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Feeling and Thinking at Work:
Personal and Collective Work-identity
Predictions and Formations

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*"I thought that this would be a job,
but it became so much more, it be-
came a part of my life" (Unknown)*

Abstract

The aim of the present thesis was to investigate emotional and cognitive personal and collective work-identity in predicting employees' work-related motivation, organizational justice perceptions, general mental health and exhaustion; as well as if psychosocial working conditions might explain some of these relationships. Emotion and cognition in formation of personal and collective work-identity were also investigated. The sample consisted of 768 teachers responding to a questionnaire (Study I-IV) during spring 2016. The results showed that personal work-identity positively predicted self-determined work motivation, accounted for by the emotion component, and collective work-identity positively predicted organizational pay justice, accounted for by the cognition component (Study I). Emotional personal and cognitive collective work-identity positively predicted general mental health and negatively predicted exhaustion. Reversed relationships were found for cognitive personal and emotional collective work-identity (Study II). Teachers' psychological job demands and resources mediated the relations between emotional and cognitive personal and collective work-identity, respectively, and exhaustion and self-determined work motivation, respectively (Study III). Emotional processes positively predicted cognitive processes, and emotional profile showed effects on cognitive processes regarding personal work-identity formation, while cognitive processes positively predicted emotional processes, and cognitive profile showed effects on emotional processes regarding collective work-identity formation (Study IV).

In conclusion, emotional and cognitive personal and collective work-identity play significant but different roles in predicting work-related motivation, organizational pay justice as well as general mental health and exhaustion. Also, teachers' psychosocial working conditions may contribute to explaining some of these associations. Finally, emotion and cognition may play different roles in the formation of personal and collective work-identity.

Keywords: personal and collective work-identity, emotion, cognition, work motivation, organizational pay justice, general mental health, exhaustion, teachers' psychosocial working conditions, work-identity formation

Sammanfattning

Syftet med föreliggande avhandlingen var att undersöka om emotionell och kognitiv personlig och kollektiv arbetsidentitet predicerar anställdas arbetsrelaterade motivation, upplevd organisatorisk rättvisa, mental hälsa, utmattning och ifall psykosociala arbetsvillkor kan förklara en del av dessa samband, samt att undersöka emotioner och kognitioner och deras roll i formationen av personlig- och kollektiv arbetsidentitet. Urvalet bestod av 768 lärare som svarade på en enkät (Studie I-IV) under våren 2016. Resultaten visade att personlig arbetsidentitet positivt predicerade självbestämd arbetsmotivation, där den emotionella komponenten stod för detta samband, och att kollektiv arbetsidentitet positivt predicerade organisatorisk lönerättvisa, där den kognitiva komponenten stod för detta samband (Studie I). Emotionell personlig och kognitiv kollektiv arbetsidentitet predicerade positivt allmän mental hälsa och negativt utmattning medan kognitiv personlig och emotionell kollektiv arbetsidentitet uppvisade omvända relationer med dessa utfallsmått (Studie II). Arbetsrelaterade psykologiska krav och resurser hos lärare stod för en medierande roll i förhållandet mellan emotionell och kognitiv personlig respektive kollektiv arbetsidentitet och utmattningsproblem respektive självbestämda arbetsmotivation (Studie III). Emotionella processer predicerade positivt kognitiva processer och emotionell profil visade effekter på kognitiva processer gällande formationen av personlig arbetsidentitets, och kognitiva processer predicerade positivt emotionella processer, och kognitiv profil visade effekter på emotionella processer gällande formationen av kollektiv arbetsidentitets (Studie IV).

Sammanfattningsvis spelar emotionell och kognitiv personlig och kollektiv arbetsidentitet betydande men olika roller gällande hur de predicerar arbetsrelaterad motivation, organisatorisk lönerättvisa samt allmän mental hälsa och utmattning. Dessutom kan lärares psykosociala arbetsvillkor delvis förklara en del av dessa samband. Slutligen verkar emotion och kognition spela olika roller i formationen av personlig- och kollektiv arbetsidentitet.

Nyckelord: personlig och kollektiv arbetsidentitet, emotion, kognition, arbetsmotivation, organisatorisk lönerättvisa, allmän mental hälsa, utmattning, lärares psykosociala arbetsvillkor, arbetsrelaterad identitetsformation

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List of Studies

This thesis is based on the following studies, which are referred to in the text by Roman numerals.

Study I

Nordhall, O., & Knez, I. (2018). Motivation and Justice at Work: The Role of Emotion and Cognition Components of Personal and Collective Work Identity. *Frontiers in Psychology, 8* (January), 1–12. <https://doi.org/10.3389/fpsyg.2017.02307>

Study II

Nordhall, O., Knez, I., & Saboonchi, F. (2018). Predicting general mental health and exhaustion: the role of emotion and cognition components of personal and collective work-identity. *Heliyon. 4*(8). doi: 10.1016/j.heliyon.2018.e00735

Study III

Nordhall, O., Knez, I., Saboonchi, F., & Willander, J. (2020). Teachers' Personal and Collective Work Identity predicts Exhaustion and Work Motivation: Mediating Roles of Psychological Job Demands and Resources. *Frontiers in Psychology, 11* (1538), 1-16. doi: 10.3389/fpsyg.2020.01538

Study IV

Nordhall, O., Knez, I., & Willander, J. (Under revision). Emotion and cognition in personal and collective work-identity formation: variable- and person-oriented analyses.

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Introduction

When you meet other people one of the first questions you ask each other is often: What do you do for living? The reason why we ask such a question may be that occupational work gives information about who you are. Thus, occupational work may say something about how you define yourself and may be a part of your identity (Knez, 2016).

But why do we work? For many people, the motivation to work might be based on something else than monetary payment. For example, development of the individual self in combination with interpersonal relationships might be stronger motives to work than monetary payment (Ritter & Anker, 2002). Accordingly, many people do not work just to live but live to work (Bond, & Howgego, 2016; Thompson & Bunderson, 2001), or to paraphrase conversely the existential philosopher Sartre, for humans "the existence precedes the essence". For many people, occupational work may be the essence that precedes their existence (Sartre, 1946/2007). In the same way, paraphrasing the philosopher Descartes' "Cogito ergo sum", i.e. "I think therefore I am" (Descartes, 1644/1983), many people stick to the principle of "Labero ergo sum", i.e., "I work therefore I am" (Bond, & Howgego, 2016; Dang, 2014). Occupational work may thus constitute a main objective, a life goal that we strive for (Knez, 2017) and by which we may "taste" some meaning in our life (Gini, 1998; Sartre, 1946/2007). This kind of person-work bonding also includes work-related feelings (emotion) and thinking (cognition), defining ourselves as individual and social beings (Knez, 2016).

Occupational work has several psychological- and health-related implications for the individual, e.g., employment reduces the risk of depression and improves general well-being. The person-work bonding may affect our individual health, development and social life (Dang, 2014; van der Noordt et al., 2014; Waddell & Burton, 2006).

Additionally, different psychosocial characteristics of the work environment may influence work motivation and mental health (Waddell & Burton, 2006). Psychological job demands and resources are two important aspects of the work environment associated with burnout, engagement and mental health (Demerouti et al., 2001; Hakanen et al., 2006; Hakanen et al., 2008). Employees' mental health may also be affected by an effort-reward imbalance, where a combination of high work-related effort and low rewards increases the risk of adverse mental health (Siegrist, 2013; Unterbrink et al., 2007).

Occupational work as a part of our self also implies that we identify with our personal work and with the occupational organization/collective (Knez, 2016). In a Gallup survey from 2014, 55 per cent of US workers reported that they got a sense of identity from their job, a number that increases to 70 per cent for college graduates. In a historical perspective, it was with the rise of paid employment in the 19th century that the notion of work as an end in itself and as a source of identity started to emerge. Before that time people's sense of belonging was more determined by family, religion or the place where they lived (Bond & Howgego, 2016).

Although the concept of occupational work still seems to lack a common definition (Karlsson, 2017), one common notion states that occupational work is a business or activity on which a person builds his/her livelihood. This denotes a contractual employment relationship and/or an occupational work for which an individual receives a salary. In other contexts, the concept of work may however, also include unpaid work (Aronsson et al., 2012).

In view of this, the present thesis is about personal and collective work-identity including emotion and cognition components. These constructs may predict employees' work-related motivation, justice perceptions, mental health and exhaustion, which will be delineated below. Due to the teacher sample of the present thesis, teachers' psychological job demands and resources will be related to the constructs previously mentioned. Additionally, emotion and cognition may play significant roles in the formation of personal collective work-identity, which also will be described in the present thesis.

Identity and work-identity

The interweaving of oneself and certain interests, values, social groups or occupations implies a process of identification where one internalizes a conceptual definition, i.e., an identity, of oneself. Some identity theorists treat the concepts of identity and identification as synonyms (Brewer & Gardner, 1996) while others contrast these two concepts (see Sluss & Ashforth, 2007). Identity is then regarded as a state and a general definition of the self, while identification is regarded as a self-defining process with a certain focus/target with which one identifies. Identification thus implies internalization of an identity (see Albert et al., 2000; Ashforth & Schinoff, 2016; Johnson et al., 2018; Sluss & Ashforth, 2007).

A *work-identity* organizes and gives meaning to our memories and behaviors in an occupational context and, by that, defines our work-related self (Conway, 2005; Ferris et al., 2018; Klein & Nichols, 2012; Knez, 2014; 2016). The work-related self is the entirety of the work-related thoughts, feelings and behaviors (Hogg & Terry, 2000; Kihlstrom & Klein, 1994; Knez, 2014; Van Knippenberg & Sleebos, 2006).

To some extent, work-identity may overlap with the concepts of work commitment, job involvement, work engagement- and motivation in that these concepts include identification and/or affective commitment to occupational work. However, these concepts are more of an attitude, thereby separating the self from the occupational work, which makes them conceptually and empirically different from work-identity (see Ashforth & Mael, 1989; Bakker & Demerouti, 2008; Knez, 2016; Paullay et al., (1994); Pinder, 2008; van Knippenberg & Sleboos, 2006).

When related to work, identity formation implies a self-construal by which people define and categorize themselves in terms of work-related interests, values, groups etc. (Brewer & Gardner, 1996; Brown, 2017; Hogg & Terry, 2000; Van Knippenberg & Sleebos, 2006). This implies that behaviors, intentions and preferences in a working context belong to oneself (Kihlstrom et al., 2003; Klein, 2014).

A work-identity may consist of multiple foci of identification. Different foci of identification, i.e., different entities or “targets” are, for example, identification with a place (Knez, 2014), a work role (Sluss & Ashforth, 2007), a personal occupational career (Pate et al., 2009) a work group and an organization (Blader et al., 2017; He & Brown, 2013; van Knippenberg & Van Schie, 2000). Also, work-identity consists of different identity levels in terms of, e.g., personal and collective work-identity.

Personal and collective work-identity

Work identity can be broadly divided into *personal* (I/Me-descriptions) and *collective* work-identity (We-descriptions) (Millward & Haslam, 2013; Knez, 2016), see Figure 1 below. This type of division concerns the individual and collective self-construal, in terms of individual/personal and social/collective work-related self, respectively. By this, the self is represented at two different identity levels: a personal and a social identity level (Knez, 2016; Xenikou, 2014). These levels involve three aspects of the self: 1) individual/personal self (defined by personal traits); 2) relational self (defined by dyadic relationships with other people); and 3) collective self (defined by group membership) (Brewer & Gardner, 1996; see also Brown, 2006; Haslam & Ellemers, 2011).

The theoretical framework on which the present thesis is based is twofold; personal and collective work-identity.

A personal work-identity account is based on an autobiographical memory perspective, asserting that the relationship between memory and the self is reciprocal (Klein, 2014). This implies that the individual self, by our memories, is a narrative product of its past and vice versa (see Knez et al., 2017; Knez & Nordhall, 2017). Accordingly, autobiographical memory plays a crucial role in our lives and is an essential component of the self and our identity. Autobiographical memories contribute to the insight into who we are as individuals, i.e., they are self-defining (Baddeley et al., 2015; Conway, 2005; Williams et al., 2008). Thus, autobiographical memories create a sense of self-continuity over time in line with the wording of, “I was therefore I am” (Bluck & Liao, 2013, p. 7). Autobiographical memories concern: 1) personal experiences, i.e., the episodic part of the autobiographical memory (see Baddeley, 2015a; 2015b for overviews), e.g., “when and where did I eat my breakfast yesterday morning?”. Autobiographical memories also concern: 2) general facts, i.e., semantic memory (see Eysenck, 2015 for an overview), about e.g., our place of residence, type of occupation and degree, etc. Personal work-identity concerns memories about one’s personal work and thus has the personal work or career as the focus of identification and expresses a need to distinguish oneself from others (Brewer & Gardner, 1996), “in order to preserve the personal self, the personal story and its memories” (Knez, 2016, pp. 3). Thus, personal work-identity accounts for personal autobiographical work-related experiences (Knez, 2016).

According to the second theoretical framework, the collective work-identity account is based on a social identity perspective (e.g., Ashforth & Mael, 1989) including social identity theory (Tajfel & Turner, 1986) and self-categorization theory (Turner et al., 1987). According to these theoretical accounts,

individuals define themselves in terms of membership of social categories, thereby attributing prototypes of such social categories to themselves. By social identification, individuals perceive themselves in terms of the characteristics they share with other in-group members (Haslam & Ellemers, 2011; van Knippenberg & Van Schie, 2000). In- vs. outgroups is one example of such social categorization, e.g., “We who belong to organization/group A” (in-group categorization) vs. “They who belong to group/organization B” (out-group categorization) (see Caza et al., 2018; Tajfel, 1982). In collective work-identity the focus of identification is the workgroup or organization as a whole (see e.g. Brewer & Gardner, 1996; Riketta & van Dick, 2005). Collective work-identity emanates from the need to belong to a certain group “in order to be part of the collective self, the collective story and its memories” (Knez, 2016, p. 3) and implies perception of oneness with, for example, a work organization.

A collective identity can be defined as, “the individual’s knowledge that he [or she] belongs to certain social groups together with some emotional and value significance to him [or her] of his [or her] group membership” (Tajfel, 1972, p. 292). Such a group membership implies a conceptual/cognitive depersonalization of the individual self and an emotional attachment to the group/organization (Tajfel & Turner, 1986; see Hogg, 2012 for a review). Here, the work organization may be regarded as the salient foci of collective work-identity in that organizations compared to workgroups constitute larger and more abstract/symbolic type of the occupational collective, thereby providing the self with more encompassing and depersonalizing “we-descriptions”. Organizational identity is also one of the most frequently studied types of social work-identity (see Hogg & Terry, 2000; Mael & Ashforth, 1989; Miscenko & Day, 2016).

Finally, personal and collective work-identity are to some extent independent of each other (see Brewer & Gardner, 1996; Pate et al., 2009). By this, having a strong work-identity at one level does not rule out a similarly strong identity at another level. Accordingly, personal and collective work-identity shape, “functionally independent cognitive structures, leading to separate motivations and influences on work-related satisfaction” (Knez, 2016, p.1).

Also, personal and collective work-identity consists of emotion and cognition components which will be outlined below.

Emotion and cognition in work-identity

The personal and collective work-identity involves two basic psychological processes of *emotion* (feeling) and *cognition* (thinking) about oneself in relation to one’s work (Brown, 2017; Conway, 2005; Haslam & Ellemers, 2011; Klein et al., 2004). These two types of psychological processes may be grouped into emotion and cognition components, respectively, that account for people-work bonding phenomena, see Figure 1 (Knez, 2016, see also Van Dick & Wagner, 2002). Also, emotional and cognitive self-related processes may be involved in the work-identity formation and may be affected by external factors, such as work environment, and organizational and social structures (Day et al., 2006; Hogg, 2012; Gioia et al., 2013).

In personal work-identity, the emotion component indicates an affective closeness/attachment/belonging between an employee and his/her employment, while the cognition component denotes, e.g., reflections upon memories and agency in the self-work relation across time (Knez, 2016; see also Knez, 2014). Previous studies show that emotion compared to cognition may regulate intrinsic psychological processes, and enhance retention and recall in autobiographical memory (Knez, 2014; 2016; Knez et al., 2017).

In line with a social identity perspective and self-categorization theory, collective work identity is supposed to be more of a cognitive entity (see Ashforth & Mael, 1989; Harquail & King, 2003; van Knippenberg & Sleebos, 2006; Turner et al., 1987). Collective work-identity may be described as, “a product of the dialectic relationship between collective, shared cognition on the one hand and socially structured individual cognitions on the other” (Corley et al., 2006, p. 88). This kind of cognitive bonding to the collective implies perception of oneness and belongingness to, e.g., a work organization (Ashforth, 2016; Ashforth and Mael, 1989). Such an organizational belongingness refers to a cognitive bond to the organization in terms of incorporation of the organization into ones’ self-concept. This contrasts with the emotional belongingness to the personal work, which, as previously stated, denotes an affective closeness/attachment between the employee and his/her work (see Knez, 2016).

An emotion component of collective work-identity has also been suggested, which, in contrast to the cognition component, concerns, e.g., affective commitment to a particular organization (Ellemers et al., 1999; 2004; Johnson et al., 2018; Xenikou, 2014).

Additionally, personal and collective work-identity, including emotion and cognition, has shown implications for employees’ work-related attitudes, judgements and mental health.

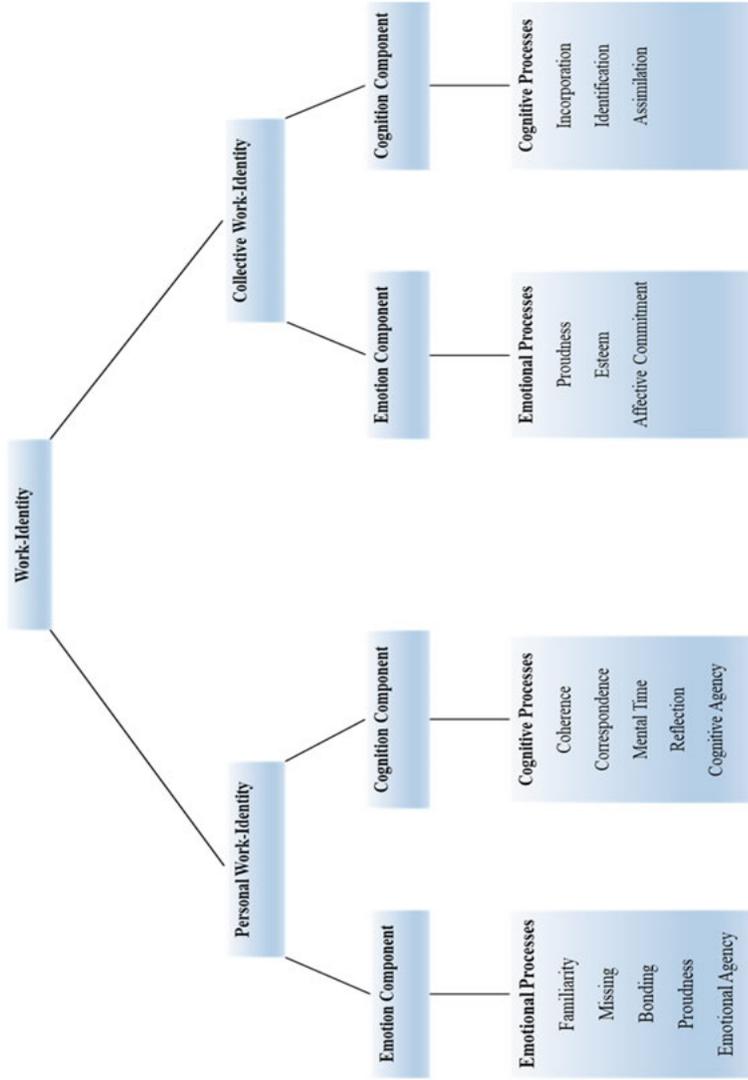


Figure 1. Tentative schematic model of work-identity comprising the two levels of personal and collective work-identity, which involve emotion and cognition components, which in turn contain emotional and cognitive processes, respectively.

Work-related motivation, justice, mental health and exhaustion

Employees' work-identity influences their social interactions, judgements, performance at work, as well as mental health in a broad sense (Ferris et al., 2018; Jetten et al., 2012; Johnson et al., 2010). Thus, knowledge of employees' personal/collective work-identity may enhance our understanding of their work-related motivation, justice perceptions, general mental health and exhaustion (see Jetten et al., 2012; Riketta, 2005; Knez, 2016; Lee et al., 2015).

Motivation in a work context

Work-identity may relate to the question of, "Why do you work?" which concerns the motivational aspects of occupational work (see Björklund, 2001; Latham & Pinder, 2005). *Work motivation* might be defined as "the energetic forces that initiate work-related behaviour and determine its form, direction, intensity and duration" (Pinder, 2008, p. 11).

According to Self-Determination Theory (SDT), occupational work per se has the potential to promote the psychological needs of competence, relatedness and autonomy, and thereby influence *self-determined*, i.e., intrinsic, work motivation (Deci & Ryan, 2000; Ryan & Deci, 2017a; Van den Broeck et al., 2016). Stronger self-determined work motivation may in turn promote well-being and mental health for the employee (Deci & Ryan, 2008; Deci et al., 2001; Ryan & Deci, 2017b). Self-determined work motivation implies that occupational work is an expression of volition. This concerns to what degree the work-related values, regulations and behaviors are autonomous and thus internalized into the self (Kasser & Ahuvia, 2002). Individual/personal rather than group-based needs and motivation are highlighted by SDT, thus having the individual as its focus (Gagne & Deci, 2005; Ryan & Deci, 2012).

Individual differences in perceived control, self-esteem, ego-development, defensive functioning and basic need satisfaction, have been suggested as antecedents of work motivation (Gagne & Deci, 2005; Latham & Pinder, 2005).

Previous studies on work-identity and work motivation have reported that a high level of organizational (i.e., collective) identification at work may improve performance for both organizations and individuals. Also, stronger work-identity is associated with stronger engagement and satisfaction at work (Bjerregaard et al., 2015). Primarily, a general collective work-identity is not associated with individual internal work motivation (van Knippenberg & Van Schie, 2000). Instead, a positive relation between collective work-identity and organizational-related motivation and behaviors is stronger in a collectivistic vs. an individualistic organizational culture (Lee et al., 2015). Also, the more one identifies with one's work tasks (personal work-identity) the stronger one's basic need satisfaction, which in turn may promote personal work motivation. However, the stronger one identifies with the views of one's organization (collective work-identity), the weaker one's self-determined motivation (Deci & Ryan, 2000; Van den Brock, et al., 2016).

Previous studies have mostly addressed work-motivation as related to social work-identity (relational and/or collective work-identity). This implies a

focus on group-based motivation on behalf of the organizational collective as opposed to the personal motivation to perform well (Bjerregaard et al., 2015; van Knippenberg, 2000).

Besides work motivation, work-identity may also be associated with perceptions of organizational justice.

Justice in an organizational context

Organizational justice denotes processes of perceived fairness within the organization, with implications for employees' occupational behavior and mental health (see Greenberg & Colquitt, 2005 for an overview). A well-supported model has argued in favor of four independent justice dimensions (Ambrose & Arnaud, 2005; Colquitt, 2001; Nicklin et al., 2014), defined as:

Procedural justice concerns fairness perceptions in relation to organizational procedures (Greenberg, 2011). Here, the opportunity to "voice", i.e., to express one's opinions and concerns is one such central issue (Thibaut & Walker, 1975). Also, consistency, correctness, lack of bias, and accuracy are involved in this justice dimension (Leventhal, 1980).

Distributive justice concerns fairness perceptions in relation to the distribution of outcomes, such as money, rewards, and time (Greenberg, 2011). Distributive justice is facilitated when outcomes are consistent with respect to equity and equality (Adams, 1965; Leventhal, 1980) and when personal effort-outcome ratios match effort-outcome ratios of significant others (Adams, 1965).

Interpersonal justice concerns perceptions of the decision-maker's conduct, e.g., being courteous. Decisions might be perceived as fair even though they have negative consequences for the recipient, if the recipient recognizes him/herself to be respectfully treated by the decision-maker (Greenberg, 1993).

Informative justice concerns timing, amount and quality of information that the recipient receives (Greenberg, 1993). Also, opportunities to receive relevant and adequate explanations of, and arguments for, e.g., payment decisions should be applied regularly (Anderson-Stråberg et al., 2007; Bobocel & Zdzniuk, 2005).

Stronger perceptions of organizational justice have been associated with better mental health and lower degree of sick leave, stress-related problems, cardiovascular problems, burnout and exhaustion (Greenberg, 2010; Ndjaboué et al., 2012; Robbins et al., 2012).

Work-identity has been associated with organizational justice in terms of the mediating role of work-identity in the relations between organizational justice and different outcomes (Cho & Treadway, 2011; Olkkonen & Lipponen, 2006; Blader & Tyler, 2009). This has been done to clarify the role of identity-based information incorporated in organizational justice. Also, interactions between social identity and organizational justice dimensions on different work-related outcomes have been investigated (see Lipponen et al., 2011). For example, experiences of procedures as unfair predict stronger acts of revenge, but mainly for those with strong vs. weak organizational identification (De Cremer, 2006).

It has also been shown that one crucial psychological foundation of perceived justice is constituted by the self (Skitka, 2003). This may be due to organizational justice as determined by self-regulatory process and self-related goals and knowledge (Johnson et al., 2006). The association between organizational justice and work-identity primarily concerns the collective self, where organizational justice and collective work identity both are focusing the work organization. Here, stronger collective work-identity associates with stronger perceptions of organizational justice (Olkkonen & Lipponen, 2006; Cho & Treadway, 2011; He et al., 2014). In view of this, work-identity also associates with mental health as well as exhaustion.

Mental health and exhaustion related to work

In the context of work, *mental health* has been suggested to be reciprocally associated with job characteristics (De Lange et al., 2004). One general notion asserts that mental health is more than the mere lack of mental disorders. Mental health is defined by WHO (2001, p 1) as, “a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community”. According to WHO (2003), mental health also comprises perceived self-efficacy, autonomy, competence, inter-generational dependence and recognition of one’s intellectual and emotional potential.

However, one important adverse mental health construct related to work is burnout. Burnout may be described as the major manifestation of work-related psychological distress and it has been conventionally defined in terms of a core component of *exhaustion*, together with depersonalization (cynicism) and reduced efficacy (Maslach & Jackson, 1981; Maslach & Leiter, 2008; Maslach et al., 2001; Saboonchi et al., 2012). Whereas burnout is an overreaching construct predominately outlined as a process rather than as an end state (Hallsten, 2017), exhaustion delineates an ill-health status and symptoms of an individual that has been exposed to prolonged stress (for an overview see Schaufeli et al., 2017). Several studies ascribe exhaustion to a lack of energy in social interactions, physical fatigue, inability to cope with everyday demands, impaired memory, concentration difficulties, sleeping problems and emotional instability (see Grossi et al., 2015; Saboonchi et al., 2012). In view of this, work engagement might be considered as the opposite side of the burnout syndrome (Maslach, 2011; Maslach & Leiter, 2008).

Work environmental factors have been considered as primary predictors of burnout (De Lange et al., 2004). Individual differences in, e.g., personality have also been addressed to account for the variability in manifestations of burnout syndrome among individuals within similar work environments (see Alarcon et al., 2009; Langelan et al., 2006). Negative work-related outcomes of burnout, particularly exhaustion, are job turnover, lower job satisfaction, productivity and performance, as well as increased job absenteeism. Additionally, exhaustion has been associated with increased risk of cardiovascular disease and heart attacks (Ybema et al., 2010).

The health-related effects of work-identity have mostly been analyzed from a social identity perspective, asserting identification with a social collective at work as positively predicting one's mental health (see Jetten et al., 2012 for an overview). High levels of collective work-identity may operate as a psychological buffer against the negative impact of work-related stress and by that reduce problems of burnout and exhaustion (Haslam et al., 2009a; 2009b).

Findings have indicated that stronger identification with the organization/workgroup implies a sense of social belongingness and support that in turn entails less mental health-problems but stronger mental health and well-being (Crabtree et al., 2010; Haslam et al., 2005). Relationships between collective work-identity and mental health are also indicated to be even stronger when, e.g., cognitive dimensions, such as, perceived control (Greenaway et al., 2015) and positive attributions of collective work-identity are involved (Cruwys et al., 2015). Accordingly, by stronger self-categorization and belongingness to a certain organization/group, i.e., cognitive components of collective work-identity, individuals may achieve better mental health and fewer exhaustion problems (van Dick & Haslam, 2012).

The links between personal work-identity and health-related outcomes have been addressed by only a few studies. For example, stronger emotional identification with one's personal work associates with less burnout and exhaustion problems (Edwards & Diercke, 2010; Fisherman, 2015; Lammers et al., 2013). A stronger emotional personal work-identity implies an attachment/belongingness/closeness to work. This type of stronger emotional self-concept may provide a buffer against stress-related experiences at work, thereby decreasing one's burnout and exhaustion problems (see Knez, 2016; Knez & Eliasson, 2017).

However, it has been reported that stronger cognitive identification with one's personal work associates with stronger burnout and exhaustion problems (Fisherman, 2015). For example, Stets and Burke (2000) have indicated that job stressors positively relate to psychological distress in employees reporting high levels of job involvement, that is closely connected to the cognitive component of personal work-identity (see Frone & Russell, 1995).

In view of this, psychosocial working conditions may also play crucial roles for employees' mental health and work motivation.

Psychosocial working conditions: demands and resources

In a work environmental context, situational and organizational job characteristics have been shown to play a crucial role for outcomes like work motivation, mental health and burnout (Angerer, 2003; Badawy, 2015; Maslach et al., 2001; Schaufeli et al., 2009). Employees may for example, experience different *psychological job demands* and *resources* that are crucial conditions of the psychosocial work environment (De Lange et al, 2004; Van den Broeck et al., 2008).

According to the Job Demands-Resources (JD-R) model, job demands are those physical, psychological, social or organizational aspects of the job that

require sustained physical and/or psychological effort and therefore are associated with physiological or psychological costs (Demerouti et al., 2001). Psychological job demands, like low social support, dysfunctional interactions with colleagues and expectations to care for others in a prosocial way constitute efforts. As such, psychological job demands may affect employees in terms of increased stress, anxiety and exhaustion problems (Bakker & Demerouti, 2017; Schaufeli & Bakker, 2004).

Job resources are physical, psychological, social or organizational aspects of the job, e.g., autonomy, skill variety, opportunities for growth, and experiences of occupational inspiration, which may promote work goals, personal growth, development and learning (see Bakker & Demerouti, 2008; Choochom, 2016; Vansteenkiste et al., 2007). Psychological job resources may enhance employees' work motivation, performance and mental health (Bakker & Demerouti, 2017; De Lange et al., 2004; Schaufeli & Bakker, 2004).

The JD-R model also asserts that job resources may reduce the impact of job demands on, e.g., psychological distress and exhaustion (Bakker & Demerouti, 2017; Demerouti & Bakker, 2011; Hakanen et al., 2006).

Psychological job demands and resources may also explain organizational effects on the employees' psychological functioning, mental health and work engagement and motivation (Hakanen et al., 2008; Van den Broeck et al., 2008). For example, personal resources in terms of intrinsic values and self-efficacy may mediate the negative relationship between perceived organizational support and exhaustion, and turnover intentions (Karatepe, 2015).

One group of importance, regarding their mental health and work motivation in relation to psychosocial working conditions, is that of teachers.

Teachers' psychosocial working conditions, mental health and work motivation

Since the studies in the present thesis are based on a sample of *teachers*, there is a need to clarify teachers' psychosocial working conditions as well as their mental health and work motivation status.

Working as a teacher may be stressful, making them especially vulnerable to psychological distress, such as burnout, particularly exhaustion (Grossi et al., 2015; Hakanen et al., 2006; Maslach et al., 2001). To some extent, teachers' daily work consists of several demands and difficulties, such as, general work overload, large classes, pupils' complex learning needs, low social support, dysfunctional interactions with colleagues, perceived expectations to care for others, e.g., students/pupils and colleagues, in a prosocial way (Aloe et al., 2014; Gray et al., 2017; Santavirta et al., 2007).

Based on the Effort-Reward model (Siegrist, 2002; 2008), a study by Hinz et al. (2016) showed that teachers are exposed to more effort-reward imbalance, and experience more mental health problems compared to the general population.

The disadvantageous working situation of teachers might to some extent, be a result of dysfunctional educational reforms and monetary savings in the public sector, which in combination with unsupportive administration and

leadership may have reduced job resources like time and autonomy (Gray et al., 2017; Hinz et al., 2016).

In line with the Job Demands-Resources (JD-R) model (Demerouti et al., 2001), teachers' job demands, especially emotionally demanding social interactions, constitute stressful situations with an increased risk of teachers being affected by adverse mental health like burnout and exhaustion problems (Gray et al., 2017, Mojsa-Kaja et al., 2015). Demanding social interactions may increase the "good soldier syndrome", i.e., the voluntary, *extra-role performance* that is not formally recognized by the official procedures, rules and work-descriptions in the organization but that contributes to social and effective organizational functioning (Organ, 1997; Organ & Ryan, 1995; Podsakoff et al., 2009). When extra-role behavior is performed in terms of caring for others, it is *prosocial*. Although the voluntary aspect of prosocial extra-role performance is emphasized, other studies have shown that this is rarely the case (see Bolino et al., 2013; Bolino et al., 2010; Vigoda-Gadot, 2007). While some previous studies have shown health promoting effects of prosocial extra-role performance (see Lam et al., 2016; Simbula & Guglielmi, 2013), several others have demonstrated that there also is a "dark side" of prosocial extra-role performance, due to the demanding and adverse mental health aspects of this behavior, e.g., increased stress reactions (see Bolino et al., 2013 for an overview). Vigoda-Gadot (2007) showed that extra-role performance positively predicts burnout, especially if the employees feel pressured to engage in the performance (Bolino et al., 2010). Accordingly, teachers' prosocial extra-role performance may constitute a psychological job demand (see Bolino et al., 2010; Demerouti et al., 2001).

However, most teachers are not suffering from insurmountable job demands, adverse job stress and exhaustion problems (or other kinds of burnout problems). Instead, many find their teaching satisfying and inspiring, showing a great amount of motivation, engagement and commitment (see Gray et al., 2017; Hakanen et al., 2006; Zee & Koomen, 2016). This is because teachers also have access to psychological job resources such as autonomy, skill variety, performance feedback, opportunities for growth (Bakker & Demerouti, 2017; Klusmann et al., 2008) as well as mastery of skills and experiences of educational inspiration (Choochom, 2016; Hultell & Gustavsson, 2011; Vansteenkiste et al., 2007).

By experiencing *educational inspiration*, teachers may attain increased engagement and motivation in their work (see Hakanen et al., 2006; Klusmann et al., 2008). More precisely, educational inspiration may positively predict teachers' intrinsic work motivation; that is, "by satisfying the basic psychological needs of autonomy, belongingness and competence, job resources are also intrinsically motivating for employees" (Hakanen et al., 2008, p. 225).

In general, teachers' job resources have been shown to associate positively with work engagement and motivation, constituting positive antipodes to burnout and exhaustion that are characterized by, e.g., lack of energy (Hakanen et al., 2006; Saboonchi et al., 2012).

There is also a need to outline the working conditions for the specific group of Swedish teachers, some of whom constitute the sample of the present thesis.

Teachers' psychosocial working conditions in a Swedish context

In the context of teachers' working conditions, Swedish teachers have experienced financial savings on an organizational level and an increased workload in terms of, e.g., more administrative work, e.g., formal documentation of pupils' performance (Månsson, 2002; Månsson & Persson, 2004). Also, the lower results by Swedish pupils according to PISA investigations (OECD, 2017) have put stronger pressure on teachers to change the ongoing downward trend in the pupils' results. Thereby, the already heavy workload for Swedish teachers has increased (Lärarnas Riksförbund, 2013). In relation to this, the proportion of cases of sick leave with adverse mental diagnoses among teachers is higher than the average in the general Swedish population. Problems with sleep due to not being able to drop thoughts about work during leisure time are more common among teachers than in many other Swedish occupational groups. Such problems may cause failure to recover, which in turn may increase accumulated stress resulting in some Swedish teachers leaving the teaching occupation due to the stressful working situation (Försäkringskassan, 2014). The prevalence of burnout syndrome among Swedish teachers has also been higher than in other professional groups: 9.6 % of Swedish teachers may suffer from this syndrome compared to a prevalence of 6% among other work groups in Sweden (Hallsten et al., 2002). Such a situation with increased job demands, heightened job stress and subsequent adverse mental health is similar for teachers in many other countries (Gray et al., 2017).

The formal work of improving the working conditions for the 240 000 teachers in Sweden (Sveriges Kommuner och Landsting, 2018) is carried out by the national political and educational authorities and is performed by the employers (municipalities and school administration). Also involved are the two trade unions for Swedish teachers: "Teachers Union" (in Swedish "Läraryrskommittén") with 234 000 members in total, including all kinds of teachers (mostly preschool- and primary teachers) but also other types of occupations (see Läraryrskommittén, n.d.), and "The National Union of Teachers" (in Swedish "Lärarnas Riksförbund") with 90 000 members in total, including certificated teachers (mostly secondary- and upper secondary teachers) and study advisors (see Lärarnas Riksförbund, n.d.). The latter of these trade unions is of relevance to the present thesis (see Method section).

Work-identity formation

The previous sections show that emotion and cognition in personal and collective work-identity have implications for psychological and environmental domains at work concerning the employees' mental health, attitudes at work and perceptions of psychological job demands and resources. However, there is also a need to understand the role of emotion and cognition in the formation of personal and collective work-identity, i.e. the "how?" and "why?" of work-identity, to get a clearer picture of one of the psychological foundations of employees' working life.

In the general identity formation, the ability to view oneself in the third person, i.e., the sense of a "Me" that may be described or judged by an "I"

(James, 1890 in Leary & Tangney, 2012) is of importance. The development of the autobiographical memory, where one gets an increased sense of different possible selves and a sense of self-coherence across time, is also crucial in identity formation. This may imply a sense of past vs. future selves, e.g., “When I was younger, I liked doing...and now I like doing... but when I start working, I will do...” (Fivush, 2011).

In the context of work, identity formation takes place during young adulthood due to the development of autobiographical memory and abstract thinking (Fivush, 2011; Knez, 2016; Skorikov & Vondracek, 2011). Work-identity formation also involves social comparison and relationships, and the need for connection vs. independence by, e.g., categorization of self and others in terms of in- vs. outgroup membership (Chen et al., 2011; Harter, 2012).

Previous studies on work-identity formation have, for example, suggested vocational activities, personality, gender, family and peers, social and economic conditions as well as generic developmental factors as explaining antecedents of work-identity formation (see e.g. Lee et al., 2015; Miscenko & Day, 2016; Postmes et al., 2018; Riketta, 2005; Riketta & Dick, 2005; Skorikov & Vondracek, 2011). Similarly, social-cognitive factors, such as the need for affiliation, belonging, self-esteem, security, positive affectivity, organizational justice, self-categorization, and work role have been used to understand how and why work-identity takes place (see Cho & Treadway, 2011; Haslam & Ellemers, 2011; He et al., 2013; Johnson et al., 2018; Olkkonen & Lipponen, 2006; Stets & Burke, 2000).

Also, the employment/organizational time may be one of the main constituents of work-identity formation in that a period of employment may affect employees’ identification with the occupational work and/or the organization (see Haslam & Ellemers, 2011; Knez, 2016; van Dick et al., 2004).

Additionally, work-identity formation might involve specific emotional and cognitive processes, which will be outlined below.

Processes of emotion and cognition

In previous research, there has been a focus on effects of work-identity formation regarding personal/individual, relational/interpersonal and collective/organizational types of work-identifications (Hogg & Terry, 2000; Knez, 2016). There has been less focus on the different emotional and cognitive self-related processes involved in work-identity formation (see Day et al., 2006; Hogg, 2012).

In personal work-identity, processes of work-related familiarity, missing (of ones work when not at the working place), emotional bonding, proudness and emotional agency (work as part of oneself) are involved in the emotion component. Processes of work-related coherence (continuity), correspondence (adaptive interactions between the self and its working contexts), mental time (temporality in the person-work bonding), reflection (upon one’s work-related memories) and cognitive agency (work-related memories as part of oneself) are included in the cognition component of personal work-identity (see Knez, 2014; 2016). For an overview, see Figure 1 above.

In the collective work-identity, the emotion component involves processes of proudness (of organizational belonging), esteem (of organizational belonging), and affective commitment (to the organization). In contrast, the cognition component of collective work-identity comprises processes of incorporation (of peoples' organizational perceptions), identification ("we" descriptions of the organization) and assimilation (of organizational successes) (Nordhall & Knez, 2018 based on Ashforth & Mael, 1989; Harquail & King, 2003; Mael & Ashforth, 1992; Mael & Tetrick, 1992). For an overview, see Figure 1 above.

These processes are of importance in understanding the formation of personal and collective work-identity from an autobiographical memory and social identity perspective (Knez, 2014; 2016).

It has been indicated that the emotion component temporally precedes and affects the cognition component in the formation of personal work-identity (see Knez, 2014; 2016; Knez & Eliasson, 2017; Knez et al., 2018a, b). However, and in contrast to personal work-identity formation, the cognition component of collective work-identity formation may be supposed to temporally precede and affect the emotional one since collective identity is supposed to be more of a cognitive entity, where cognitive/ perceptual awareness of the organization as part of the self is the foundation of organizational identification (see Ashforth & Mael, 1989; Harquail & King, 2003; Mael & Ashforth, 1992; van Knippenberg & Sleebos, 2006). For example, van Dick et al. (2004) have indicated that collective work identification involves cognitive processes (employee identifying him-/herself as a member of an organization) which activates affective commitment/reactions to the organization.

Variable- and person-oriented analyses

When investigating attitudinal, health-related or formation aspects of work-identity there has been a strong trend in using variable-oriented analyses (see Haslam & Ellemers, 2011; Haslam et al., 2009a; Gioia et al., 2013; Jetten et al., 2012; Johnson et al., 2018; Knez, 2016; Riketta, 2005).

In variable-oriented analyses, each variable is treated as a separate entity meaning that levels, components or processes of work-identity are analyzed as separated factors/entities. By a variable-oriented analysis, e.g., work-identity formation is investigated in terms of linear relationships between these separated factors/variables (see Bergman, 2000; Bergman, et al., 2000; Magnusson, 2000).

In contrast to a variable-oriented analysis, a person-oriented analysis may investigate how individuals group into different clusters (i.e., profiles). A person-oriented analysis may enhance the understanding of, e.g., work-identity formation (Day et al., 2006; Dutton et al., 2010; Gioia et al., 2013) as it entails a holistic approach of the individual as an organizing whole. Here individuals may be grouped into different clusters with different profiles (i.e., combinations) of a set of seemingly compartmentalized factors, e.g., work-identity processes (see Bergman, 2000; Bergman, et al., 2000; Magnusson, 2000). However, person-oriented analyses have been less common in research on work-identity formation (e.g., see Canrinus, 2011; Endedijk et al., 2017; Groth et al., 2017; Pillen et al., 2013).

Rationale and general aim of the thesis

Previous research on work-identity has focused mostly on different identity levels; personal, but foremost collective levels (Millward & Haslam, 2013; Riketta & Dick, 2005; Van Dick & Wagner, 2002; van Knippenberg & van Schie, 2000). However, such accounts may not acknowledge the role of emotion and cognition components (but see Xenikou, 2014 for an exception) and/or psychological processes involved in personal and collective work-identity predictions and formations, which otherwise may shed some light on the emotional and cognitive operations in work-identification and their relationships with occupational and health-related factors (Day et al., 2006; Gioia et al., 2013; Knez, 2016).

Although little research has investigated cognitive and emotional constructs involved in work-identity (see Knez et al., 2019), some “identity-based approaches to understanding thoughts, feelings, and actions in organizations have produced, particularly in recent years, an array of rich insights that truly have broadened the domain of organizational behavior” (Brief & Walsh, 2001, p. xi). The present thesis adds a more detailed understanding of emotion and cognition in personal and collective work-identity in relation to work and health-related outcomes. In doing so, the present thesis contributes to the fields of occupational health science and work/organizational psychology.

In view of this, the general aim of the present thesis was to investigate emotional and cognitive personal and collective work-identity in predicting employees’ work-related motivation, justice perceptions, general mental health, exhaustion, and if psychosocial working conditions might explain some of these relationships, as well as to investigate emotion and cognition in formation of personal- and collective work-identity.

Note: Conceptualizations of “prediction” and “predict” in this thesis do not imply a prediction in an absolute causal terminology but in a statistically/mathematical sense. This implies a prediction of a criterion value given a specific predictor value on a regression line (see e.g. Tabachnick & Fidell, 2012).

Summary of studies

Aims and hypotheses

Study I

The aims of Study I were to investigate relationships between personal and collective work-identity, respectively, and work-related motivation and justice perceptions. It was hypothesized that personal work-identity compared to collective work-identity would show stronger positive association with self-determined work motivation, and that emotional compared to cognitive personal work-identity would account for this association. It was also hypothesized that collective work-identity compared to personal work-identity would show stronger positive association with organizational pay justice, and that cognitive compared to emotional collective work-identity would account for this association.

Study II

The aim of Study II was to investigate relationships between emotional and cognitive personal and collective work-identity, respectively, and general mental health and exhaustion. Emotional personal work-identity was hypothesized to positively associate with general mental health and negatively associate with exhaustion. These associations were expected to reverse for cognitive personal work-identity, which was hypothesized to negatively associate with general mental health and positively associate with exhaustion. Furthermore, emotional collective work-identity was hypothesized to negatively associate with general mental health and positively associate with exhaustion. These relationships were expected to reverse for cognitive collective work-identity that was hypothesized to positively associate with general mental health and negatively associate with exhaustion.

Study III

The first aim of Study III was to investigate if, Hypothesis 1: a positive relationship between teachers' cognitive personal work-identity and emotional collective work-identity, respectively, and exhaustion is mediated by psychological job demands. The second aim was to investigate if, Hypothesis 2: a positive relationship between teachers' emotional personal work-identity and cognitive collective work-identity, respectively, and self-determined work motivation is mediated by psychological job resources.

Study IV

The aim of Study IV was to investigate the role of emotion and cognition regarding personal and collective work-identity formation. It was hypothesized that emotional processes positively predict cognitive processes of personal work-identity; and that cognitive processes positively predict emotional processes of collective work-identity. It was also hypothesized that there are effects of emotional profile on cognitive processes of personal work-identity;

and that there are effects of cognitive profile on emotional processes of collective work-identity.

Note: In Study IV the formation of work-identity was not measured across time. Instead, data were obtained on the momentary set up of work-identity in individuals with a mean employment time of 14 years (see Method/Participants section). The difference between the development of work-identity across time (work-identity formation per se, see Haslam & Ellemers, 2011; Knez 2014; 2016; van Dick et al., 2004; Riketta, 2005) and the momentary set up of work-identity formation obtained in Study IV is that the present data concern the momentary set up of work-identity relative to the period of employment. By this, the present thesis may tentatively suggest how the identity-profession relationship may converge into the phenomenon of work-identity across the employment.

Note: The conceptualization of “effects” relates to the use of a quasi-experimental design with independent and dependent variables where these effects, however, do not indicate causation in an equally strong sense as in studies with an experimental design. For these types of arguments, see Knez et al. (2018a; 2019) and Tabachnick & Fidell (2012).

Methods

Participants

For all the Studies (I-IV) the participants consisted of members of the Swedish trade union, “The National Union of Teachers” (see above). The participants represented eleven different local branches of the union and worked in the southern and the middle part of Sweden. The response comprised 768 (26%) questionnaires that were returned (out of 2,905 individuals that received the questionnaire), with an internal non-response rate of 0.003% for some measures (see Table 2 for details). Due to lack of information, no analysis of the non-respondents could be performed. For the demographical data of the participants and a comparison sample of Swedish teachers (Skolverket n.d.), see Table 1.

Table 1. Demographical data for the participants (N= 768) and for a comparison sample of Swedish teachers (N=133 741) based on statistics from year 2016.

Demographical data	Participants (N=768)	Comparison sample (N=133 741)
Teachers/ Educational function (%)	99.0	100
Permanent employment (%)	99.0	85.0
Non-private sector (%)	92.1	89.4
Full-time employment (%)	80.5	73.0
Gender/ females (%)	75.5	76.0
Education/University studies (%)	68.0	81.3
Age (Mean years and SD)	46.3 (SD=10.1)	46.0 (SD= 11.4)
Mean employment time within the organization (years)	14	13.5

Procedure and Ethical considerations

Chairpersons of the 11 municipal branches of the “The National Union of Teachers” were contacted and informed of the aim of the project: to investigate relations between work-related identity, motivation, justice, mental health and working conditions. After permission from the chairpersons, a web-link to the questionnaire was distributed to the union members by the chairpersons during four weeks in April-May 2016 including two reminders. This was done because Swedish juridical restrictions do not permit a chairperson of a trade union to distribute individual e-mail addresses of the members outside the union. A covering letter accompanying the questionnaires described the purpose of the project and informed the participants that completion of the questionnaire was taken as an assurance of their informed consent to participate, that participation was voluntary, and that confidentiality and anonymity were assured. However, the participants were asked to fill in their name and address after completion of the questionnaire if they wanted to receive a cinema ticket as compensation for their participation. The participants were informed that nobody, but the researchers of the present project, would have access to their names and addresses.

For all the Studies (I-IV) an ethical application was reviewed and approved by the Swedish Regional Ethical Review Board of Uppsala (Dnr 2015/423).

Measures

In the present thesis, the following measures/variables were used (also see Table 2 for more details):

Emotional and cognitive personal work-identity, based on Knez (2014; 2016) and constructed by Nordhall & Knez (2018). Acceptable construct validity was shown for the scales by a confirmatory factor analysis, including a second-order factor representing a general personal work-identity construct, with cognitive and emotional components as first-order factors: $\text{Chi}^2 = 188.57$, $\text{df} = 28$ ($p < 0.001$), $\text{CFI} = 0.95$ and $\text{RMSEA} = 0.08$, indicating acceptable fit between model and data (see Byrne, 2016).

Emotional and cognitive collective work-identity, operationalized by “Identification with a Psychological Group Scale” constructed by Mael & Tetrick (1992), validated by Mael & Ashforth (1992, see also Riketta, 2005) and translated to Swedish by O. Nordhall. Acceptable construct validity was shown for the scales by a confirmatory factor analysis, including a second-order factor representing a general collective work-identity construct, with cognitive and emotional components as first-order factors: $\text{Chi}^2 = 64.09$, $\text{df} = 7$ ($p < 0.001$), $\text{CFI} = 0.97$ and $\text{RMSEA} = 0.10$, indicating acceptable fit between model and data (see Byrne, 2016).

Self-determined work motivation, measured by the “Work Extrinsic and Intrinsic Motivation Scale”, constructed and validated by Tremblay et al. (2009) and translated to Swedish by O. Nordhall.

Procedural pay justice; distributive pay justice; interpersonal pay justice; and informative pay justice, operationalized by scales constructed and validated by Colquitt (2001) and translated to Swedish by Anderson-Stråberg et al., (2007).

Exhaustion, operationalized by the Karolinska Exhaustion Scale 26, constructed, validated and translated to Swedish by Saboonchi et al. (2012).

General mental health, measured by a single item (“How do you rate your mental health at the present?”), see Ahmad et al., 2014; Hays et al., 2017). A single self-rating item of general mental health was used in line with studies showing that self-evaluation of health status shows good predicting capability above and beyond the contribution made by indices based on the presence of health problems (see Ahmad et al., 2014; Hays et al., 2017). The use of a three-point Likert scale was based on previous studies indicating that when a general health measure contains a higher number of response categories, the extreme categories indicate a low response frequency and thus are redundant (see Idler & Kasl, 1991; Idler & Benyamini, 1997).

Demographical variables, measured and controlled for in the statistical analyses of Studies I-II.

Psychological job demands, measured by three items (“extra role social support given to the pupils; colleagues; pupils’ parents”, respectively), constructed by O. Nordhall (see Nordhall et al., 2020).

Psychological job resources, measured by two items (“stimulating educational interactions with the students”; “overall educational work as incentive”) constructed by O. Nordhall (see Nordhall et al., 2020).

Emotional and cognitive processes of personal work-identity (see above and Knez, 2016), measured by single item questions (one item per process) constructed by Nordhall & Knez, 2018 (see also Nordhall et al., Under revision). The emotional processes were: familiarity; missing; bonding; proudness; and emotional agency: and the cognitive processes were: coherence; correspondence; mental time; reflection; and cognitive agency.

Emotional and cognitive processes of collective work-identity (see above and Mael & Tetrick, 1992; Mael & Ashforth, 1992; Xenikou, 2014), measured by single item questions (one item per process). The emotional processes were: proudness; esteem; and affective commitment: and the cognitive processes were: incorporation; identification; and assimilation (see also Nordhall et al., Under revision).

Emotional profiles of personal work-identity, constructed by grouping individuals along the emotional processes (see above) of personal work-identity into four different clusters, i.e., profiles.

Cognitive profiles of collective work-identity, constructed by grouping individuals along the cognitive processes (see above) of collective work-identity into four different clusters, i.e., profiles.

Table 2: Variables measured in each Study (I-IV), respectively, together with numbers of participants (N) and internal consistency (Cronbach alpha (α)) for each measure/variable.

Variable	N	Cronbach alpha (α)	Study I	Study II	Study III	Study IV
1. Personal work-identity	767	.86	X			
2. Emotional personal work-identity	767	.75	X	X	X	
3. Familiarity	767	N.A*				X
4. Missing	767	N.A*				X
5. Bonding	767	N.A*				X
6. Proudness	767	N.A*				X
7. Emotional Agency	767	N.A*				X
8. Emotional profiles of personal work-identity	767	N.A*				X
9. Cognitive personal work-identity	767	.84	X	X	X	
10. Coherence	767	N.A*				X
11. Correspondence	767	N.A*				X
12. Mental Time	767	N.A*				X
13. Reflection	767	N.A*				X
14. Cognitive Agency	767	N.A*				X
15. Collective work-identity	767	.87	X			
16. Emotional collective work-identity	767	.78	X	X	X	
17. Proudness	767	N.A*				X
18. Esteem	767	N.A*				X
19. Affective commitment	767	N.A*				X
20. Cognitive collective work-identity	767	.77	X	X	X	
21. Incorporation	767	N.A*				X
22. Identification	767	N.A*				X
23. Assimilation	767	N.A*				X
24. Cognitive profiles of collective work-identity	767	N.A*				X
25. Self-determined work motivation	766	.74	X		X	
26. Procedural Pay Justice	767	.91	X			
27. Distributive Pay Justice	767	.95	X			
28. Interpersonal Pay Justice	767	.93	X			
29. Informative Pay Justice	767	.94	X			
30. General mental health	767	N.A*		X		
31. Exhaustion	767	.95		X	X	
32. Psychological job demands	766	.64			X	
33. Psychological job resources	766	.73			X	
34. Monthly income	768	N.A*	X			
35. School sector	768	N.A*	X	X		
36. Years of employment	768	N.A*	X	X		
37. Permanent employment	768	N.A*	X			
38. Age	768	N.A*		X		
39. Gender	768	N.A*		X		
40. Full time employment	768	N.A*		X		
41. Educational level	768	N.A*		X		

* N.A = not applicable

Designs and Data analyses

Study I

Based on cross-sectional data, four types of multiple hierarchical regression analyses were performed: (1) Personal and collective work-identity (predictors) and self-determined work motivation (criterion variable); (2) Emotional and cognitive personal work-identity (predictors) and self-determined work motivation (criterion variable); (3) Personal and collective work-identity (predictors) and procedural, distributive, interpersonal, and informative organizational pay justice dimensions as criterion variables; (4) Emotional and cognitive collective work-identity (predictors) and procedural, distributive, interpersonal, and informative organizational pay justice dimensions as criterion variables. Also, the effects of four potential confounders were controlled for, and these covariates were entered in step one (and the predictors in step two) in all four analyses: monthly income; school sector (public vs. private); years of employment; and permanent employment (no vs. yes).

Study II

Based on cross-sectional data, four different multiple hierarchical regression analyses were performed: (1) Emotional and cognitive personal work-identity (predictors) and general mental health (criterion variable); (2) Emotional and cognitive personal work-identity (predictors) and exhaustion (criterion variable); (3) Emotional and cognitive collective work-identity (predictors) and general mental health (criterion variable); (4) Emotional and cognitive collective work-identity (predictors) and exhaustion (criterion variable). Also, the effects of six potential confounders were controlled for, and these covariates were entered in step one (and the predictors in step two) in all four analyses: age; gender (male vs. female); teachers with full-time employment (%); school sector (public vs. private); years of employment; and educational level (low vs. high).

Study III

Based on cross-sectional data, four different mediation analyses were performed: (1) Cognitive personal work-identity (predictor), exhaustion (criterion variable) and psychological job demands (mediator), see Figure 2a; (2) Emotional collective work-identity (predictor), exhaustion (criterion variable) and psychological job demands (mediator), see Figure 2a; (3) Emotional personal work-identity (predictor), self-determined work motivation (criterion variable) and psychological job resources (mediator), see Figure 2b; (4) cognitive collective work-identity (predictor), self-determined work motivation (criterion variable) and psychological job resources (mediator), see Figure 2b.

The mediation, i.e., the indirect effect of the predictor on the criterion variable, was defined as the product of path a and b, i.e., ab (see Figure 2 and Preacher & Hayes, 2004). In the analyses of Study III, the potential confounders analyzed in Study I and Study II were not included due to the results of these two studies, which showed that the potential confounders did not affect the relationships between the predictors and the criterion variables.

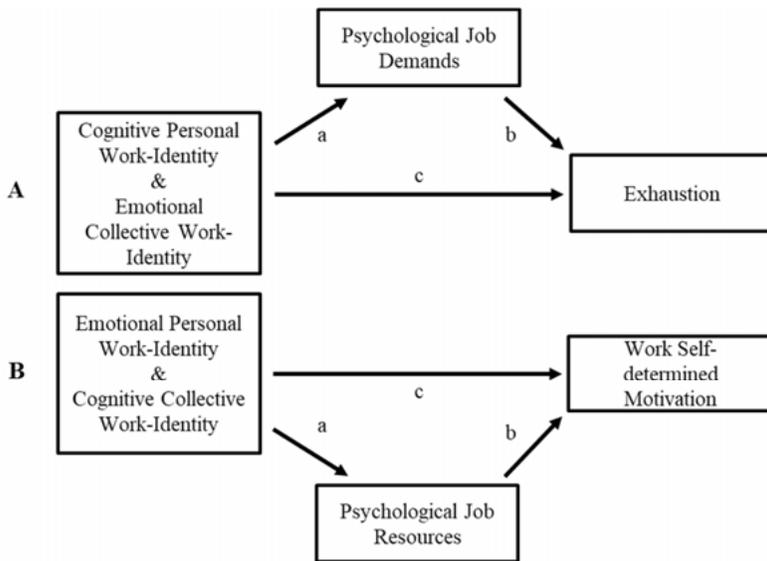


Figure 2. A) Cognitive personal work-identity and emotional collective work identity as predictors of exhaustion = path c, mediated by psychological job demands = path ab.
B) Emotional personal work-identity and cognitive collective work identity as predictors of work self-determined motivation = path c, mediated by psychological job resources = path ab.

Study IV

Based on cross-sectional data, two types of multiple regression analyses, i.e., *variable-oriented analyses*, were performed, including: (1) emotional processes (predictors) predicting cognitive processes (criterion variables) in the personal work-identity formation; (2) cognitive processes (predictors) predicting emotional processes (criterion variables) in the collective work-identity formation.

Also, based on cross-sectional data and *person-oriented analyses*, individuals were clustered to obtain different clusters, i.e., profiles, in emotional personal and cognitive collective work-identity. The emotional process of personal work-identity and the cognitive processes of collective work-identity, respectively, were used to form clusters, resulting in four emotional profiles of personal work-identity and four cognitive profiles of collective work-identity, respectively. Additionally, two multivariate analyses of variance were performed to investigate: (1) effects of emotional profile (independent variable with four levels, i.e., profiles) on cognitive processes (dependent variables) of personal work-identity formation; (2) effects of cognitive profile (independent variable with four levels i.e., profiles) on emotional processes (dependent variables) of collective work-identity formation.

Results

Study I

The results of Study I showed that *personal*, but not collective, work-identity positively associated with self-determined work motivation, accounted for by the *emotion* component of personal work-identity, after controlling for the four potentially confounding variables.

Furthermore, the results showed that *collective*, but not personal, work-identity positively associated with all four organizational pay justice dimensions (procedural, distributive, interpersonal and informative pay justice), accounted for by the *cognitive* component of collective work-identity (except for the distributive dimension), after controlling for the four potentially confounding variables.

Study II

The results of Study II showed that *emotional personal* work-identity and *cognitive collective* work-identity *positively* associated with general mental health and *negatively* associated with exhaustion, after controlling for the six potentially confounding variables. The reverse results were found for *cognitive personal* work-identity and *emotional collective* work-identity in that they *negatively* associated with general mental health (although the effect of the emotional collective work-identity was not significant) and *positively* associated with exhaustion, after controlling for the six potentially confounding variables.

Study III

The results of Study III showed that teachers' psychological job *demands* (pro-social extra role performance) mediated the positive relationships between cognitive personal work-identity and emotional collective work-identity, respectively, and exhaustion. By this, teachers' *cognitive personal* work-identity and *emotional collective* work-identity, respectively, positively predicted exhaustion indirectly via psychological job demands.

Furthermore, the results showed that teachers' psychological job *resources* (educational inspiration) mediated the positive relationships between emotional personal work-identity and cognitive collective work-identity, respectively, and self-determined work motivation. By this, teachers' *emotional personal* work-identity and *cognitive collective* work-identity, respectively, positively predicted self-determined work motivation indirectly via psychological job resources.

Study IV

The results of Study IV showed that, by *variable-oriented analyses*, *emotional* processes (Familiarity, Missing, Bonding, Proudness and Emotional Agency), in general, positively predicted *cognitive* processes (Coherence, Correspondence, Mental Time, Reflection and Cognitive Agency) in the *personal* work-identity formation, with the exception of Proudness that negatively, or not at all, associated with the cognitive processes. Also, the results showed that the *cognitive* processes (Incorporation, Identification and Assimilation) positively

predicted *emotional* processes (Proudness, Esteem and Affective Commitment) in the *collective* work-identity formation.

Furthermore, and by *person-oriented analyses*, the results showed effects of the *emotional* profile on *cognitive* processes of *personal* work-identity. More precisely, individuals with Profile 1 (“Strong and Consistent Emotional-als”) and Profile 2 (“Strong but Moderate Inconsistent Emotional-als”), respectively, scored higher on the five cognitive processes of personal work-identity compared to Profile 3 (“Moderate Strong and Moderate Consistent Emotional-als”) and Profile 4 (“Moderate Strong but Moderate Inconsistent Emotional-als”), respectively.

The results also showed effects of the *cognitive* profile on *emotional* processes of *collective* work-identity. More precisely, individuals with Profile 1 (“Strong and Consistent Identifiers”) scored highest, followed by Profile 2 (“Moderate Strong and Consistent Identifiers”), followed by Profile 3 (“Moderate Weak and Moderate Inconsistent Identifiers”), followed by Profile 4 (“Weak but Consistent Identifiers”) on the three emotional processes of collective work-identity.

Summary of results

The following four main results were obtained:

1. Personal work-identity positively predicted self-determined work motivation, accounted for by the emotion component, and collective work-identity positively predicted organizational pay justice, accounted for by the cognition component.
2. Emotional personal and cognitive collective work-identity, respectively, positively predicted general mental health and negatively predicted exhaustion, while cognitive personal and emotional collective work-identity, respectively, negatively predicted general mental health and positively predicted exhaustion.
3. Teachers’ psychological job demands and resources played mediating roles in the relation between emotional and cognitive personal and collective work-identity, respectively, and teachers’ exhaustion problems and self-determined work motivation, respectively.
4. Emotional processes positively predicted cognitive processes, and the emotional profile showed effects on cognitive processes regarding the personal work-identity formation. Also, cognitive processes positively predicted emotional processes, and the cognitive profile showed effects on emotional processes regarding the collective work-identity formation.

General discussion

Work-identity predictions and formations are important given that the psychological bonding to work might be fundamental to us as individuals and social beings, with implications for our work-related attitudes, behavior and mental health. Accordingly, the aim of the present thesis was to investigate emotional and cognitive personal and collective work-identity in predicting employees' work-related motivation, organizational justice perceptions, general mental health and exhaustion. Also to investigate if psychosocial working conditions might explain some of these relationships. Additionally, the aim was to investigate emotion and cognition in formation of personal and collective work-identity in order to gain more understanding of emotional and cognitive processes, and individual profiles involved in work-identity formation.

Here, the above will be discussed, as well as an overall synthesis, theoretical and practical implications, limitations and concluding remarks.

As previously noted, the conceptualization of “prediction” and “predict” in this thesis does not imply a prediction in an absolute causal terminology but, in a statistically/mathematical sense; implying a prediction of a criterion value given a specific predictor value on a regression line.

Personal and collective work-identity predicts motivation and justice at work

Personal, but not collective, work-identity positively predicted self-determined work motivation (Study I). This finding may indicate personal work-identity as a source of basic psychological need satisfaction at work. This is because Self-Determination Theory suggests satisfaction of basic needs (competence, relatedness and autonomy) as crucial for self-determined motivation (Deci & Ryan, 2000; Van den Broeck et al., 2016, 2008).

The results of Study I are in accordance with “the identity-matching principle” (Ullrich et al., 2007) and “the notion of foci of identification and its associated effects” (van Dick & Wagner, 2002; Riketta & van Dick, 2005; Olkkonen & Lipponen, 2006). These principles assert that when the level/focus of identity (e.g., personal/occupation) matches the level/focus of outcome (e.g., personal/individual self-determined work motivation), the association will be stronger compared to when level/focus of identity and outcome does not match. For example, collective work-identity (collective level/organizational focus) does not match self-determined work motivation (personal level/occupational focus). Accordingly, these two constructs were not significantly related in Study I.

In Study I, collective, but not personal, work-identity positively predicted organizational pay justice. This is also in line with “the identity-matching principle” and “the notion of foci of identification and its associated effects”. This is because both collective work-identity and organizational pay justice are categorized on a collective level/focusing on the work organization, while personal work-identity is not.

Similar findings have previously been shown both with cross-sectional and experimental data. These findings suggest that the collective self-concept is (positively) associated with different organizational justice dimensions (see Johnson et al., 2006).

In sum, the results of Study I extend “the identity matching principle” and “the notion of foci of identification and its associated effects” by showing that these principles not only apply to social work-identities (e.g., workgroup vs. organization, see Riketta & van Dick, 2005), but also apply to personal vs. collective work-identity.

Emotion and cognition in *personal* work-identity predict work motivation, mental health and exhaustion

The results of Study I indicate that when employees experience stronger emotions in their personal work bonding, they are also more self-determined work motivated in terms of pure satisfaction and interest in their work. Additionally, in Study II it was shown that stronger emotional personal work-identity associated with increased mental health and decreased exhaustion.

Self-Determination Theory asserts that stronger self-determined motivation may increase employees’ mental health and decrease their exhaustion (see Ryan & Deci, 2017b; Ryan & Deci, 2000). Accordingly, self-determined work motivation might play an explaining role in the relationships between employees’ emotional personal work bonding and mental health and exhaustion problems (see Crawford et al., 2010; Kuvaas, 2006; Simpson, 2009).

According to the Job Demands-Resource model (Crawford et al., 2010; Schaufeli & Bakker, 2004), employees may experience less exhaustion problems due to increased work motivation. However, strong work motivation and engagement may turn into over commitment, thereby increasing the risk of exhaustion problems (Preckel et al., 2005; Van den Broeck et al., 2008).

The results of Study I and II are in line with an autobiographical memory perspective on work-identity, suggesting that emotional attachment/belongingness/closeness accounts for positive relationships with outcomes related to well-being and mental health (Knez, 2016; Knez & Eliasson, 2017). In view of this, “the storage of important information for the episodic memory will be enhanced by the emotional context of that information” (Knez, 2014, p. 184-185). Also, we have stronger memories for events that are emotionally processed than those that are not (Knez, 2014; Knez & Eliasson, 2017). Accordingly, by the emotional context and content of the work-related memories, the corresponding emotional personal work-identity may promote our wellness at work.

In Study II, it was found that cognitive personal work bonding negatively related to general mental health and positively related to exhaustion. These results parallel findings of job-involvement as positively associated with exhaustion (Donahue et al., 2012). Job-involvement implies intense but unintentional rumination about ones work, i.e., a strong cognitive self-work bonding, which may constitute a stressor for the employees that increases their exhaustion problems (Frone & Russell, 1995; Stets & Burke 2000). The results of Study

It also parallels findings within clinical psychology where it has been shown that repetitive and unintentional (negative) thoughts heighten responses to stressful events in terms of increased depression and anxiety symptoms (Ruscio et al., 2015).

Accordingly, it may be suggested that stronger cognitive personal work-identification may heighten responses to stressful events at work with subsequent exhaustion problems. Also, and in line with the model of Effort-Reward Imbalance, stronger cognitive personal work-identification might constitute a mental effort (see Siegrist, 2002; 2008) that increases the risk of exhaustion (Blom, 2012; Hinz et al., 2016).

Emotion and cognition in *collective* work-identity predict organizational justice, mental health and exhaustion

Stronger emotional collective work-identity was associated with stronger exhaustion problems (Study II), which may relate to the concept of organization-based self-esteem where the employees generate their self-esteem in connection with their organizational belongingness (Pierce & Gardner, 2004). Stronger emotional bonding to the organization in terms of, e.g., organization-based self-esteem, may make the employee more vulnerable to stress-related factors in the organizational work setting, e.g., downsizing and work-related overload, thereby increasing the risk of exhaustion problems.

Stronger cognitive bonding to the organization was associated with stronger pay-related justice perceptions (Study I), better general mental health and lower exhaustion (Study II). Accordingly, the present thesis extends knowledge concerning health-related effects of organizational identity by showing that organizational work-identity, as positively related to well-being, mental health, and negatively related to mental health problems, is accounted for by cognitive rather than emotional collective work bonding (see Jetten et al., 2012; Haslam et al., 2009a for reviews). This is in accordance with the predominant theoretical frameworks on organizational identity: social identity theory (e.g., Ashforth & Mael, 1989; Tajfel & Turner, 1986) and self-categorization theory (Turner et al., 1987). These theoretical accounts emphasize collective work identity as more of a cognitive structure (Harquail & King, 2003), with perception of belongingness to an organization as the essence of organizational identity.

Finally, organizational justice has shown positive associations with well-being and mental health, and in Study I, cognitive collective work-identity positively associated with organizational pay justice. Therefore, it may be assumed that organizational justice perceptions explain to some extent the positive association, reported in Study II, between employees' cognitive collective work bonding and mental health. This was not investigated in the present thesis. However, a mediating role of organizational justice has been indicated in previous research (see Greenberg, 2010; Ndjaboué et al., 2012; Piccoli & De Witte, 2015; Robbins et al., 2012).

Work-identity predictions of mental health: a questioning

The results of Study II may question previous findings that stronger work-identity in general implies better mental health and less exhaustion (e.g., Edwards & Dirette, 2010; Haslam et al., 2009a; Jetten et al., 2012; Steffens et al., 2016). In Study II it was shown that such relationships might be reversed accounted for by the emotion and cognition component of personal and collective work-identity, respectively. Thus, there is a need to differentiate between emotional and cognitive personal and collective work-identity, respectively, when investigating health related predictions of work-identity.

Mediating roles of teachers' psychological job demands and resources

The results of Study III showed mediating roles of teachers' psychological job demands and resources. This is in line with the Job Demands-Resource model (Demerouti et al., 2001) which asserts that strenuous psychological job demands positively associate with adverse mental health, such as, burnout and/or exhaustion, while favorable psychosocial working conditions, such as, psychological job resources positively associate with engagement and motivation at work (Bakker & Demerouti, 2008; Bakker et al., 2014; Demerouti et al., 2001).

In view of Study III, teachers' prosocial extra-role performances might be regarded as a stressful psychological job demand with a dark side in terms of increased exhaustion problems (see Bolino et al., 2010; 2013; Vigoda-Gadot, 2007). However, in studies on extra-role performance as promoting mental health (Lam et al., 2016; Simbula, & Guglielmi, 2013) extra-role performance might not have been operationalized in terms of prosocial emotionally demanding social interactions. This may explain why such extra-role performance has not been experienced as stressful and accordingly, not associated with adverse mental health. Also, extra-role performance experienced as more or less voluntary, might affect to what extent it has health-promoting effects (see Bolino et al., 2010; 2013; Vigoda-Gadot, 2007).

Additionally, teachers' educational inspiration might be regarded as a psychological job resource promoting self-determined work motivation. In accordance with Self-Determination Theory (Ryan & Deci, 2000), experiences of educational inspiration, as an intrinsic goal, may facilitate basic need satisfaction of autonomy, belongingness and competence, thereby increasing teachers' self-determined work motivation. In addition, it may increase their work-related well-being and satisfaction (see Björklund et al., 2013).

Teachers' psychological job demands and resources are crucial predictors of adverse mental health and motivation at work, respectively (Hakanen et al., 2006). The present thesis suggests that such working conditions are also mediating factors between the individual teacher (work-identity) and his/her exhaustion problems and work motivation. This is of importance regarding antecedents and effects of teachers' social and organizational working conditions and their relation to mental health and well-being at work (see e.g. Gray et al., 2017; Hakanen et al., 2006 Mojsa-Kaja et al., 2015).

Emotion and cognition in work-identity formations

In Studies I-III, emotion and cognition were shown to play different roles in personal and collective work-identity predictions of work- and health-related outcomes. To shed light on such relationships, understanding of emotion and cognition in the formation of personal and collective work-identity (Study IV) may be of importance. This is because there may be an interplay between work-related identity formations and psychosocial and organizational working conditions in relation to one's motivation, justice perceptions and mental health at work (for overviews see Gioia et al., 2013; Knez, 2016; Xenikou, 2014).

An autobiographical memory perspective on work-identity formation suggests that the emotion component temporally precedes and affects the cognition component. Such results have been empirically demonstrated regarding formation of place-related identity, a concept closely connected to work-identity (see Knez, 2014; 2016; Knez & Eliasson, 2017; Knez et al., 2018a; b). The results of Study IV are in line with this, indicating that emotional processes positively predict cognitive processes (variable-oriented analyses) and that emotional profile has effects on cognitive processes (person-oriented analyses) of personal work-identity.

According to a social identity perspective (e.g., Ashforth & Mael, 1989; Hogg, 2012; van Dick et al., 2004), the cognitive processes, compared with emotional processes, are suggested to precede temporally in the formation of collective work-identity. In line with this, the results of Study IV indicate that cognitive processes positively predict emotional processes (variable-oriented analyses) and that cognitive profile has effects on emotional processes (person-oriented analyses) of collective work-identity.

By a combination of a variable and person-oriented analysis, one may attain important information about the contribution of the different and separate psychological processes involved, as well as the contribution of individual combinations/ profiles of such processes, in the formation of employees' work-identity (see Bergman, 2000; Bergman, et al., 2000; Magnusson, 2000).

Work-identity organizes personal experiences and knowledge in the context of occupational work across time, where time is suggested as one of the main constituents of human experiences and knowledge acquisition, thereby presuming processes in work-identity formation in a causal relationship. According to an autobiographical memory perspective on work-identity formation, time (in employment) affects emotional attachment/belonging/closeness to the work that in turn affects cognitive processing of that work. This implies a temporal dimension in the work-identity formation process (for model overviews see Knez, 2014; 2016; Knez et al., 2019). Also, from a social identity perspective, it has been shown that time in an organization is one crucial predictor of the formation of collective work-identity (see Haslam & Ellemers, 2011; van Dick et al., 2004; Riketta, 2005). Here, time in the organization may affect to what extent the organization is incorporated and assimilated in the collective self, which in turn may activate organizational proudness, esteem and commitment, i.e. emotional identification with the organization.

Given these theoretical frameworks of work-identity formations, it might be tentatively assumed that the results of Study IV show not just cross-sectional associations but also may indicate causal relations along a temporal dimension regarding the role of emotion and cognition in the formation of personal and collective work-identity. In Study IV, data were reported on the momentary set up of work-identity in individuals with a mean employment time of 14 years. This means that work-identity formation was investigated relative to the period of employment, suggesting that the longer the employment time the more the momentary set up of work-identity will correspond to the work-identity formation measured across time. Accordingly, the present thesis suggests how work-identity formation may develop across the employment.

It might also be suggested that personal and collective work-identity formation to some extent varies between individuals due to their emotional profile in personal work-identity and their cognitive profile in collective work-identity.

Theoretical implications

In sum, the theoretical implications of the results obtained are:

1. In *personal* work-identity predictions, the *emotion* component positively accounts for the magnitude in work motivation and general mental health, and negatively accounts for the magnitude in exhaustion. The *cognition* component of personal work-identity accounts for the magnitude in these outcomes in reverse directions.
2. In *collective* work-identity predictions, the *cognition* component positively accounts for the magnitude in organizational pay justice and general mental health, and negatively accounts for the magnitude in exhaustion. The *emotion* component of collective work-identity accounts for the magnitude in these outcomes in reverse directions.
3. In particular, these findings suggest that work motivation, organizational pay justice, general mental health and exhaustion may vary symmetrically across the: (1) Type of person-work bonding (personal vs. collective work-identity); and (2) Type of psychological component (emotion vs. cognition) involved in personal and collective work-identity.
4. Teachers' psychosocial working conditions in terms of psychological job *demands* and *resources* might explain partly some of the associations mentioned above.
5. Finally, *emotion* and *cognition* might play symmetrically different roles in the personal and collective work-identity formation.

A synthesis of the person-work bonding in a context of occupational mental health

Based on the present thesis, one may suggest a tentative synthesis concerning work-identity formations and predictions in a context of occupational mental health, (see Figure 3 for an overview; and Figure 1 above for a detailed structure of the work-identity, its levels, components and processes).

In the *personal* work-identity formation, work-related *emotion* may constitute the psychological basis of work-related *cognition*. Additionally, work-related *emotion* may provide for increased work-motivation, mental health and decreased exhaustion problems. Work-related *cognition* may entail increasing exhaustion problems and decreasing mental health.

In *collective* work-identity formation, organizational *cognition* may constitute the psychological basis of organizational *emotion*. Additionally, organizational *cognition* may provide for increasing work-motivation, perceptions of organizational justice, mental health and decreasing exhaustion problems. However, organizational *emotion* may entail increasing exhaustion problems.

In terms of psychological job distress as a summarizing concept, prosocial extra-role performances may constitute a psychological job demand, partly explaining the positive relationships between the individual (work-related *cognition* and organizational *emotion*) and adverse mental health.

In terms of work-related wellness as a summarizing concept, occupational inspiration may constitute a psychological job resource, partly explaining the positive relationships between the individual (work-related *emotion* and organizational *cognition*) and work motivation and mental health.

Practical implications

From the perspectives of employees and employers, it is of interest to formulate some practical implications of the results obtained, both at the individual and organizational level (see Lloyd, Bond, & Flaxman, 2016; van der Klink et al., 2001). Knowledge of emotional and cognitive processes involved in work-identity formation may be useful in order to understand, and sometimes modify, unhealthy feeling and thinking in the psychological linkage between the employee and his/her occupational work/organization (see Klein et al., 2004; Knez, 2014; 2016). Here, interventions may promote the advantage of stronger *feeling* and reduce the disadvantage of stronger *thinking* in employees' *personal* work bonding. Such interventions should also promote the advantage of stronger *thinking* and reduce the disadvantage of stronger *feeling* in employees' *collective* work bonding. This might enhance employees' work-related motivation, justice perception and mental health, and may reduce the risk of exhaustion problems.

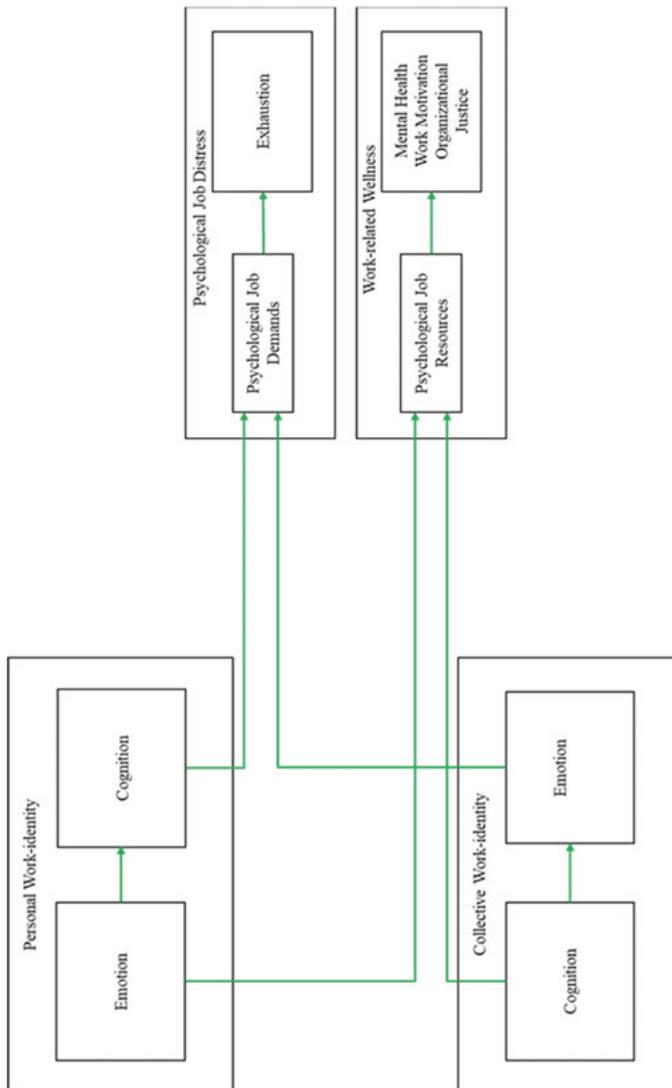


Figure 3. A tentative synthesis of the work-identity formations and predictions in a context of occupational mental health. Note: All simple relations (positive and negative) have not been displayed due to the principle of simplicity.

Teachers' *educational inspiration* may constitute a psychological job *resource* and therefore it should be promoted to enhance self-determined motivation and mental health at work. However, teachers' *prosocial extra role performances* may constitute a psychological job *demand* that increases adverse mental health. Prosocial extra role performances may be reduced by, for example, more clear cut and explicit work descriptions and expectations of role vs. extra role performances within the national educational system's programs (see Klusmann et al., 2008; Lei et al., 2012; Somech, 2016). By this, teachers may increase their knowledge of what performance should and should not be expected of them in their work role. Such revised work descriptions may reduce

teachers' prosocial extra role performances before they become too demanding. Also, interventions focusing on psychological job demands and resources may increase the sense of self-efficacy and job control, thereby decreasing teachers' burnout and exhaustion problems (Siu et al., 2014; Skaalvik & Skaalvik, 2007; Żolnierczyk-Zreda, 2005). A decrease in teachers' exhaustion problems is of importance due to their high prevalence of burnout and exhaustion problems (see Hakanen et al., 2006; Hallsten et al., 2002). In addition, those teachers exhibiting stronger enthusiasm and intrinsic motivation and a lesser degree of exhaustion may mobilize interest, energy and curiosity among pupils (Patrick et al., 2000), and mobilize their own ability to provide adequate teaching and achieve educational goals (see Hakanen et al., 2006).

Insights into emotional and cognitive processes involved in work-identity formation may be of some value also in the context of organizational change, which involves role identity transitions that may imply changing or differentiation in work roles (see Ashforth, 2001; Oreg et al., 2013; Stets & Burke, 2000). Organizational change has been shown to challenge, and be challenged, by a strong work-identity and it may be difficult to force a change in work-identity. Reorganization and transitions of work roles during organizational changes may imply a psychological break up of prevailing work-identities as well as re-formation of new work-identities, entailing the individual employee experiencing a loss of control, thereby increasing his/her stress-reactions (Drzensky & Van Dick, 2013). In view of this, emotional and cognitive work-identity processes and profiles may have implications for how the individual employee is affected by the organizational change and for his/her adaption in its aftermath. Also, insights into, and re-formations of emotion and cognition in work-identity may enhance the fit between the individual employee (work-identity profile) and occupational work during and after an organizational change. This may enhance organizational effectiveness as well as employees' well-being and mental health (for similar views and practices, see Pellegrini et al., 2018; Zappal et al., 2019).

More precisely, such interventions as mentioned above may include adapted application of Cognitive Behavioral Therapy sessions (CBT: see Corey, 2009) as one treatment condition, Acceptance Commitment Therapy sessions (ACT: see Hayes et al., 2012) as another treatment condition and one or several control groups. In the treatment groups, the participants may be helped to understand, handle and modify thoughts, feelings and behavioral strategies of relevance for their personal and collective work-identity as well as for their occupational inspiration, extra role performances and stress-triggering perceptions of their occupational work. Also, pre- and post-interventional measures of the constructs of relevance should be included in such interventions [see van Dierendonck et al. (1998) for a similar intervention related to effects of organizational (in-)justice perceptions on burnout].

Considerations and limitations

To large extent, the present thesis rests on the concepts of personal and collective work-identity, comprehensively accounted for by previous theoretical and

empirical studies. In general, the present results were in line with these theoretical and empirical accounts and additionally, the results were not affected by potentially confounding (demographical) variables. These aspects may be considered as strengths of the present thesis. However, it is also necessary to mention some limitations.

The results of the present thesis were based on cross-sectional data, thus lacking random assignment to intervention groups or experimental conditions. This means that it is not possible to draw definite conclusions about causation. To draw conclusions about causation one should use experimental designs, although they are associated with limitations regarding the ecological validity of the findings, which is of particular relevance in research fields like health and organizational/work psychology and occupational health sciences. Although an experimental design seems to be the best way to unravel causal relationships, one may use such a design in many natural settings without having full experimental control over every potential confounder (see Knez, et al., 2018a; 2019 for this type of argument). This is also the case in the use of longitudinal designs.

The response rate of 26% might be regarded as quite low, reducing the opportunities for more general conclusions. However, nearly 800 participants participated in the present study, which is sufficient for the statistics used (Tabachnick & Fidell, 2012). Of relevance is the representativeness of the sample in relation to the Swedish working population in general. This also relates to the question of systematic falling off in the participant recruitment, which was hard to estimate due to lack of information about the non-respondents.

However, concerning demographical data, the present sample (N= 768) matched the comparison sample of Swedish teachers (N= 133 741), thereby indicating the participants of the present thesis as representative for Swedish teachers.

Since the sample consisted of only teachers this may limit general conclusions about employees' work-identity in relation to their work-motivation, perceived pay justice, general mental health and exhaustion. However, the hypotheses in the present thesis were based on theoretical accounts and previous empirical findings of general associations between the current constructs. The results obtained showed themselves to be congruent with these standpoints. Also, the constructs of personal and collective work identity were measured at levels of certain emotional and cognitive psychological processes. These processes have been shown to be fundamental for the general human ability of psychological (work-)identification (see Hogg & Terry, 2000; Knez, 2014; 2016; van Knippenberg & Sleebos, 2006). Thereby the results of the present thesis may be tentatively assumed as general and not to a large extent affected by the sample size or the use of a teacher sample.

Regarding the use of a teacher sample, no specific educational- and/or school-related factors were included in the analyses as the aim was to investigate general relationships between the phenomena involved, exemplified by a sample of teachers (see Knez, et al., 2018a for this type of argument).

Another potential limitation might be the operationalization of psychological job demands and resources that was limited to teachers' prosocial extra role

performance and educational inspiration, respectively. However, the aim of Study III was to investigate specifically the mediating role of *teachers'* psychological working conditions of which prosocial extra role performance has been shown to be a crucial psychological demand (see e.g., Bolino et al., 2013; Gray et al., 2017; Santavirta et al., 2007). Concerning educational inspiration as a psychological job resource, one may ask if this construct constitutes a job or a personal resource. While personal resources refer to general beliefs, e.g., optimism and self-efficacy (Bakker & Demerouti, 2017), job resources specifically refer to the job situation; and therefore educational inspiration may be regarded as a job resource for teachers (see e.g. Bakker & Demerouti, 2008; Choochom, 2016).

Another potential limitation might be the lack of formal validation of the personal work-identity (PWI) measure (including emotion and cognition components). This may question the validity and reliability of this instrument. However, as previously stated (see Measure section), acceptable construct validity was shown for the PWI-scale by a confirmatory factor analysis (see Byrne, 2016), including a second-order factor representing a general personal work-identity construct, with cognition and emotion components as first-order factors. Also, the scale of general PWI as well as its emotion and cognition components showed satisfying internal consistency in terms of Cronbach alphas (α). Additionally, in the PWI-scale, each item denotes a certain self-related process. Thus, the scale in total denotes ten specific self-related processes, which are comprehensively supported by previous theoretical and empirical accounts as crucial autobiographical memory processes. These autobiographical memory processes are of importance in the psychological (work-) identity formation (see e.g. Klein et al., 2004; Klein & Nichols, 2012; Knez, 2014; 2016).

Finally, the use of self-reported data may run the risk of recall bias as well as that of being affected by the participants' attitude towards the current phenomena. The participants may also give socially accepted or their own ideal responses in self-reporting measures. However, it seems difficult to measure employees' perceptions of such constructs as those in the present thesis without using self-reported data. Additionally, it has been shown that similar results of, e.g., working conditions, may be obtained regardless of whether one uses self-reported data or data measured by external assessments (see Härenstam et al., 2003).

Concluding remarks and future research

The present thesis contributes to the understanding of how emotional and cognitive bonding to occupational work may predict work- and health-related outcomes and how some of these relationships may be accounted for by psychological job demands and resources.

The present thesis is in line with the general notion of occupational work being important for who we are and how self-concepts in terms of work-identities may predict outcomes of importance, both for employees and organizations.

The present thesis shows a less bright side of work-identity. It may be a disadvantage to identify oneself with occupational work by stronger *thinking* in *personal* work bonding and by stronger *feeling* in *collective* work bonding, respectively. These aspects of work-identity were associated with worse general mental health and increased exhaustion problems. This is of importance given the high prevalence of exhaustion problems among teachers.

The present thesis also points to some bright sides of work-identity. It may be an advantage to identify oneself with occupational work by stronger *feeling* in *personal* work bonding and stronger *thinking* in *collective* work bonding, respectively. These aspects of work-identity were associated with stronger work motivation, organizational justice perceptions, general mental health and lower degree of exhaustion problems.

For teachers it might be a disadvantage to engage in *prosocial extra-role performance* because such a *psychological job demand* was related positively, for the individual teacher (work-identification), to exhaustion problems. However, for teachers it might be an advantage to have access to strong *educational inspiration* because such a *psychological job resource* was related positively, for the individual teacher (work-identification), to self-determined motivation at work. Similar suggestions may probably also apply to other occupational groups than teachers.

Thus, by its dark and bright sides, work-identity may constitute a “*double-edged sword*” in relation to work- and health-related outcomes.

A deeper understanding of work-identity and its effects may also be enhanced by insights into the emotional and cognitive processes involved in personal and collective work-identity formation. It may be suggested that the relation between emotion and cognition in work-identity may vary between individuals due to their profile in *emotional personal* and *cognitive collective* work bonding. To grasp such a complexity of work-identity, future research should involve both personal and social theory perspectives as well as analyses at different levels (variable- and person-oriented).

For future research, the use of longitudinal or even experimental designs might be suggested to unveil associations in time and causal effects of work-identity as well as causation in the formation of work-identity over time. To strengthen the opportunities for generalizations, it would be of value to use samples other than teachers. Additionally, it would be of importance to investigate emotion and cognition components of personal and collective work-identity in relation to other work- and health-related outcomes, such as sickness absenteeism and presenteeism, work-family conflict, perception of different working conditions, e.g., effort-reward imbalance and different job demands and resources. Finally, one might introduce these alternative outcomes as mediating or moderating variables in the relation between levels, components and/or processes of work-identity, and different outcomes, in order to shed more light on work-identity effects.

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Papers

Associated papers have been removed in the electronic version of this thesis.

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