Downloaded from: http://www935.ibm.com/services/us/imc/pdf/g510-1669-00-a-birds-eye-view-usingsocial-network-analysis.pdf

Donders, N.C., Van der Gulden, J.W., Furer, J.W., Tax, B. & Roscam ABbing, E.W. (2003).

Work stress and health effects among university personnel. *International archives of occupational and environmental health, 76*(8), 605-613.

Galetta, A. (2013). *Mastering the Semi-Structured Interview and Beyond: From Research Design to Analysis and Publication.* New York: NYU Press.

Golden, J., Conroy, R.M., Bruce, I., Denihan, A., Greene, E., Kirby, M. & Lawlor, B.A. (2009). Loneliness, social support networks, mood and wellbeing in community-dwelling elderly. *International Journal of Geriatric Psychiatry, 24*, 694-700.

Gravetter, F.J. & Wallnau, L.B. (2010). *Statistics for the Behavioral Sciences. Wadsworth: Cengage Learning.*

Heaney, C.A. & Israel, B.A. (2008). Social networks and social support. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (pp. 189-210). San Francisco, CA, US: Jossey-Bass.

Hite, J.M., Hite, S.J., Mugimu, C.B. & Nsubuga, Y.K. (2010). "Strategic 'co-opetition': headteacher networking in Uganda's secondary schools", in Daly, A.J. (Ed.), *Social Network Theory and Educational Change*, Harvard Educational Press, Cambridge, MA, 197-219.

Krackhardt, D. & Hanson, J.R. (1993). Informal Networks: The Company Behind the Chart. *Harvard Business Review,* 104-111.

Mankin, A., Von der Embse, N., Renshaw, T.L. & Ryan, S. (2018). Assessing Teacher Wellness: Confirmatory Factor Analysis and Measurement Invariance of the Teacher Subjective Wellbeing Questionnaire. *Journal of Psychoeducational Assessment, 36*(3), 219-232.

Matthews, G.J. & Harel, O. (2011). Data confidentiality: A review of methods for statistical disclosure limitation and methods for assessing privacy. *Statistics Surveys, 5*, 1.29.

McGuire, G.M. (2002). Gender, Race and the Shadow Structure: A Study of Informal Networks and Inequality in a Work Organization. *GENDER & SOCIETY, 16*(3), 303-322.

Moolenaar, N.M. (2012). A Social Network Perspective on Teacher Collaboration in Schools: Theory, Methodology and Applications. *American Journal of Education, 119,* 7-39.

Moolenaar, N.M., Sleegers, P.J.C. & Daly, A.J. (2012). Teaming up: Linking collaboration

networks, collective efficacy, and student achievement. *Teaching and teacher education, 28*, 251-262.

Renshaw, T. L., Long, A. C., & Cook, C. R. (2015). Assessing teachers' positive psychological functioning at work: Development and validation of the Teacher Subjective Wellbeing Questionnaire. School Psychology Quarterly, 30, 289-306.

Ryan, R.M. & Deci, E.L. (2000). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development and Well-Being. *American Psychologist, 55*(1), 68-78.

Siedlecki, Salthouse, Oishi and Jeswani (2015). The Relationship Between Social Support and Subjective Well-Being Across Age. *Social Indicators Research, 117*(2), 561-576.

Spilt, J.L., Koomen, H.M.Y. & Thijs, J.T. (2011). Teacher Wellbeing: The Importance of Teacher-Student Relationships. *Educational Psychology Review, 23*(4), 456-477.

Wallace, B.A. & Shapiro, S.L. (2006). Mental Balance and Well-Being: Building Bridges Between Buddhism and Western Psychology. *American Psychologist, 61*(7), 690-701.

Ward, P. & Meyer, S. (2009). Trust, Social Quality and Wellbeing: A Sociological Exegesis. *Development and Society, 38*(2), 339-363.

Appendices

Appendix A: Questionnaire

Beste leerkrachten van XXX,

Mijn naam is Anne Zeldenrijk, master-student van de Universiteit Utrecht. Graag nodig ik u uit om deze vragenlijst in te vullen.

Met dit bericht wil ik u informeren over het doel van dit onderzoek.

Voor mijn masterscriptie wil ik onderzoeken of er een relatie is tussen het sociale netwerk dat op een basisschool aanwezig is en het welbevinden van een leerkracht.

Deze vragenlijst zal 5-10 minuten van uw tijd in beslag nemen.

Bent u benieuwd naar de resultaten van het onderzoek? Dan houd ik u graag op de hoogte!

De gegevens worden alleen verzameld en bewaard voor onderwijs- en onderzoeksdoeleinden. Uw deelname is anoniem en vrijwillig; de informatie in de vragenlijst zal vertrouwelijk worden behandeld. Het onderzoeksrapport zal geen persoonlijke informatie bevatten. Dit onderzoek is onder supervisie van Dr. Casper Hulshof.

In de vragenlijst vindt u enkele algemene vragen, vragen over uw sociale netwerk en over uw welzijn op school. Vink het hokje aan dat het beste overeenkomt met uw mening.

Bedankt voor uw medewerking aan dit onderzoek!

Anne Zeldenrijk

Mail: a.zeldenrijk@students.uu.nl

Uw akkoord:

1. Ik ga akkoord met deelname aan deze studie.

2. Ik begrijp dat ik op elk moment kan stoppen met het invullen van deze vragenlijst zonder hiervoor een reden op te geven en zonder dat dit gevolgen voor mij heeft.

3. Ik begrijp dat alle persoonlijke informatie die ik in deze vragenlijst geef privé blijft.

4. Ik begrijp dat ik alle vragen die ik heb over deze vragenlijst kan stellen aan Anne Zeldenrijk (a.zeldenrijk@students.uu.nl).

Algemene vragen

Wat is uw geslacht?	Man – vrouw – anders
Wat is uw leeftijd?	18-27 jaar - 28-37 jaar - 38-47 jaar - 48-57 jaar - 58-67 jaar

Hoeveel jaren werkervaring heeft u?

Hoeveel jaren bent u werkzaam op uw huidige school?
(schooljaar 2018-2019 = 1 jaar, 2017-2018 = 2 jaar, etc.)

Wat is uw functie binnen de school? Leerkracht - Directie / zorg / IB - Onderwijsassistent

Sociaal network

Wat is uw naam?

Naar wie gaat u toe voor advies voor persoonlijke zaken? (noteer de naam van uw collega)

Naar wie gaat u toe voor advies voor werkgerelateerde zaken? (noteer de naam van uw collega)

TSWQ

Likert schaal: 1 = bijna nooit … 4 = bijna altijd

Ik heb het gevoel dat ik op deze school thuis hoor.

Ik ben een succesvolle leerkracht.

Ik kan echt mezelf zijn op deze school.

Ik ben er goed in leerlingen te helpen nieuwe dingen te leren.

Ik heb het gevoel dat de mensen op deze school om mij geven.

Ik heb veel bereikt als leerkracht.

Ik word met respect behandeld op deze school.

Ik heb het gevoel dat mijn lesgeven effectief en nuttig is.

Ik wil u heel erg bedanken voor uw deelname aan deze vragenlijst!

Wilt u op de hoogte worden gehouden van de resultaten van dit onderzoek? Laat dan uw e-mailadres achter.

Appendix B: Timetable

11th of December 2018	Draft version of methods + risk analysis	V
5th of January 2019	Draft version research plan (introduction + methods)	V
8th of January 2019	Peer feedback	V
15th of January 2019	Assignment 6a: Basic attitude of academic integrity Assignment 6b: FETC form	V
24th of January 2019	Final draft version research plan	V
26th of February 2019	Final research proposal (re-exam)	V
	Feedback moment Casper	V
1st week of February 2019	Appointments participant(s)	V
March/April 2019	Data collection	V
20th of May 2019	Result + discussion section (mail Casper)	V
23rd of May 2019	Feedback moment Casper Overleg AP opdracht (valorisation report)	V
June 2019	Finalize thesis	V
10th of June 2019	Deadline master thesis	
19th of June 2019	Conference	

Appendix C: FETC

APPLICATION FORM FOR THE ASSESSMENT OF A RESEARCH PROTOCOL BY THE FACULTY ETHICS REVIEW BOARD (FERB) OF THE FACULTY OF SOCIAL AND BEHAVIOURAL SCIENCES

General guidelines for the use of this form

1. This form can be used for a single research project or a series of related studies (hereinafter referred to as: "research programme"). Researchers are encouraged to apply for the assessment of a research programme if their proposal covers multiple studies with related content, identical procedures (methods and instruments) and contains informed consent forms and participant information, with a similar population. For studies by students, the FERB recommends submitting, in advance, a research programme under which protocol multiple student projects can be conducted so that their execution will not be delayed by the review procedure. The application of such a research programme must include a proper description by the researcher(s) of the programme as a whole in terms of the maximum burden on the participants (e.g. maximum duration, strain/efforts, types of stimuli, strength and frequency, etc.). If it is impossible to describe all the studies within the research programme, it should, in any case, include a description of the most invasive study known so far.
2. Solely the first responsible senior researcher(s) (from post-doctoral level onwards) may submit a protocol.
3. Any approval by the FERB is valid for 5 years or until the information to be provided in the application form below is modified to such an extent that the study becomes more invasive. For a research programme, the term of validity is 2 years and any extension is subject to approval. The researcher(s) and staff below commit themselves to treating the participants in accordance with the principles of the Declaration of Helsinki and the Dutch Code of Conduct for Scientific Practices as determined by the VSNU Association of Universities in the Netherlands (which can both be downloaded from the FERB site on the Intranet[1]) and guarantee that the participants (whether decisionally competent or incompetent and/or in a dependent relationship vis-a-vis the researcher or not) may at all times terminate their participation without any further consequences.
4. The researcher(s) commit themselves to maximising the quality of the study, the statistical analysis and the reports, and to respect the specific regulations and legislation pertaining to the specific methods.
5. The procedure will run more smoothly if the FERB receives all the relevant documents, such as questionnaires and other measurement instruments as well as literature and other sources on studies using similar methods which were found to be ethically acceptable and that testify to the fact that this procedure has no harmful consequences. Examples of studies where the latter will always be an issue are studies into bullying behaviour, sexuality, and parent-child relationships. The FERB asks the researcher(s) to be as specific as possible when they answer the relevant questions while limiting their answers to 500 words maximum per question. It is helpful to the FERB if the answers are brief and to the point.
6. **Our FAQ document that can be accessed through the Intranet provides background information with regards to any questions.**
7. The researcher(s) declare to have described the study truthfully and with a particular focus on its ethical aspects.

[1] See: https://intranet.uu.nl/facultaire-ethische-toetsingscommissie-fetc

Signed for approval[2]:

Date:

[2] The senior researcher (holding at least a doctoral degree) should sign here.

A. **GENERAL INFORMATION/PERSONAL DETAILS**

1.

a. a. Name(s), position(s) and department(s) of the responsible researcher(s):
Dr. Casper Hulshof, Social and Behavioral Sciences

b. Name(s), position(s) and department(s) of the executive researcher(s):
Anne Zeldenrijk, Educational Sciences

2. Title of the study or research programme - Does it concern a single study or a research programme? Does it concern a study for the final thesis in a bachelor's or master's degree course?:

Social networks and teacher wellbeing (master thesis)

3. Type of study (with a brief rationale):

- **experimental**
- observational
- otherwise:

4. Grant provider:

5. Intended start and end date for the study:

February 2019 – June 2019

6. Research area/discipline:

Educational Sciences

7. For some (larger) projects it is advisable to appoint an independent contact or expert whom participants can contact in case of questions and/or complaints. Has an independent expert been appointed for this study?[3]:

No.

8. Does the study concern a multi-centre project, e.g. in collaboration with other universities, a GGZ mental health care institution, a university medical centre? Where exactly will the study be conducted? By which institute(s) are the executive researcher(s) employed?:

No.

9. Is the study related to a prior research project that has been assessed by a recognised Medical Ethics Review Board (MERB) or FERB?

If so, which? Please state the file number:

No.

B. SUMMARY OF THE BACKGROUND AND METHODS

Background

1. What is the study's theoretical and practical relevance? (500 words max.):

Theoretical: There are lots of studies to find a relationship between the social network and the wellbeing of elderly or depressed patients. Studies to find a relationship between social network and cooperation within schools are done, but I haven't found a study that linked a social network to teacher wellbeing, while I think it is important to map that as a principal.

Practical: It is nowadays a lot in the news that there is a high amount of teachers with a burn-out or symptoms of a burn-out and do not feel well, due to their work. If there is a connection between the social network in a school and teacher wellbeing, the principal of the school could respond to this to improve wellbeing or improve the social network.

[3] This contact may, in principle, also be a researcher (within the same department, or not) who is able to respond to the question or complaint in detail. Independent is to say: not involved in the study themselves. The FERB upholds that an independent contact is not obligatory, but will be necessary when the study is more invasive.

2. What is the study's objective/central question?:

To what extent does a relation between a social network in primary education in The Netherlands and teacher wellbeing exists?

3. What are the hypothesis/hypotheses and expectation(s)?:

I expect a relation between a social network with high density and positive perceived wellbeing.

Design/procedure/invasiveness

4. What is the study's design and procedure? (500 words max.):

I will make use of a questionnaire to map the networks between teachers in a school.
I will make use of a questionnaire to measure the perceived wellbeing of individual teachers (Teacher Subjective Wellbeing Questionnaire (TSWQ)).

The teachers will receive a link to the online questionnaire, they will fill in the informed consent and the questionnaire. After the data is collected, the data per school will be merged and analysed. First, the social network will be composed per school. Then, the perceived wellbeing of teachers will be put together in one average and merged to one average per school.

The social networks will be defined as a density network or a centralized network. The wellbeing of teachers will be defined in an average per school. The two measurements will be compared. Then, there will be checked whether there is a connection between the sort of network and the perceived wellbeing of teachers.

5.

a. Which measurement instruments, stimuli and/or manipulations will be used?[4]:

   Online questionnaires will be used.

b. What does the study's burden on the participants comprise in terms of time, frequency and strain/efforts?:

   The questionnaire will take 10-15 minutes of the participants time. They have fill in the questionnaire once, it would not ask a lot of effort.

c. Will the participants be subjected to interventions or a certain manner of conduct that cannot be considered as part of a normal lifestyle?:

   No.

d. Will unobtrusive methods be used (e.g. data collection of uninformed subjects by means of observations or video recordings)?:

   No.

e. Will the study involve any deception? If so, will there be an adequate debriefing and will the deception hold any potential risks?:

   No.

[4] Examples: invasive questionnaires; interviews; physical/psychological examination, inducing stress, pressure to overstep important standards and values; inducing false memories; exposure to aversive materials like a unpleasant film, video clip, photos or electrical stimulus; long-term of very frequent questioning; ambulatory measurements, participation in an intervention, evoking unpleasant psychological or physical symptoms in an experiment, denial, diet, blood sampling, fMRI, TMS, ECG, administering stimuli, showing pictures, etc. In case of the use of a device (apparatus) or administration of a substance, please enclose the CE marking brochure for the relevant apparatus or substance, if possible.

6. Will the participants be tested beforehand as to their health condition or according to certain disorders? Are there any inclusion and/or exclusion criteria or specific conditions to be met in order for a participant to take part in this study?:

They have to be a 'fixed employee' in the school. Substitute teachers can participate, only if they work at the school for a longer period and are involved in the network.

7. Risks for the participants -

a. Which risks does the study hold for its participants?:
   They can feel the risk of violation of their privacy, since they have to give answers on personal questions to determine their wellbeing and their opinion about colleagues with whom they prefer to work with.

b. To what extent are the risks and objections limited? Are the risks run by the participants similar to those in daily life?:
   No, their participation cannot lead to negative consequences in their daily life.

8. How does the burden on the participants compare to the study's potential scientific contribution (theory formation, practical usability)?:

The results of this study can be used in practice by principals to form a social network that contributes to a positive perceived wellbeing.

9. Will a method be used that may, by coincidence, lead to a finding of which the participant should be informed?[5] If so, what actions will be taken in the case of a coincidental finding?:

No.

Analysis/power

10. How will the researchers analyse the data? Which statistical analyses will be used?:

[5] For instance: dementia, dyslexia, giftedness, depression, extremely low heartbeat in an ECG, etc. If coincidental findings may be found, this should be included in the informed consent, including a description of the actions that will be taken in such an event.

With SPSS will the social network be mapped. To analyse the average of the perceived wellbeing, the data will be put in SPSS and measured. To find a relationship between the social network and the perceived wellbeing, a regression analysis will be performed.

11. What is the number of participants? Provide a power analysis and/or motivation for the number of participants. The current convention is a power of 0.80. If the study deviates from this power, the FERB would like you to justify why this is necessary:

There are 27 schools that will be approached, per school 15-20 employees will be asked to fill in the questionnaire. So, 405-540 participants will participate in the study.

C. PARTICIPANTS, RECRUITMENT AND INFORMED CONSENT PROCEDURE

1. The nature of the research population (please tick):

1. General population without complaints/symptoms

2. General population with complaints/symptoms

3. Patients or population with a diagnosis (please state the diagnosis)

2. Age category of the participants (please tick):

- **18 years or older**
- 16-17 years
- 13-15 years
- 12 years or younger

3. Does the study require a specific target group? If so, justify why the study cannot be conducted without the participation of this group (e.g. minors):

Yes, 'fixed employees' in a school. Substitute teachers might not give/have/experience an honest perception of the social network within school. If a substitute teacher is working in the same school for a longer period, it would not give a distorted picture.

4. Recruitment of participants -

a. How will the participants be recruited?:
The institute will be asked whether the study can be performed, the questionnaire will be send by email.

b. How much time will the prospective participants have to decide as to whether they will indeed participate in the study?:
From the moment they receive the email, until March. After that, the data will be analysed.

5. Does the study involve informed consent or mutual consent? Clarify the design of the consent procedure (who gives permission, when and how). Does the study involve active consent or passive consent? If no informed consent will be sought, please clarify the reason:

The institute will give permission whether or not the study can take place, the principals of the school can then decide whether or not the schools join in the study and the teachers can decide whether or not they want to participate in the study. They have to fill in their Informed Consent online if they agree with the terms of the study before they start the questionnaire. It is an active consent.

6. Are the participants fully free to participate and terminate their participation whenever they want and without stating their grounds for doing so?:

Yes. I will give the possibility to clarify why they quit the questionnaire, this might be interesting for the limitations.

7. Will the participants be in a dependent relationship with the researcher?:

No. They can fill in the questionnaire by themselves online.

8. Compensation

a. Will the participants be compensated for their efforts? If so, what is included in this recompense (financial reimbursement, travelling expenses, otherwise). What is the amount? A thank you note, if they are interested, they can receive the results of the research.

b. Will this compensation depend on certain conditions, such as the completion of the study? No, the results of the study will be send to the school if the principal of the school is interested in the (anonymised) results of the research.

D. PRIVACY AND INFORMATION

1.

a. Will the study adhere to the requirements for anonymity and privacy, as referred to in the Faculty Protocol for Data Storage[6]?:

[6] This can be found on the Intranet: https://intranet.uu.nl/wetenschappelijke-integriteit-facultair-protocol-dataopslag

- anonymous processing and confidential storage of data (i.e. storage of raw data separate from identifiable data): yes/no have to figure out how.
- the participants' rights to inspect their own data: **yes**/no
- access to the data for all the researchers involved in the project: **yes**/no

If not, please clarify.

b. Has a Data Management Plan been designed?
No.

2.

a. Will the participant be offered the opportunity to receive the results (whether or not at the group level)?:
Yes.

b. Will the results of the study be fed back to persons other than the participants (e.g. teachers, parents)?:
No.

If so, will this feedback be provided at the group or at the individual level?

3.

a. Will the data be stored on the faculty's data server?: **yes**/no

b. Will the data that can be traced back to the individual be stored separately on the other faculty server available for this specific purpose?:
Yes.

If not, please clarify where will the data be stored instead?:

E. ADDITIONAL INFORMATION

Optional.

F. FORMS TO BE ENCLOSED (CHECKLIST)

- Text (advert) for the recruitment of participants
- Information letter for participant
- Informed consent form for participants
- Written or oral feedback information (debriefing text)
- (Descriptions of) questionnaires
- (Descriptions of) measurement instruments/stimuli/manipulations
- Literature/references

Signature(s):[7] Date and place:

Name, position:

[7] The senior researcher (holding at least a doctoral degree) should sign here.