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Being well at work: the impact of organizational climate and social identity on employee stress and self-esteem over time

Loren Willis[a], Katherine J. Reynolds[a] and Eunro Lee[b]

[a]Research School of Psychology, Australian National University, Canberra, ACT, Australia; [b]School of Health and Biomedical Sciences, Royal Melbourne Institute of Technology, Melbourne, Australia

ABSTRACT

In organizational psychology, staff perceptions of organizational climate have been found to be an important predictor of employee outcomes, such as employee stress. However, only a small pool of research has investigated the psychological mechanism that underpins the relationship, and no past literature has explored how the relationship persists over time. This paper uses the social identity approach to investigate whether social identification predicts and mediates the relationship between staff perceptions of organizational climate and their levels of stress and self-esteem over time. Employing a sample of public school teachers, the study was conducted over two years (N = 281, 65 schools). The results indicated that social identification fully mediated the relationship between organizational climate and self-esteem longitudinally but showed no significant relationship with stress. The implications of these findings are discussed, with recommendations for future research.

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Organizational climate; social identification; stress; self-esteem; school climate

Introduction

Over the past two decades, researchers in the organizational field have dedicated an immense amount of effort to understanding the construct of organizational climate in relation to employee outcomes. Organizational climate refers to the sum of the processes and activities (including but not limited to policies, practices and relations) within an organization as they are perceived by the organization's staff (Griffin, Hart, & Wilson-Evered, 2003). Organizational climate has been shown to be a strong predictor of a number of key employee outcomes, such as job satisfaction (Patterson, Warr, & West, 2004), employee morale (Cotton & Hart, 2003), job performance (Raza, 2010) and organizational citizenship behavior (Randhawa & Kaur, 2015). The interest of the current research is to understand the relationship between organizational climate and employee stress and self-esteem.

The impact of organizational climate on employee stress and self-esteem has important financial and practical implications. Lost productivity, absenteeism and turn-over due to workplace stress can cause large financial losses, particularly on a societal level, with losses ranging from €2.5 billon in Canada and €25.4 billion in Europe to €313 billion in the USA (European Agency for Safety and Health at Work, 2014). However, research has indicated that the lowest workers' compensation costs have been found in work teams with an organizational climate that foster a positive work environment, where employees feel supported (Cotton, 2008). Hence, it is in the best interest of the employees, the employers and the wider community that research into understanding how organizational climate impacts employee stress and self-esteem continues and advances.

Although past evidence suggests there is a strong link between organizational climate and employee stress, there is a lack of understanding in how organizational climate relates to employee self-esteem, even though self-esteem is known to impact important employee outcomes (Pierce & Gardner, 2004). Past research also indicates that an individual's social connection to and within their organization can have a significant impact on their overall health (Steffens, Haslam, Schuh, Jetten, & van Dick, 2017). However, there is little research investigating how organizational climate, social identification and employee stress and self-esteem relate to each other, and even less exploring the psychological mechanisms that might provide an explanation as to how and why organizational climate affects employee well-being. There have been some cross-sectional attempts to use the social identity approach (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) to understand how an individual's connection to their organization can impact their well-being (Bizumic, Reynolds, Turner, Bromhead, & Subasic, 2009; Haslam, 2004). However, there is a need for more analyses that can explore the direction and persistence of the relationship over time, with stress and self-esteem as a focus. In a quest to fill these gaps, the current research examines social identity as a potential psychological mechanism that underpins the relationship between organizational climate and stress, and self-esteem, over time.

What is organizational climate?

Following the preliminary work of Lewin (1951), organizational climate has been the focus of numerous studies, yet the field still suffers from conceptual uncertainty and a lack of clarity surrounding how to measure it (Lee et al., 2017). Organizational climate can

CONTACT Loren Willis Loren.Willis@anu.edu.au

be thought of as an assessment of the social relations and qualities that characterize the entity from the perspective of its members (Ostroff, Kinicki, & Muhammad, 2012). One conceptualization of the human environment, developed by Moos (1974), has been used to construct measurements of organizational climate (Anderson, 1982; Echeverri & Cruz, 2014). Moos' theory (1974) argued that all social environments, such as large organizations, have unique characteristics that influence individuals' cognitions and behaviors. After validating measurements for nine different social environments, such as hospitals, prisons and schools (for examples see Moos, 1968; Moos & Moos, 1978; Trickett & Moos, 1973), Moos conceptualized three basic dimensions that seemed to be present in every psychosocial environment: system maintenance and change (order, values and norms), the quality of relationships, and personal growth/goal orientation (Malloy et al., 2015; Moos & Moos, 1978). A stronger endorsement of systems maintenance, good quality relationships and clearer goal orientation/growth relates to a more positive psychosocial environment. These three domains span many of the sub-factors included in organizational climate research (for examples see Clark, 2002; Jones & James, 1979; Ostroff, 1993) and organizational climate assessment tools (Echeverri & Cruz, 2014; Sanduvete-Chaves, Lozano-Lozano, Chacón-Moscoso, & Holgado-Tello, 2018; Shehnaz, Premadasa, Arifulla, Sreedharan, & Gomathi, 2015), offering some parsimony in an otherwise complex field. In line with much of the relevant research, the current study conceptualizes and measures organizational climate based on the theoretical framework of Moos (1974).

Organizational climate, stress and self-esteem

The overwhelming conclusion of the cross-sectional occupational health research is that there is a strong relationship between perceptions of organizational climate and employee stress. Cotton and Hart (2003) reviewed several studies on various professional populations, including teachers, police and health professionals, and found that organizational climate exerted a strong influence on employee stress, morale and overall well-being. Additionally, Sahni and Kumar (2012) explored the relationship between organizational climate and stress among 625 employees of a large manufacturing company and concluded that there was a significant negative association between positive climate perceptions and stress.

However, there is a research gap in understanding how organizational climate relates to employee self-esteem. Researchers have found that positive and negative perceptions of workplace experiences independently contributed to employee self-esteem and stress, as a decrease in one's stress does not necessarily lead to a rise in one's self-esteem (Steffens et al., 2017). Yet, self-esteem has received very little attention in comparison to employee stress, even though it appears that psychological distress and positive aspect of well-being contribute equally to an employee's quality of work life (Hart, 1994). As self-esteem is correlated with a range of other well-being constructs, it is beneficial to understand the predictors leading to employee self-esteem, as it is likely to give insight into employee well-being more broadly. Additionally, past literature indicates that self-esteem has a significant impact on many essential employee outcomes, such as motivation, attitudes (e.g job satisfaction, turnover intentions and organizational commitment), and behavior (e.g citizenship behavior and turnover; see Pierce & Gardner, 2004, for a full review of the literature), as well as overall job performance (Campbell, 1990). Therefore, understanding the psychological process that helps explain how the organizational environment comes to influence one's self-esteem is of high value.

One study that did investigate the relationship between school climate and self-esteem was Bizumic et al. (2009). In a student population, they found that school climate was significantly related to student self-esteem levels. However, in their staff sample, there was no significant correlation between organizational climate and employee self-esteem. Yet, other researchers, such as Wilson, De Joy, Vandenberg, Richardson, and McGrath (2004) found that when they surveyed 1,130 retail employees, positive perceptions of organizational climate predicted positive individual outcomes, such as psychological empowerment, self-efficacy and self-reported overall health. Therefore, there is a need to clarify whether there is a meaningful relationship between organizational climate and self-esteem in the workplace.

Furthermore, studies that explore the relationship between organizational climate and stress or self-esteem beyond a cross-sectional analysis are rare. Longitudinal studies involving organizational climate are encouraged as researchers have found that climates are not stable over time, and employees can change their perceptions of work environments (Jackofsky & Slocum, 1988; Wang & Degol, 2016). Similarly, stress levels are known to fluctuate over time due to environmental factors, and although self-esteem can be relatively stable for long-term employees, changes or shifts in the work environment can produce significant changes in employee self-esteem (Pierce & Gardner, 2004). Of the longitudinal research that has investigated how organizational climate impacts employee well-being, the relationships do seem to be persistent over time. Cotton and Hart (2003) worked with school staff members to design and implement a positive organizational climate intervention that resulted in stress-related worker's compensation premiums decreasing by 65% over two years and 75% over three years. Similarly, Griffin et al. (2003) investigated the role of poor organizational climate on individual distress (negative affect), morale (positive affect), turnover intentions and sick leave in hospital workers over a two-year period. Their findings indicated that organizational climate was the "key driver" of overall employee well-being (Griffin et al., 2003). However, more research is crucial to understand how organizational climate relates specifically to the concepts of employee stress and self-esteem over time, and which psychological mechanisms are driving the relationship. One area of research that is offering a promising explanation is the social identity approach.

The social identity approach, stress and self-esteem

The social identity approach incorporates both social identity theory (Tajfel & Turner, 1979) and self categorization theory (Turner et al., 1987), into one comprehensive approach. A social identity refers to a person's knowledge that they belong to a group and that group membership has some emotional and valued significance (Haslam, 2004). It is argued that individuals

can identify with multiple groups and as such, have multiple interdependent categorizations of the self, including themselves as an individual, a member of an ingroup (such as a workgroup), and a member of a high-order superordinate ingroup (such as an organization) (Turner et al., 1987). It is these shared group memberships and how much one psychologically identifies with the group that forms part of their self-concept.

Social identification might influence employee stress and self-esteem in the following ways. First, it is proposed that identification with an organization or group reduces an individual's primary stress appraisal and increases their perception of resources to cope, such as having greater social support (Haslam, 2004; Steffens et al., 2017). This theory was tested by Griffin, Steptoe, and Cropley (1999), who found that the same situations appeared less stressful to teachers who had higher levels of perceived social support and effective coping behavior. In a rare longitudinal study, Haslam, Jetten, and Waghorn (2009), found that over a five-year period, high workgroup identifiers were more likely to experience morale and pride, and less likely to experience stress when the group was exposed to their highest workload, highlighting the benefits of group identification. Even the most recent literature is finding that poor social job characteristics, such as social exclusion from the workgroup, increases a teacher's perceived stressors and disrupts their sleep pattern which aids stress recovery, meaning that their resources to cope are diminished (Kottwitz, Gerhardt, Pereira, Iseli, & Elfering, 2018).

Second, identifying with an organizational group may increase one's level of self-esteem and decrease their level of stress, as they are satisfying a basic human need to belong and have a sense of purpose (Baumeister & Leary, 1995; van Dick & Wagner, 2002). When one develops a meaningful relationship with a group, feelings of worthiness, sensitivity to team camaraderie and positive well-being are heighted (Rego, Souto, & Pina e Cunha, 2009; Reicher & Haslam, 2006; Reynolds, Subasic, Lee, & Bromhead, 2016). This relationship was outlined by van Dick, Wagner, Stellmacher, Christ, and Tissington (2005), who showed that employees who identify highly with their workgroup and/or organization tend to rate their commonality with team members as higher and have higher levels of overall well-being. Therefore, social identification seems to play a key role in predicting employee outcomes, such as stress and self-esteem levels. However, the current study also proposes that social identification is a psychological mechanism through which perceptions of organizational climate could impact employees.

Organizational climate, social identification, stress and self-esteem

Past theoretical, statistical and conceptual complications have led to organizational climate and social identification sometimes representing overlapping and entangled research topics, delaying research progress (Byrd & Martin, 2016; Goodenow, 1993; Lee et al., 2017). As social psychological constructs, organizational climate concerns the social characteristics of the organization and captures one's evaluative perception of the processes and norms that construct the environment (Maxwell, Reynolds, Lee, Subasic, & Bromhead, 2017; Moos, 1973). Whereas social identification captures one's psychological connection to the organization and concerns individuals' social selves reflecting the salience of their affiliated groups. Numerous researchers through rigorous statistical analysis have distinguished between these two concepts and concluded that they need to be analyzed as related, yet separate constructs (Lee et al., 2017; Turner, Reynolds, Lee, Subasic, & Bromhead, 2014). Although statistical correlations and causal path coefficients can appear large between the two variables (Lee et al., 2017; Maxwell et al., 2017), organizational climate and social identification are conceptually and theoretically distinct.

With substantial evidence, extant research has shown that there is a meaningful relationship between organizational climate and levels of group identification and connectedness (Bartels, Pruyn, de Jong, & Joustra, 2007; Loukas, 2007; Reynolds, Lee, Turner, Bromhead, & Subasic, 2017). Within the workplace, individual group members are exposed to their organization's climate, which reflects the group's characteristics, such as the organization's goals, values and beliefs (Ellemers, de Gilder, & Haslam, 2004). In order to understand their social reality, individuals can engage in a sensemaking process, whereby they seek and decode identity relevant information from the organizational climate to form their self-concept and understand how they fit into the group (Ashforth & Schinoff, 2016). If the organization has a positive organizational climate, for example they have a clear goal, they have a strong sense of shared values and beliefs, and the members of their organization experience positive relations, this would increase the salience of the group meaning, clearly define the situational context for individual group members and facilitate identity construction (Bizumic, Reynolds, & Meyers, 2012). When "who we are as a group" is clear and distinctive, it increases an individual's ability to connect and identify with the organization (Bizumic et al., 2012). Furthermore, if the organization is perceived to have a positively distinct climate and resonates with how one hopes to see themselves, it becomes more attractive for employees to belong to the group and psychologically identify with the group in an effort to increase their self-worth, as the group membership will ultimately form part of their self-concept (Haslam & Ellmers, 2005).What is understood to a lesser extent is how organizational climate comes to influence further employee outcomes.

By utilizing the social identity perspective, we can begin to understand how relationships and processes at the organizational level can impact and shape individual outcomes. We need to go further than just viewing the organization as a sociological group but try to understand it as a psychological group that is self-defining and fulfilling a basic human need to belong. As people come to identify and view the group as psychologically meaningful, they internalize the norms, values, and beliefs that define the group (Turner, 1985). Therefore, a group such as one's organization is not just an external environment but can impact on one's behavior and identity (Ashford & Mael, 1989). As the norms, values and beliefs of an organizational group are encompassed in the organizational climate, it is argued that it is through the existence of a psychological connection between the organization and the individual that organizational climate can impact one's levels of stress or self-esteem (Bizumic et al., 2009). The influence of organizational climate on employee outcomes could be

activated through one's identification. The strength of one's identification and how connected they feel to the group could help us better understand to what extent organizational climate will impact stress and self-esteem.

Bizumic et al. (2009) demonstrated how the social identity approach could be applicable to the relationship between organizational climate and individual well-being. They explored how organizational variables (including school climate and school identification) influenced well-being among 113 staff from two high schools. Their results indicated that school climate was correlated with staff stress levels but had no significant relationship with staff self-esteem. Similarly, higher school identification predicted higher self-esteem and lower depression levels, but not stress levels, in school employees. School identification also mediated the relationship between school climate and depression. However, the variables of stress and self-esteem were not considered for mediation analysis. Therefore, although there is evidence to believe social identification could mediate the relationship between organizational climate and staff self-esteem and stress, it is yet to be tested.

Furthermore, Bizumic et al.'s (2009) research paradigm can be strengthened and extended in important ways. First, their staff data was only collected from two high schools and had a sample of just over 100 staff members. It is possible that due to the small sample pool and sample size, meaningful relationships between organizational climate, stress and self-esteem were not detected, and their results may have limited generalizability. Second, as their analysis was cross-sectional, it does not offer insight into how organizational climate, social identification and stress, and self-esteem, relate to each other over time.

As approximately 90% of empirical research on stressors and health is cross-sectional, arguably one of the largest gaps in the organizational climate and well-being literature is the lack of longitudinal studies (Angelo & Chambel, 2015; Zapf, Dormann, & Frese, 1996). A recent meta-analysis that reviewed 53 studies on the social identification and health relationship in organizations, found only three longitudinal studies measuring stress and two studies measuring positive aspects of well-being, with none directly measuring self-esteem (Steffens et al., 2017). Therefore, understanding how organizational climate, social identification and employee stress and self-esteem impact each other over time is of great value.

The present study

The current research intends to examine the longitudinal relationship between organizational climate, social identification, and employee stress, and self-esteem respectively. There are three main gaps that this research seeks to address. First, there is a gap in the literature exploring how organizational climate is associated to employee self-esteem. Without this knowledge, we cannot fully understand how the organizational environment shapes employee self-esteem, which is linked not only to the employee's self-concept and overall well-being, but to a range of occupational outcomes. Second, there has been insufficient work conducted on exploring the psychological mechanisms that explain how organizational climate comes to impact employee outcomes. The current study will be the first (across both cross-sectional and longitudinal literature) to test whether social identification mediates the relationship between organizational climate and stress and self-esteem in an organizational sample. Lastly, there is no research investigating the direction and strength of these relations longitudinally. Without this information, it will remain unclear as to how organizational climate influences employee outcomes, which could ultimately impact on the performance of the employee and the organization.

An extensive aspect of organizational climate research concerns school climate (Anderson, 1982; Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013). Schools are organizations just like any other, with school climate implying organizational climate to the employed school staff. School climate has inherited its concepts, approaches and measures from the organizational climate research and applied them to school processes (Thapa et al., 2013; You, O'Malley, & Furlong, 2014). The organizational framework of Moos (1974) in particular has been utilized to understand the school environment and construct measurements of school climate (Lee et al., 2017; Reynolds et al., 2017; Shehnaz et al., 2015). One of the reasons that school climate is often researched is that teaching is rated as one of the most stressful professions, which results in high levels of absenteeism and early retirement. Therefore, understanding organizational variables within this context is of paramount concern (Kyriacou, 2001; van Dick & Wagner, 2002). Teachers are also believed to have fewer extrinsic motivations than other professions, as they do not receive much salary incentive (Khan, Rasli, Yusoff, & Ahmad, 2015). Thus, psychological motivations, such as organizational identification, play an important role in impacting individual outcomes (van Dick & Wagner, 2002). Therefore, the current study will explore how school (organizational) climate impacts staff stress and self-esteem in schools.

The main aim of the study is to test longitudinally whether social identification predicts and mediates the relationship between school climate and stress, and self-esteem respectively. Hence, based on the past literature previously discussed, the hypotheses for this study are as follows when the various covariates are considered:

Hypothesis 1a: School climate will have a significant negative association with stress longitudinally.

Hypothesis 1b: School climate will have a significant positive association with self-esteem longitudinally.

Hypothesis 2a: Social identification will have a significant negative association with stress longitudinally.

Hypothesis 2b: Social identification will have a significant positive association with self-esteem longitudinally.

Hypothesis 3a: Social identification will mediate the relationship between school climate and stress longitudinally. More specifically, more positive perceptions of school climate will be associated with greater social identification that in turn will be associated with lower levels of stress.

Hypothesis 3b: Social identification will mediate the relationship between school climate and self-esteem longitudinally. More specifically, more positive perceptions of school climate

will be associated with greater social identification that in turn will be associated with higher levels of self-esteem.

Additionally, to assess the direction of the relationships, the reverse mediational relationships and the reciprocal relationships (all the variables influencing one another across time) were also explored for stress and self-esteem respectively. Examining the relationships in different directional models does not confirm causality, but it does test which relationships are more plausible by ruling out alternative relationships (de Jonge et al., 2001; Zapf et al., 1996), which will strengthen our main mediation analysis.

Method

Participants

The data was collected in 2014 and 2015 as part of an ongoing longitudinal study. Of the 88 schools with 4759 staff members approached to participate in the research, 1878 school staff from 72 schools agreed to participate at Wave 1. The mean staff response rate from Wave 1 to Wave 2 at the school level was 56.55% (*SD* = 18.98). However, only 281 staff members from 65 schools could be matched from Wave 1 to Wave 2, with participation ranging from 1–17 responses per school, leaving the total number of participants for the study as 281 employees. Staff participated from K-10 schools (kindergarten- 10th grade, *n* = 24; 8.5%), primary schools (1st grade –6th grade, *n* = 126; 44.8%), high schools (7th grade – 10th grade, *n* = 97; 34.5%), colleges (11th grade – 12th grade, *n* = 19; 6.8%), special education schools (*n* = 14; 5.0%) and an early childhood school (*n* = 1; .4%). The sample consisted of 75 males (26.7%) and 206 females (73.3%), with 229 (81.5%) employed full-time and 49 (17.4%) employed part-time. The staff belonged to the following age groups: under 35 years of age (82; 29.2%), 35–49 years of age (129, 45.99%), over 49 years of age (67, 23.8%) and 3 (1.1%) preferred not to answer the question. Of the participants, 35 (12.5%) worked in administration and 246 (87.5%) were teachers. Sixty-six participants (23.5%) had less than 6 years of teaching experience, 69 (24.6%) had 6–10 years' experiences, 80 (28.5%) had 11–20 years' experiences and 66 (23.5%) had more than 20 years of experience. Total student enrolment at the schools ranged from 98 to 1214 students (*M* = 567, *SD* = 264.60). The socio-economic statuses of the schools were measured using the Index of Community Socio-Educational Advantage (ICSEA; standardized with a national mean of 1000 and a 100 standard deviation; Australian Curriculum, Assessment and Reporting Authority [ACARA], 2015), with values ranging from 929 to 1203 (*M* = 1081.30, *SD* = 58.79).

Materials and procedures

The participants completed the survey via an internal online link at a time that was convenient to them within a three-week period and a follow-up period one year later. All staff provided online consent to participate and could withdraw at any time. Staff responses were anonymous, but self-generated identification codes were requested for longitudinal data linking purposes. Participants rated their agreement to each statement on a 7-point Likert scale, ranging from 1 (Not at all) to 7 (Agree Strongly) for all measures except measurements of stress. Statements pertaining to stress were measured on a 4-point Likert scale, ranging from 0 (Does not apply to me at all) to 3 (Applies to me very much or most of the time). All reverse items were adequately reversed scored. The measures' reliability coefficients (Cronbach *α*) are provided in Table 1.

Table 1. Descriptive statistics for matched sub-scales in 2014, 2015 data.

	Wave 1			Wave 2		
Measures	*M*	*SD*	*α*	*M*	*SD*	*α*
Workgroup Identification	5.86	1.05	0.80	6.07	1.02	0.78
School Identification	6.08	1.04	0.95	6.26	1.00	0.96
Shared Values	5.50	1.13	0.95	5.77	1.09	0.95
Academic Emphasis	6.01	0.80	0.94	6.20	0.73	0.94
Staff and Student Relations	6.18	0.71	0.94	6.28	0.69	0.95
Staff and Staff Relations	5.54	1.24	0.94	5.64	1.26	0.94
Self-esteem	5.62	1.02	0.81	5.76	1.06	0.90
Stress	0.91	0.67	0.90	0.79	0.64	0.80

Control variables

The demographic covariates in the current study include the staff's age, gender, teaching experience, role (teaching or administration), executive status, the school level SES (ICSEA), school response rate, school size (number of students enrolled), and school sector (such as primary school or high school). These covariates were controlled as past research has indicated that they are important predictors in the school climate literature (Anderson & Iwanicki, 1984; Grayson & Alvarez, 2008; Khan et al., 2015; Lau, Tak Yuen, & Chan, 2005; Lee & Loeb, 2000; Ross, Romer & Horner 2012). Furthermore, relational demography research has shown that having similar attributes to organizational members increases pleasant interactions and psychological attachment to the group (Tsui, Egan, & O'Reilly, 1992). Therefore, as the current study is interested in perceptions of climate (with shared values and relations) and group identification, it is crucial these demographics are controlled for in the models.

Outcome variables (dependent variables)

Stress. The 7-item stress measure was derived from a shortened version of the Depression, Anxiety, Stress Scale (DASS-21; Brown, Korotitsch, Chorpita, & Barlow, 1997; see Lovibond & Lovibond, 1995 for full version). The shortened DASS-Stress has high reliability (Brown et al., 1997) and validity when measuring stress in non-clinical samples (Henry & Crawford, 2005). Example items were "I found it difficult to relax" and "I found myself getting agitated".

Self-esteem. Self-esteem was operationalized as global self-esteem. Global self-esteem was measured with four-items of original and modified (see Bizumic et al., 2009) versions of the Rosenberg Self-esteem Scale (RSE; Rosenberg, 1956), as it is one of the most widely-used scales, with more empirical validation than any other self-esteem measure (Robins, Hendin, & Trzesniewski, 2001). The shortened (4-item) RSE scale has successfully be used by other researchers (Bizumic et al., 2009; O'Malley & Bachman, 1983) and is beneficial in balancing practical needs and psychometric rigor (Robins et al., 2001). Example items were "I am generally satisfied about myself" and "I take a positive attitude towards myself".

Explanatory variables

School climate. School climate was measured at an individual level as this level of analysis is the most widely used in the school climate literature and has the most support for predicting employee outcomes (Parker et al., 2003).[1] It was measured using modified school climate items that made it appropriate for a staff sample from the SCASIM-St, a validated measure (see Lee et al., 2017 for details on SCASIM-St validity and invariance tests). The current study also conducted a Confirmatory Factor Analysis (CFA)[2] on school climate to confirm whether the same factor structure was achieved for an organizational population. In line with Lee et al. (2017), the CFA confirmed that there were four sub-factors that indicated the 2nd order latent variable of school climate. The sub-factors were derived from the psychosocial environment framework of Moos (1968) and constructed by Lee et al. (2017) to include items measuring shared values and approach (representing the dimension of system maintenance), staff relations, staff and student relations (both representing the quality of relationships dimension) and academic emphasis (representing the dimension of growth/goal orientation). The measure of shared values and approach (8 items) assessed the staff perception of the school's sense of collective mission, rules and processes. Example items were "There is a sense that we are all on the same team" and "There is a school spirit and pride". The measure of staff relations (5 items) assessed the degree to which relationships amongst staff are characterized by respect, understanding, support and acceptance. Example items were "Staff value and respect each other" and "The decisions made by the school leadership are fair". The measure of staff and student relations (9 items) assessed the degree to which staff relations with students are supportive, respectful and fair. Example items were "Staff care about students" and "Staff treat students which respect". The measure of academic emphasis (8 items) assessed the degree to which staff perceived teachers as supporting students to achieve academically. Example items were "Staff challenge student to do better" and "Staff expect everyone to work hard".

Social identification. A CFA[3] on social identification revealed that it was comprised of two sub factors, school identification (six items) and workgroup identification (four items). These items were based on measures of social identity from Doosje, Ellemers, and Spears (1995) and modified to be relevant in a school context. School identification measures included items such as "Being a part of this school is important to me" and "I feel a strong connection with this school". The workgroup identification example items were "Belonging to this workgroup is important to me" and "This workgroup is an important reflection of who I am". As the workgroup is part of the individual's wider, superordinate school identity, it makes conceptual sense that the two are captured by one second order factor of social identification, in line with past research (van Knippenberg & van Schie, 2000).

Analysis overview

Expectation Maximization method was chosen to impute all missing data, excluding demographic cases, to estimate better coefficients and satisfy the requirement of having no missing values in SEM analysis (Tabachnick & Fidell, 2014). It was possible that the staff from the same school could be more correlated compared to staff from different schools. Therefore, Mplus was used to calculate interclass correlation coefficients (ICC) and design effects[4] for the DVs only, to determine whether the assumption of independent observations had been violated (Hox, 2010). If the ICCs were greater than zero and the design effects were greater than 2, multi-level modeling would be employed to account for the nested structure of the data (staff clustered by schools) (Muthén & Satorra, 1995).

In the main analysis, two hierarchically nested structural equation models (hereafter hierarchical SEM) were conducted with the DV of stress and the DV of self-esteem. As the research suggests stress and self-esteem within the workplace appear to be qualitatively different rather than being two opposite constructs on the same continuum of well-being (Hart & Wearing, 1995; Steffens et al., 2017) and they are likely to present opposite effects with inverse coefficients, they were analyzed separately. The aim of the analysis was to test whether social identification at Wave 1 mediated the relationship between school climate at Wave 1 and stress at Wave 2, and self-esteem at Wave 2. Reverse models were also tested to see whether social identification at Wave 2 mediated the impact of stress at Wave 1 upon school climate perception at Wave 2, as well as the impact of self-esteem at Wave 1 upon school climate at Wave 2. Mediation analysis was chosen over moderation due to theoretical considerations, as social identification was conceptualized as a general psychological mechanism through which the relationship between organizational climate and employee outcomes can be understood. Furthermore, past researchers who have explored social identification as a moderator did not find results to support this relationship but concluded that it is more suited as a mediating variable (Bizumic et al., 2009; Reynolds et al., 2017).

In the hierarchical SEM, background variables and the DV at Wave 1 were entered into Step 1, school climate was entered into Step 2, then school climate was removed and social identification was entered in Step 3, both school climate and social identification were entered in Step 4, and mediation analysis with indirect pathways were measured in Step 5. The MacArthur approach was used to test whether mediation was present and complete (MacKinnon, 2008), following the criteria that the subsequent relationships had to be significant: (1) from school climate to social identification, (2) from social identification to stress/self-esteem, and (3) the indirect path from school climate to stress/self-esteem via social identification. If the direct path between school climate and stress or self-esteem was also significant with the mediator in the model, it was interpreted as partial mediation.[5]

Lastly, two-wave auto-regressive cross-lagged SEM, testing the cross-lagged paths from Wave 1 variables to Wave 2 variables, with the DV of stress at Wave 2 and the DV of self-esteem at Wave 2, were conducted respectively. Although these models do not answer our main mediation hypotheses (as cross-lagged panel models test only the rank order change in the variables with the control of the regression to the mean; MacKinnon, 2008), they can help to determine whether there are any reciprocal relationships between the variables across time and provide more confidence in the main mediation analysis.

All model outputs were checked for model fit and empirically derived modification indices were applied, using empirical and theoretical knowledge, to maximize model fit. For model fit, the χ^2 statistic was examined in conjunction with other model fit indices, as it is known to be sensitive to large samples. Judgement of model fit indices were based on the recommendations of Hu and Bentler (1995, 1998, 1999). Model fit was deemed satisfactory when CFI (Comparative Fit Index) and TLI (Tuker-Lewis Index) exceeded or were close to 0.95, RMSEA (Root Mean Square Error of Approximation) was close to or less than 0.06, and SRMR (Standardized Root Mean Square Residual) was close to or less than 0.08 (Hu & Bentler, 1995, 1998, 1999)

Results

Descriptive results

One merged dataset containing the matched participants from 2014 and 2015 was utilized for analysis, with descriptive statistics displayed in Table 1. Skewness and kurtosis were significant for almost all item scores ($|z| > 1.96$, $p < .025$). The maximum likelihood parameter estimation with robust standard errors, MLR, was used to accommodate the non-normality in the variables (Muthén & Muthén, 1998–2012). Correlations among the study variables are presented in Table 2.

Attrition analysis

The attrition analysis was conducted as regression analysis, comparing two wave longitudinal participants with one wave cross-sectional participants upon their data at Wave 1. The results are presented in Table 3. The attrition effects for every variable were significant, except for self-esteem and academic emphasis. The longitudinal sample is thus limited in generalizability, as it represents a staff population with a lower level of stress, higher levels of identification and a more positive perception of school climate. Only 15% of the cross-sectional participants had matched data that allowed them to be part of the longitudinal sample. This was due to high turnover rates (Hancock & Scherff, 2010), errors in the self-generated code and a change in the position of the self-generated code request from the front to the back of the survey between Wave 1 and Wave 2.

Intra-class correlation (ICC) and design effects

The ICCs of stress items ranged from 0 to 0.131, with design effects ranging from 1.03 to 1.44. Self-esteem items ICC ranged from 0 to 0.04 with design effects from 1.01 to 1.15. In both cases the design effects were below 2, so the assumption of observation independency was not violated. Accordingly, ICC analysis for the IVs and multi-level analysis was not necessary, and ordinary uni-level SEM was conducted without testing school-level effects.

SEM analysis with stress at wave 2 as DV

Table 4. summarizes the results of the hierarchical SEM. The demographic covariates only model (model 1.1) showed that previous stress levels ($\beta = 0.58$, $p < .001$), being male ($\beta = -0.11$, $p = .042$) and being at a K-10 school, as opposed to a primary school ($\beta = 0.22$, $p = .008$), were associated with higher reported stress. The seven stress indicator items showed high factor loadings on the latent stress variable, ranging from .640 to .842. Model 1.2 indicated that school climate did not significantly predict stress over time ($\beta = 0.00$, $p = .959$). Model 1.3 suggested that social identification did not significantly predict stress over time ($\beta = -0.05$, $p = .367$). When school climate and social identification at Wave 1 were entered into the same model (model 1.4), both variables still had no significant association with stress at Wave 2.[6]

In terms of statistical power, the parameter to sample size ratio in Model 1.3, was just below the recommended 5:1 ratio (Bentler, 1987). However, a supplementary analysis was conducted with stress indexed by scale score (an observed variable with each participant's mean score of their responses to all the indicator items), which exceeded the 5:1 ratio (6.57:1). The results of the scale score SEM were the same as in the model using the latent stress variable with respective items, with no significant associations between the variables of interest. Therefore, the latent variable (stress) model was retained and no further analysis was conducted as the first criteria of mediation was not met (MacKinnon, 2008).

SEM analysis with self-esteem at wave 2 as DV

Table 5. summarizes the results of the hierarchical SEM. The demographic covariates only model (model 2.1) showed that having high self-esteem at Wave 1 ($\beta = 0.64$, $p < .001$) and being employed at an early learning/special education school, as opposed to a primary school ($\beta = 0.10$, $p = .022$) was associated with higher levels of self-esteem. The four self-esteem indicator items showed high factor loadings on the latent self-esteem variable, ranging from .513 to .924.

Model 2.2 showed that school climate significantly predicted self-esteem over time ($\beta = 0.10$, $p = .032$), suggesting the more positive one's perception of their school climate at Wave 1, the higher their reported self-esteem at Wave 2. Model 2.3 indicated that social identification significantly predicted self-esteem levels over time ($\beta = 0.19$, $p < .001$), suggesting the higher one's social identification at Wave 1, the higher their reported self-esteem at Wave 2. When school climate and social identification at Wave 1 were entered into the same model (model 2.4), social identification at Wave 1 did have a significant relationship with self-esteem at Wave 2 ($\beta = 0.36$, $p = .026$). Whereas school climate had a non-significant relationship with self-esteem at Wave 2 ($\beta = -0.19$, $p = .211$).

Model 2.5 showed that there was a non-significant relationship between school climate and self-esteem over time ($\beta = -0.19$, $p = .211$). School climate was significantly related to social identification ($\beta = 0.85$, $p < .001$) and social identification was significantly related to self-esteem ($\beta = 0.09$, $p < .001$). The indirect relationship from school climate to self-esteem via social identification over time was significant ($\beta = 0.30$, $p = .032$). Therefore, the results indicate that social identification completely mediated the relationship between school climate and self-esteem over time. The final model is represented in Figure 1. The variables explained 46.1% of the overall variance[7]

Table 2. Correlations among variables.

		Correlations																								
Variables		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Wave 1 Variables (2014)																										
1	School Identification	-																								
2	Workgroup Identification	.75**	-																							
3	Shared Values	.71**	.65**	-																						
4	Staff/Student Relations	.51**	.54**	.66**	-																					
5	Academic Emphasis	.47**	.47**	.62**	.76**	-																				
6	Staff/Staff Relations	.67**	.61**	.82**	.58**	.56**	-																			
7	Self-esteem	.28**	.23**	.22**	.22**	.22**	.19**	-																		
8	Stress	-.21**	-.12*	-.24**	-.11	-.12*	-.20**	-.46**	-																	
Wave 2 Variables (2015)																										
9	School Identification	.65**	.53**	.57**	.46**	.36**	.52**	.25**	-.15*	-																
10	Workgroup Identification	.39**	.48**	.36**	.32**	.29**	.33**	.19**	-.07	.62**	-															
11	Shared Values	.56**	.49**	.62**	.51**	.46**	.58**	.20**	-.15*	.74**	.58**	-														
12	Staff/Student Relations	.37**	.35**	.42**	.58**	.48**	.41**	.05	.00	.48**	.44**	.68**	-													
13	Academic Emphasis	.42**	.38**	.48**	.53**	.61**	.48**	.10	-.02	.48**	.42**	.73**	.79**	-												
14	Staff/Staff Relations	.51**	.47**	.53**	.48**	.38**	.62**	.14*	-.13*	.69**	.54**	.85**	.60**	.61**	-											
15	Self-esteem	.34**	.30**	.26**	.21**	.19**	.25**	.67**	-.34	.35**	.31**	.33**	.21**	.22**	.24**	-										
16	Stress	-.20**	-.18**	-.20**	-.13*	-.10	-.15**	-.45**	.58**	-.29**	-.27**	-.29**	-.10	-.13*	-.26**	-.48**	-									
Demographic Controls																										
17	Response Rate	-.05	-.04	-.03	-.08	-.04	.01	-.03	.09	-.05	-.07	-.02	-.12*	-.11	-.03	-.02	.04	*								
18	School Type	.05**	.05**	.11**	.06**	.07**	.06**	.04**	.02**	.09**	.09**	.20**	.11**	.11**	.11*	.04**	.12**	.38**	-							
19	ICSEA	-.04	-.05	.09	.05	.07	-.01	.10	-.05	.01	.01	.10	.05	.07	.01	.04	-.08	.13*	-.28**	-						
20	School Size	-.17**	-.20**	-.20**	-.21**	-.17**	-.21**	-.02	-.08	-.23**	-.19**	-.28**	-.27**	-.25**	-.30**	-.03	.08	.04	-.09	.33**	-					
21	Gender	.10	.12*	.08	.10	.05	.03	-.13*	.09	.14*	.14*	.16**	.12	.09	.10	.01	-.09	-.01	-.10	-.03	-.19**	-				
22	Experience	.17**	.14*	.11	.08	.01	.07	.17**	-.08	.12*	.14*	.15*	.10	.07	.13*	.14*	-.10	-.02	.06	.09	.09	-.03	-			
23	Age	.17**	.14*	.06	.07	.02	.07	-.01	.10	.17**	.14*	.10	.14*	.12*	.05	.02	.04	.09	-.05	-.03	-.04	.09	.02	-		
24	Executive Status	.18**	.23**	.18**	.16**	.11	.14*	.05	-.05	.08	.04	.02	.00	-.02	.04	.01	-.03	-.03	-.01	-.01	.01	.05	.03	.12*	-	
25	Administration	.00	-.05	-.06	.05	.03	-.04	.06	.21**	.00	.01	-.02	.04	.05	-.02	.00	.21**	-.06	-.20**	.06	.05	-.13*	.18**	-.04	.18**	-

Note. For the categorical variable of school type, the significance of each correlation was tested by ANOVA and the effect size of the correlation was from Intra-class correlation (ICC) analysis; ICSEA: Index of Community Socio-Educational Advantage (Socio-economic status); Gender: 0=male, 1=female; Executive status: 0=non-executive, 1=executive; Administration: 0 = admin, 1 = teacher. **p < .01. *p < .05.

Table 3. Regression coefficients of all scale variables explained by longitudinal vs. cross sectional participation.

Measures	β	(s.e)
Self-esteem	.027	.070
Stress	−.054*	.046
School Identification	.066**	.074
Workgroup Identification	.064**	.072
Shared Values & Approach	.058*	.080
Staff and Student Relations	.048*	.053
Academic Emphasis	.024	.057
Staff and Staff Relations	.093**	.088

N = 2024 for cross-sectional, *N* = 281 for longitudinal participants. Cross sectional participants = coded 0, Longitudinal participants = coded 1. ** $p < .01$ * $p < .05$.

SEM analysis with reverse models

The reverse model of stress at Wave 1 predicting social identification and school climate at Wave 2 was examined. The hierarchical SEM showed that stress at Wave 1 did not significantly predict school climate at Wave 2 ($\beta = 0.00$, $p = .959$). When stress at Wave 1 and social identification at Wave 2 were entered into same model, stress had a non-significant relationship with school climate ($\beta = -0.01$, $p = .88$), whereas social identification at Wave 2 did have a significant association with school climate at Wave 2 ($\beta = 0.64$, $p < .001$). Social identification at Wave 2 did not appear to mediate the relationship between stress and school climate over time as this model did not have adequate model fit (RMSEA = 0.065, CFI = 0.892, TLI = 0.877, χ^2 (299, N = 261) = 625.915, $p < .001$, SRMR = 0.125).

The reverse model of self-esteem at Wave 1 predicting school climate and social identification at Wave 2 was examined. The hierarchical SEM showed that self-esteem did not significantly predict school climate perceptions over time ($\beta = 0.00$, $p = .959$). When self-esteem at Wave 1 and social identification at Wave 2 were entered into the same model, self-esteem had a non-significant relationship with school climate ($\beta = -0.09$, $p = .125$), whereas social identification did have a significant association with school climate ($\beta = 0.66$, $p < .001$). Social identification at Wave 2 did not appear to mediate the relationship between self-esteem and school climate over time as this model did not have adequate model fit (RMSEA = 0.069, CFI = 0.885, TLI = 0.866, χ^2 (222, N = 261) = 495.571, p < .001, SRMR = 0.131).

Two-wave auto-regressive cross-lagged SEM

A two-wave auto-regressive cross-lagged SEM was conducted with the latent variables of school climate, social identification and stress, all at time 1 and time 2. The model fit the data only marginally satisfactorily (RMSEA = 0.059, CFI = 0.924, TLI = 0.909, χ^2 (205, N = 261) = 390.871, $p < .001$, SRMR = 0.090). The model explained 38.2% of the variance of stress at Wave 2. The results showed that employees of K-10 schools (compared with primary school employees) are more likely to report higher levels of stress over time ($\beta = 0.18$, $p = 0.022$). To be expected for the autoregressive paths, social identification predicted itself over time ($\beta = 0.70$, $p < .001$), school climate predicted itself over time ($\beta = 0.69$, $p < .001$) and stress predicted itself over time ($\beta = 0.55$, $p < .001$), but no other significant reciprocal relationships between variables over time were found. However, due to the sample size limit, the ratio between the number of estimated parameters to the observation cases (3.84:1) was smaller than recommended (Bentler, 1987), meaning that these results should be interpreted with caution.

Table 4. SEM results for model 1.1–1.4 explaining staff levels of stress over time.

	Model 1.1		Model 1.2		Model 1.3		Model 1.4	
	β	(s.e.)	β	(s.e.)	β	(s.e.)	β	(s.e.)
Individual Predictors								
Age	0.01	0.07	0.01	0.07	−0.01	0.07	−0.01	0.07
Gender	−0.11*	0.06	−0.11*	0.06	−0.11	0.06	−0.11	0.06
Experience	−0.04	0.08	−0.04	0.08	−0.03	0.08	−0.02	0.08
Executive Status	0.05	0.06	0.05	0.06	0.04	0.06	0.04	0.06
Administration	0.05	0.05	0.05	0.05	0.04	0.05	0.05	0.05
Stress Wave 1	0.58***	0.05	0.58***	0.05	0.58***	0.05	0.58***	0.06
School Level Predictors								
ICSEA	−0.04	0.07	−0.04	0.07	−0.05	0.07	−0.06	0.07
Total Enrolments	0.02	0.09	0.02	0.1	0.01	0.1	0.02	0.1
Response Rate	0.02	0.07	0.02	0.07	0.02	0.07	0.01	0.07
Schooldum 1	0.22**	0.08	0.22**	0.08	0.22**	0.08	0.22**	0.08
Schooldum 2	0.06	0.08	0.06	0.08	0.06	0.08	0.07	0.08
Schooldum 3	0.02	0.08	0.02	0.08	0.02	0.08	0.01	0.09
Schooldum 4	−0.03	0.06	−0.03	0.06	−0.03	0.06	−0.03	0.06
School Climate			0.01	0.07			0.14	0.13
Social Identification					−0.05	0.06	−0.16	0.13
Model Fit Results								
RMSEA	0.03		0.05		0.04		0.04	
RMSEA CI	[0.01, 0.05]		[0.04, 0.06]		[0.03, 0.06]		[0.03, 0.05]	
CFI	0.98		0.95		0.95		0.96	
TLI	0.98		0.94		0.94		0.95	
Chi Square (df)	107.63 (88)**		276.43 (178)**		188.75 (126)**		305.29 (212)**	
SRMR	0.03		0.07		0.06		0.07	
Total R^2	0.43***	0.06	0.43***	0.06	0.43***	0.06	0.44***	0.06

Gender: 0 = male, 1 = female; Executive status = 0 = non-executive, 1 = executive; Administration: 0 = admin, 1 = teacher; School Dummy's for School Type had the reference Primary Schools; Schooldum1 = K-10 schools; Schooldum2 = High Schools; Schooldum3 = Colleges; Schooldum4 = Special schools and Early-learning schools; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker Lewis Index; χ2(df) = Chi-square (degrees of freedom); SRMR; Standardised Root Square Mean Residual. *** $p < 0.001$ **$p < .01$, * $p < .05$.

Table 5. SEM results for model 2.1–2.5 explaining staff levels of self-esteem over time.

	Model 2.1		Model 2.2		Model 2.3		Model 2.4		Model 2.5	
	β	(s.e.)	*β*	(s.e.)	*β*	(s.e.)	*β*	(s.e.)	*β*	(s.e.)
Individual Predictors										
Age	0.01	0.07	0.01	0.09	0.01	0.07	0.01	0.07	0.01	0.07
Gender	0.04	0.06	0.07	0.13	0.02	0.06	0.02	0.06	0.02	0.06
Experience	−0.01	0.08	−0.01	0.07	−0.03	0.08	−0.04	0.08	−0.04	0.08
Executive Status	−0.05	0.06	−0.06	0.13	−0.01	0.06	−0.02	0.06	−0.02	0.06
Administration	0.01	0.05	0.06	0.15	0.02	0.05	0.02	0.05	0.02	0.05
Self-esteem Wave 1	0.64***	0.05	0.60***	0.06	0.62***	0.05	0.62***	0.05	0.62***	0.05
School Predictors										
ICSEA	−0.08	0.03	0.01	0.01	−0.07	0.06	−0.06	0.06	−0.06	0.06
Total Enrolments	0.17	0.1	0.01	0.01	0.19*	0.1	0.19	0.1	0.19	0.1
Response Rate	−0.02	0.06	0.01	0.01	−0.01	0.06	0.01	0.06	0.01	0.06
Schooldum 1	−0.12	0.07	−0.4	0.23	−0.12	0.07	−0.12	0.07	−0.12	0.07
Schooldum 2	−0.13	0.08	−0.23	0.17	−0.13	0.08	−0.13	0.08	−0.13	0.08
Schooldum 3	−0.13	0.08	−0.54	0.34	−0.13	0.09	−0.12	0.09	−0.12	0.09
Schooldum 4	0.10*	0.04	0.09*	0.04	0.09*	0.04	0.09*	0.04	0.09*	0.04
School Climate			0.10*	0.05			−0.19	0.15	−0.19	0.15
Social Identification					0.19***	0.06	0.36*	0.16	0.36*	0.16
SocID ON School Climate									0.85***	0.04
Indirect Path via SocID									0.30*	0.14
Model Fit Results										
RMSEA	0.05		0.06		0.06		0.05		0.05	
RMSEA CI	[0.029, 0.072]		[0.044,0.068]		[0.048, 0.077]		[0.041,0.063]		[0.041,0.063]	
CFI	0.96		0.93		0.92		0.94		0.94	
TLI	0.94		0.92		0.9		0.93		0.93	
Chi Square (df)	69.181(41)**		198.713 (109)**		146.910 (73)**		253.896 (148)**		253.896 (148)**	
SRMR	0.03		0.07		0.06		0.08		0.08	
Total R^2	0.45***	0.06	0.44***	0.06	0.45***	0.05	0.46***	0.05	0.46***	0.05

Gender: 0 = male, 1 = female; Executive Status = 0 = non-executive, 1 = executive; Administration: 0 = admin, 1 = teacher; School Dummy's for School Sector had the reference Primary Schools; Schooldum1 = K-10 schools; Schooldum2 = High Schools; Schooldum3 = Colleges; Schooldum4 = Special schools and Early-learning schools; SocID = Social identification; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker Lewis Index; χ2 (df) = Chi-square (degrees of freedom); SRMR; Standardised Root Square Mean Residual. ***$p < .001$, **$p < .01$, *$p < .05$.

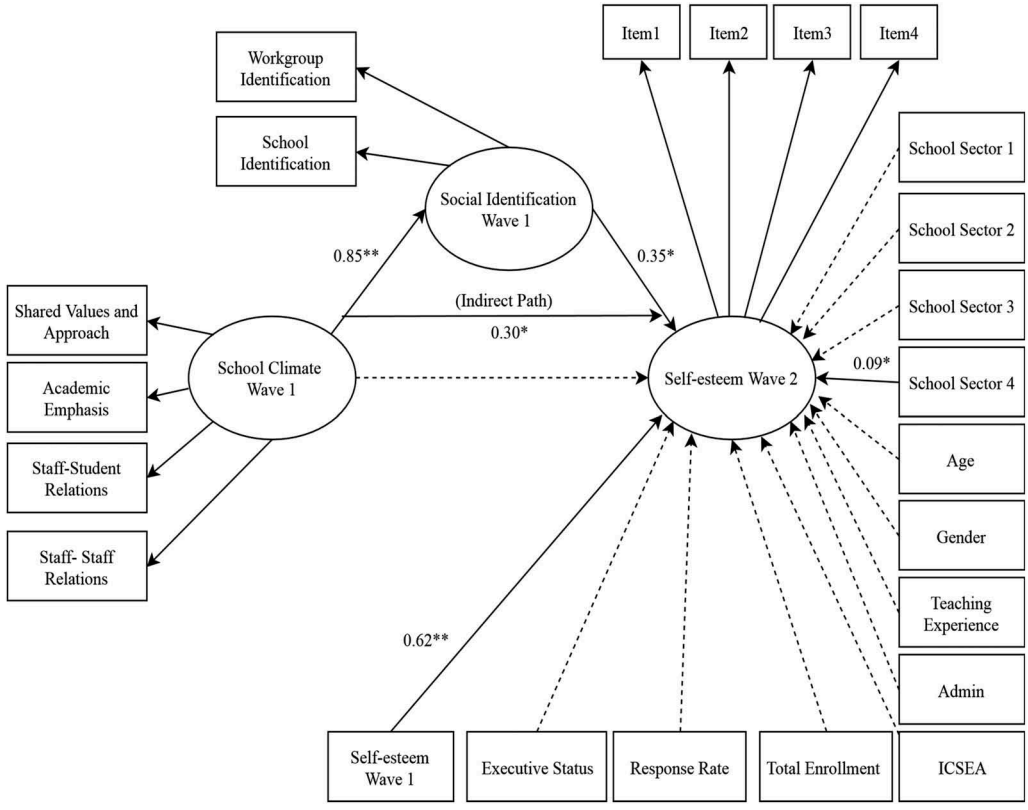

Figure 1. Model 2.5: Hierarchical SEM of self-esteem at Wave 2 with school climate at Wave 1, covariates and a mediator of social identification at Wave 1, with standardized coefficients. *Note*. School sector has primary school as the reference. School Sector 1 = K-10 School; School Sector 2 = High Schools; School Sector 3 = Colleges; School Sector 4 = Special schools and Early-learning schools; ICSEA: Socio-economic status; Gender: 0 = male, 1 = female; Executive status = 0 = non-executive, 1 = executive; Administration: 0 = admin, 1 = teacher. Error terms, correlations and related coefficients are omitted for simplicity. *$p < .05$, **$p < .01$. Dotted lines represent non-significant associations.

A two-wave auto-regressive cross-lagged SEM was also conducted with the latent variables school climate, social identification and self-esteem, all at time 1 and time 2. The model fit the data only marginally satisfactorily (RMSEA = 0.052, CFI = 0.942, TLI = 0.930, χ^2 (203, N = 261) = 346.56, $p < .001$, SRMR = 0.092). The model explained 46.6% of the variance of self-esteem at Wave 2. The covariates of ICSEA ($\beta = -0.12$, $p = 0.033$) and school size ($\beta = 0.04$, $p = 0.044$) were significant, implying that larger schools with lower ICSEA were more likely to report higher self-esteem levels. To be expected for the autoregressive paths, social identification predicted itself over time ($\beta = 0.59$, $p < .001$), school climate predicted itself over time ($\beta = 0.67$, $p < .001$) and self-esteem predicted itself over time ($\beta = 0.65$, $p < .001$). The model indicated that there was a marginally significant reciprocal relationship with social identification at Wave 1 explaining self-esteem at Wave 2 ($\beta = 0.21$, $p = .091$), and self-esteem at Wave 1 explaining social identification at Wave 2 ($\beta = 0.11$, $p = 0.075$). Of note, the standardized regression coefficient of social identification at Wave 1 upon self-esteem at Wave 2 has a β value that is twice as large than the other way around. Hence, the directional path from social identity to self-esteem was stronger even when a reciprocal relationship was marginally suggested. However, as the ratio of the estimated parameters to the observation cases (3.73:1) was smaller than recommended (Bentler, 1987), the results should be interpreted with caution.

Discussion

The present study examined whether social identification could account for the relationship between perceptions of school climate and employee levels of stress and self-esteem in the school setting. A longitudinal study was conducted to identify whether the school climate, social identification and stress and self-esteem relationships were persistent over time and which directions these relationships were most plausible.

Of the hypotheses proposed, three out of six were confirmed. School climate and social identification did not have a significant relationship with stress over time (H1a and H2a respectively), meaning mediation analysis was not attempted (H3a). Furthermore, neither reverse nor reciprocal directional models explained the results, further supporting the findings of the main analysis. However, school climate and social identification did have a positive significant relationship with self-esteem over time (H1b and H2b respectively), and social identification completely mediated the relationship between school climate and self-esteem over time (H3b).

In relation to stress, these findings contradict past longitudinal studies which found either positive organizational climate perceptions or stronger identification appeared to lead to less stress over time (Angelo & Chambel, 2015; Haslam, 2004; Haslam et al., 2009). It is possible that school climate or social identification did not predict stress over time because the longitudinal sample was less stressed. More specifically, the attrition analysis showed that the longitudinal sample had more positive perceptions of school climate, were more likely to identify and had less stress than the cross-sectional sample. Potential reasons for this difference in subpopulations are discussed in the limitation and future directions below. Therefore, future studies with more representative random samples might update the current findings.

In contrast, the hypotheses regarding the relationship between school climate, social identification and self-esteem were all confirmed. The results indicated that the more positive staff perceptions of school climate were and the more strongly one identified, the higher their level of self-esteem over time. These results were in line with the small amount of research on the area, which found organizational climate or social identification had a positive relationship with self-esteem using cross-sectional design (Griffin et al., 2003) and longitudinally (Cotton & Hart, 2003; Rego et al., 2009; van Dick et al., 2005).

Furthermore, as social identification was a complete mediator of the relationship between school climate and self-esteem, it appears that staff perceptions of climate operated indirectly through the psychological mechanism of social identification to impact self-esteem. The findings also revealed that the reverse model did not fit the data, but the cross-lagged model showed that self-esteem and social identification had a marginally significant reciprocal relationship over time. However, the direction of the relationship was stronger from social identification predicting self-esteem than the other way around, indicating that social identification is a plausible psychological mechanism that activates the influence of school climate on employee self-esteem over time. Future studies with larger sample sizes and more measurement time points may fulfil further validation of the suggested reciprocity between social identity and individual members' well-being when organizational climate is also taken into account.

Contributions to theory and research

The current study has helped fill the gaps of past research in the organizational health field. Most notably, this study contributed greatly to understanding how the social identity approach can be applied to organizational research, particularly within the school setting. The current study expands upon research that proposed social identification as an explanatory mechanism for how climate comes to impact employee outcomes by utilizing validated, comprehensive measurement constructs of school climate and social identification, to statistically test the relationship for the first time in a staff sample (Bizumic et al., 2009). Our findings add to the "social cure" movement of the social identity approach literature (Jetten, Haslam, & Haslam, 2012), using robust statistical techniques that support the premise that social identification within the organizational setting "invigorates" employees (Jetten et al., 2012; Steffens et al., 2017). Furthermore, by testing alternative directions of the relationships, one can have more confidence that they understand how the variables interact over time.

As previously mentioned, only approximately 10% of past research in the organizational and social identification health fields have conducted longitudinal research (Steffens et al., 2017; Zapf et al., 1996). Of these longitudinal studies, none of them explored the relationship between organizational climate, social identification and employee stress or self-esteem. For the first time in a single statistical model, the present study revealed that organizational climate, through social identification, can explain self-esteem over time, but not stress. The current research clarifies the mixed evidence presented by some cross-sectional studies and finds that there is a persistent, meaningful

relationship with organizational climate, social identification and self-esteem in the workplace over time. These longitudinal findings demonstrate that the strength of the relationship is affected by health valence (positive vs. negative) (Steffens et al., 2017), highlighting the need to extend the pool of research exploring employee self-esteem.

The longitudinal results also advance theory and research, as it suggested that the supposedly well-established link between organizational climate and stress did not appear (Sahni & Kumar, 2012; Wilson et al., 2004). The discrepant results between the cross-sectional and longitudinal studies indicate the importance of exploring whether relationships are persistent over time, in order to understand the true implications of organizational variables. The longitudinal analysis in the current study can act as an interesting starting point for further research to understand how the organizational climate and stress relationship changes over time.

Limitations and future directions

There are some limitations in the current study that should be noted and rectified in future research. First, the longitudinal analysis could have benefited from a larger sample size. The small sample size was due to high levels of turnover and errors in self-reported identification codes as a result of procedural changes. The resulting sample size was an issue as the reverse models did not meet the recommended sample size to number of free parameters ratio (Bentler, 1987), meaning that the models poor fit could have been caused by a poor predictive model or methodological limitations. The sample size also limited the statistical power and fit of models with stress and self-esteem entered as two dependent variables in the same model. Similarly, the sample size limitation is responsible for the hindered fitness of the overall model to the data for the two-wave auto-regressed cross-lagged panel analysis testing reciprocal effects, as the ratio for a coefficient to the number of participants would not have been satisfied. Future studies would benefit from a larger sample size as this would provide the opportunity for more in-depth analyses. However, as the current study's sample size is more than double that of past cross-sectional literature in the area (Bizumic et al., 2009), it is still a worthwhile contribution.

Similarly, a strength of the current study was that it measured variables across time. However, only two waves of data were collected, limiting the choice of statistical analysis. Future studies could collect three or more waves of data to utilize advanced analysis, such as latent growth curve models (de Jonge et al., 2001). Although it is possible that mediation models can be tested across two time points (MacKinnon, 2008), more rigorous inferences about casual relations could be made with measurements over three time points (Cole & Maxwell, 2003). Some researchers recommend that to decrease bias, the predictor and the mediator should not be measured concurrently, nor should the mediator and the outcome variables, implying that three time points are necessary (Cole & Maxwell, 2003). Therefore, future studies could include additional waves of data to analyze the variable trajectory more accurately over time.

Furthermore, the attrition analysis suggested that the cross-sectional and longitudinal samples were significantly different from each other, potentially limiting the generalizability of the findings. It is possible that the longitudinal sample could have under-represented the participants who viewed school climate negatively or were highly stressed, as they may have been less likely to do a non-compulsory survey, less likely to provide the self-generated codes, more likely to be absent, or be lost from staff turnover (Hancock. & Scherff, 2010; Zapf et al., 1996). Second, the longitudinal sample could have over-represented highly identifying participants, as they could have been more willing to complete the survey to engage in organizational citizenship behavior (Christ, van Dick, Wagner, & Stellmacher, 2003). However, as teachers are known to have one of the highest rates of occupational stress, absenteeism, turnover and early retirement of any profession (Kyriacou, 2001; van Dick & Wagner, 2002) even with the current studies limitations, the contribution and implications for policy-making with this profession in mind outweigh the flaws. Future studies need to collect data in different occupational settings where more variability is natural present, or design research that will engage the employees who are more stressed and have lower social identification, as it is this population that adds a financial burden to organizations and offers the most potential by way of intervention to address well-being issues.

As the current study only measured a limited number of variables that fluctuate in the workplace, future studies could be more comprehensive in the predictors and dependent variables that they include. For example, future studies could include task-related stressors (such as concentration demands and load on memory) and resources (such as task and timing control), so that the current study's findings and the job-resource demand literature can be integrated to form a cohesive picture of how organizational variables impact employee outcomes. Similarly, if stressors and measurements of threat to the self were included, the current study could be integrated with the stress as offence to self (SOS; Semmer, Jacobshagen, Meier, & Elfering, 2007) literature to get a better understanding of how the social environment can impact and threaten one's sense of identity, as well as understand the relationship between self-esteem and stress, and how they impact each other. Furthermore, beyond stress and self-esteem, other common indicators of well-being utilized in the organizational setting could be included in the relationship, such as enthusiasm (Rego & Pina e Cunha, 2008), morale (Cotton & Hart, 2003), psychological empowerment (Wilson et al., 2004), ability to recover (Sonnentag & Kruel, 2006), burnout (Angelo & Chambel, 2015) and emotional exhaustion (Yao et al., 2015). Although the majority of these well-being indicators are correlated with each other, they do not always provide the same results in organizational studies. Therefore, future research could cross-validate the current study, but use more comprehensive measurements of employee well-being.

Conclusion

This study aimed to fill in the gaps of organizational research and investigate whether social identification was a psychological mechanism through which organizational climate impacted both employee stress and self-esteem. The findings

from the study only appeared to show a relationship between organizational climate and social identification with self-esteem over time, but not stress. However, there is still a need for future research to overcome methodological issues of the current study and understand the place of the social identity approach in organizational climate research more clearly. Overall, this study provides empirical support demonstrating that organizational climate and social identification are important variables when considering employee outcomes. To be "well at work", perhaps organizations need to look at their employee's perceptions of organizational climate and social identification for answers.

Notes

1. We recognize that some researchers would understand the individual level of analysis as "psychological climate", as organizational climate is measured with aggregated individual scores (Parker et al., 2003). However, other researchers argue that organizational climate is best conceptualized as a characteristic of the individual (James, 1982; Miller & Fredericks, 1990) and that important information is lost when scores are aggregated (Hox, 2010). Furthermore, as a lot of past literature defines and/or analyses organizational climate at an individual level, particularly when the organization of interest is a school (for examples see Bizumic et al., 2009; Grayson & Alvarez, 2008; Malloy et al., 2015), the current study will do the same to ensure consistency.
2. Structural equation modeling methods were used to competitively test models of school climate, utilizing the MLR (maximum likelihood parameter estimates with standard errors and a chi-square test statistic that are robust to non-normality and non-independence of observations) estimator, derived modification indices and the Mplus "Type = Complex" option with the cluster variable of school. This was conducted on the 2014 data with 2,024 school employees. The CFA confirmed the superior school climate model consisted of one second-order factor (RMSEA = 0.045, CFI = 0.963, TLI = 0.954, χ^2 (356, N = 139) = 1538.320, $p < .001$, SRMR = 0.035). All items loaded onto their subsequent latent factor, with item loadings ranging from 0.657–0.871 and scales having an internal consistency over $\alpha = 0.943$. As the CFA has confirmed the validity of the measure, the first order CFA with the four sub-factors will be used in the subsequent SEM analysis.
3. Structural equation modeling methods were used to competitively test models of social identification utilizing the MLR estimator, derived modification indices and the Mplus "Type = Complex" option with the cluster variable of school. This was conducted on the 2014 data with 2,024 school employees. The CFA confirmed the superior social identification model consisted of one second-order factor (RMSEA = 0.063, CFI = 0.973, TLI = 0.954, χ^2 (26, N = 39) = 197, $p < .001$, SRMR = 0.024). All items loaded onto their subsequent latent factor, with item loadings ranging from 0.407–0.912 and scales having an internal consistency over α = .786. As the CFA has confirmed the validity of the measure, the first order CFA with the two sub-factors will be used in the subsequent SEM analysis.
4. Formula for design effect (Muthén & Muthén, 1998–2012): $DEFF = \frac{VC}{VSRS} = 1 + (s - 1)\rho$, where VC = correct variance under cluster sampling; VSRS = variance assuming simple random sampling; s = common cluster size and ρ = intra-class correlation.
5. As supplemental analysis requested by reviewers, a single SEM with both self-esteem and stress outcome variables was tested. Whereas the model fit the data only marginally satisfactorily (χ2 (101, $N = 261$) = 195.326, $p < .001$, RMSEA = 0.060, CFI = 0.927, TLI = 0.899, SRMR = 0.081), almost identical results were found to the main results. The indirect effect from school climate to self-esteem via social identification over time was marginally significant for self-esteem ($\beta = 0.24$, $p = .060$) whereas the indirect effect for stress was not significant ($\beta = -0.12$, $p = .290$). Therefore, we retain our analysis strategy as they are parsimonious models with stronger measurement rigor. The poor model fit was expected due to the sample size limit and the subsequent small ratio between the number of estimated parameters ($N = 55$) and the observation cases ($N = 261$) even with using observed variables of self-esteem and stress as opposed to the latent variables in the main model with indicator items. It is also possible that the poor model fit is due to a poor predictive model, which is addressed further in the discussion.
6. A supplementary SEM was run with the addition of the Wave 2 school climate and social identification variables to the Wave 1 predictors, mediator, and covariates to explain the variance in Wave 2 stress. Potentially due to the sample size limitation with estimating 84 parameters, the model poorly fit the data (χ2 (372, $N = 261$) = 795.783, $p < .001$, RMSEA = 0.066, CFI = 0.880, TLI = 0.865, SRMR = 0.089). Despite the model fit flaw, similar results to the main model could be noted with no significant longitudinal indirect effect from school climate via social identification upon stress ($\beta = -0.09$, $p = .583$).
7. A supplementary SEM was run with the addition of the Wave 2 school climate and social identification variables to the Wave 1 predictors, mediator, and covariates in explaining Wave 2 self-esteem. Due to the sample size limitation with estimating 70 parameters, the model poorly fit the data (χ2 (290, $N = 261$) = 732.710, $p < .001$, RMSEA = 0.076, CFI = 0.855, TLI = 0.836, SRMR = 0.092). Given the model fit flaw, similar results to the main model could be noted with marginally significant longitudinal indirect effect from school climate via social identification upon self-esteem, suggesting partial mediation ($\beta = 0.29$, $p = .083$).

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