Effort gains in teams through fellow team members' affective social support

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Abstract

In the last decades teamwork has become a predominant means to structure work. Several aspects contribute to effective and motivating teamwork environments – one such aspect might be fellow team members' affective social support. Although positive effects of social support from various sources on work-related outcomes have previously been documented, it is not clear whether the reception of fellow team members' support can indeed trigger additional effort in the recipients above and beyond the level of individual work and teamwork without support. Fellow team members' support might present a rather neglected but powerful aspect of motivating teamwork. Based on the Model of Social Support within Teams (Hüffmeier & Hertel, 2011), this dissertation addressed the motivating effects of fellow team members' social support on various levels of psychological functioning. The focus was specifically placed on affective social support and its two subtypes social encouragement and social recognition. Moreover, several underlying psychological processes for the motivating effects of social encouragement and social recognition were proposed and investigated. The first three studies focused on the motivating effects of fellow team members' affective social support on three levels of psychological functioning including existing beliefs about motivating teamwork, effort intentions, and effort expenditure. Study 1 investigated beliefs about motivating teamwork among employees with teamwork experience (N = 130) and showed that fellow team members' social support was a frequently reported source of motivating teamwork. Study 2 explored effort intentions among athletes of team sports (N = 94) with several outlined training scenarios and showed significant additional increases in effort intentions due to the reception of affective social support. Study 3 investigated actual effort expenditure among student dyads with a persistence task (N = 88) and showed significant performance increases due to the reception of fellow team members' social support over and above teamwork without support. In order to investigate the underlying processes of the motivating effects of affective social support, Study 4 pre-tested self-constructed scales for assessing the assumed mediating variables in a panel study with employees with teamwork experience (N = 262). The results revealed adequate validity for the constructed scales. Study 5 – a diary study among employees in teamwork settings (N = 208) – explored the within-person relationship between daily perceived affective support from fellow team members' and daily work motivation along with several mediating processes. Multilevel modeling results revealed the assumed positive relation between day-level perceived affective support and work motivation and that particularly positive affect mediated

this relation. Study 6 and Study 7 examined the independent effects of fellow team members' social encouragement and social recognition on additional effort beyond the level of individual work and teamwork without support along with several mediating processes. In Study 6 a persistence task was employed among student dyads (N = 83) over several consecutive trials. Contrary to the assumptions, the results showed no effect of either type of affective support on additional effort as reflected in performance measures as well as self-reported effort. The results, however, indicated that the reception of fellow team members' affective support tended to positively affect the ratings of the mediating variables compared to group work without support. Study 7 investigated the motivating effects of social encouragement among student dyads using a cognitive task (N = 71). Contrary to the assumptions, the results indicated again no additional effort when participants received social encouragement. However, in line with the assumptions perceived affective support showed small positive relations with the mediating variables as well as self-reported effort. Together, this dissertation provides initial evidence for the motivating effects of fellow team members' affective social support on several levels of psychological functioning. The mixed findings on additional effort point to context conditions which need to be taken into account. Furthermore, initial evidence is provided for the underlying processes of the motivating effect of fellow team members' affective support as well as for the validity of the Model of Social Support within Teams (Hüffmeier & Hertel, 2011). The findings of these studies are discussed with regard to their theoretical and practical implications, and possible directions for future research are offered.

Chapter 1
Introduction and theoretical background

1.1 Introduction

Imagine you are running a team marathon. While you are running your laps your team members cheer, clap, shout encouragements, and tell you that your running time is great. Would you feel motivated to run faster or keep running fast when you feel tired? It seems at least plausible that your team members who provided you with support assume that their support has positive consequences on your – the recipients'– effort and performance. Your fellow team members' belief might thereby be based on a lay theory of achievement motivation (e.g., Mueller & Dweck, 1998) which might not hold true. If this underlying assumption of your fellow team members were, however, correct and more than a lay theory, affective social support might be a powerful but so far rather neglected aspect of motivating teamwork (Hüffmeier & Hertel, 2011): What if team members increase their effort because they receive affective support? Compared to proposed motivating work design characteristics (cf. Hackman & Oldham, 1976), affective "support [might be] an easy and inexpensive mean[s] to, not only improve the social environment of an employee, but also to make an important contribution towards productivity targets" (Osca, Urien, Gonzalez-Camino, Martinez-Perez, & Martinez-Perez, 2005, p. 307). Thus, understanding the potentially positive consequences of fellow team members' affective social support on effort and performance might provide an important means to structure productive work environments.

Starting as early as Triplett in 1898, research on teamwork settings has tried to understand the motivating as well as the demotivating effects of group work (see also Köhler, 1926; Ringelmann, 1913).[1] Previous research which has specifically investigated the motivating effects of teamwork has established several sources of additional effort in teams. However, these sources of increased effort in teams incorporated a focus on contextual characteristics of the task (e.g., Steiner, 1972; Weber & Hertel, 2007) or characteristics of the team partners (e.g., Tauer & Harackiewicz, 2004; Wittchen, Krimmel, Kohler, & Hertel, 2013). The motivating effects of dynamic and on-going interactions among team members have generally been rather neglected (Hüffmeier & Hertel, 2011) or have for reasons of experimental standardization been controlled for (e.g., Hertel, Kerr, & Messé, 2000; Kerr et al., 2007).

[1] The terms group and team are used interchangeably in this dissertation.

Research focusing on work-related social support has to a large part investigated the consequences of organizational support (e.g., Allen, Shore, & Griffeth, 2003; Chen, Aryee, & Lee, 2005; Eisenberger, Armeli, Rexwinkel, Lynch, & Rhoades, 2001; Eisenberger Huntington, Hutchison, & Sowa, 1986; L. Rhoades & Eisenberger, 2002). Organizational support incorporates the valuation of contributions as well as care for the employee (e.g., Eisenberger et al., 1986). Previous research has evidenced that organizational support was positively related to various outcomes on the employee level which can benefit the employee (for example, satisfaction; e.g., Allen et al., 2003; Eisenberger, Cummings, Armeli, & Lynch, 1997) as well as the organization itself (for example, commitment; e.g., L. Rhoades & Eisenberger, 2002; Wayne, Shore, & Liden, 1997). In addition, support from supervisors and team leaders has been shown to contribute importantly to perceived organizational support and to have unique influences on motivational and performance outcomes of subordinates (e.g., Amabile, Schatzel, Moneta, & Kramer, 2004; Maertz, Griffeth, Campbell, & Allen, 2007; Pazy & Ganzach, 2009; L. Rhoades & Eisenberger, 2002).

Few studies in the context of work-related social support have focused on the unique effects of fellow team members' support on motivational and performance related outcomes (e.g., Beehr, Jex, Stacy, & Murray, 2000; Chiaburu & Harrison, 2008; Ducharme & Martin, 2000; Mossholder, Settoon, & Henagan, 2005). Furthermore, research which has focused on supportive behavior has often focused on the antecedents of providing supportive behavior (e.g., Ilies, Fulmer, Spitzmuller, & Johnson, 2009, Rioux & Penner, 2001; Smith, Organ, & Near, 1983) but not on the motivating consequences of social support. Importantly, several meta-analytic studies have indicated that not only organizational support or supervisor support can influence performance related outcomes but that also fellow team members' social support might provide a unique contribution to such outcomes (e.g., Chiaburu & Harrison, 2008; Chiaburu, Lorinkova, & Van Dyne, 2013; Ng & Sorensen, 2008; Self, Holt, & Schaninger, 2005). These results point to interactions within teams as an important, yet possibly neglected source for increased motivation and performance (Hüffmeier & Hertel, 2011). However, studies which have incorporated fellow team members as sources of support and have focused on performance outcomes provided to the most part correlational evidence (e.g., Chiaburu & Harrison, 2008; Osca et al., 2005; van Emmerik, 2008). Thus, on the one hand these studies lack clear information for the causal relationship between receiving fellow team members' support and additional effort. It might thereby be possible that particularly high effort and performance causes fellow team members to provide social support to this teammate to aid his/her performance and appreciate his/her effort. Thus, the reverse relation

between support reception and high levels of performance might also be plausible. On the other hand, it remains unclear whether receiving fellow team members' social support can indeed trigger effort gains, that is, increased effort beyond the level of individual work (Hertel, 2000), or whether receiving social support merely leads to the absence of effort losses (effort below the level of individual work).[2] Both alternatives – actual effort gains and the absence of effort losses – are thinkable but have different consequences for the implementation of support within teams. Thus, research incorporating clear baseline conditions and allowing for causal inferences is needed to provide unambiguous evidence for the additionally motivating effects of fellow team members' social support. A first investigation of fellow team member's social support in a controlled laboratory setting indicated that even effort impairments due to social support might occur (cf. Irwin, Feltz, & Kerr, 2013). Although several alternative explanations for these results are plausibly offered by the authors, further research is needed to provide a more conclusive answer to the question of whether fellow team member's social support can indeed trigger additional effort in the support recipient.

This dissertation addresses the lack of social support research in regard to the motivational consequences of support reception and extends previous research in several ways. First, this research focuses on the question whether receiving fellow team members' support and particularly affective social support can indeed lead to effort gains within teamwork settings beyond the level of individual work and teamwork without support. By incorporating clear baseline conditions and experimentally manipulating support reception causal evidence for the motivating effects of fellow team members' affective social support can be provided. In addition, between-person research on the motivating effects of social support (e.g., Eisenberger et al., 2001; Freeman & Rees, 2008; van Emmerik, 2008) is extended by focusing on dynamic short-term within-person relationships. Taking a within-person perspective contributes importantly to the question whether fellow team members' support can explain varying levels of exerted effort in different situations or on different days. Together, the results contribute to a better understanding of individual team member's effort gains and further aid the application of motivating means in various teamwork contexts. Second, this dissertation is the first empirical research to examine different types of affective social support – social encouragement and social recognition – (Hüffmeier & Hertel, 2011) in

[2] Motivation can be understood as an overarching construct which incorporates the effort and direction of behavior (e.g., Geen, 1995). Effort in turn reflects more specifically the intensity as well as the persistence of behavior. Thus, the more specific term effort gains instead of motivation gains will be used in this dissertation.

their independent effect on effort gains. Furthermore, this dissertation provides in addition to previous research on social support (e.g., Bishop, Scott, & Burroughs, 2000; Eisenberger et al., 2001) insights into the underlying mediating processes of both types of affective social support in their effect on effort gains. As the provision of both types of affective social support might not always be adequate or possible, investigating whether and how each type of affective support relates to additional effort, aids in guiding team members to provide affective support to one another in an effective way. Third, the motivational consequences of fellow team members' affective support are addressed at several levels of psychological functioning; lay theories about motivating group work, effort intentions, performance behavior, and subjective investments of effort. By focusing on several levels of psychological functioning, important insights are provided into the levels at which fellow team members' affective support is indeed effective. Finally, this dissertation provides initial evidence for the validity of the Model of Social Support within Teams (MSST; Hüffmeier & Hertel, 2011) which represents a theoretical framework for the effects of fellow team members' social support on effort and performance. In addition, several theoretical extensions of the MSST are proposed and initially empirically supported contributing to a better understanding of when and how affective social support triggers additional effort gains.

1.2 Theoretical background

In the following sections the theoretical background of this dissertation will be presented. I will first elaborate on effort gains and effort losses within the context of teamwork. Subsequently, the concept of social support will be defined and distinguished from related concepts. Following, I will introduce the MSST (Hüffmeier & Hertel, 2011) focusing specifically on affective social support and its two subtypes social encouragement and social recognition. Based on the MSST (Hüffmeier & Hertel, 2011) and relevant theories in work and organizational psychology the study hypotheses will then derived.

1.2.1 Effort gains and effort losses

Before investigating effort gains in teams, research has largely focused on process losses in teams indicating that teamwork is not in every case motivating and effective (e.g., Karau & Williams, 1993; Kerr & Bruun, 1981; Schnake, 1991). Process losses thereby indicate that the actual productivity has fallen behind the potential productivity (Steiner, 1972). Reasons for process losses in groups might be an inadequate coordination of individual contributions

and/or losses in effort of individual team members (e.g., Kravitz & Martin 1986; Steiner, 1972). Losses of individual effort might result from a lack of identifiability of the individual team member's contribution to the group outcome or the failure to evaluate individual contributions (e.g., Harkins, 1987; Harkins & Szymanski, 1987; Karau & Williams, 1993; Kerr & Bruun, 1981; Latané, Williams, & Harkins, 1979). Furthermore, effort losses might occur from the dispensability of the individual group member's contribution to the group outcome (e.g., Harkins & Petty, 1982; Kerr & Bruun, 1993) or a feeling of being exploited by other group members who do not expend their highest effort (e.g., Kerr, 1983; Schnake, 1991).

More recently, research has begun to focus on the motivating effects of teamwork and has established several sources of increased effort within teams. These sources include social indispensability – i.e., high instrumentality of one's contribution for the team outcome (e.g., Hertel et al., 2000), social comparison – i.e., upward comparisons with other team members (e.g., Lount & Wilk, 2014; Stroebe, Diehl, & Abakoumkin, 1996) or competitions between teams (e.g., Wittchen et al., 2011), social compensation – i.e., low performance of other group members in a valued task (e.g., K. D. Williams & Karau, 1991), and social facilitation – i.e., the presence of other team members in simple tasks (Zajonc, 1965).[3]

However, even though one of the earliest studies of motivating teamwork (Köhler, 1926) mentioned spontaneous social support among team members and speculated about the potential motivating effects, fellow team members' support has not yet been extensively researched as potential trigger of effort gains. Social support, in comparison to the so far established sources of effort gains, incorporates aspects of ongoing inter-individual interactions, focuses on relations among team members, and thus represents a dynamic aspect of teamwork (Hüffmeier & Hertel, 2011). In the following the concept of social support will be defined.

1.2.2 The concept of social support

The research of social support is not new but has become a popular field in the 1970s when it became evident that social relationships play an important role in the relation between stress and health (e.g., Caplan, 1974; Cassel, 1976; Cobb, 1976; House, Umberson, & Landis, 1988). However, this broad interest in the concept of social support has led to rather broad

[3] Although, social facilitation does not require specifically team members to be present as audience, social facilitation can nevertheless also occur in teamwork contexts.

and vague definitions (Barrera, 1986). Generally, social support refers to "helping transactions that occur between people who share the same households, schools, neighborhoods, workplaces, organizations, and other community settings" (Barrera, 2000, p. 215). In this dissertation, social support is understood as the "information leading the subject [that is, the recipient] to believe that he is cared for and loved, esteemed, and a member of a network of mutual obligations" (Cobb, 1976; p. 300). It is thereby assumed that social support is important to fulfill basic human needs, such as the need to belong (e.g., Cobb, 1976; B. H. Kaplan, Cassel, & Gore, 1977; Baumeister & Leary, 1995). S. Cohen, Gottlieb, and Underwood (2000) further stated that social support refers "to the social resources that persons perceive to be available or that are actually provided to them" (p. 4). Thus, a distinction is added between actually enacted or expressed support and the sense of or belief in support without actually receiving support (Gottlieb & Bergen, 2010). Based on the definition of social support, several conceptualizations of social support have emerged which capture different phenomena. These conceptualizations incorporate social integration, perceived social support, and the actual reception of social support (e.g., Barrera, 1986; Dunkel-Schetter & Bennett, 1990; Sarason, Sarason, & Pierce, 1994; Tardy, 1985).

Social integration

Social integration refers to the amount of social ties or relationships a person has in his/her social environment as well as the importance or strengths of these relationships (e.g., Barrera, 1986; S. Cohen & Wills, 1985). Social integration is typically either assessed by general indicators of social integration such as marital status, the presence of siblings, or by estimating structural aspects of a person's social network such as the density of a network or contact frequency (e.g., Barrera, 1986). Thereby, primary and secondary groups can be distinguished with primary groups being intimate, lasting, informal, and rather small. Secondary groups are less personal, rather formal, vary greatly in membership duration, and are rather large (e.g., Granovetter, 1973; Thoits 2011). Thus, research on social integration focuses on the quantification of the structural properties of a person's social network (Barrera, 2000). The general assumption is that the more socially connected a person is, the more social support is received from significant others when needed although this assumption is typically not assessed (e.g., Barrera, 1986).

Perceived social support

Perceived social support, in contrast to social integration, focuses on the availability of certain types of support, or the belief about the availability of certain types of support in times of need. Perceived support thereby comprises the cognitive appraisal of one's social network, its supportiveness, and the available support in this network (e.g., Barrera, 2000; Dunkel-Schetter & Bennet, 1990). Perceived support is, for example, assessed by directly asking respondents to what extent they would have a certain supportive behavior available to them combined with measures of how satisfied individuals are with the available support (e.g., Barrera, 1986; S. Cohen, Mermelstein, Kamarck, & Hoberman, 1985; Sarason, Levine, Basham, & Sarason, 1983; Wills & Shinar, 2000). Some researchers thereby argue that perceived availability of social support is at a general level more of a stable personal characteristic. Perceptions of relationships are assumed to be rather stable and to not vary greatly with changes in the social environment or any specific interaction (e.g., Kaniasty, Norms, & Murrell, 1990, Study 1; Lakey & Cassady, 1990; Sarason, Sarason, & Pierce, 1990; Sarason, Sarason, & Shearin, 1986). Furthermore, it is assumed that stable expectations are aggregated over many different support occasions (e.g., Hobfoll, 2009; Sarason, Sarason, & Pierce, 1994; Uchino, 2009) starting from early childhood experiences (e.g., Flaherty & Richman, 1986; Graves, Wang, Mead, Johnson, & Klag, 1998; Mallinckrodt, 1992; Uchino, 2009). However, there is also evidence that perceptions of general available support can be altered by the social environment (e.g., Brissette, Scheier, & Carver, 2002; Kaniasty et al., 1990, Study 2; Lakey, 1989).

In the present dissertation, perceived support is understood as an evaluation of available support. This includes the appraisal of support which is perceived to be potentially available from others but also of support which is indeed received from others (e.g., Pierce, Sarason, & Sarason, 1992). Thus, perceived support incorporates an evaluation of the supportiveness of available support. This conceptualization is in line with other approaches of perceived support which focus on how supported individuals feel from certain sources (e.g., Ducharme & Martin, 2000; Eisenberger et al., 2001; Grace & VanHeuvelen, 2015; Pierce et al., 1992).

Received social support

Received social support focuses on positive acts of support that are actually received by a focal person (e.g., Barrera, 1996, Helgeson, 1993). In social environments, support can be spontaneously offered by network members and/or individuals can deliberately seek support

from others (e.g., Barrera, 2000, Dunkel-Schetter & Bennet, 1990; Uchino, 2009). Received support, the more behavioral aspect of support (i.e., in comparison to the cognitive appraisal of support; Dunkel-Schetter & Bennet, 1990), is usually measured by asking how often several supportive behaviors have occurred in a certain time frame, for example, within the last four weeks (e.g., Barrera, Sandler, & Ramsay, 1981; Dunkel-Schetter, Feinstein, & Call, 1986). These measures, however, have the disadvantage of also being subjective in nature as they typically do not objectively assess the amount and type of support that was actually received but rely on self-reports of the recipient (e.g., Barrera, 1986; Hobfoll, 2009). It is thereby possible that some acts of support cannot be remembered (accurately) whereas other supportive behaviors important to the recipient might not be included in the questionnaire. The present dissertation manipulates the received acts of support in several studies and focuses on the immediate consequences of the reception of specific acts of support. In the following, social support will be distinguished from related concepts in work and organizational psychology.

1.2.3 Distinction of social support from related concepts in work and organizational psychology

Social support belongs with several concepts in work and organizational psychology to the broad category of prosocial behaviors (Brief & Motowidlo, 1986). Prosocial behaviors can be defined as helping behaviors that are meant to benefit others rather than the self and may contain costs for the self such as diminishments of own resources such as time or money (e.g., Brief & Motowidlo, 1986; Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007). Acts such as "helping, sharing, donating, cooperating, and volunteering" are typical forms of prosocial behaviors (Brief & Motowidlo, 1986, p. 710). Prosocial behaviors within organizations have typically been researched as organizational citizenship behaviors (OCBs; e.g., Organ, 1988; 1997; Podsakoff, Ahearne, & MacKenzie, 1997), prosocial organizational behavior (e.g., Brief & Motowidlo, 1986; George & Bettenhausen, 1990), and extra-role behavior (e.g., Katz & Kahn, 1978; Van Dyne & LePine, 1998), and can be directed towards co-workers, groups, supervisors, customers, or the organization itself (e.g., George & Bettenhausen, 1990). Generally, these constructs include behaviors that aid the long-term welfare, effectiveness, and success of the organization (Brief & Motowidlo, 1986; Organ, 1988; van Dyne & LePine, 1998). However, extra-role behavior incorporates also behaviors, such as whistle-blowing (Near & Miceli, 1985) and principled organizational dissent (Graham, 1986) which might sustain the organizational effectiveness in the long run, but risk

"severe short-term costs to the social and psychological context [of the work environment]" (Organ, 1997, p. 92). Furthermore, prosocial organizational behavior can be positive for an individual coworker or a group, but negative for the organization or vice versa (Brief & Motowidlo, 1986). OCBs are viewed as always positive for the organization's effective functioning (Organ, 1988). Social support can also be seen as always positively intended but support is directed only towards one or several individuals such as fellow team members (cf. Barrera, 2000; Cobb 1976). Further, social support focuses on personal well-being and not on the organizational (economic) well-fare (e.g., Barrera, 2000; Cobb 1976). Although social support might also contribute (indirectly) to the well-fare of the organization, this positive effect is not part of the definition of social support. Furthermore, social support does not only incorporate help but also stresses care for and appreciation of another person (cf. Cobb, 1976). The care for and appreciation of individuals is not (explicitly) incorporated in the definitions of OCBs, prosocial organizational behavior, and extra-role behavior (e.g., Brief & Motowidlo, 1986; Organ, 1988; 1997; Van Dyne & LePine, 1998) but might present rather a byproduct.

Moreover, prosocial organizational behavior might be in-role prescribed or extra-role, and may or may not entail rewards (e.g., George & Bettenhausen, 1990; Organ, 1997). In comparison, extra-role behavior and OCBs are not specified in work-role descriptions, are not directly or explicitly formally rewarded, and are not punished when not performed (e.g., Organ, 1988; Van Dyne & LePine, 1998; see Organ, 1997, for a broader definition of OCBs). Similarly, fellow team members are not required to provide social support to other team members by their formal role but support is provided voluntarily (Hüffmeier & Hertel, 2011). In addition, the definition of social support, in contrast to OCBs, prosocial organizational behavior, and extra-role behavior, stresses mutual obligations and reciprocity within social relationships or networks (e.g., Cobb, 1987; Gouldner, 1960). Thus, social support is assumed to create and to maintain reciprocal processes within a network and emphasizes dynamic interactions of giving and taking.

Social support is particularly conceptually similar to OCBs-individual (OCBI) which are actions that are intended to immediately benefit certain individuals such as fellow team members (L. J. Williams & Anderson, 1991). In contrast to social support, OCBIs are, however, assumed to benefit the organization indirectly through the benefit of individuals (L. J. Williams & Anderson, 1991). For social support a benefit for the organization is not proposed. Furthermore, social support can take place within work or organizational groups but also outside the work environment and is more broadly applicable to various team contexts.

Taken together, social support shares conceptual overlap with several concepts of prosocial behaviors in the work context. Social support is, however, distinct in that it focuses specifically and only on the individuals' well-fare, that it stresses care for and appreciation of the support recipient, and that it can occur in various contexts of group work. In the following a theoretical framework of the effects of fellow team members' social support will be described focusing particularly on the motivating effects of support.

1.2.4 The Model of Social Support within Teams

Previous research on social support has primarily focused on the positive outcomes for mental and physical health and well-being (e.g., S. Cohen & Wills, 1985; Holt-Lunstad, Smith, & Layton, 2010; Uchino, 2009). Social support might function as a personal resource which prevents strains and reduces the negative effects of stressful events (e.g., S. Cohen & Wills, 1985; Viswesvaran, Sanchez, & Fisher, 1999). However, social support might in addition have positive effects on effort and performance outcomes. In their model of work engagement, Bakker and Demerouti (2008) assume that social support as job related resource is positively related to work engagement and subsequently to various performance outcomes. However, the model focuses specifically on the work context, does not distinguish the sources and forms of support, and does not specifically target actual gains in effort.

In addressing the conceptual gap of the effects of fellow team members' social support on the recipients' effort and performance, Hüffmeier and Hertel (2011) postulated a theoretical framework – the Model of Social Support within Teams – which is applicable to various teamwork contexts. The framework focuses specifically on synergetic effects in teams, that is, higher performance due to supportive teamwork compared to working individually. The model furthermore specifies different forms of fellow team members' social support and explicates various processes through which each type of support leads to effort gains as well as coordination gains for the recipient of support.

The MSST (Hüffmeier & Hertel, 2011) assumes that fellow team members constitute a unique source of support which can affect effort and performance beyond the influences of team leaders. As team members can be assumed to interact more frequently than they interact with their supervisor or team leader, team members might know the tasks and incorporated challenges particularly well. Thus, affective support from fellow team members might be provided more regularly, might match the challenges encountered more closely, and might be better timed than supervisor or team leader support. In addition, fellow team members' social support might be particularly valuable as it is not formally prescribed by their role as is team

leader support (Hüffmeier & Hertel, 2011). Chiaburu and Harrison (2008) provided in their meta-analysis support for the unique effect of fellow team members' social support over and above the influence of supervisor support on performance outcomes.

The construct of social support can further be classified in its functional aspects including emotional or affective support as well as informational and instrumental support (e.g., Barrera & Ainlay, 1983; S. Cohen & Wills, 1985; Gottlieb, 1978; Wills 1991).[4] Affective support is defined as the experience of emotional strength, empathy and care, acceptance or appreciation because of one's own worth (e.g., Carson, Tesluk, & Marrone, 2007; Cobb, 1976), and might be expressed verbally, by listening and non-verbal gestures (e.g., Settoon & Mossholder, 2002; Zellars & Perrewé, 2001). Affective support can thereby be provided in relation to non-task related aspects, to positive aspects of a task, or to negative aspects of a task. Importantly, the focus is always on the person and not on the task (e.g., Beehr, King, & King, 1990; Fenlason & Beehr, 1994; Zellars & Perrewé, 2001). In contrast, informational support includes advice, guidance, or "help in defining, understanding, and coping with problematic events" or tasks (S. Cohen & Wills, 1985, p. 313; Wills, 1991). Instrumental support includes tangible help and assistance in solving tasks and problems and incorporates providing financial and/or material resources, services, or time (S. Cohen & Wills, 1985). Informational and instrumental support thus focus specifically on the task and can be summarized as task-related social support (Hüffmeier & Hertel, 2011).

According to the MSST, affective social support should mainly lead to increased effort in teams and in consequence to increased performance. Task-related support is, in contrast, assumed to lead primarily to increased coordination within the team and in consequence to increased performance (Hüffmeier & Hertel, 2011). However, affective and task-related support might not be entirely independent (e.g., Ducharme & Martin, 2000; Tardy, 1992). Acts of providing or merely offering information or tangible help might also be interpreted as caring and expressions of concern for the recipient (e.g., Durcharme & Martin, 2000; Tardy, 1992). Furthermore, providing affective support might also improve the exchange of information, clarify tasks and roles within the team, and in consequence increase the coordination within the team (Hüffmeier & Hertel, 2011). This dissertation places its focus primarily on the motivating consequences of affective social support. Task-related support might, however, also contribute to the motivating effects of support reception at least to a

[4] Some authors further differentiate positive social interactions or socializing and social companionship (for example, having people to do things with, to spend time with, and to provide a sense of belonging) as functional aspect of social support (e.g., Barrera & Ainlay, 1983; S. Cohen & Wills, 1985; Hirsch, 1980).

certain degree. Task-related support is thus incorporated in the initial assumptions on the effects of social support on different levels of psychological functioning. However, the specific effects of task-related support and other forms of affective support (for example, non-task related affective support) are not further addressed and specified here. In the following sections the assumptions of the effects of social support on the level of beliefs about motivating group work, effort intentions and effort gains will be presented.

1.2.4.1 Social support and beliefs about motivating group work[5]

In order to gain a thorough understanding of the positive effects of social support, the effects of fellow team members' support can be considered at several levels of psychological functioning. Investigating beliefs about motivating group work might present an important starting point as beliefs might influence behavioral intentions, task motivation as well as performance behaviors. As outlined in the example given in the beginning, fellow team members might provide support as they believe it to be helpful for the receiving fellow team member. Several aspects might affect the held beliefs about motivating group work. First, fellow team members might have made the experience themselves that receiving fellow team members' support is helpful and motivating when performing a team task. Second, in-group norms that govern the well-functioning of social groups prescribe loyalty among in-group members as well as providing and reciprocating help (e.g., P. M. Blau, 1964; Gouldner, 1960; Tajfel, 1970; Wilder, 1986). Thus, fellow team members might consciously attend to providing support to other fellow team members in times of need as well as reciprocating the support received from others (e.g., Gouldner, 1960). In consequence, individuals with teamwork experience might hold fellow team members' social support as salient aspect of motivating group work which might be similarly or even more important than other established triggers of additional effort in groups. Thus, the following is predicted:

> Hypothesis 1: People with group work experience will mention social support as a source of effort gains in groups spontaneously at least as often as social

[5] The Hypotheses 1, 2, and 3 and their derivation are adopted from Hüffmeier, J., Wessolowski, K., Randenborgh, A., Bothin, J., Schmid-Loertzer, N., & Hertel, G. (2014). Social support from fellow group members triggers additional effort in groups. *European Journal of Social Psychology*, *44*, 287-296. doi: 10.1002/ejsp.2021 [Copyright © 2014 John Wiley & Sons, Ltd.]. The method, results, and discussion are presented in Chapter 2.

indispensability, social comparison, or social compensation when being asked about motivating group work.

1.2.4.2 Social support, effort intentions and effort gains

The reception of fellow team members' support might furthermore affect the level of intended effort. Effort intentions incorporate the amount of effort individuals plan to invest in a task which subsequently affects performance outcomes (cf. Hüffmeier, Dietrich, & Hertel, 2013; Karau & Williams, 1993). Although high effort intentions might not in all cases lead to high performance outcomes, intentions might nevertheless present an important precursor of actually exerted effort. Team members who received support might be expected to reciprocate the support received (e.g., P. M. Blau, 1964; Gouldner, 1960). Support recipients might either reciprocate the benefit received by supporting another fellow team member at a later point in time, or by deliberately increasing their effort on behalf of their team in the respective task. If support is provided, for example, because individuals believe that support reception is motivating, the providers of support might hope to see consequences in effort. Being aware of these expectations, support recipients might thus increase the effort they intend to invest for their team. It might even be plausible that both forms of reciprocation – providing support and additional effort – are expected.

Several studies have indicated positive effects of social support on performance related measures. Laboratory studies have shown that participants who received either written or verbal instrumental as well as affective social support from the experimenter outperformed participants who did not receive any type of support (e.g., Kimbler, Margrett, & Johnson, 2012; Sarason, 1981; Sarason & Sarason, 1986; Tardy, 1992). Furthermore, in the sports context, social support has been researched in various disciplines focusing primarily on a general perception of being supported from various sources of the direct social environment (e.g., Freeman & Rees, 2008; Rees, Ingledew, & Hardy, 1999), or the audience (e.g., Baumeister & Steinhilber, 1984; Jamieson, 2010), but rarely stemming only from team members (for an exception see Freeman & Rees, 2010). Rees and Hardy (2004) showed positive effects of perceived support on performance related factors (for example, flow) in high level tennis players (see also, Rees et al., 1999). A study by Rees, Hardy, and Freeman (2007) as well as Freeman and Rees (2008) investigated the effects of social support on objective performance measures in high-performance golf players. Rees et al. (2007) found that self-reported received support positively influenced performance in subsequent competitions. Freeman and Rees (2008) showed that also perceived support had positive

effects on subsequent performance. Although rarely specifically targeted, research indicates that teammates, besides friends, family and coaches, constitute an important source of support for individual athletes in team settings (e.g., Rosenfeld, Richman, & Hardy, 1989) and might thus contribute importantly to individual athletes' performance.

A further line of research has investigated the effects of social support on performance focusing on business teams. In a longitudinal study, Osca and colleagues (2005) showed that self-reported received support from supervisors and colleagues was positively related to productivity indices of car manufacturing work groups. Furthermore, a meta-analysis by Humphrey, Nahrgang and Morgeson (2007) found a positive relationship between combined supervisor and coworker social support and work motivation as well as (a weaker relationship) between social support and self-reported performance indices.

Focusing specifically on fellow team members' social support, Beehr et al. (2000) investigated among student employees of a door-to-door book company whether perceived support from fellow team members was related to sales performance outcomes. The authors showed small but substantial relations between social support from fellow team members and performance outcomes. Similarly, a study by Tsai, Chen, and Liu (2007) showed a positive relation between self-reported received coworker support and self- and other rated task performance (cf. also AbuAlRub, 2004; Fisher, 1985; Xanthopoulou, Bakker, Heuven, Demerouti, & Schaufeli, 2008; for exceptions showing only effects of supervisor support but not of fellow team member's support see Baruch-Feldman, Brondolo, Ben-Dayan, & Schwartz, 2002). On the team level, Torrente, Salanova, Llorens, and Schaufeli (2012) showed that a supportive climate within teams was (among other resources) positively related to team work engagement and subsequently to performance in teams. Furthermore, in a recent meta-analysis, Chiaburu and Harrison (2008) focused specifically on social support from fellow team members in comparison to social support from supervisors. The authors found that coworker support contributed uniquely to performance related outcomes above and beyond the supportive effects of supervisor support (see also Self et al., 2005).

However, research which has provided correlational evidence for the motivating effects of fellow team members' social support (e.g., Beehr et al., 2000; Tsai et al., 2007) as noted before cannot unambiguously evidence actual effort gains (e.g., Hüffmeier & Hertel, 2011). In order to specifically investigate effort gains adequate baseline conditions such as group work conditions without support are necessary (e.g., Hertel et al., 2000; Hüffmeier & Hertel, 2011; Kerr et al., 2007). Based on the reasoning above and the initial empirical evidence, I assume for the effect of support reception on effort intentions:

Hypothesis 2: Group members receiving social support from their fellow members express higher effort intentions as compared with group members receiving no support or persons working individually.

In addition, based on the MSST (Hüffmeier & Hertel, 2011) the reception of fellow team members' affective social support should lead to additional effort gains in teams compared to individual work or group work without support. Several cognitive as well as affective processes are assumed to mediate this effect and are further explicated below. In addition, task-related support might also contribute to increased effort to a certain degree, for example, through increasing team efficacy (Hüffmeier & Hertel, 2011). Thus, beyond the level of effort intentions – a central precursor of exerted effort – social support should also have a motivating effect on actual effort expenditure. Thus, the following is predicted:

Hypothesis 3a: Group members receiving social support from their fellow members show higher effort as compared with group members receiving no support and persons working individually.

The following sections will focus more specifically on the motivating effects of particularly affective social support. Next, the two subtypes of affective social support – social encouragement and social recognition – will be differentiated.

1.2.4.3 Classification of affective support: Social encouragement and social recognition

Affective social support can be classified into social encouragement and social recognition (Hüffmeier & Hertel, 2011). Social encouragement is directed towards future performance and entails reassurance, cheering and trust; social recognition is directed towards present and past performance and entails praise, appreciation, and acknowledgement (e.g., Hüffmeier & Hertel, 2011; Luthans & Stajkovic, 2000; Wong, 2014). Social encouragement can be provided without any prior knowledge of the recipient's performance (Hüffmeier & Hertel 2011). This might, for example, occur at the outset of new teams where individual team members might not have knowledge about each other's previous performance. Social encouragement might be typically provided ahead of a challenging task. Social recognition, in contrast, builds on actual past (or currently shown) performance and might be provided when a team member is already performing a challenging task and/or when this specific task is finished. In that, social recognition is similar to positive feedback interventions. However,

feedback interventions are intentional interventions which aim at improving task performance by providing specific or detailed information about aspects of a performed task (e.g., Kluger & DeNisi, 1996). Social recognition as a facet of affective support, in contrast, aims at valuing and appreciating a person for his/her contributions to a task rather than providing detailed task-related feedback information in order to deliberately improve task performance (e.g., Barrera, 2000; Luthans & Stajkovic, 2000).

1.2.4.4 Affective social support and effort gains

Fellow team members' social encouragement and social recognition can be seen as independent sources of increased effort and performance in teams compared to working individually and group work without support (Hüffmeier & Hertel, 2011). As will be argued later, I suggest that the effect of social encouragement and social recognition on additional effort is mediated by several processes which differ in part for social encouragement and social recognition. Previous research on the motivating effects of social encouragement and social recognition has provided initial evidence for the assumed effort enhancing effects of encouragement and recognition.

Initial empirical evidence for the motivating effects of social encouragement

Several laboratory studies have investigated the effects of encouragement on maximum force execution during isometric muscle contraction tasks. These studies have evidenced that participants exerted a higher maximum force in trials in which they received verbal encouragement from an experimenter compared to trials in which they did not receive verbal encouragement (e.g., Binboğa, Tok, Catikkas, Guven, & Dane, 2013; McNair, Depledge, Brettkelly, & Stanley, 1996). Similarly, Bickers (1993) found that participants who performed a leg holding endurance task performed better when they received encouragement from the experimenter compared to when they did not receive encouragement (see also, Andreacci et al., 2002; Guyatt et al., 1984; for no effects of experimenter verbal encouragement on physical performance see, for example, Campenella, Mattacola, & Kimura, 2000). These studies although focusing on encouragement form the experimenter might also point to the motivating effects of receiving fellow team members' social encouragement.

Two recent studies specifically investigated whether fellow team members' encouragement can trigger increased endurance in plank exercise tasks compared to teamwork without encouragement employing adequate baselines for testing effort gains (Irwin et al., 2013; Max, 2014). Both studies incorporated virtual teamwork with two team partners

performing plank exercises simultaneously and visible to each other through screens. The alleged team partner of the participant was rendered superior in capabilities and did or did not provide social encouragement while performing the task. Max (2014) further distinguished inclusive (e.g., "we can do it") versus exclusive encouragement ("e.g., you can do it") and its effect on additional effort compared to teamwork without encouragement. These studies indicated, however, negative effects of fellow team members' support reception on effort gains. Contrary to predictions, participants who received encouragement from a fellow team member during the task showed significantly lower effort gains compared to participants who did not receive encouragement. Although this finding is of high value for research on the motivating effects of team support, several possible explanations might account for the obtained results. Support stemming from a superior team member who is on the same formal level as the support recipient might have been interpreted as patronizing by the recipient instead of encouraging (Irwin et al., 2013). According to the threat-to-self-esteem model (e.g., Fisher, Nadler, & Whitcher-Alagna, 1982; Nadler & Fisher, 1986, Peeters, Buunk, & Schaufeli, 1995) provided aid which induces feelings of inferiority might result in negative feelings, devaluation of the help provided or of the provider him-/herself. Although, Fisher and colleagues (1982) particularly assumed feelings of inferiority for imposed tangible support, it might nevertheless be possible that imposed encouragement from a moderately superior team partner also led to feelings of inferiority. Feelings of inferiority and a subsequent devaluation of the encouragement and/or the team member might thus have led to lowered effort compared to teamwork without encouragement. In addition, uncertainty about the intention of the supportive messages – self-support or other support – might have furthermore reduced the supportiveness of the provided encouragement (cf. Irwin et al., 2013). Furthermore, the authors used pre-recorded messages, which were played at fixed intervals. According to Max (2014), these messages were in both studies, however, pre-recorded by a non-performing confederate resulting in verbal messages that lacked any sign of strain or fatigue which would naturally occur when actually performing the task. The pre-recorded verbal messages as well as their pre-timed administration might have undermined the authenticity of the encouragement provided. Taken together, several potential methodological issues of the research by Irwin et al. (2013) and by Max (2014) might have undermined the motivating effects of fellow team members' social encouragement. Thus, a reinvestigation of the motivating effects of affective social support avoiding these potential issues is warranted.

Moreover, some of the studies which have attempted to provide evidence for the motivating effects of social encouragement operationalized encouragement as a combination of social encouragement and social recognition. Praises of present performance were presented along with statements encouraging future performance (e.g., Andreacci et al., 2002, Guyatt et al., 1984, Irwin et al., 2013; Worthington, Martin, Shumate, & Carpenter, 1983). Thus, research targeting the unique motivating effects of fellow team members' social encouragement seems to be lacking so far.

Initial empirical evidence for the motivating effects of social recognition

Focusing on social recognition, Tuckman and Sexton (1991) investigated whether students who received praise for their weekly effort in a voluntary task performed better than students who did not receive such praise. Results showed that students who received written praise outperformed students who did not receive praise over a course period of ten weeks (for similar results for verbal praise see Deci, 1971). A meta-analysis by Cameron and Pierce (1994) furthermore showed that verbal praise increased the recipients' willingness to spend time on the tasks given. Furthermore, Luthans, Rhee, Luthans, and Avey (2008) investigated whether the implementation of social recognition from team leaders significantly increased employees' performance compared to receiving no recognition. The authors thereby showed that receiving recognition indeed increased task performance (for similar findings see also Stajkovic & Luthans, 2001). A meta-analysis by Stajkovic and Luthans (2003) summarized the findings on work-related social recognition as management tool and provided evidence for the positive effects on performance outcomes.

Together, the previous research provides first indications of the potential positive effects of the reception of social encouragement and social recognition but is, however, not conclusive about the specific effects of fellow team members' affective support. A variety of studies has either focused on supervisory (or experimenter) support only (e.g., Bickers, 1993; Stajkovic & Luthans, 2001; Tardy, 1992; Tuckman & Sexton, 1991) or investigated the combined effect of fellow team members' and supervisory support (e.g., Humphrey et al., 2007; Osca et al., 2005). Based on the assumption that fellow team members' constitute an important source of social encouragement and social recognition which contributes each to increases in exerted effort in the support recipient, I assume:

Hypothesis 3b: Group members receiving social recognition from their fellow team members show higher effort as compared with group members receiving no support and persons working individually.

Hypothesis 3c: Group members receiving social encouragement from their fellow team members show higher effort as compared with group members receiving no support and persons working individually.

The assumed underlying processes for social encouragement and social recognition will be explicated in the following. Both types of affective support are assumed to convey different information for the recipient which should in turn trigger increased effort, however, through partly different underlying processes. The focus of this dissertation lays on mediating variables on the individual level. Mediation processes on the group level will not be considered. First, the proposed mediating processes which are assumed to underlie both types of affective support will be specified. Second, the mediating processes which are assumed to differ for social encouragement and for social recognition will be explicated.

1.2.4.5 The role of positive affect

The affective reaction to receiving affective support might present an important mediator in the relation between support and effort. According to the core assumption of the Affective Events Theory (Weiss & Cropanzano, 1996), discrete experiences at work can influence and alter affective reactions which in turn influence behaviors and attitudes related to task performance. Social encouragement as well as social recognition from fellow team members might constitute positive events at work, at sports competitions, in volunteer work, and other team settings which cause a positive affective reaction in the recipient. Thus, receiving social encouragement or receiving social recognition from one's fellow team members is assumed to influence the recipient's affect in a positive manner by evoking feelings of happiness, joyfulness, and/or pride (e.g., Basch & Fisher, 2000; Delin & Baumeister, 1994, Maybery, Jones-Ellis, Neale, & Arentz, 2006; Watson & Clark, 1988). Support for this assumption stems from surveys about positive work events or daily uplifts in which receiving affective support was typically included as one type of daily uplifts and regularly mentioned (e.g., Basch & Fisher, 2000; Hart, Wearing, & Headey, 1993; Herzberg, Mausner, & Snyderman, 1959; Kanner, Coyne, & Schaefer, 1981; Maybery et al., 2006). It is assumed that both the reception of social encouragement and social recognition increase positive affect.

Positive affect in turn is assumed to be positively linked to effort and performance. Several processes might account for this positive relation such as task enjoyment (e.g., Hirt, Melton, McDonald, & Harackiewicz, 1996; Isen & Reeve, 2005; Martin, Ward, Achee, & Wyer, 1993) or focusing on positive (aspects of) outcomes (e.g., George & Brief, 1996; A. Erez & Isen, 2002, Seo, Barrett, & Bartunek, 2004). Several studies have evidenced that positive affect positively influenced task related performance. A. Erez and Isen (2002) investigated the effect of positive affect on performance in an anagram task. Results showed that participants in an induced positive mood state persisted longer on the task, solved more anagrams, and reported higher motivation compared to participants in the neutral mood control group (for similar findings see also Kavanagh, 1987). Totterdell (1999) showed in the sports context that positive affect had a positive effect on professional cricket players' subjective as well as objective performance. Furthermore, Tsai et al. (2007) found a positive relation between positive affect and task performance in a field study among sales agents (see also, Foo, Uy, & Baron, 2009; and for meta-analytic findings see S. Kaplan, Bradley, Luchman, & Haynes, 2009; Lyubomirsky, King, & Diener, 2005). Although people in positive affect have been repeatedly shown to exhibit superior performance as compared to people in neutral or sad moods in various tasks (e.g., Estrada, Isen, & Young, 1994; A. Erez & Isen, 2002; Totterdell, 1999), happy people are, however, not always superior. People in sad moods tend to outperform people in positive moods in complex mental tasks in which elaborated and new strategies are necessary and heuristic shortcuts lead to false results (e.g., Bless, Clore, Schwarz, Golisano, Rabe, & Wölk, 1996; Bodenhausen, Kramer, & Süsser, 1994; Sinclair & Mark, 1995). Importantly, however, people in positive moods can be instructed to utilize elaborated processing dissolving differences between happy and sad individuals (e.g., Bless, Bohner, Schwarz, & Strack, 1990). Further, several studies have evidenced that state affect influenced task related outcomes uniquely above and beyond the influence of trait affect (e.g., Judge & Illies, 2004; J. A. Rhoades, Arnold, & Jay, 2001; Tsai et al., 2007; Zelenski, Murphy, & Jenkins, 2008). Taken the arguments described above together, I assume:

Hypothesis 4a: Positive affect partially mediates the positive relationship between social recognition and effort gains.

Hypothesis 4b: Positive affect partially mediates the positive relationship between social encouragement and effort gains.

1.2.4.6 The role of self-efficacy beliefs

The second mediating process which is assumed to be in common for the effects of social recognition and social encouragement on effort gains is self-efficacy beliefs (Hüffmeier & Hertel, 2011). Bandura (1997) defined self-efficacy as the "belief in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). Self-efficacy beliefs include the assurance or conviction that one has the competencies and capabilities to master a certain performance level (e.g., Bandura 1977). Self-efficacy beliefs might thereby reside at several levels of generality: a task specific belief in one's competencies (e.g., Bandura, 1977; Gist & Mitchell, 1992), a more overarching belief in one's competencies in a certain domain which is not limited to a specific task (for example, occupational self-efficacy; Bandura, 2006; Schyns & von Collani, 2002), and a generalized self-efficacy belief (e.g., Scholz, Gutiérrez Doña, Sud, & Schwarzer, 2002). As this dissertation focuses on the effects of single acts of fellow team members' affective support, self-efficacy beliefs which relate to specific tasks in a limited time frame such as during a working period or during a working day are targeted. Generalized self-efficacy beliefs might in contrast not be strongly altered by specific acts of affective support and are thus not further investigated here.

Bandura (1977; 1981) specified in his work four predominant antecedents or sources of self-efficacy beliefs: mastery experience – the authentic experience of successful performance, modeling – the perception of successful performance from similar others, verbal persuasion – the reception of assuring suggestions from others, and emotional arousal – the perception of one's own physiological reactions. It is assumed and has been shown that mastery experience is the predominant source for the development of a strong sense of self-efficacy (e.g., Usher & Pajares, 2006).

Social recognition by its definition praises and acknowledges successful performance or effort investments (e.g., Hüffmeier & Hertel, 2011; Luthans & Stajkovic, 2000) and might thus serve as indicator of successful mastery experiences. Particularly in team contexts, it might not always be clear which performance or effort level is considered successful. Receiving recognition might provide such information. Furthermore, successful performance might not in every case be acknowledged by one's fellow team members. However, when social recognition is provided, it should evidence the successful mastery of a task or of intermediate goals (e.g., Luthans, Stajkovic, 2000). In line with Bandura's (1977) assumption, received social recognition as indicator of mastery experiences is thus assumed to increase the recipient's self-efficacy beliefs.

A second source of self-efficacy is verbal persuasion (e.g., Bandura, 1977; 1981; Matsui, Matsui, & Ohnishi, 1990). As stated above, verbal persuasion incorporates that a person is convinced or made belief that s/he has the necessary ability to successfully master a task. Social encouragement might thereby constitute one form of verbal persuasion as it aims at strengthening and assuring the recipient in his/her competency. This source of self-efficacy might, however, be vulnerable to aspects that undermine successful persuasion. Actual experiences such as the experience of deficient performance but also upcoming self-doubts might easily disconfirm the persuasive message and thus undermine a lasting sense of self-efficacy (Bandura, 1977; 1981, for no effects of encouragement on self-efficacy see Irwin et al., 2013). However, if verbal persuasion is not undermined, it should increase self-efficacy beliefs.

Evidence for the positive effect of affective social support on self-efficacy beliefs was shown in a dairy study among flight attendants by Xanthopoulou and colleagues (2008). The authors found that affective social support provided by fellow team members was positively related to self-efficacy beliefs. Similarly, Rees and Freeman, (2007) showed a positive relation between received as well as generally perceiving affective social support from various sources and self-efficacy beliefs among athletes.

In turn, the increased actual belief or conviction that one can successfully master a task at hand should increase the effort one invests in a task and the endurance or persistence exhibited in the task when facing problems (Bandura, 1977; Hüffmeier & Hertel, 2011). Research employing social cognitive theory has assumed a positive relation between self-efficacy beliefs and performance (e.g., Bandura, 1997; Lubbers, Loughlin, & Zweig, 2005; Tsai et al., 2007; for meta-analysis see Judge & Bono, 2001; Multon, Brown, & Lent, 1991; Stajkovic & Luthans, 1998). Most evidence stems from between-person research. However, Seo and Illies (2009) showed a positive relation between self-efficacy and performance in a within-person design. The authors employed a stock market task in which learning was possible with task difficulty remaining high thus rendering the task through all trials challenging. A continuously challenging task might thereby prevent the development of overconfidence and a consequently reduction of invested resources (see also Beattie, Fakehy, & Woodman, 2014; Schmidt & DeShon, 2010).

Proponents of control theory (Powers, 1973) have shown that self-efficacy beliefs was not or negatively related to performance (e.g., Vancouver, Thompson, Tischner, & Putka, 2002; Yeo & Neal, 2006). High self-efficacy beliefs may render one overconfident which can lead to decreased effort in certain tasks as one misjudges, for example, one's progression

towards a set goal (e.g., Vancouver et al., 2002). Several contextual factors may play an important role with some factors rendering a positive self-efficacy-effort relation more likely (e.g., continuous challenge or unambiguous task requirements; Schmidt & DeShon, 2010; Seo & Ilies, 2009) and other factors rendering a negative self-efficacy-effort relation more likely (e.g., preparatory contexts; Vancouver & Kendall, 2006). Although not all context conditions for the positive or negative effects of self-efficacy on effort and performance are yet discovered (e.g., Beck & Schmidt, 2015), the incorporated tasks in the present dissertation can be considered challenging. Therefore, it seems rather unlikely that overconfidence and a subsequent reduction in effort will occur due to task settings. Thus, in line with the MSST (Hüffmeier & Hertel, 2011) and social cognitive theory (e.g., Bandura, 1991), I assume a positive relation between self-efficacy beliefs and effort. Therefore, I expect:

> Hypothesis 5a: Self-efficacy beliefs partially mediate the positive relationship between social recognition and effort gains.

> Hypothesis 5b: Self-efficacy beliefs partially mediate the positive relationship between social encouragement and effort gains.

As reasoned above, self-efficacy beliefs from social recognition should be based on the actual experience of mastery and success. In contrast, self-efficacy beliefs from social encouragement should be based on a more vulnerable belief in one's competencies which might be undermined, for example, by self-doubts. Thus, social recognition might have a larger and more lasting effect on self-efficacy beliefs compared to social encouragement (e.g., Bandura, 1977; 1981; Usher & Pajares, 2006). I therefore assume that:

> Hypothesis 5c: The relation between social recognition and self-efficacy beliefs is stronger compared to the relation between social encouragement and self-efficacy beliefs.

In the following the specific mediating processes assumed for the relation between social encouragement and effort gains will be described. Subsequently, the specific mediating processes assumed for the relation between social recognition and effort gains will be explicated.

1.2.4.7 The role of obligation to perform well

In distinguishing social encouragement and social recognition, I assume that particularly social encouragement creates a feeling of obligation to perform well for one's team. Obligation to perform well can be understood as a prescriptive belief (e.g., Eisenberger et al., 2001) and part of the reciprocal social exchange processes (e.g., P. M. Blau, 1964; Gouldner, 1960). On the organizational level, perceived organizational support theory assumes that high levels of perceived support from one's organization lead to obligations to care about and invest in one's organization (e.g., Eisenberger et al., 2001; L. Rhoades & Eisenberger, 2002). On the individual team members level similar obligations might play a role. Social encouragement should be provided by fellow team members before a task is performed. Thus, team members take time to encourage a fellow team member and invest their resources. Being a member of a team, when accepting this role, incorporates a set of expectations inherent to this social role and provides one with a set of behavioral guidelines (Thoits, 2011). In terms of mutual reciprocity, such guideline might include investing in one's team when one's team has invested in you (e.g., P. M. Blau, 1964; Gouldner, 1960). Receiving encouragement from fellow team members might thus cause feelings of obligation towards the team. This might incorporate, on the one hand, the obligation to reciprocate the favor received in kind such as providing encouragement to other team members (e.g., P. M. Blau, 1964; Gouldner, 1960). Depending on the opportunities to provide encouragement, reciprocation in kind might, however, occur much later in time. Knowing that team members took their time and invested their resources to provide encouragement might, on the other hand, also cause an obligation to perform well in the task for which encouragement was received. This obligation is thereby assumed to be developed by the support recipient due to existing reciprocity norms (e.g., P. M. Blau, 1964; Gouldner, 1960) but not due to an intentional initiation by the support providers.

In contrast, social recognition is provided while performing a task for the team or thereafter (Hüffmeier & Hertel, 2011). Recognizing and appreciating the invested effort of the performing team member(s) might rather present a way of immediate reciprocation of the already invested effort. Stated differently, because a team member invested substantial effort on behalf of his/her team, the team should feel obligated to reciprocate the invested effort in some way. Thus, received recognition should not create strong feelings of obligation to perform well but should rather fulfill existing obligations.

Initial evidence for a relation between social support and felt obligation stems from the context of perceived organizational support. Eisenberger and colleagues (2001) investigated

felt obligation between employees and their organization. The authors showed that perceived organizational support was positively related to employee's obligation to care for the organization's well-being. Furthermore, Mossholder and colleagues (2005) found specifically in team contexts that perceived coworker support correlated positively with felt obligation towards one's coworkers.

In turn, a high obligation to perform well for one's team is assumed to increase the effort one exerts for one's team in a respective task (e.g., Mossholder et al., 2005; see also Eisenberger et al., 2001, for similar assumptions on the organizational level). Initial evidence for a positive relation between obligations and effort stems from research on the organizational level. Eisenberger et al., (2001) showed in the employee-organization relationship that felt obligation mediated the relation between perceived organizational support and work performance (for similar findings see Yu & Frenkel, 2013). Taken together, I thus assume:

> Hypothesis 6: Perceived obligation to perform well partially mediates the positive relationship between social encouragement and effort gains.

1.2.4.8 The role of social pressure

A further mediating process assumed for the relation between social encouragement and effort gains is social pressure which is put on the recipient of support from the support providers (Hüffmeier & Hertel, 2011). When fellow team members provide social encouragement in reference to a certain task they might try to intentionally "push" the recipients' performance upwards by communicating implicitly expectations (Hüffmeier & Hertel, 2011). Receiving social encouragement from the team might leave the recipient with the pressure to live up to the communicated expectations and to not disappoint the team (Hüffmeier & Hertel, 2011). If no adequate consequences on performance outcomes are observable fellow team members might reduce collaboration or even ostracize this team member (e.g., Schachter, 1951; K. D. Williams, 2007). The potential negative social consequences of not living up to the performance expectations of one's team might further increase the perceived social pressure in the recipient of encouragement (Hüffmeier & Hertel, 2011). Obligations, in contrast, should be developed by the recipient of support when receiving a benefit because s/he feels as part of a system of mutual obligations and exchanges of benefits. Obligations to perform well might also incorporate expectations about task performance but these expectations might be rather developed by the recipient of encouragement him- or herself and not put on

(intentionally) from support providers. Furthermore, obligations to perform well constitute one aspect of the reciprocation process of giving and taking benefits. As reciprocal exchanges within social systems are assumed to be rather indeterminate (Gouldner, 1960), other or additional ways of adequate reciprocation of benefits received are possible when high task performance was not achieved such as reciprocation in kind. Initial empirical evidence for the role of social pressure stems from a study by Gabriele, Walker, Gill, Harber, and Fisher (2005) which evidenced as side result that social encouragement induced feelings of social pressure from the support providers (cf. also Vinokur & Caplan, 1987).

Feeling high social pressure in turn should increase exerted effort in the respective task (e.g., Ajzen, 1991; Hüffmeier & Hertel, 2011). Ajzen's Theory of Planned Action (1991) suggests that social pressures for certain behaviors affect intentions to perform these behaviors and subsequently the behavior itself. Several studies have indicated that social pressure can increase effort intentions as well as performance outcomes (e.g., Baumeister, Hamilton, & Tice 1985; Maurer & Palmer, 1999). Living up to the communicated expectations might thereby be seen as avoidance process aiming at preventing potentially negative social consequences (e.g., Hüffmeier & Hertel, 2011; e.g., Schachter, 1951; K. D. Williams, 2007). In contrast to social pressure, obligations to perform well should develop because one aims at reciprocating a benefit received but also to actively secure future benefits. Obligations to perform well might thus rather be seen as approach process aiming at securing future benefits. For social pressure, it might be possible that up from a certain level of pressure performance decreases occur (cf. Baumeister, 1984; Gardner & Cummings, 1988). However, as social encouragement can be considered as well-intended support, it might be unlikely that receiving fellow team members' encouragement increases social pressure to such a high level so that performance decreases occur. Therefore, I assume:

> Hypothesis 7: Social pressure partially mediates the positive relationship between social encouragement and effort gains.

1.2.4.9 The role of implicit goal setting

A mediating process proposed specifically for social recognition is implicit goal setting (Hüffmeier & Hertel, 2011). A goal is "the object or aim of an action" (Locke & Latham, 2002, p. 705) and might be explicitly and/or implicitly set. Explicit goal setting incorporates directly assigning goals or overtly choosing goals which might be more or less difficult and specific (e.g., M. Erez, Earley, & Hulin, 1985; Locke & Latham, 1990). For example, a

supervisor might define the goal for a team member to increase his/her production speed by 10%. Implicit goal setting incorporates setting goals individually rather due to situational circumstances without the explicit demand to do so and they might also be subconscious (e.g., Bargh, Lee-Chai, Barndollar, Gollwitzer, & Trötschel, 2001; Hertel, Kerr, Scheffler, Geister, & Messé, 2000; Morin & Latham, 2000). For example, a supervisor might share the information that the production of the company lacks behind the production schedule without inferring further consequences for the team. A team member might, however, subsequently aim at working faster.

Receiving recognition from one's fellow team members can serve as important information about which level of performance is valued and expected in the team (e.g., Delin & Baumeister, 1994; Hüffmeier & Hertel, 2011). In that sense, recognition can serve as feedback information although it contains less informational content than deliberate feedback (Kluger & DeNisi, 1996) and can thus trigger implicit goal setting. Importantly, as team members are not required to provide recognition (Hüffmeier & Hertel, 2011), it is likely that when they do team members acknowledge particularly high effort or performance. Thus, not merely standard acts of effort or performance are acknowledged but noteworthy acts of effort or performance (e.g., Delin & Baumeister, 1994; Luthans & Stajkovic, 2000). Receiving recognition might be translated into goals such as meeting the thereby communicated performance expectations of the team, receiving recognition again as a sign of belonging to the group (Baumeister & Leary, 1995), or performing even better than before. Based on the assumption that acknowledgement and praise are primarily provided for high or noteworthy effort or performance (e.g., Delin & Baumeister, 1994; Luthans & Stajkovic, 2000), these goals should also be rather high. The reception of fellow team members' recognition is thus assumed to trigger setting implicitly high performance goals for oneself (Hüffmeier & Hertel, 2011).

In turn, following Locke and Latham's goal setting theory (1990; 2002), goals should be related to performance through increased effort and/or persistence.[6] High self-set goals are assumed to increase exerted effort in a subsequent task compared to low self-set goals (cf. also Campion & Lord, 1982; Donovan & Williams, 2003).[7] This relation should be strongest

[6] In addition, focusing attention on activities that are relevant for the goal and activating relevant knowledge and skills for the task are further mechanisms linking goals and performance (e.g., Locke & Latham, 2002).

[7] This relationship is assumed to be linear if the person remains committed to his/her goal, has the ability to reach the goal, and has no other goals that stand in conflict to the original goal (e.g., Locke & Latham, 2006).

when goals are specific rather than vague (e.g., Locke & Latham, 1990; Wood, Mento, & Locke, 1987; Zetik & Stuhlmacher, 2002). Taken together, I assume:

Hypothesis 8: Implicit goal setting partially mediates the positive relationship between social recognition and effort gains.

1.2.4.10 The role of perceived support

When specific acts of fellow team members' affective support are received, they might not always be perceived or evaluated in the same manner but might be affected by various factors of the support situation. Several studies focusing on instrumental support but also affective support have suggested that well-meant support might not always perceived the way it was intended (e.g., Deelstra et al., 2003; Beehr, Bowling, & Bennett, 2010; Peeters et al., 1995). J. L. Cohen, Lakey, Tiell, and Neeley (2005) showed that provider and recipients of social support agreed more on the actually provided, that is, received support, than on the perceived supportiveness of the provided acts of support. This implicates that focusing only on whether and which type of support was received in certain situations might leave out important information of the supportive interaction, namely, how the received support was actually perceived by the recipient.

In their threat-to-self-esteem model, Fisher and colleagues (1982) explicated an interpretation of received instrumental support as either predominantly self-esteem threatening or self-supportive which affects the subsequent reactions to the received support. In the present context of the motivating effects of affective support, the strength of the effects of received support might depend on the degree to which the received acts of support are perceived as supportive. That is, the more supported the recipient feels after the reception of fellow team members' affective support the stronger should the effects on the mediating variables as well as on effort be. In contrast, if the recipient does not feel particularly supported after receiving fellow team members' well-intended affective support, no or merely small effects on effort might be expected. Initial evidence points to the importance of considering perceived support for performance related outcomes (e.g., Beehr et al., 2000; Eisenberger et al., 2001; van Emmerik, 2008). In discriminating received affective support and its perceived supportiveness, I assume:

Hypothesis 9: Perceived affective support mediates the positive relationship between received affective support and effort gains as mediating process sequentially before

positive affect, self-efficacy beliefs, social pressure, obligation to perform well, and goal setting.

Figure 1.1 shows the research model for the proposed effects of social encouragement and social recognition on effort gains.

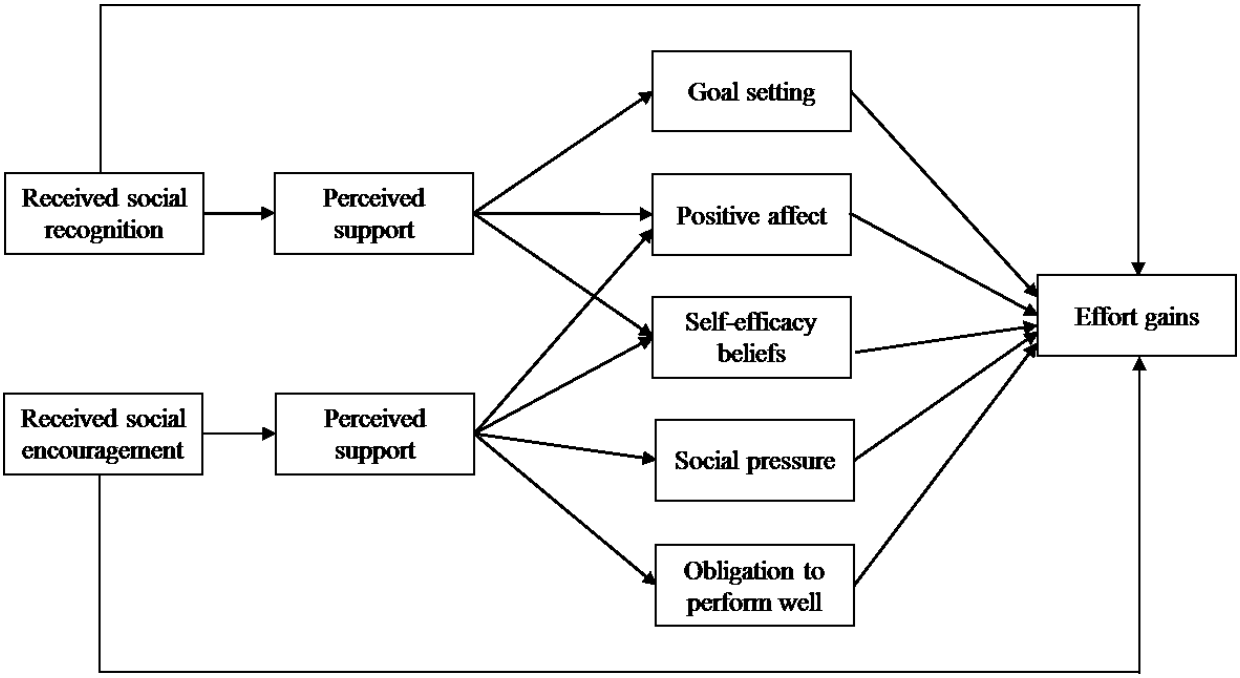

Figure 1.1. Research model.

1.3 Dissertation outline

In Chapter 2, three studies are reported that examine the motivating effects of fellow team members' social support on three levels of psychological functioning focusing on existing beliefs about motivating teamwork, effort intentions, and exerted effort. Existing beliefs about motivating group work are investigated in a short survey targeting persons with current teamwork experience (Study 1). Effort intentions are investigated with several outlined team scenarios among athletes of team sports (Study 2; cf. Hüffmeier et al., 2013). Finally, actual effort gains are investigated in a laboratory setting among student dyads with an established persistence task (Study 3; Hertel et al., 2000). This research has been published at the European Journal of Social Psychology. In Chapter 3, the validation of self-constructed and adopted scales for testing the assumed mediating processes in the following studies is examined. For this purpose, a panel study in which employees with current teamwork experience remembered and reported supportive within-team interactions is presented (Study

4). In Chapter 4, a diary study among employees in teamwork settings focuses on the within-person relationship between daily perceptions of affective support from one's team and daily work motivation (Study 5). In addition, positive affect, self-efficacy beliefs, as well as obligation to perform well are investigated as mediating processes. This study is part of a larger diary study. In Chapter 5, two experimental studies examine the independent effects of social encouragement and social recognition on effort gains along with the respective mediating processes. The first study investigates the motivating effects of social encouragement and social recognition in student dyads with a persistence task (Study 6; Hertel et al., 2000). The second study presented in Chapter 5 investigates the motivating effects of social encouragement among student dyads using a cognitive task (Study 7). In order to avoid the potential issues possibly inherent in the research by Irwin and colleagues (2013) as well as by Max (2014), the laboratory studies of this dissertation employ settings with team partners with equal capability levels (i.e., neither team partner is rendered superior in capabilities) and live affective support. Finally, in Chapter 6, the findings are discussed in regard to their theoretical and practical implications and possible directions for future research are offered.

Chapter 2
The effectiveness of social support on three levels of psychological functioning[8]

2.1 Introduction

In order to gain a thorough understanding of the positive effects of affective social support, it seems important to not only focus on the level of exerted effort but also on other levels of psychological functioning. Positive effects of fellow team members' support might thereby also be present at "earlier" stages such as the level of existing beliefs about motivating teamwork as well as effort intentions. As not only affective but also task-related support can be assumed to be perceived as motivating (e.g., Hüffmeier & Hertel, 2011; Tardy, 1992), task-related support is in addition to affective support considered in this initial investigation. In the following, in Study 1 the salience of fellow team member's social support in employees' beliefs about motivating group work is explored. In Study 2 the motivating effects of fellow team members' support on the level of effort intentions is tested. Finally, in Study 3 actual effort gains due to the reception of fellow team members' support as compared to individual work and group work without support are investigated.

2.2 Study 1

2.2.1 Method

Participants

One hundred and thirty employees with professional group work experience from various occupational fields (71 women, 58 men; $M_{(age)}$ = 39.33, SD = 12.55) voluntarily participated in this study.[9] Participants were recruited in commuter trains to survey a sample with a wide range of professions, a broad age range, and a balanced gender distribution. Participants did not receive any compensation.

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[8] This chapter is adapted from Hüffmeier, J., Wessolowski, K., Randenborgh, A., Bothin, J., Schmid-Loertzer, N., & Hertel, G. (2014). Social support from fellow group members triggers additional effort in groups. *European Journal of Social Psychology*, *44*, 287-296. doi: 10.1002/ejsp.2021 [Copyright © 2014 John Wiley & Sons, Ltd.]. To avoid redundancies and to fit to the other sections of this dissertation, the introduction section of the original paper was adapted, the general discussion was shortened, personal pronouns were replaced by passive sentence structures, the tables were renumbered, and Hypothesis 3 was renamed in Hypothesis 3a.

[9] One participant did not provide age and gender.

Measures

In a short survey, the participants read the following instruction:

> *Please remember situations at your job in which you worked together with others as a group. Please remember specifically situations in which the work in your group was so motivating for you that you excelled yourself. What was decisive for your increased motivation in these situations? Please name at least three reasons or triggers of additional motivation through your group.*

Focusing on general characteristics of the work environment and on social support specifically, two raters independently coded whether or not participants named characteristics of the task (e.g., task meaningfulness), of their fellow group members (e.g., high motivation), of the formal work organization (e.g., allocation of subtasks), or of interpersonal processes between group members (e.g., communication). Social support constituted a subcategory of interpersonal processes and was coded as affective support (e.g., receiving recognition, praise, reassurance, being cheered on, and cared about) or task-related support (e.g., mutual help and assistance) following the MSST (Hüffmeier & Hertel, 2011). The intra class correlation (two-way mixed) as a measure of the agreement between the two raters (Shrout & Fleiss, 1979) was initially .78, 95% confidence interval (CI) [.75, .81], and increased to .98, 95% CI [.980, .984], after the raters had discussed incongruent ratings.

2.2.2 Results and discussion

Results revealed that interpersonal processes were mentioned by 54.6% of all participants as reasons or triggers of additional motivation in groups.[10] Among those who mentioned interpersonal processes, 49.3% specifically described fellow group members' social support as experienced trigger of additional motivation. To test Hypothesis 1, the McNemar's test was employed (McNemar, 1947). Results indicated that social support (mentioned 35 times) was mentioned significantly more often than social indispensability, the most frequently mentioned (16 times) of the three often studied triggers of effort gains, $\chi^2(1) = 8.40$, $p = .005$ (cf. Table 2.1). This result thus provides empirical evidence for Hypothesis 1 and furthermore indicates that social support was mentioned more often than all three often investigated triggers of effort gains (cf. Table 2.1).

[10] Results are reported as means between the two raters.

Table 2.1

Percentages and absolute values for triggers of additional motivation reported as means between raters (Study 1; N = 130)

Trigger of additional motivation	Percentage	Absolute value
General		
Interpersonal processes[a]	54.6	71
Task	41.9	54.5
Group members	43.1	56
Formal work organization	45.8	59.5
Specific		
Social support	26.9	35[b]
Affective support	20.0	26
Task-related support	10.8	14
Social indispensability	12.3	16
Social comparison	1.9	2.5
Social compensation	0.8	1

Note.
[a]Includes social support.
[b]Reports the number of people that mentioned at least one type of social support.

The types of social support mentioned included 74.3% affective support and 40.0% task-related support (for an overview, see Table 2.1).[11] Thus, in accordance with the MSST (Hüffmeier & Hertel, 2011), social support and particularly affective support were frequently perceived as sources of effort gains in people's beliefs about motivating group work. In Study 2, in a controlled experimental setting, it was investigated whether receiving affective support, as the hypothesized main source of additional effort (cf. Hüffmeier & Hertel, 2011), can indeed trigger effort gains in groups in terms of self-reported effort intentions as a direct precursor of behavior.

[11] As some participants mentioned both types of support, the reported percentages exceed 100%.

2.3 Study 2

2.3.1 Method

Participants

Ninety-four volleyball players (52 women, 42 men; $M_{(age)}$ = 26.00, SD = 13.07) of various amateur sports groups were recruited at a season opening tournament and received candy as non-monetary reward.

Experimental Task and Design

Participants completed written questionnaires describing seven similar line sprint scenarios, which many teams in volleyball practice perform on a daily base. These line sprints are thus highly familiar to active players. The first scenario, an individual sprint, was used as reference point for the subsequent group sprint scenarios (cf. Hüffmeier et al., 2013). Group sprints were framed as entailing either no support, social recognition, or social encouragement from fellow group members. Social recognition and social encouragement were realized as separate conditions because the MSST (Hüffmeier & Hertel, 2011) assumes that both processes are independent and trigger equally strong effort gains. Furthermore, group size was incorporated as an exploratory factor in order to investigate possible effects of the number of supporting group members on reported effort intentions. In accordance with Social Impact Theory (Latané, 1981), it could have been expected that a higher number of sources of social support increases the impact experienced by the target. A larger number of social support providers (N = 6) was thus compared with a smaller number of providers of support (N = 3). Finally, to control for order effects, the six group sprint scenarios were arranged in two different random orders. The experimental design thus represented a 3 (support: no support vs. social recognition vs. social encouragement) × 2 (group size: three vs. six players) × 2 (scenario order: order 1 vs. 2) design with the first two factors being within-subjects.

Procedure

For the individual scenario, participants imagined performing a line sprint between volleyball court lines twice on their own. Participants were told that their individual sprinting time is very important to the coach and would co-determine playing times (i.e., the desired outcome for motivated volleyball players). For the group scenarios, participants imagined performing the line sprints as a relay group. It was described that group performance would be the sum of

the individual group members' sprinting times and would co-determine playing times. In the group scenarios operationalizing social recognition, it was additionally described that the relay group claps and shouts ("*You are running really well! Keep it up*!") to provide appreciation of and praise for the shown performance while the participant is running. In the scenarios operationalizing social encouragement, it was explained that prior to the sprint fellow group members cheer the participant on ("*Let's go! You can do it*!", exchange high fives), to express belief in him/her and encouragement for future performance.
Completing the questionnaire took about 30 min.

Measures
After reading each scenario, participants indicated their effort intentions on two items ("*How much effort will you expend in this run*?" and "*How much dedication will you show during this run*?"; cf. Hüffmeier et al., 2013). The individual scenario was not further analyzed as it functioned as the reference for the group scenarios. For the group scenarios, the 7-point scales ranged from 1 (much less compared with running individually) to 7 (much more compared with running individually) with a scale midpoint of 4.0 termed "*as much as when running individually*" (cf. Hüffmeier et al., 2013). For the six group scenarios, the two items correlated between .83 and .87.

2.3.2 Results

The 3 (support: no support vs. social recognition vs. social encouragement) × 2 (group size: three vs. six players) × 2 (scenario order: order 1 vs. 2) ANOVA of effort intentions revealed a significant main effect for support, $F(2, 184) = 26.70$, $p < .001$, $\eta^2 = .23$, indicating differences in effort intentions in the support conditions. No other main or interaction effects were found, Fs < 1.36, indicating that neither group size nor scenario order had an effect on effort intentions.

In a more detailed analysis of the main effect of support, mean levels of intended effort were compared with the scale midpoint of 4 ("*as much as when running individually*"). The scale midpoint represents a theory consistent and clear baseline to determine group-based effort gains and losses. Ratings above (below) the scale midpoint indicated intentions to increase (reduce) one's effort when running in groups. One sample *t*-tests revealed significant increases in effort intentions for conditions with social recognition ($M = 5.80$, $SD = 0.94$), $t(93) = 18.59$, $p < .001$, $d = 1.91$ and social encouragement ($M = 5.76$, $SD = 0.97$), $t(93) = 17.55$, $p < .001$, $d = 1.80$, supporting Hypothesis 2. As mean ratings of the social recognition

and social encouragement conditions did not differ significantly, $t < 1$, and correlated highly, $r = .81$, $p < .001$, one general mean score for the conditions comprising affective support was calculated. A paired *t*-test showed significantly higher increases in effort intentions in conditions with affective support ($M = 5.78$, $SD = 0.91$) as compared with group conditions with no support ($M = 5.31$, $SD = 1.02$), $t(93) = 6.22$, $p < .001$, $d = 0.64$, further supporting Hypothesis 2. The post-hoc comparison of the no-support group condition with the scale midpoint revealed also a significant increase in effort intentions, $t(93) = 12.48$, $p < .001$, $d = 1.29$, however, this effect was weaker as in the conditions with affective support. The results thus support the underlying assumption of the MSST (Hüffmeier & Hertel, 2011) that social recognition and social encouragement are independent and equally effective triggers of effort gains in groups.

2.3.3 Discussion

In accordance with Hypothesis 2, it was demonstrated that (imagined) affective social support from fellow group members increases group members' effort intentions compared with receiving no support or performing individually. Results are thus in line with the MSST (Hüffmeier & Hertel, 2011) and the assumed in-group and reciprocity norms (e.g., Gouldner, 1960; Tajfel, 1970; cf. Study 1), which demand the reciprocation of received support by increased effort. The observed increases in effort intentions in the no-support group condition compared with performing individually can be attributed to a high indispensability for the groups' success and possibly also to the inter-group competition with other groups in this exercise (Wittchen, van Dick, & Hertel, 2011). Importantly, however, receiving social support increased intended effort well beyond the level of the no-support group condition. Self-reported effort intentions are, however, not always valid predictors of behavior (cf. Ajzen, 1991; Sheeran, 2002). Due to social desirability in the utilized group sport context or hypotheses guessing that may have resulted from comparing several group scenarios to one individual scenario, participants might have reported more favorable ratings for group work with support. However, social desirability and social demands present in Study 2 are not confounds that can or even should be avoided in the context of this research. Instead, social demands are part of the process of interest given that it was assumed that the motivational effect of social support is (at least partly) based on social norms. To overcome possible biases of self-reports and to extend the present findings to actual effort expenditure, a persistence task with behavioral performance measures was employed in the third study. Furthermore, to gain first insights into the amount and type of social support voluntarily provided,

spontaneous affective and task-related support was allowed. This also enabled a first investigation of the proposed general effect of receiving social support (including both affective and task-related support) on group members' effort gains (cf. Hüffmeier & Hertel, 2011).

2.4 Study 3

2.4.1 Method

Participants

Eighty-nine female participants, $M_{(age)}$ = 22.48, *SD* = 3.05, mostly students from the University of Münster (two participants were employed in the health and service sector), took part in this study. One participant expressed doubts about the instructions and was excluded. A lottery-based monetary reward for every randomly chosen fourth participant was paid performance-contingently.

Experimental Task and Design

An established weight-holding persistence task (Hertel et al., 2000) was administered in which effort is monotonously related to performance regardless of ability or training. Participants were instructed to hold a 0.9 kg weight with one hand above a trip rod for as long as they felt comfortable. Each participant performed four trials, two with each arm switching the performing arm after each trial. The first two trials were always performed individually. In the last two trials, participants worked either alone again (individual control condition), with a group partner from whom they did not receive support (group control condition) or with a group partner from whom they received support (group condition with support). Thus, a 3 (task condition: individual control vs. group control vs. group with support) × 2 (arm: dominant vs. non-dominant) × 2 (trial: first vs. second trial with given arm) design was employed with the last two factors being within-subjects.

Procedure

Before the session, participants were asked for any pre-existing physical conditions, which would have led to the exclusion from the experiment. Devices showing the time (watches and mobile phones) were collected from the participants and returned after the task. The task was explained leaving participants naïve about the exact number of trials and the group sessions.

Participants were instructed to perform as well as they could, lowering their arm as soon as the task became too uncomfortable to avoid injuries and total exhaustion. Written permission for videotaping the entire session was taken and recording started subsequently. The experimenter stayed in the room during all sessions, located behind the performing participant next to the video camera.

Following the first two individual trials, a group partner was introduced in the two group conditions. In the group control condition, the introduced partner was a trained female confederate to control for social support in this condition. In the group condition with support, the introduced group partner was a participant who had performed the two individual trials prior to the arrival of the second participant. As the interest was in the type and amount of support people would voluntarily provide in the employed group setting, a participants rather than a confederate was used in this condition.

In both group conditions, the first participant/confederate was hidden behind a partition in the experimental room, wearing headphones while the second participant was performing the two individual trials to prevent dissemination of any information from the individual trials. For the group trials, participants were assigned a group name ("*group blue*"), and the real/second participant was allegedly chosen at random to perform the persistence task again. The other group partner was to stand on a marked cross on the floor at a distance of 1.5 m and in a 45° angle in front of the performing partner. In the group condition with support, participants were further told that the other group member could support her fellow group partner in whatever way she felt was helpful except for helping to hold the weight. In the group control condition, no reference to support was made. The confederate was trained to act shy, avoiding explicit support of the performing participant (e.g., avoiding eye contact, neither speaking nor gesturing). In all group trials, the performing participant was not allowed to communicate with her partner, and communication was prohibited between the sessions. Performance feedback was not provided between trials. Participants were furthermore told that the group could, based on a lottery system, earn up to €100 divided equally among the group partners. Every 10 s of holding the weight above the trip rod were worth €1.40.

In the individual control condition, the last two trials were performed in the same manner as the first two trials except for the introduced monetary reward of €0.70 for every 10 s of holding the weight above the trip rod resulting in a lottery-based reward of up to €50. Dependent on the experimental condition and the order of performance in the group conditions, the experiment took 30–75 min. Rest periods between the first and the second trial

were 4 min, between the second and third trial 8 min, and between the third and the fourth trial 6min. After the last two trials, participants were thanked and debriefed.

Measures

To investigate the type of support provided, the 22 sessions of the group condition with support were rated by two raters for social encouragement (i.e., expressed belief in group members, cheering; e.g., "*I am certain you will do well on this task*.", clapping), social recognition (i.e., praise, appreciation; e.g., "*You are doing great*."), task-related support (i.e., advice; e.g., "*It helped me to count until 100*."), and distraction (e.g., talking about something task-unrelated). One point was scored for each act of support. The intraclass correlation (two-way mixed) of the agreement between the two employed raters (Shrout & Fleiss, 1979) was initially .73, 95% CI [.59, .81], increasing to .99, 95% CI [.98, .99], after their discussion of incongruent ratings. Performance was defined as the total amount of seconds the weight was held above the trip rod and measured by the experimenter with a stop watch. A second independent rater who was blind to the hypotheses recoded the performance times from the videos. The intraclass correlation (two-way mixed) as a measure of agreement between the experimenter and the second rater (Shrout & Fleiss, 1979), .993, 95% CI [.991, .995] showed close to perfect agreement. To control whether received social support influenced perceptions of indispensability, the perceived importance of the own contribution to the group outcome was assessed with two items ("*How important was your performance in the last trial*?" and "*How important was your contribution for a good result during the last trial*?") adopted from Hertel, Deter, and Konradt (2003) and measured on a 7-point scale from 1 (not much) to 7 (very much). The two items were highly correlated, $r = .81$, $p < .001$.[12] For exploratory reasons, it was also investigated whether the expected performance increase in the group condition with support was associated with increased stress levels. Experienced strain was assessed with one item, which was adopted from Hertel et al. (2000; "*How strenuous was the last trial for you*?"). It was measured on an equivalent 7-point scale after each trial.

[12] One participant was excluded from all analyses of perceived indispensability as her ratings were highly incongruent (i.e., she answered the two parallel items in a diametrically opposed manner). The correlation of the two items decreased from .81 to .67 when including this participant.

2.4.2 Results

A preliminary analysis of performance data of the individual control condition in a 2 (start with arm: dominant vs. nondominant) × 2 (kind of arm: dominant vs. nondominant) × 2 (repetition: first vs. second trial with respective arm) ANOVA with repeated measures on the last two factors revealed a significant main effect for arm, $F(1, 20) = 7.05$, $p = .015$, $\eta^2 = 0.26$. Performance was significantly higher with the dominant arm ($M = 167.7$ s, $SD = 60.3$) than with the nondominant arm ($M = 152.8$ s, $SD = 58.7$). No other main or interaction effects were observed, all Fs < 1, suggesting that performance was unaffected by the order of arms, and no significant fatigue effect was present.

For the analysis of effort gains in groups, one overall performance score was computed by subtracting average performance times in the individual trials (first and second trial) from the average performance times in the group trials (third and fourth trial, cf. Hertel et al., 2000; Kerr, Feltz, & Irwin, 2012).[13] The difference scores thus entail the performance from the individual trials as a theory consistent and clear baseline to determine group-based effort gains and losses. Effort gains in groups are indicated by positive difference scores. Please note that effort gain scores were combined for the dominant and nondominant arm based on a 3 (condition: individual control vs. group control vs. group with support) × 2 (arm: dominant vs. nondominant arm) ANOVA with repeated measures on the latter factor. There was a significant main effect for condition revealing significant differences between experimental conditions, $F(2, 63) = 15.77$, $p < .001$, partial $\eta^2 = 0.33$. Neither the main effect for arm nor the interaction was significant, all Fs < 1, indicating similar performance gains for both arms.

In a more detailed analysis of the effect for condition, a priori contrasts (first contrast: group condition with support [1], group control condition [-1], individual control condition [0]; second contrast: group condition with support [1], group control condition [0], individual control condition [-1]) yielded significantly higher increases in effort in the group condition with support than in the group control condition, $t(63) = 4.51$, $p < .001$, $d = 1.35$, and in the individual control condition, $t(63) = 5.16$, $p < .001$, $d = 1.45$, consistent with Hypothesis 3a (cf. Table 2.2). A post-hoc comparison of the group control condition with the individual control condition revealed no significant difference, $t < 1$.

[13] An alternative analysis of effort gains in groups can be realized by considering performance scores of individual trials as covariance in the main analysis of performance in the group trials (cf. Kerr et al., 2008), thereby avoiding the use of difference scores. Analyses following this approach led to an identical results pattern.

Table 2.2

Means and standard deviations of performance scores (s) and subjective ratings (Study 3; N = 88)

	Group with support		Group control		Individual control	
Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*
Performance						
Individual Trials 1 & 2	169.75	64.96	172.23	36.37	160.30	57.26
Difference scores	62.11	46.22	7.75	33.14	-0.09	39.60
Strain						
Individual Trials 1 & 2	4.43	1.53	4.27	1.10	3.82	1.42
Difference scores	1.16	1.04	1.05	1.08	1.20	0.80
Perceived indispensability Trials 3 & 4	6.12	1.06	5.76	0.91	5.11	1.23

Furthermore no significant difference occurred for perceived indispensability for the group outcome, $t(41) = 1.19$, $p = .24$, and for the strain measure, $t < 1$, between the two group conditions (cf. Table 2.2).[14] Finally, the video ratings of type of spontaneously provided support showed that affective support (encouragement and recognition; $M = 26.73$, $SD = 23.34$) clearly predominated in the support condition compared with task-related support ($M = 3.66$, $SD = 4.97$), bias-corrected accelerated 95% CI [15.09, 26.52] and distraction ($M = 6.55$, $SD = 5.65$), bias corrected accelerated 95% CI [11.16, 24.34] (cf. Table 2.3).[15]

[14] Results showed a similar pattern, $t(42) = 0.85$, $p = .40$, when including the participant with incongruent ratings for perceived indispensability.

[15] For an exploratory analysis of the distinctive predictive effects of the amount of affective and task-related support on effort gains, linear regression analyses were calculated. Results revealed affective support as a marginal predictor of effort gains in groups, $R^2 = .095$, $F(1, 20) = 2.10$, $p = .082$ (one-tailed), and task-related support as a not significant predictor of effort gains in groups, $F < 1$. These effects were observed with a relatively small sample size in this condition ($N = 22$). Note, however, that they nevertheless tend to be consistent with the theoretical model hypothesizing affective support as primary predictor of effort gains in groups.

Table 2.3

Means and standard deviations of social support provided (Study 3, N = 88)

	Type of Support							
	Encouragement		Recognition		Task-related		Rest category	
Component	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Verbal	7.70	5.73	9.41	7.71	2.36	2.77	4.07	3.38
Nonverbal	4.93	6.33	4.68	6.54	1.30	2.44	2.47	2.57

2.4.3 Discussion

In line with Hypothesis 3a, the results provide empirical evidence for the assumed effect of fellow group members' social support on individuals' performance: Receiving social support increased performance beyond the levels of group work without such support and also of individual work. These experimental results extend previous correlational evidence on social support in groups (e.g., Beehr et al., 2000; Chiaburu & Harrison, 2008) by demonstrating actual group-based performance gains on the individual level triggered by social support.

Moreover, participants perceived themselves as equally indispensable for the group outcome in both group conditions, indicating that received support did not alter perceptions of indispensability for the group (Kerr & Hertel, 2011). Noteworthy, experienced strain was comparable in the two group conditions despite the significant performance difference, reflecting the well-documented positive effects of social support on the stress–strain relation (e.g., S. Cohen & Wills, 1985; Viswesvaran et al., 1999).

Based on previous research on social indispensability (e.g., Hertel, Niemeyer, & Clauss, 2008; Kerr et al., 2007; see also Kerr & Hertel, 2011), the lack of effort gains in the group control condition as compared with individual work may at first seem surprising. However, as assumed in Study 1, group settings incorporate in-group and reciprocity norms (e.g., Gouldner, 1960; Tajfel, 1970; Wilder, 1986). The neutral, that is, nonsupporting, group member might have been perceived as violating the default expectations related to social support in team settings and might therefore have been demotivating and consequentially might have lowered participants' effort in Study 3 to the level of individual work.

Finally, participants spontaneously provided mostly affective social support, which may be partially due to the employed, rather simple task, which did not require much advice or assistance from group members. However, in line with Study 1 and the MSST (Hüffmeier

& Hertel, 2011), participants might have also provided more affective support because they believed affective support to be particularly effective in enhancing effort of others.

2.5 General discussion

The objective of the present research was to explore receiving social support as unique and so far understudied source of effort gains in groups. Consistent with the general framework (cf. Hüffmeier & Hertel, 2011), the results not only showed that social support is evident in people's beliefs about motivating group work, but that receiving social support also substantially increases effort intentions and performance compared with group work without support and individual work. Notably, the effects of fellow group members' support were consistently demonstrated across different samples (employees, active athletes, and university students) and across different tasks.

Moreover, the effect sizes for the demonstrated effort gains in groups indicate quite large effects (cf. J. Cohen, 1992), suggesting that receiving social support can be a particularly strong motivator. Descriptively, the magnitude of the obtained effect of social support in Study 3, $g = 1.42$ (comparing group work with support to individual work), was even stronger than previously established sources of effort gains: social comparison, $g = 0.41$ (Weber & Hertel, 2007), social indispensability, $g = 0.31$ (Weber & Hertel, 2007), and social compensation, $g = 0.69$ (Karau & Williams, 1993).

Importantly, the observed effects of social support are distinct from mere social facilitation effects (Zajonc, 1965). In the individual trials with one nonperforming person present – the coach (Study 2) or the experimenter (Study 3) – facilitating effects due to evaluation apprehension (e.g., Feinberg & Aiello, 2006; Guerin, 1986) were presumably present. Introducing a supporting group partner increased effort well beyond this level of individual work revealing additional effort resulting from social support. Furthermore, perceived indispensability for the group outcome (e.g., Hertel et al., 2000; Kerr & Hertel, 2011) can neither account for the demonstrated effects. In Studies 2 and 3, social indispensability was controlled for rendering the performing participant in the group conditions with and without support highly indispensable for the group outcome. The supporting group partner triggered additional effort beyond the level observed in the group condition without support, indicating that indispensability cannot account for the obtained effect. Finally, the similar results of indispensability ratings in the two group conditions (Study 3) are also inconsistent with this alternative explanation.

The present research is limited in several ways. The conducted studies demonstrate a strong effect of social support on effort intentions and performance measures. However, the psychological processes underlying this effect as specified by the MSST (Hüffmeier & Hertel, 2011) were not assessed. The MSST assumes that affective social support leads to effort gains through individual level processes such as increased self-efficacy (Bandura, 1991) or goal setting (Locke & Latham, 1990) and through group level processes as cohesion and group identification (van Dick, Tissington, & Hertel, 2009). Task-related support is assumed to operate mainly through learning and reciprocation processes within the group (Hüffmeier & Hertel, 2011). Future research is required to further investigate these processes.

Moreover, the research designs employed in Studies 2 and 3 did not allow for a specific test of the distinctive predictive effects of affective support and task-related support. As this was, however, not the aim of this first research on the motivating effects of fellow group members' support, future research should differentiate between the motivating effects of affective and task-related support. Furthermore, the demonstrated effects on performance were found employing a terminated, simple physical task with an unfamiliar fellow group member. Replications of these findings in more complex and long-term tasks with existing and larger groups are desirable. Future research could furthermore investigate, which combination of single factors (e.g., the number of supporters, the quantity of support provided, the support timing, etc.) is most meaningful in triggering effort gains in individual group members.

Moreover, Study 2 indeed indicated similar motivational effects for women and men receiving fellow group members' social support. It is, however, conceivable that characteristics of the provider of social support, such as, for instance, gender and the associated behavior expectations (cf. Eagly & Crowley, 1986), might moderate the effect of receiving fellow group members' social support on effort. Demonstrating the motivating effects of fellow group members' social support among gender-heterogeneous groups would thus further aid in generalizing the obtained findings.

Finally, the effects of social support on effort intentions and performance were investigated in separate studies in order to avoid mere-measurement effects (e.g., Morwitz, Johnson, & Schmittlein, 1993; Sherman, 1980; Sprott, Spangenberg, & Fisher, 2003). Asking participants about a certain behavior or intention might change subsequent behavior, as "people are reminded of what they should do when making predictions and then act in a way that is consistent with normative prescriptions to a greater or lesser degree than they would have absent making a prediction" (Sprott et al., 2003, p. 423). Thus, showing that social

support affects both intentions and behavior in a similar way might be more conservative (and thus conclusive) in separate studies that avoid mere-measurement effects. However, it might be valuable to investigate whether merely asking participants about their intended effort increases their exerted effort significantly and thus benefits a subsequent group task.

Taken together, the present research demonstrates that receiving fellow group members' social support is a unique and strong source of increased effort intentions and performance for group members. The considerable effect sizes and the lack of systematic research on motivating effects of dynamic group interactions warrant further specific investigations of the effect of fellow group members' social support and its context conditions.

As an initial step to further investigate the motivating effects of fellow team members' affective social support, the following panel study pre-tests several self-constructed scales for assessing the proposed mediating processes in subsequent studies. Furthermore, the scales for the mediating variables are distinguished from perceived affective support and self-rated work motivation.

Chapter 3
Validation of scales to assess the mediating variables

3.1 Introduction

This study aimed at pre-testing and validating scales for assessing the proposed mediating processes in the effect of fellow team members' affective social support on effort gains. As validated scales for the context of this dissertation were not found, scales were mainly self-constructed to focus on a specific team task. Pre-testing these scales before employing them in further studies was thereby considered important. Furthermore, adapted scales for measuring perceived affective support and work motivation were investigated alongside the mediating variables as perceived support and work motivation were also assessed in subsequent studies. Importantly, the scales for assessing the mediating variables could be distinguished from the scales for perceived affective support and work motivation.

To assess the study variables, I employed the event reconstruction method in which participants were guided to reconstruct and re-experience specific events from their daily work without directly interrupting their regular work routine (e.g., Grube, Schroer, Hentzschel, & Hertel, 2008; Hertel & Stamov-Roßnagel, 2012). By utilizing specific questions or cues in the instructions, the episodic memory of particular work events is activated and aids in re-experiencing feelings and thoughts of a work events. This method might be particularly valuable in the context of fellow team members' affective support as support reception might not occur very regularly and might be difficult to capture with traditional experience sampling methods (e.g., Hertel & Stamov-Roßnagel, 2012). In the present study, participants were asked to reconstruct and re-experience two work events in which they received social encouragement or social recognition from fellow team members.

3.2 Study 4

3.2.1 Method

3.2.1.1 Participants

The study was conducted via the German online panel PsyWeb. The online panel includes a larger amount of individuals who agreed to participate in psychological research. The participants are regularly contacted and invited to participate in online studies and surveys via

e-mail. The participation is thereby always voluntary. In the present research, about 3000 panel members received an e-mail with an invitation to participate in the study, 696 panel members opened the survey. Participants were excluded from the analysis when they did not complete at least one event (N = 299) and when they did not provide their consent to include their data in the analysis (N = 3). Furthermore, as it was possible that participants could not remember either one of the two specified events, 132 participants were thus excluded from further analyses. The final sample consisted of 262 participants (176 women, 86 men; M_{age} = 46.32, SD = 9.36) with 144 participants who completed one event and 118 participants who completed both events. In terms of education the majority of the participating employees held a university degree (41.6%) or had higher vocational training (39.8%). Participants worked on average about 55.98% of their working time in teams and reported a mean team tenure of 8.3 years (SD = 10.9). The occupational fields in the sample were healthcare (17.2%), government service and administration (16.8%), service industries (11.5%), media and IT (9.9%), industry (9.5%), and bank and insurance sector (6.9%). Some participants, 18.3% percent, did not provide information about their occupational field.

3.2.1.2 Procedure

Members of the panel were invited via a programmed invitation and received information about the general goal of the study, requirements for participation, and duration of the survey along with the link to the questionnaire. The goal of the study was framed as investigating aspects of the daily work environment that influence work motivation. Requirements for participation were regular teamwork which was not further confined. The duration for completing the questionnaire was indicated with 15 minutes. Participants were furthermore offered an individual feedback at the end of the survey.

When opening the link to the questionnaire, participants received the same information as in the e-mail invitation. After participants provided their consent to participate in the study as well as their age and gender a definition of teamwork was given:

> *Teamwork: Typical teamwork includes that you are working together with one or several other colleagues on a shared task. All of you thereby arrange and coordinate the subtasks among you. Subtasks may thereafter also be completed alone.*

Participants were then asked to indicate their average working time in teams as well as their team tenure. Subsequently, participants were asked to remember several events from their past working days and were told that the order of the subsequently presented events would be randomly determined by the computer. Participants were then guided to remember

and complete an event with social encouragement first and subsequently an event with social recognition or vice versa (cf. Table A.1 in the appendix). For the social encouragement event, participants were asked:

Please remember a situation of your last working days in which one or more colleagues (not your supervisor)

- encouraged you for an upcoming team task and/or

- expressed confidence that you would do a good job in an upcoming team task and/or

- cheered you on for an upcoming team task.

For the social recognition event, participants were asked:

Please remember a situation of your last working days in which one or more colleagues (not your supervisor)

- praised you for your performance or your effort for the team and/or

- appreciated your performance or your effort for the team and/or

- valued your performance or your effort for the team.

Following each event, participants were asked to take a moment to remember this event. Thereafter, participants indicated whether they could or could not remember a suitable event. When participants could not remember a suitable event, the next event followed or, after the second event, the survey ended. When participants could remember a suitable event, the survey continued and participants were asked to think about the occasion leading to the reception of fellow team members' support. To aid the re-experience of the event, participants were asked to think about who was present in that particular situation, where they had been in that situation, and to note briefly what had been said to them. Subsequently, the study variables were presented and answered in reference to the remembered event. To avoid potential order effects, the included mediator variables were assessed in a random order. Following the study variables, participants indicated for each event when the event had taken place and how well they could remember this event. After both events had been presented, participants provided their demographic information, could exclude their data from data analyses, and received immediate individual feedback when they provided their consent.

3.2.1.3 Measures

Prior to each block of items, participants were reminded to answer the items in relation to their remembered specific work event. In addition, each block of items included the heading "*In this situation*". If not indicated otherwise, the items were scored on a 7-point scale ranging

from 1 (“not at all true”) to 7 (“completely true”). All employed items can be found in Table 3.1.

Perceived affective support. Perceived affective support was assessed with five items adopted from Ducharme und Martin (2000). The scale was designed for the work context and measures the current state of perceived affective support from fellow team members on a general level. The items were adapted for the current study to measure perceived affective support after a specific support event (e.g., “I felt that my coworkers really cared about me.”).

Positive affect. Four items from the PANAS-X (Watson & Clark, 1994) joviality dimension were employed (e.g., “happy”). These items were chosen due to their fit to the current study and due to high factor loadings on the joviality scale (cf. Watson & Clark, 1994).

Self-efficacy. The four items for measuring self-efficacy beliefs were developed specifically for this study. The items were construed following Bandura’s (2006) recommendations for constructing items for self-efficacy measures. The items targeted specifically future team tasks and assessed the associated confidence to master these tasks (e.g., “I was confident that I could perform my future team tasks successfully.”). Furthermore, the items were constructed so that they can be employed in various team contexts and are not limited to the working context.

Social pressure. The four items to assess social pressure were specifically constructed for this study and assessed expectations and pressure from one’s team to show a good performance in future team tasks (e.g., “My team expected high me to spend a high amount of effort in future team tasks.”).

Obligation to perform well. The four items measuring perceived obligation to perform well in future team tasks were specifically developed for this study. The items targeted whether the recipients of support felt they owed their team a good performance or high effort (e.g., “I felt obligated to exert high effort for my team in future team tasks.”).

Goal setting. Four items were constructed to assess goal setting. The items’ focus was on setting performance related goals for future team tasks (e.g., “For my following team tasks, I set myself high performance goals.”).

Work motivation. The participants’ work motivation for future team tasks was assessed with three items adapted from Kleinlein (2008) as well as Hertel and colleagues (2003). The items measured the motivation as well as willingness to exert task related effort (e.g., “My work motivation for future team tasks was equivalent to:”). The items were measured on a scale ranging from 0 (“extremely low”) over the scale midpoint 100 (“normally, like on a usual

working day") to 200 ("extremely") points. Participants were asked to provide the best-fitting score.

Table 3.1

Employed items in German (Study 4)

Perceived affective support	
PAS 1	Ich hatte das Gefühl meinen Teamkollegen wirklich wichtig zu sein.
PAS 2	Ich habe mich meinen Teamkollegen nahe gefühlt.
PAS 3	Ich hatte das Gefühl, meine Teamkollegen haben sich persönlich für mich interessiert.
PAS 4	Ich habe mich von meinen Teamkollegen wertgeschätzt gefühlt.
PAS 5	Ich hatte das Gefühl, dass meine Teamkollegen mir gegenüber wohlwollend waren.
Positive affect	
AFF 1	glücklich
AFF 2	freudig
AFF 3	fröhlich
AFF 4	begeistert
Self-efficacy beliefs	
SE 1	Ich war mir sicher, dass ich meine zukünftigen Aufgaben im Team gut erfüllen kann.
SE 2	Ich war zuversichtlich, dass ich mit meinen Fähigkeiten zukünftige Aufgaben im Team sehr gut bewältigen kann.
SE 3	Ich war überzeugt, dass ich in zukünftigen Aufgaben im Team eine sehr gute Leistung erbringen kann.
SE 4	Ich wusste, dass ich die Anforderungen in zukünftigen Aufgaben im Team erfüllen kann.
Social pressure	
SP 1	Mein Team hat für weitere Teamaufgaben einen hohen Arbeitseinsatz von mir erwartet.
SP 2	Mein Team hat mich unter Druck gesetzt bei weiteren Teamaufgaben eine sehr gute Leistung zu erbringen.
SP 3	Mein Team hatte hohe Erwartungen an meine Leistung bei zukünftigen Teamaufgaben.
SP 4	Mein Team hat einen hohen Leistungsdruck für zukünftige Teamaufgaben aufgebaut.
Obligation to perform well	
OBL 1	Ich habe mich verpflichtet gefühlt mich bei weiteren Teamaufgaben für mein Team anzustrengen.
OBL 2	Ich habe mich verpflichtet gefühlt für das Team bei weiteren Teamaufgaben möglichst gut zu sein.

(continued)

Table 3.1 *(continued)*

OBL 3	Ich hatte das Gefühl, ich sollte bei weiteren Teamaufgaben für mein Team mein Bestes geben.
OBL 4	Ich hatte das Gefühl, meinem Team bei weiteren Teamaufgaben eine gute Leistung schuldig zu sein.
Goal setting	
GS 1	Ich habe mir für meine weiteren Teamaufgaben ein sehr hohes Leistungsziel gesetzt.
GS 2	Ich habe mir vorgenommen, bei meinen weiteren Teamaufgaben eine sehr gute Leistung zu erbringen.
GS 3	Mein Ziel war es, weitere Teamaufgaben so gut, wie es mir nur möglich ist, zu erledigen.
GS 4	Mein eigener Anspruch an meine Leistung in weiteren Teamaufgaben war sehr hoch.
Work motivation	
MOT 1	Meine Arbeitsmotivation für meine weiteren Teamaufgaben entsprach (0-200) ….. Punkten.
MOT 2	Meine Einsatzbereitschaft für meine weiteren Teamaufgaben entsprach (0-200) ….. Punkten.
MOT 3	Meine Leistungsbereitschaft für meine weiteren Teamaufgaben entsprach (0-200) ….. Punkten.

Note. PAS, perceived affective support; AFF, positive affect; SE, self-efficacy beliefs; SP, social pressure; OBL, obligation to perform well; GS, goals getting; MOT, work motivation.

3.2.1.4 Analytic strategy

In order to test whether the constructed items present adequate indicators for their respective latent construct and whether these constructs are distinct from another, I conducted a confirmatory factor analyses with AMOS 22.0 software (Arbuckle, 2012) with maximum likelihood estimation. The analysis was run on the first event that each participant responded to irrespective of the type of event (i.e., social encouragement or social recognition) to ensure independence of data due to repeated measures. The measurement model had 7 latent factors: perceived affective support, positive affect, self-efficacy, social pressure, obligation to perform well, goal setting and work motivation.

3.2.2 Results

Preliminary Analysis

Table 3.2 shows the means, standard deviations, alpha reliabilities, and correlations of the study variables for the first event answered and Table 3.3 shows the same statistics for the

second event. Overall, the scales showed adequate variability and no indication of floor or ceiling effects.

Common method variance

As all variables were assessed at the same time from the same source, common method variance might be an issue in this study (Podsakoff, MacKenzie, & Podsakoff, 2012). Common method variance was therefore estimated with Harman's single-factor test (e.g., Podsakoff & Organ, 1986) for the data of the first event answered. An exploratory factor analysis was thus conducted with all relevant items. Inspecting the unrotated factor solution, common method variance can be considered a serious issue in a set of data when either only a single factor emerges from the factor analysis or several factors emerge but one general factor explains the majority of the covariance among the included variables (e.g., Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Podsakoff & Organ, 1986). The results showed that no single factor emerged, but seven factors with an eigenvalue greater than one. In addition, no general factor was present, as the first factor explained 32.2% of the variance. Furthermore, as shown in the confirmatory factor analysis below, the assumed seven-factor model fit the data better than a single-factor model. This would not be expected if a substantial common method bias was present but would then lead to a better fit of the single-factor model. Additionally, Tables 3.2 and 3.3 show a diverse pattern of relationships between the study variables with several non-significant correlations which would not be the case if a strong common method bias was present. Taken together, the results indicate that common method variance due to the employed design can be concluded to not be a major issue in the present data.[16]

[16] For an additional analysis of common method variance, a single unmeasured latent common method factor underlying all of the assessed items was added to the measurement model to detect common method variance (cf. Podsakoff et al., 2012). The pattern of factor loadings with and without the common method factor was, however, not substantially different indicating further that common method variance is not a major concern in the present study.

Table 3.2

Means, standard deviations, alpha reliabilities, and correlations among study variables for Event 1 (Study 4; N = 262)

	Mean	*SD*	1	2	3	4	5	6	7
1. Perceived affective support	5.57	1.18	(.90)						
2. Positive affect	4.91	1.40	.50**	(.90)					
3. Self-efficacy	5.81	1.10	.38**	.34**	(.92)				
4. Social pressure	4.00	1.30	-.01	.04	-.07	(.81)			
5. Obligation to perform well	5.17	1.48	.20**	.17**	.14*	.43**	(.93)		
6. Goal setting	5.77	1.34	.34**	.31**	.40**	.32**	.55**	(.89)	
7. Work motivation	141.25	38.07	.36**	.44**	.29**	.48**	.30**	.13*	(.94)

Note. Alpha coefficients are reported on the diagonal.
*$p < .05$, **$p < .01$.

Table 3.3

Means, standard deviations, alpha reliabilities, and correlations among study variables for Event 2 (Study 4; N = 118)

	Mean	*SD*	1	2	3	4	5	6	7
1. Perceived affective support	5.47	1.30	(.94)						
2. Positive affect	4.92	1.48	.71**	(.93)					
3. Self-efficacy	5.72	1.20	.33**	.41**	(.97)				
4. Social pressure	4.08	1.45	-.03	.01	.08	(.86)			
5. Obligation to perform well	5.16	1.44	.29**	.23*	.16	.52**	(.93)		
6. Goal setting	5.66	1.17	.42**	.35**	.36**	.38**	.67**	(.90)	
7. Work motivation	142.06	37.82	.49**	.53**	.17	.50**	.32**	.06	(.92)

Note. Alpha coefficients are reported on the diagonal.
*$p < .05$, **$p < .01$.

Confirmatory factor analysis

A confirmatory factor analysis was conducted with all study variables but separate for the first and second event answered. A significant Mardia's test (test of multivariate kurtosis), Event 1: $z = 47.29$, $p < .001$ and Event 2: $z = 28.51$, $p < .001$, as well as the values for univariate skewness and kurtosis (cf. Table 3.4) for Event 1 and Event 2 indicated that multivariate normality was violated. However, West, Finch, and Curran (1995) recommend using maximum likelihood estimation technique as long as absolute skewness does not exceed 2 and kurtosis does not exceed 7. As the highest obtained absolute skewness was 1.47 and 1.46 for Event 1 and Event 2, respectively, and the highest absolute kurtosis was 2.38 and 2.47 for Event 1 and Event 2, respectively, the deviation from normality was well below the recommended limits (cf. also Curran, West, & Finch, 1996).

As the factors were not considered independent, the factors were allowed to covary. The model fit was determined by the root mean square error of approximation (RMSEA) which should be close to .05 for a good fit of the data to the model and less than .08 for a reasonable fit (e.g., Browne & Cudeck, 1993; Hu & Bentler, 1999). Furthermore, the standardized root mean square residual (SRMR; e.g., Bentler, 1995; Hu & Bentler, 1999) was utilized with a value close to .09 for a good fit and the comparative fit index (CFI; e.g., Bentler, 1990, Hu & Bentler, 1999) with a value close to .95. Finally, the χ^2 difference was employed to compare nested models (e.g., Barrett, 2007).

Results of the confirmatory factor analysis for the first event indicated that the initial measurement model did not fit the data quite acceptably, χ^2 (329) = 930.98, $p < .001$, CFI = .90, SRMR = .10, and RMSEA = .08. The individual factor loadings of each item on its respective latent factor were significant at $p < .001$ and ranged from .41 to .95 (standardized regression weights). The two lowest factor loadings included items of the social pressure scale, with loadings equal to .41 and .45 and communalities of .16 and .20 (cf. Table 3.5). These two factor loadings were below the commonly utilized threshold of at least .50 (e.g., G. Blau & Andersson, 2005; Cann, 2004; Mahlendorf & Wallenburg, 2013; Renn & Fedor, 2001). All other factor loadings ranged from .73 to .95.

Table 3.4

Skewness and kurtosis for all items for Event 1 and Event 2 (Study 4)

	Event 1		Event 2	
Item	Skewness	Kurtosis	Skewness	Kurtosis
PAS 1	-1.15	1.10	-1.21	1.20
PAS 2	-0.95	0.56	-0.74	0.30
PAS 3	-0.62	-0.42	-0.62	-0.36
PAS 4	-1.33	1.84	-1.16	1.24
PAS 5	-1.30	1.30	-1.35	1.74
AFF 1	-0.59	-0.35	-0.43	-0.47
AFF 2	-1.03	0.76	-0.85	0.42
AFF 3	-0.70	-0.14	-0.58	-0.45
AFF 4	-0.40	-0.54	-0.46	-0.67
SE 1	-1.45	2.38	-0.84	0.13
SE 2	-1.23	1.25	-1.18	1.68
SE 3	-1.09	0.67	-0.99	0.68
SE 4	-1.28	1.33	-1.06	0.63
SP 1	-0.78	-0.07	-0.74	-0.07
SP 2	0.96	-0.03	0.59	-0.62
SP 3	-0.94	0.41	-0.94	0.23
SP 4	0.75	-0.50	0.41	-0.93
OBL 1	-1.14	0.76	-0.77	0.17
OBL 2	-0.79	-0.19	-0.73	-0.26
OBL 3	-0.91	-0.04	-0.87	0.27
OBL 4	-0.51	-0.69	-0.54	-0.54
GS 1	-1.01	0.32	-0.90	0.42
GS 2	-1.16	1.07	-1.19	1.42
GS 3	-1.47	2.14	-1.46	2.47
GS 4	-1.14	1.04	-1.17	1.54
MOT 1	-0.27	-0.69	-0.08	-1.07
MOT 2	-0.34	-0.49	-0.16	-0.83
MOT 3	-0.33	-0.65	-0.05	-1.07

Note. PAS, perceived affective support; AFF, positive affect; SE, self-efficacy; SP, social pressure; OBL, obligation to perform well; GS, goals getting; MOT, work motivation.

Table 3.5

Factor loadings and communalities for all items for Event 1 and Event 2 (Study 4)

	Event 1		Event 2	
Item	f	h^2	f	h^2
PAS 1	.79	.62	.82	.66
PAS 2	.82	.68	.88	.77
PAS 3	.78	.61	.88	.77
PAS 4	.86	.73	.91	.83
PAS 5	.79	.63	.90	.82
AFF 1	.85	.72	.84	.70
AFF 2	.82	.67	.95	.89
AFF 3	.89	.79	.92	.85
AFF 4	.79	.62	.81	.65
SE 1	.83	.68	.90	.80
SE 2	.90	.81	.94	.89
SE 3	.95	.90	.96	.93
SE 4	.77	.60	.94	.88
SP 1	.45	.20	.62	.38
SP 2	.90	.81	.94	.89
SP 3	.41	.16	.51	.26
SP 4	.94	.89	.92	.85
OBL 1	.87	.76	.85	.73
OBL 2	.94	.89	.92	.84
OBL 3	.81	.66	.84	.70
OBL 4	.87	.75	.90	.81
GS 1	.84	.70	.90	.80
GS 2	.86	.74	.88	.78
GS 3	.73	.54	.70	.49
GS 4	.86	.73	.85	.72
MOT 1	.86	.75	.85	.72
MOT 2	.94	.88	.96	.92
MOT 3	.95	.91	.89	.78

Note. PAS, perceived affective support; AFF, positive affect; SE, self-efficacy; SP, social pressure; OBL, obligation to perform well; GS, goal setting; MOT, work motivation; f, factor loadings; h^2, communalities.

For the social pressure scale, the two low loading items reflected "expectations" which seemed to differ in the present study from actual experienced pressure reflected by the remaining two social pressure items. Perceived expectations might reflect a precursor of experienced pressure. However, expectations may or may not turn into actually felt social pressure. Thus, participants in the present study who perceived high performance expectations from their team might not have automatically felt pressured to exert high effort. It thus might be possible that the generated items assessed two different stages of social pressure. As this scale aims, however, at addressing perceived social pressure and not the existence of mere expectations within a team, I decided to exclude the two items focusing on expectations from the social pressure scale. The correlation of the two remaining items was $r = .85$.

The analysis of the reduced model (two items for the social pressure factor) led to a so-called Heywood case, that is, a negative error variance for one of the remaining social pressure items. This issue can be considered a frequent problem in factor analyses which might cause improper solutions (e.g., Marsh, 1987). The Heywood case might have occurred due to a small(er) number of items for the social pressure factor (cf. Marsh, 1987). A way of dealing with Heywood cases is to fix the violating error variances to a very small positive value, for example, .001, (e.g., Gerbing & Anderson, 1987; König, Klehe, Berchtold, & Kleinmann, 2010) which was applied in the present analysis. The model fit was then re-estimated indicating an improved and acceptable model fit, $\chi^2(279) = 563.66$, $p < .001$, CFI = .95, SRMR = .05, and RMSEA = .06, $\Delta\chi^2$ ($\Delta df = 50$) = 367.32, $p < .001$. In a further step, I compared the reduced seven-factor model to a series of alternative models to test whether the assumed model reflected the obtained data structure best. I employed chi-square differences to compare models. The fit indices of all investigated alternative models are presented in Table 3.6. The results indicated a superior fit of the reduced seven-factor model compared to all other investigated models. Thus, the measures used in the present study, with the deletion of two of the social pressure items, seem to capture distinct constructs.

Table 3.6

Model fit results for confirmatory factor analyses for Event 1 (Study 4)

Model	χ^2	df	$\Delta\chi^2$ (Δdf)	CFI	SRMR	RMSEA
1. Hypothesized seven-factor model	563.66	279		.95	.05	.06
2. Six-factor model (AFF, SE = 1 factor) [a]	1171.72	285	608.06(6)***	.84	.12	.11
3. Six-factor model (AFF, GS = 1 factor) [a]	1186.44	285	622.78(6)***	.83	.12	.11
4. Six-factor model (AFF, OBL = 1 factor)	1461.10	284	897.44(5)***	.78	.14	.13
5. Six-factor model (AFF, SP = 1 factor) [a]	1290.80	285	727.14(6)***	.82	.17	.12
6. Six-factor model (SE, GS = 1 factor) [a]	1137.97	285	574.31(6)***	.84	.13	.11
7. Six-factor model (SE, OBL = 1 factor)	1473.98	284	910.32(5)***	.78	.15	.13
8. Six-factor model (SE, SP = 1 factor)	910.11	284	346.35(5)***	.89	.08	.09
9. Six-factor model (GS, OBL = 1 factor) [a]	991.05	285	427.39(6)***	.87	.09	.10
10. Six-factor model (GS, SP = 1 factor)	948.39	284	384.73(5)***	.88	.09	.10
11 Six-factor model (OBL, SP = 1 factor)	902.01	284	338.35(5)***	.89	.09	.09
12. Three-factor model (AFF, SE, GS, OBL, SP = 1 factor)	2812.67	296	2248.34(17)***	.54	.17	.18
13. Two-factor model (PAS, AFF, SE, GS, OBL, SP = 1 factor)	3337.82	298	2774.16(19)***	.44	.17	.20
14. Two-factor model (AFF, SE, GS, OBL, SP, MOT = 1 factor)	3351.05	298	2787.39(19)***	.44	.16	.20
15. One-factor model	3860.15	299	3296.49(20)***	.35	.17	.21

Note. All alternative models were compared to the hypothesized seven-factor model. PAS, perceived affective support; AFF, positive affect; SE, self-efficacy; GS, goals setting; OBL, obligation to perform well; SP, social pressure; MOT, work motivation; CFI, Comparative Fit Index; SRMR, Standardized Root Mean Square Residual; RMSEA, Root Mean Square Error of Approximation.

[a] Error variance of one social pressure item was constrained to .001 due to a negative error variance obtained for this item.

***$p < .001$.

As an exploratory test of the reliability of the measurement model, I tested the measurement model also for the second event. However, as the sample size for the second event with $N = 118$ was rather small, the results might merely provide a tendency for model fit. The original model did, as in the first event, not fit the data well, $\chi^2(329) = 808.98$, $p < .001$, CFI = .86, SRMR = .10, and RMSEA = .11. Again, all factor loadings were significant with the two problematic social pressure items identified in Event 1 showing again the lowest factor loadings with .62 and .51, respectively. However, compared to Event 1 the factor loadings improved and were above the applied threshold of .50. All other factor loadings ranged from .70 to .96. It thus seems that the four social pressure items were answered

differently, or more specifically, more similarly when answered the second time. This is also indicated by descriptively higher intercorrelations among the four social pressure items in the second compared to the first event (cf. Table A.2 in the appendix). Answering the items more similarly the second time might be attributable to less attention when completing the items as the items were already "familiar". In addition, participants might have assumed that the four items belonged together and measured the same (or a similar) aspect of the remembered work event. This assumption might have led participants to answer the items more similarly the second time. In consequence, I placed a greater focus on how the items were answered the first time assuming that participants were more attentive the first time completing the items and might have held no specific belief about groupings of the presented items. Thus, the procedure for Event 1 was repeated for Event 2: The social pressure items focusing on expectations were excluded from further analyses and the model fit was re-estimated. The model fit improved, however, merely an acceptable fit was obtained, χ^2 (278) = 587.63, $p <$ .001, CFI = .90, SRMR = .06, RMSEA = .10, $\Delta\chi^2$ (Δdf = 51) = 221.35, $p <$ .001. However, as indicated in Table 3.7, the hypothesized seven-factor model showed a superior fit compared to all other alternative models and thus replicates the results obtained for Event 1.

Table 3.7

Model fit results for confirmatory factor analyses for Event 2 (Study 4)

Model	χ^2	df	$\Delta\chi^2$ (Δdf)	CFI	SRMR	RMSEA
1. Hypothesized seven-factor model	587.63	278		.90	.06	.10
2. Six-factor model (AFF, SE = 1 factor)	1011.06	284	423.43(6)***	.77	.17	.15
3. Six-factor model (AFF, GS = 1 factor)	934.04	284	346.41(6)***	.80	.15	.14
4. Six-factor model (AFF, OBL = 1 factor)	1027.35	284	439.72(6)***	.77	.16	.15
5. Six-factor model (AFF, SP = 1 factor)	785.75	284	198.12(6)***	.84	.09	.12
6. Six-factor model (SE, GS = 1 factor)	933.76	284	346.13(6)***	.80	.17	.14
7. Six-factor model (SE, OBL = 1 factor)	1034.08	284	446.45(6)***	.77	.17	.15
8. Six-factor model (SE, SP = 1 factor)	787.44	284	199.81(6)***	.84	.09	.12
9. Six-factor model (GS, OBL = 1 factor)	741.58	284	153.95(6)***	.86	.08	.12
10. Six-factor model (GS, SP = 1 factor)	778.21	284	190.58(6)***	.85	.09	.12
11 Six-factor model (OBL, SP = 1 factor)	756.82	284	169.19(6)***	.85	.09	.12
12. Three-factor model (AFF, SE, GS, OBL, SP = 1 factor)	1921.67	296	1334.04(18)***	.49	.20	.22
13. Two-factor model (PAS, AFF, SE, GS, OBL, SP = 1 factor)	2158.73	298	1571.10(20)***	.42	.19	.23
14. Two-factor model (AFF, SE, GS, OBL, SP, MOT = 1 factor)	2137.25	298	1549.62(20)***	.43	.19	.23
15. One-factor model	2352.63	299	1765.00(21)***	.36	.19	.24

Note. All alternative models were compared to the hypothesized seven-factor model. PAS, perceived affective support; AFF, positive affect; SE, self-efficacy; GS, goals setting; OBL, obligation to perform well; SP, social pressure; MOT, work motivation; CFI, Comparative Fit Index; SRMR, Standardized Root Mean Square Residual; RMSEA, Root Mean Square Error of Approximation.

***$p < .001$.

3.2.3 Discussion

The present study aimed at validating the self-constructed scales for assessing the mediating variables assumed in the relation between affective social support and effort gains. Furthermore, adapted scales for assessing perceived affective support and work motivation were investigated and distinguished from the scales for the mediating variables. All scales showed a good to very good internal consistency reliability. After two items form the social pressure scale focusing on expectations rather than on actual experienced pressure were excluded, the measurement model showed a satisfactory fit to the data. The assumed factor structure was superior to alternative models for both investigated support events (i.e., first and second event answered) indicating that the employed measures captured distinct constructs. In

addition, similar findings for both events further indicate initially adequate reliability of the constructed scales. Thus, the constructed scales seem adequate measures for investigating the proposed mediation processes. Furthermore, as the obtained communalities were overall high for Event 1 (excluding two social pressure items; cf. Table 3.5; $M_{Event\ 1} = .73$), the sample size of 262 participants with a 10.1 to 1 subject to variable ratio can be considered adequate for the conducted factor analyses for Event 1 (MacCallum, Widaman, Zhang, & Hong, 1999).[17]

In addition, the present findings indicate that support events with social recognition and social encouragement do occur in a certain frequency within work group settings. About two thirds of the participants who completed the survey were able to remember at least one support event. However, less than half of these participants were able to remember a second event. This might indicate that affective social support among fellow team members is indeed provided but on a rather irregular basis. Assuming that fellow team members' affective support can indeed trigger additional effort beyond the level of individual work and group work without support, the present findings indicate that the motivating potential of affective support might not be fully utilized in working teams. As the order of events was mixed, it does not seem likely that one type of affective support was easier to remember or occurred more often than the other type of affective support.

The following diary study provides a first investigation of the mediating processes between affective social support and effort within working teams. The study focuses on the effects of daily perceived affective support on daily work motivation.

[17] MacCallum et al. (2009) showed in their research on adequate sample sizes for factor analyses that communalities played the most important role for determining sample sizes.

Chapter 4
The effects of daily perceived affective support on daily work motivation[18]

4.1 Introduction

The aim of the present study was to provide an initial investigation of several mediating processes assumed in the relation between fellow team members' affective support and effort gains. The focus was laid on daily perceived affective support which was explored among employees in teamwork settings with work motivation as dependent variable.

In line with earlier reasoning (cf. Chapter 1), perceived affective support might present an important determinant of effort exertion. If a team member does not feel particularly supported from his/her team, s/he might not feel motivated to exert additional effort for his/her team. On the contrary, if a team member feels a strong sense of support, motivation for additional effort exertion on behalf of the team might be expected. On a daily basis, it seems likely that due to dynamic interactions within teams the level of perceived support of individual team members might not be identical on every single working day but might vary to a certain extend from day to day (e.g., Amabile et al., 2004; Xanthopoulou et al., 2008; Xanthopoulou et al., 2009). Daily perceived affective support might be affected by fellow team members' verbal or non-verbal acts of encouragement and recognition, unnoticed acts of affective support (e.g., Bolger, Zuckerman, & Kessler, 2000), by task-related support as it might also be interpreted as caring and concern (e.g., Ducharme & Martin, 2000; Tardy, 1992), but also by conflicts (e.g., Sandler & Barrera, 1984) on a respective day. The degree of daily perceived affective support might thereby affect daily work motivation: The higher the perceived support from one's team on a certain working day, the more motivated should individual team members be on that respective day.

Initial evidence stems from research which has focused on individual differences in general perceived support. Several studies have indicated that general perceived support was positively related to performance outcomes (e.g., Beehr et al., 2000; Bishop et al., 2000; Eisenberger et al., 2001; van Emmerik, 2008). In addition, research focusing on short-term effects of supportive interactions has furthermore evidenced positive relations between daily team support and performance related outcomes (e.g., Simbula, 2010; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009; Xanthopoulou et al., 2008). Taken together, I assume for within-person fluctuations in perceived affective support:

[18] Data from this study stem from a larger diary study which has not been published elsewhere.

Hypothesis 10: Daily perceived affective support is positively related to daily work motivation.

Several of the proposed sequentially later mediating processes between received affective social support and effort gains (cf. Figure 1.1) were investigated in the present study. In line with earlier assumptions on received affective support (cf. Chapter 1), perceived affective support on a certain day such as feeling appreciated and valued from one's team is assumed to be positively related to that day's positive affect (e.g., L. Rhoades & Eisenberger, 2002). In turn, increased daily positive affect is assumed to be positively related to daily work motivation (e.g., A. Erez & Isen, 2002; Totterdell, 1999; Tsai et al., 2007). Thus, I assume:

Hypothesis 11: Daily positive affect partially mediates the positive relation between daily perceived affective support and daily work motivation.

Furthermore, daily perceived affective support from one's team might strengthen one's self-efficacy beliefs. Feeling supported from one's team on a certain day might instill similar to verbal persuasion (e.g., Bandura, 1977; 1981) the belief that one can successfully master upcoming tasks. Feeling supported might further provide one with the sense that one can turn to one's team in times of need and help and support will be provided which then aids in mastering one's tasks. Xanthopoulou et al. (2008) showed that self-reported received affective support, which incorporates strong evaluative aspects of within-team interactions, was positively related to daily self-efficacy beliefs. In turn, increased daily self-efficacy beliefs should increase one's daily work motivation for these tasks (e.g., Hüffmeier & Hertel, 2011; Seo & Illies, 2009; Xanthopoulou et al., 2009). I thus assume:

Hypothesis 12: Daily self-efficacy partially mediates the positive relation between daily perceived affective support and daily work motivation.

Moreover, strong perceptions of support from one's team might also trigger obligations to perform well (cf. Eisenberger et al., 2001). High perceived support might thereby seem as a future benefit from one's team such that the team would be there and would provide support in times of need (cf. Eisenberger et al., 2001). The higher the perceived support the stronger might be the perceived benefit. Further, the higher the perceived benefit the stronger might be the felt obligation to perform well as part of the reciprocation process of

benefits (e.g. Gouldner, 1960). Eisenberger and colleagues (2001) provided initial support for this assumption by indicating that on the organizational level perceived organizational support was positively related to feelings of obligation towards the organization. Within the more dynamic context of teamwork, perceived affective support might not only lead to feelings of obligation to perform well on a general level but also on a daily level. Thus, daily perceived affective support from one's team is assumed to increase daily obligations to perform well which should in turn increase daily work motivation. Thus, I assume:

> Hypothesis 13: Daily obligation to perform well partially mediates the positive relation between daily perceived affective support and daily work motivation.

However, not all team members might develop strong feelings of obligation to perform well when feeling supported from their team. The individual team member's preference for group work – the general degree to which individuals rather work in groups than alone (Karau & Elsaid, 2007) – might influence the positive relation between perceived support and obligation to perform well (see also Hüffmeier & Hertel, 2011). Particularly, team members who show a strong preference for teamwork might be sensitive to the norms and expectations within teams and should care about the well-fare of the team they are part of (e.g., Karau & Elsaid, 2007; Moorman & Blakely, 1995; Stark, Shaw, & Duffy, 2007). Team members who prefer to work alone might, in contrast, be less sensitive to the norms in their team and might care less about the well-fare of their team. Thus, for team members with a low preference for teamwork perceptions of support might translate less strongly into an increased sense of obligation to perform well. The relation between perceived affective support and obligation to perform well is therefore assumed to depend on the individual's degree of preference for teamwork. I thus assume:

> Hypothesis 14: The positive relation between daily perceived affective support and daily obligation to perform well is moderated by general preference for teamwork with a stronger association for team members with a high preference for teamwork as compared with team members with a low preference for teamwork.

Figure 4.1 depicts the hypothesized model of the current study.

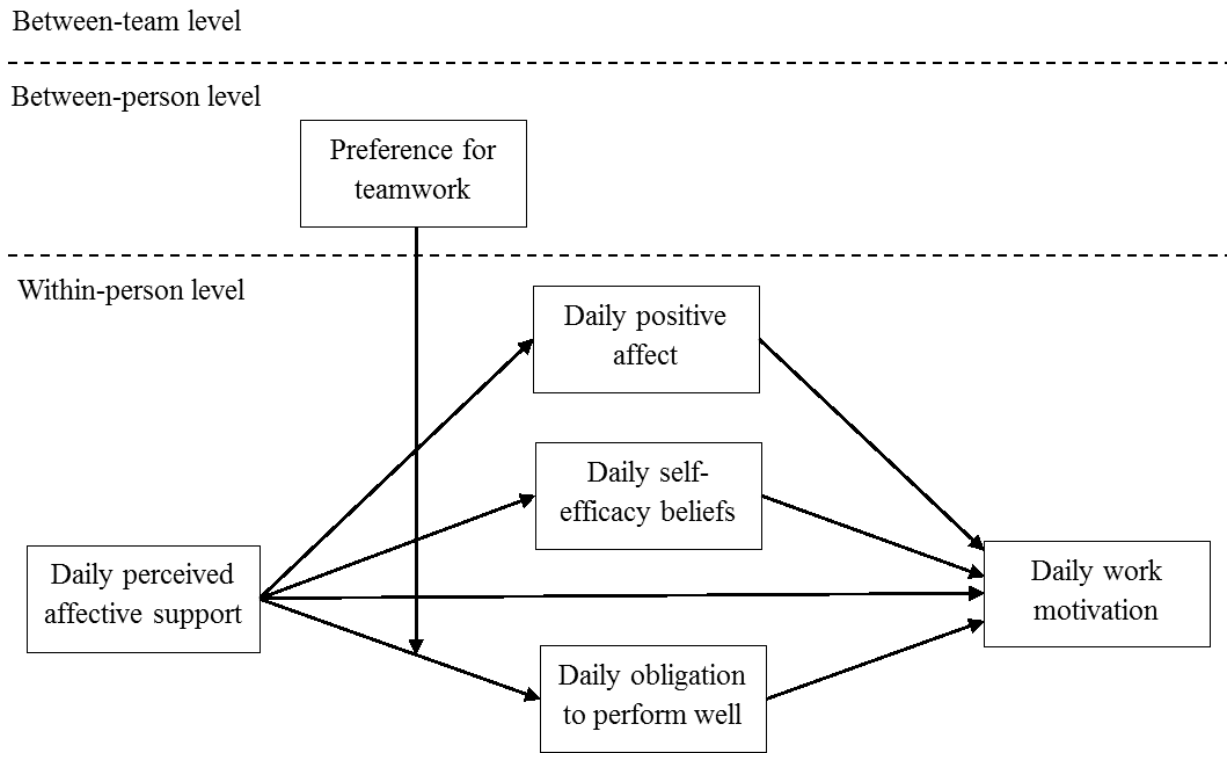

Figure 4.1. Hypothesized model of Study 5.

4.2 Study 5

4.2.1 Method

4.2.1.1 Participants and procedure

One thousand and four hundred employees from a large health and social service company were approached to participate in this dairy study. Participants were informed about an employee survey in cooperation with the Department of Organizational and Business Psychology of the University of Münster by the manager of the human resource department prior to the start of the survey. The questionnaire was implemented as paper-pencil survey and consisted of a booklet with two parts. Part 1 consisted of the diary questionnaire; part two included a general questionnaire along with the demographic information. Employees were instructed to fill in the diary questionnaire on three individually selected working days, two times a day (at the beginning of a working shift after having worked for at least 1 hour, and at the end of a working shift) in a time period of two weeks. The manager of the human resource department distributed the surveys to the respective facilities of the organization along with an anonymous return box. The return boxes had been used in previous employee surveys by the

company and were placed at the facilities and collected from the same human resource manager after the survey ended. Each questionnaire had been marked with a four-digit code prior to the distribution representing the facility in which the employee worked. A total of 321 surveys were returned (response rate = 22.9%). Participants included in the current study constitute a subsample of the total sample. Participants selected for this study worked in teamwork (N = 244). Participants who did not work in teamwork (N = 77) were not considered in this study. From the teamwork subsample, employees who failed to complete two or more daily questionnaires (N = 8), or failed to indicate their gender and age as these variables were utilized as control variables (N = 28) were excluded from further analyses. The final sample consisted of 208 employees (188 women and 20 men; M_{age} = 43.23, SD = 12.35). Employees spent 60.9% of their working time in teamwork and reported a mean company tenure of 6.6 years (SD = 6.3). Regarding the educational level, 13% of the participants held a university degree, 85.6% completed several years of professional training (35.1% of these participants held a high school diploma), 0.5% held no graduation certificate (yet), and 1% did not provide information about their education. Furthermore, 43.8% of the participants worked in education, 26.4% worked in elderly care, 14.9% worked in administration, 6.3% worked in social services, and 6.7% of the participants provided no information.

4.2.1.2 Measures

The items utilized for this study stem from a larger employee survey. Results of this survey have not been published otherwise. The items listed below focus on the research questions addressed in this study and do not present a full overview of the survey items. The items were generally measured an a 7-point scale ranging from 1 (“not at all true”) to 7 (“completely true”), differing scales for certain items are described along with the respective items.

Daily questionnaire

At the beginning of the shift. Perceived affective support from fellow teams members was measured with three items. Two items stem from the affective social support subscale from Ducharme und Martin (2000, “I feel appreciated by my coworkers today.” and “I feel that my coworkers really care about me today.”) and were pre-tested in Study 4. One item was created specifically for this study (“Today, I feel emotionally supported by my coworkers.”). Cronbach’s alpha for the three occasions ranged from .90 to .91.

At the end of the shift. For reasons of efficiency, positive affect was assessed with a single item on a smiley-face scale (cf. Jäger, 2004; Kunin, 1955). The single-item measure which was incorporated in Study 4 for explorative reasons showed a substantial positive correlation with the four-item affect measure taken from the joviality dimension of the PANAS-X (Watson & Clark, 1994) in Study 4, $r = .72$, $p < .001$. The item ("Today, my mood corresponds to the following smiley-face:") was measured on a 7-point scale with smiley faces ranging from a very sad to a very happy smiley-face. Self-efficacy beliefs were measured with three items from the German version of the Occupational Self-Efficacy Scale (Rigotti, Schyns, & Mohr, 2008; Schyns & von Collani, 2002). The items were adapted to measure day-level self-efficacy beliefs ("Today, I felt prepared for the demands in my job.", "I was able to find a solution for every problem I was confronted with today.", and "Whatever came my way today, I was able to handle it."). Cronbach's alpha for the three occasions ranged from .84 to .91. Obligation to perform well was assessed with three items chosen from the four items investigated in Study 4. Items were chosen according to their fit to the entire scale and the Cronbach's alpha of the scale when the respective item was deleted. The items were then adapted to the context of the current study ("Today, I felt obligated to my coworkers to exert high effort.", "I felt obligated today to work as good as possible in my team", and "I felt that I should make an effort for my fellow team members today."). Cronbach's alpha for the three occasions ranged from .82 to .87. Participants' work motivation was assessed with the three items employed in Study 4 (Hertel et al., 2003; Kleinlein, 2008) but were adapted for the present context ("My work motivation today was equivalent to:", "The commitment I showed at work today was equivalent to:", and "How much effort I invested at work today was equivalent to:"). The items were measured on a scale ranging from 0 ("extremely low") over the scale midpoint of 100 ("normally") to 200 ("extremely") points. Participants provided their score in a blank field. Cronbach's alpha for the three occasions ranged from .86 to .90.

General questionnaire

Preference for teamwork was assessed with three items from the group preferences subscale from the Beliefs About Groups Scale (Karau & Elsaid, 2009). Two items were positively phrased ("I prefer group work to individual work.", and "Whenever possible, I like to work with others rather than by myself.") and one item was negatively phrased ("I'm more comfortable working by myself rather than as part of a group."). The item which was negatively phrased was recoded prior to analyses. Cronbach's alpha was .62. The

sociodemographic variables assessed included age, gender, education, organizational tenure, and time spend in teamwork and were measured with a single item each.

4.2.1.3 Analytic strategy

The study employed a diary design with hierarchically structured data representing a multilevel design with days nested within employees who are in turn nested within teams (Level 1; N = 622 situations; Level 2; N = 208 employees; Level 3; N = 42 teams). All analyses were conducted with Mplus (e.g., Muthén & Muthén, 2012) with maximum likelihood estimation. The day-level predictor variables were centered to each person's mean over the 3 days to remove between-person variance; the person-level predictor variables were centered to the grand mean – the mean of the whole sample (e.g., Hofmann & Gavin, 1998; Ohly, Sonnentag, Niessen, & Zapf, 2010).

For hypotheses testing, a set of nested models was computed and compared in their fit to the data. For each analysis, I first computed an intercept only model (null model) with the intercept as the only predictor of the dependent variable. In a second step, I entered the control variables in Model 1. In the following steps, the assumed predictor variables were successively entered. For all models testing the hypotheses, the level of significance of the parameter estimates and the model fit compared to the previous model were examined. To investigate model fit, the deviance statistics (-2*log) as well as the deviation difference between the models using a chi-square test were calculated.

In order to test the mediation hypotheses, I investigated the relation between perceived affective support and the mediating variables as well as the relation between the mediating variables and work motivation controlling for perceived support. I further employed the product-of-coefficients method (e.g., MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002) to obtain estimates of the indirect effects. That is, a product of Path a (effect of the independent variable on the mediator) and Path b (the effect of the mediator on the dependent variable controlling for the independent variable) was computed (e.g., Preacher & Hayes, 2008). Furthermore, 95% confidence intervals were computed which indicate statistical significance when zero is not included within the lower and upper limit of the confidence interval (e.g., Hayes, 2009). Finally, to support the moderation hypothesis, the estimate of the interaction term was analyzed for significance. Furthermore, a more detailed analysis of the simple slopes was conducted and analyzed in regard to the assumed pattern of relationships.

4.2.2 Results

Descriptive statistics

Day-level variables were averaged across the three days.[19] Table 4.1 shows the means, standard deviations, and correlations among all study variables at the within-person and the between-person level. At the within-person level of analysis the proposed relationships between the day-level variables were positive and (marginally) significant. The demographic variables which showed a significant relation to one or more of the dependent variables were included in the subsequent analyses as control variables. Thus, organizational tenure and time spend in teamwork were excluded from further analyses; age and gender were included as control variables.

The intraclass correlations for the day-level variables were inspected on the basis of the three-level intercept-only model. For work motivation, 9.2% of the variance was attributable to between-team variations, 53.4% of the variance was attributable to between-person variations, and 37.4% of the variance was attributable to within-person variations. For social support, 2.1% of the variance was attributable to between-team fluctuations, 60.3% of the variance to between-person fluctuations, and 37.6% to within-person fluctuations. Results for positive affect indicated that 1.4% of the variance was explained by between-team variations, 27.7% of the variance by between-person variations, and 70.9% of the variance by within-person variations. Furthermore, concerning self-efficacy beliefs, 2.3% of the variance was attributable to between-team fluctuations, 58.1% to between-person fluctuations, and 39.6% to within-person fluctuations. Finally, regarding obligation to perform well, 0.8% of the variance was explained by between-team variations, 59.6% by between-person variations and 40.3% by within-person variations. Together, the results showed that most of the variance of the variables resided on Level 1 and Level 2. Only a small proportion of variance resided at Level 3. However, for work motivation, the central dependent variable, the three-level model fit significantly better than the two-level model, Δ -2*log(1) = 5.49, $p < .05$, which fit significantly better than the one-level model, Δ -2*log(1) = 237.13, $p < .001$. Thus, the subsequent analyses were conducted using three-level multilevel modeling.

As with any paper-pencil assessment, not all items were filled in by all participants across the three working days. Missing data can be considered a common problem in diary questionnaires particularly when conducting paper-pencil studies (cf. Ohly et al., 2010).

[19] For participants who reported only two situations, the day-level variables were averaged across two days.

Importantly, there were no systematic missing values in the data. Thus missing data was most likely due to inattention or oblivion. Missing values ranged from 0.32% for work motivation to 5.95% for positive affect. There are several ways of dealing with missing data when conducting multilevel analyses (e.g., Schafer & Graham, 2002). However, as I was interested in individual daily fluctuations and replacing items incorporates an approximation based on the (remaining) filled-in items, missing data were automatically deleted when conducting the analyses utilizing the Mplus default option. Importantly, Ohly et al. (2010) noted that unsystematic missing cases should not seriously impair the results (see also Bakker, Vergel, & Kuntze, 2014).

Table 4.1

Means, standard deviations, and correlations among the study variables (Study 5; N = 208 employees)

	Mean	*SD*	1	2	3	4	5	6	7	8	9	10
Person-level variables												
1. Age	43.23	12.35	-									
2. Gender	0.90	0.30	.11	-								
3. Organizational tenure[a]	6.64	6.32	.40***	.05	-							
4. Working time in teamwork[b]	60.88	32.39	-.05	.02	-.05	-						
5. Preference for teamwork	5.02	1.30	-.04	-.07	-.09	.34***	-					
Day-level variables												
6. Social support	5.14	1.26	.18*	.06	.09	.08	.19**	-	.19***	.10*	.09+	.17***
7. Positive affect	5.32	0.90	.17*	.20**	-.09	.03	.02	.26***	-	.37***	-.06	.28***
8. Self-efficacy	5.93	1.02	.14*	.09	.06	-.13+	-.03	.15*	.42***	-	.17**	.22***
9. Obligation to perform well	5.13	1.30	-.11	.04	-.02	-.03	.21**	.25***	.07	.19**	-	.10*
10. Work motivation	166.07	31.20	.31***	.09	.04	-.07	.04	.03	.35***	.22**	.09	-

Note. Correlations below the diagonal are person-level correlations ($N = 208$) with averaged data across the 3 teamwork situations. Correlations above the diagonal are day-level correlations with non-averaged date ($N = 622$). Due to missing data the sample size varies. Gender (0 = male, 1 = female).

[a]Measured in years. [b]Measured in percentage.

$^{+}p < .08$, $*p < .05$, $**p < .01$. $***p < .001$.

Test of hypotheses

In order test Hypothesis 10 that daily perceived affective support relates positively to work motivation at the end of the day, perceived support was entered after the control variables (Model 1) as day-level predictor variable (Model 2). Table 4.2 displays the results. In line with Hypothesis 10, the results evidenced that perceived affective support was indeed positively related to work motivation, $\gamma = 3.80$, $p < .01$. In addition, Model 2 showed a superior fit to the Null Model, Δ -2*log = 90.92, $df = 3$ $p < .001$, as well as to Model 1, Δ -2*log = 73.27, Δ $df = 1$, $p < .001$ (cf. Table 4.2).

In order to investigate Hypothesis 11 that daily positive affect partially mediates the relation between daily perceived affective support and daily work motivation, I first investigated the relation of perceived support and positive affect. The results are displayed in Table 4.3 and showed that daily perceived support was significantly related to daily positive affect, $\gamma = 0.21$, $p < .01$. Model 2 further showed a superior fit to the data compared to the Null Model, (Δ -2*log = 44.40, Δ $df = 3$, $p < .001$), and compared to Model 1, (Δ -2*log = 31.50, Δ $df = 1$, $p < .001$) (cf. Table 4.3). In a second step, I investigated the association between daily positive affect and daily work motivation when controlling for daily perceived support (cf. Table 4.2). Model 3 thereby evidenced a positive relation between positive affect and work motivation, $\gamma = 5.00$, $p < .001$. Model 3 further showed a superior fit to the data compared to Model 2 with only perceived support as predictor variable, (Δ -2*log = 356.08, Δ $df = 1$, $p < .001$; cf. Table 4.2). Finally, the indirect effect of daily perceived affective support on daily work motivation through daily positive affect was investigated with the product-of-coefficients method (e.g., MacKinnon et al., 2002). The results revealed a significant indirect effect as the confidence interval did not include zero, coefficient = 1.05, $SE = 0.31$, 95% CI [0.44, 1.66]. The results are thus in support of Hypothesis 11.

To test Hypothesis 12 that daily self-efficacy beliefs partially mediate the relation between daily perceived affective support and daily work motivation, I first investigated again the individual relations. The results showed that perceived support was marginally related to self-efficacy beliefs, $\gamma = 0.08$, $p = .06$ (cf. Table 4.4). Furthermore, daily self-efficacy beliefs showed a positive and significant relation with daily work motivation (when controlling for daily perceived support) as reported in Model 4 in Table 4.2, $\gamma = 5.24$, $p < .01$. Model 4 thereby showed a superior fit to the data compared to Model 2 with only daily affective support as predictor variable, (Δ -2*log = 58.16, Δ $df = 1$, $p < .001$) (cf. Table 4.2). The analysis of the indirect effect of daily perceived support on daily work motivation through daily self-efficacy beliefs revealed a significant indirect effect as the confidence interval did

not include zero, coefficient = 0.42, *SE* = 0.20, 95% CI [0.02, 0.82]. The results are thus in line with Hypothesis 12.

To investigate Hypothesis 13 that daily obligation to perform well partially mediates the relation between daily perceived affective support and daily work motivation, I focused again on the individual relations first. The results indicated that perceived support was marginally related to obligation to perform well, $\gamma = 0.09$, $p = .096$ (cf. Table 4.5). However, the relation between daily obligation to perform well and daily work motivation was not significant, $\gamma = 1.70$, $p = .11$, see Model 5 in Table 4.2. The results are thus not in support of Hypothesis 13. Additionally, the results showed a non-significant indirect effect, coefficient = 0.15, *SE* = 0.12, 95% CI [-0.08, 0.37].

Subsequently, I tested the obtained mediation effects of daily positive affect and daily self-efficacy beliefs to investigate whether both remain meaningful when incorporated simultaneously. The results showed that only positive affect, coefficient = 0.86, 95% CI [0.30, 1.43], remained as significant mediating process, whereas the indirect effect of self-efficacy beliefs was not significant anymore, coefficient = 0.28, 95% CI [-0.03, 0.60]. However, this result might nevertheless point to a tendency of daily self-efficacy beliefs to mediate the relation between daily perceived affective support and daily work motivation as the confidence interval barely included zero (corresponding *p*-value = .08).

Finally, although a stronger overall relation between daily perceived affective support and daily obligation to perform well was expected, the marginal relation might, however, be explained by a moderating effect of preference for teamwork as proposed in Hypothesis 14. In order to investigate Hypothesis 14 that the relation between daily perceived support and daily obligation to perform well is moderated by a general preference for teamwork, I first included day-level perceived support along with person-level preference for teamwork as predictors of obligation to perform well in Model 3 in Table 4.5. Model 3 thereby showed a superior fit compared to Model 1 which included only the control variables, Δ -2*log = 102.77, Δ *df* = 2, $p < .001$. Finally, the cross-level interaction term (preference for teamwork x daily perceived affective support) was included in Model 4. The results indicated a marginal cross-level interaction of preference for teamwork on the relation between daily perceived support and daily obligation to perform well, $\gamma = 0.11$, $p = .06$ (cf. Table 4.5). Furthermore, Model 4 including the cross-level interaction term showed a superior fit to the data compared to Model 3 including only the two main effects, Δ -2*log = 34.94, Δ *df* = 1, $p < .001$. In order to further examine the interaction, I followed the recommendations from Preacher, Curran, and Bauer (2006) and used values at 1 SD above and below the mean of preference for teamwork. As

shown in Figure 4.2, the relation between daily perceived affective support and daily obligation to perform well was positive and significant for employees with a high level of preference for teamwork, $\gamma = 0.27$, $p < .01$, and non-significant for employees with a low level of preference for teamwork, $\gamma = -0.02$, $p = .85$. These results are in line with Hypothesis 14 but indicate that daily perceptions of affective support only relate to daily obligation to perform well for team members with a high preference for teamwork.

Table 4.2

Multilevel estimates for models predicting daily work motivation (Study 5; N = 208 employees)

	Null Model			Model 1			Model 2			Model 3			Model 4		
Variables	*Estimate*	*SE*	*t*	*Estimate*	*SE*	*t*	*Estimate*	*SE*	*t*	*Estimate*	*SE*	*t*	*Estimate*	*SE*	*t*
Intercept	166.01	2.47	67.10***	159.04	6.12	25.99***	159.07	6.15	25.88***	159.03	6.10	26.11***	158.81	6.14	25.88***
Age				0.62	0.15	4.02***	0.63	0.16	4.05***	0.64	0.16	4.11***	0.63	0.16	4.05***
Gender				6.94	6.30	1.10	7.08	6.32	1.12	7.58	6.30	1.20	7.33	6.31	1.16
Perceived support							3.80	1.08	3.52***	2.04	1.10	1.85Δ	3.41	1.07	3.18**
Positive affect										5.00	0.96	5.20***			
Self-efficacy													5.24	1.28	4.11***
Obligation to perform well															
-2*log	5821.17			5803.52			5730.25			5374.17			5672.09		
Δ -2*log				17.65***			73.27***			356.08***			58.16***		
Δ *df*				2			1			1			1		
Variance															
Level 1	388.19	27.04		388.14	27.04		377.36	26.50		348.61	25.48		366.34	25.88	
Level 2	533.10	74.58		511.30	70.73		521.27	71.58		522.00	72.36		523.21	71.57	
Level 3	96.07	55.41		64.59	46.18		64.89	46.65		52.21	45.71		64.38	46.34	

(continued)

Table 4.2 (c*ontinued)*

	Model 5		
Variables	*Estimate*	*SE*	*t*
Intercept	158.96	6.18	25.71***
Age	0.63	0.16	4.02***
Gender	6.96	6.36	1.10
Perceived support	3.64	1.09	3.34**
Positive affect			
Self-efficacy			
Obligation to perform well	1.70	1.04	1.64
-2*log	5641.58		
Δ -2*log	88.67***		
Δ *df*	1		
Variance			
Level 1	379.45	26.91	
Level 2	524.68	72.52	
Level 3	66.70	47.65	

Note. Predictor variables on the day-level were centered to each person's mean in the respective model. Gender (0 = male, 1 = female). Model 1 is compared to the Null Model; Model 2 is compared to Model 1; Model 3, Model 4, and Model 5 are compared to Model 2.
$^{\Delta}p < .07$, $*p < .05$, $**p < .01$, $***p < .001$.

Table 4.3

Multilevel estimates for models predicting daily positive affect (Study 5; N = 208 employees)

	Null Model			Model 1			Model 2		
Variables	*Estimate*	*SE*	*t*	*Estimate*	*SE*	*t*	*Estimate*	*SE*	*t*
Intercept	5.33	0.07	81.41***	4.92	0.20	25.07***	4.93	0.21	25.20***
Age				0.01	0.01	2.33*	0.01	0.01	2.39*
Gender				0.45	0.21	2.20*	0.45	0.21	2.20*
Perceived support							0.21	0.06	3.66**
-2*log	1849.14			1836.24			1804.74		
Δ -2*log				12.90**			31.50***		
Δ *df*				2			1		
Variance									
Level 1	1.06	0.08		1.06	0.08		1.03	0.08	
Level 2	0.43	0.09		0.37	0.09		0.38	0.09	
Level 3	0.01	0.04		0.01	0.05		0.01	0.05	

Note. Predictor variables on the day-level were centered to each person's mean in the respective model. Gender (0 = male, 1 = female). Model 1 is compared to the Null Model; Model 2 is compared to Model 1.
*$p < .05$, **$p < .01$, ***$p < .001$.

Table 4.4

Multilevel estimates for models predicting daily self-efficacy beliefs (Study 5; N = 208 employees)

	Null Model			Model 1			Model 2		
Variables	*Estimate*	*SE*	*t*	*Estimate*	*SE*	*t*	*Estimate*	*SE*	*t*
Intercept	5.93	0.07	81.46***	5.69	0.23	24.79***	5.69	0.23	24.80***
Age				0.01	0.01	1.99*	0.01	0.01	2.01*
Gender				0.26	0.24	1.10	0.26	0.24	1.10
Perceived support							0.08	0.04	1.91Δ
-2*log	1740.95			1735.35			1720.70		
Δ -2*log				5.60			14.65***		
Δ *df*				2			1		
Variance									
Level 1	0.56	0.04		0.56	0.04		0.56	0.04	
Level 2	0.84	0.12		0.79	0.11		0.79	0.11	
Level 3	0.01	0.06		0.04	0.06		0.04	0.06	

Note. Predictor variables on the day-level were centered to each person's mean in the respective model. Gender (0 = male, 1 = female). Model 1 is compared to the Null Model; Model 2 is compared to Model 1.

$^{\Delta}p < .06$, $*p < .05$, $***p < .001$.

Table 4.5

Multilevel estimates for models predicting daily obligation to perform well (Study 5; N = 208 employees)

	Null Model			Model 1			Model 2			Model 3			Model 4		
Variables	*Estimate*	*SE*	*t*	*Estimate*	*SE*	*t*	*Estimate*	*SE*	*t*	*Estimate*	*SE*	*t*	*Estimate*	*SE*	*t*
Intercept	5.13	0.09	54.36***	4.99	0.30	16.81***	4.99	0.30	16.79***	4.94	0.30	16.70***	4.93	0.30	16.68***
Age				-0.01	0.01	-1.66+	-0.01	0.01	-1.61	-0.01	0.01	-1.59	-0.01	0.01	-1.59
Gender				0.16	0.31	0.51	0.16	0.31	0.52	0.21	0.31	0.67	0.22	0.31	0.72
Perceived support (PS)							0.09	0.05	1.67+	0.09	0.05	1.67+	0.12	0.08	1.64
Preference for teamwork (PT)										0.20	0.07	2.90**	0.20	0.07	2.90**
SS x PT													0.11	0.06	1.91Δ
-2*log	2018.21			2015.09			1986.97			1912.32			1877.38		
Δ -2*log				3.12			28.12***			74.65***			34.94***		
Δ *df*				2			1			1			1		
Variance															
Level 1	0.90	0.06		0.90	0.06		0.88	0.06		0.85	0.06		0.66	0.06	
Level 2	1.35	0.18		1.33	0.19		1.34	0.19		1.31	0.19		1.38	0.19	
Level 3	0.02	0.12		0.01	0.15		0.01	0.14		0.02	0.15		0.01	0.14	

Note. Predictor variables on the day-level were centered to each person's mean in the respective model. Gender (0 = male, 1 = female). Model 1 is compared to the Null Model; Model 2 is compared to Model 1; Model 3 is compared to Model 2; Model 4 is compared to Model 3.

$^{+}p < .10$, $^{\Delta}p < .06$, $^{**}p < .01$, $^{***}p < .001$.

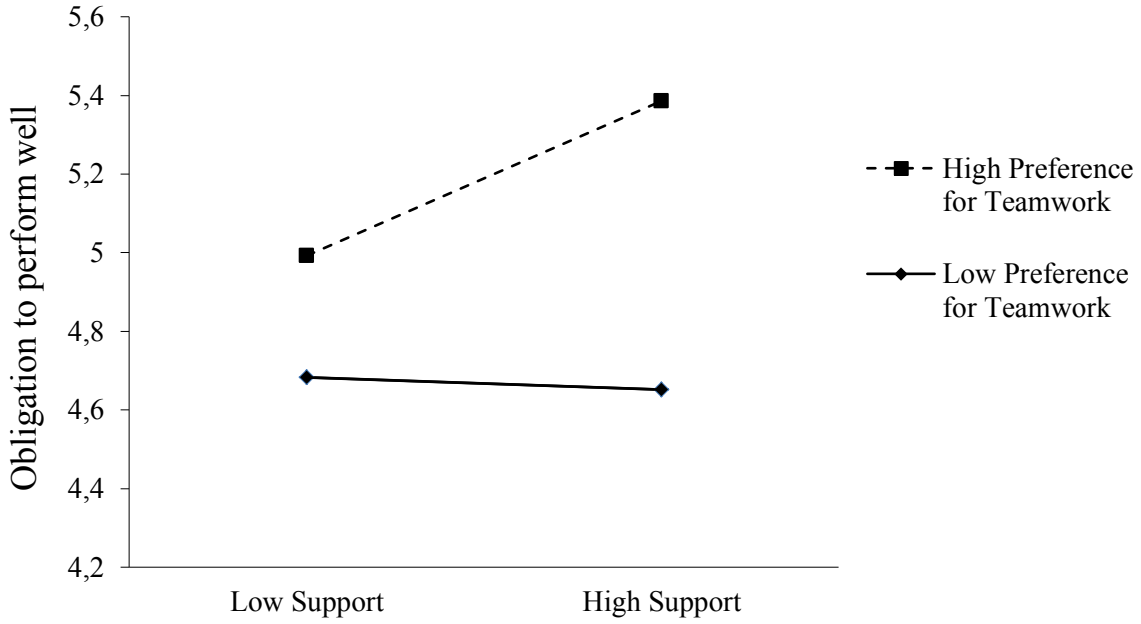

Figure 4.2. Interaction effect of person-level preference for teamwork on the within-person relation between perceived affective support and obligation to perform well.

4.2.3 Discussion

The presented diary study aimed at investigating the within-person association between perceived affective support and work motivation along with several mediating processes in the context of ongoing teamwork. In accordance with Hypothesis 10, a positive within-person association between perceived affective support at the beginning of a working shift and work motivation at the end of the working shift was demonstrated. This investigation extends previous between-person studies which have evidenced a positive relation between general perceptions of support and motivation and performance measures (e.g., Beehr et al., 2000; Freeman & Rees, 2008; van Emmerik). Furthermore, complementing earlier research on daily received support from fellow team members as well as other sources (e.g., Simbula, 2010; Xanthopoulou et al., 2008), the present study indicated that perceptions of affective support vary over rather short periods of time in established team settings. About one third of the variance in perceived affective support was thereby attributable to daily fluctuations. This study thus points to the importance of also considering within-person fluctuations of perceived support when investigating the motivating effects of fellow team members' affective support.

Moreover, in line with Hypothesis 11, daily positive affect was demonstrated as an important underlying mechanism in the relation between daily perceived affective support and daily work motivation. Particularly, daily positive affect was shown to be the strongest underlying process in the present study. Thus, positive affect might as assumed constitute an additional mediating process and thus complement the processes suggested by the MSST (Hüffmeier & Hertel, 2011). Compared to positive affect, self-efficacy beliefs played a minor role as mediating process. In partial support of Hypothesis 12, daily self-efficacy showed, however, a tendency to mediate the relation between daily perceived affective support and daily work motivation. Thereby, participants reported higher daily work motivation when they felt capable of solving their daily tasks (e.g., Hüffmeier & Hertel, 2011; Seo & Illies, 2009; Stajkovic & Luthans, 1998). However, daily perceived support only tended to increase daily self-efficacy beliefs. This might partially be due to the fact that participants worked on average 6.6 years in their company. Most of the daily job tasks might have become routine for which participants felt well equipped. It might thus be possible that the relation between perceived affective support and self-efficacy is more pronounced when investigated for new or difficult tasks. Furthermore, when perceived affective support results from strong acts of social encouragement or recognition incorporating actual mastery experience and verbal

persuasion, the effects might similarly be stronger. In the present investigation, in contrast, it is not clear which and what types of interactions contributed to daily perceptions of support.

Furthermore, feeling obligated to perform well for one's team was contrary to Hypothesis 13 not shown as mediating process in the daily affective support-work motivation relation. The mediating function of obligation in the relation between global perceived organizational support and performance outcomes (e.g., Eisenberger et al., 2001) was thus not found at the daily level in the context of teamwork. However, in line with Hypothesis 14, general preference for teamwork moderated the relation between daily perceived affective support and daily obligation to perform well. Daily perceived affective support thereby only increased daily obligation to perform well for employees with a high (compared to a low) preference for teamwork. It might thus be that only individuals with a strong preference for teamwork are sensitive to norms and expectations within their team (e.g., Karau & Elsaid, 2007; Moorman & Blakely, 1995; Stark et al., 2007). However, although the three items with the highest factor loadings on the original teamwork preference scale were chosen (cf. Karau & Elsaid, 2009), the measure of preference for teamwork showed a rather poor reliability (e.g., Nunnally, 1978). This might be due to the inclusion of one reversely phrased item. Thus, although the obtained interaction effect including preference for teamwork was consistent with assumptions, the results should be interpreted with caution.

Further, daily obligation to perform well was not related to daily work motivation which was not expected. Graen and Uhl-Bien's (1995, see also Sparrowe & Liden, 1997; Uhl-Bien & Maslyn, 2003) assumptions might offer an explanation. The authors postulated that different time frames of reciprocity (i.e., the time frame in which a favor is returned) apply for new and old relationships. The time span of reciprocity should thereby be shorter in new relationships compared to long existing relationships. It is argued that trust is developed and deepened over time and the concern about immediate reciprocation becomes consequently less important. Thus, the give and take within long existing relationships is less tightly monitored than in new relationships. Although Graen and Uhl-Bien (1995) as well as Uhl-Bien and Maslyn (2003) focused on relationships between leaders and followers, the same might hold true for relations among team members. Thus, when team members have worked in their teams for a certain time as in the present study, the time span of reciprocation might be rather long-term. Consequently, participants (at least those participants with a high preference for teamwork) might have felt obligated to perform well for their team, however, this perception might not have translated into immediate increases in work motivation. Although in teams with established relationships it might be similarly important not to forget

to reciprocate favors (e.g., Gouldner, 1960), it might, however, not be necessary to reciprocate them as soon as possible (e.g., Graen & Uhl-Bien, 1995; Uhl-Bien & Maslyn, 2003). Thus, the focused time span of one day might have been too short to capture the assumed positive consequences of obligation on work motivation.

As in every study, several limitations are inherent in this investigation. First, the assumed underlying processes as well as work motivation were measured at the same time – at the end of the working shift. Thus, causal inferences between these consequences of affective support are limited. However, contingencies between positive affect as well as self-efficacy beliefs and work motivation were obtained which provide initial evidence for the mediation hypotheses. Furthermore, previous research has documented a positive effect of positive affect and self-efficacy beliefs on performance outcomes (e.g., A. Erez & Isen, 2002; Lubbers et al., 2005; Seo & Illies, 2009; Tsai et al., 2007) rendering the proposed causal inference nevertheless plausible.

Second, as this study was based on self-reports common-method variance might have biased the obtained relationships (Podsakoff et al., 2012). I followed Podsakoff et al. (2012; see also Ohly et al., 2010) for designing the questionnaire to reduce the impact of common method bias. Participants were asked to respond honestly to the items according to their individual situation for each point of measurement. Moreover, participants were assured that their answers would be anonymous and variables were measured at two different points in time (see also Spector, 2006). In addition, the pattern of relationships showed moderate and also non-significant relationships. These findings might not be expected with a strong common method bias. Finally, a marginal significant cross-level interaction effect was found in the present study. Research has shown that interaction effects were not an artifact of common method bias but might even be harder to detect with strong common method variance (e.g., Evans, 1985; Siemsen, Roth, & Oliveira, 2010). Taken together, common method variance is similarly to Study 4 likely not a major issue in this study.

Third, the estimation of statistical power for multilevel analyses remains complex (e.g., Scherbaum & Ferreter, 2009) without feasible approaches for three-level data. Research on statistical power in multilevel modeling emphasizes the relevance of larger sample sizes at the upper levels of analyses (e.g., Scherbaum & Ferreter, 2009) recommending sample sizes of 100 at Level 2 as adequate for a robust estimation of fixed effects (Maas & Hox, 2005). With a sample size of $N = 208$ at Level 2, statistical power should thus have been sufficient for the conducted analyses. However, the actual estimation of statistical power for detecting significant effects in one's research would be preferable to relying on rules of thumb.

Finally, as the study variables stem from a larger diary study, it was not possible to assess a wide range of control variables. Thereby, I did not control for daily positive affective states. It can thus not be ruled out that the findings might be in part attributed to more general affective states such as having a good or a bad day (e.g., Sheldon, Ryan, & Reis, 1996). Considering additional control variables might further strengthen the present findings. Thus, daily fluctuations in work motivation due to daily variations in perceived affective support could be more specifically targeted and estimated above and beyond the employees' general behavior tendencies. Nevertheless, the present study provides initial evidence for the relation between daily perceived affective support and work motivation in ongoing and interdependent teamwork.

Based on the initial evidence for the motivating effects of fellow team members' affective social support, the following two experimental studies specifically address the independent effects of social encouragement and social recognition on additional effort compared to individual work and group work without support. In addition, the differential mediating processes assumed for each type of affective support are specifically targeted. Both studies presented in the following chapter incorporate the reception of deliberate acts of social encouragement and social recognition.

Chapter 5
Independent effects of social encouragement and social recognition

5.1 Introduction

The previously presented studies provided evidence for fellow team members' affective support as source of daily work motivation (cf. Study 5) and as source of effort gains (cf. Study 3). It remains, however, unclear whether particular acts of social encouragement and particular acts of social recognition can independently trigger effort gains as assumed by the MSST (Hüffmeier & Hertel, 2011). When considering affective support from fellow team members as means to structure work to increase effort and performance of individual team members, it might not always be adequate or possible to provide social encouragement and social recognition together. It might, for example, be possible that fellow team members have no knowledge about the prior performance of an individual team member. These team members can thus not evaluate whether a presently shown performance is indeed good for this particular team member. Consequently, it might not be particularly motivating for the performing team member to receive social recognition from his/her fellow team members. Social encouragement might, however, be adequately provided as no prior knowledge about performance is required (Hüffmeier & Hertel, 2011). Furthermore, it might well be possible to provide valid social recognition for exerted effort in a team task which is finished and not further continued. It might thereby be conceivable that received social recognition for a finished team task can spill over to different current tasks or to similar future tasks. However, providing social encouragement in this situation might not be adequate as the task is not continued. Thus, understanding whether and how social encouragement and social recognition can independently trigger additional effort might aid in guiding team members to provide affective support to one another in an effective way.

The studies presented in this chapter aimed at replicating the findings of Study 3 and extending these by focusing specifically on the two subtypes of affective social support. In addition, it was investigated whether and how social encouragement and social recognition differ in their respective underlying processes in triggering additional effort. Two studies were conducted to address these questions. Participants were provided with actual acts of either encouragement or recognition from a fellow team member. The first study focused on social encouragement and social recognition whereas the second study focused on social encouragement only.

5.2 Study 6

5.2.1 Introduction

This investigation focused specifically on within-person changes in the assumed mediating variables and subsequent effort due to the reception of social encouragement or social recognition. The established weight-holding persistence task (cf. Hertel et al., 2000) was again utilized and performed for several consecutive trials. In order to preclude confounds due to varying support reception, standardized support from an unfamiliar confederate of the experimenter was employed.

5.2.2 Method

5.2.2.1 Participants

Study participants were 85 women mostly students from the University of Münster (3 participants had an apprenticeship and 6 participants were employed). The participants were randomly assigned to the four employed conditions. Participants were recruited either personally or via student groups on social networks. It was thereby announced that participants could win up to €50 for taking part in the study. One participant was excluded as she knew the confederate of the experimenter. Another participant was excluded as the confederate of the experimenter – the alleged team partner – had forgotten to take of her wrist watch which was mentioned by the participant. The experimental protocol included that none of the team members was allowed to hold any devices showing the time during the experimental session. The final sample consisted of 83 participants with an age range from 18 to 30 years (M_{age} = 22.2 years, SD = 2.4).

5.2.2.2 Experimental task and design

For the present study, participants performed six consecutive trials of the weight holding task (cf. Hertel et al., 2000) with the first two trials being individual trials for all participants. The following four trials were either performed individually again (individual control), with a non-supporting team partner (group control), with an encouraging team partner (group with encouragement), or with a team partner providing recognition (group with recognition). The performing arm was switched after each trial. The experimental design used a 4 (task

condition: individual control vs. group control vs. group with encouragement vs. group with recognition) x 2 (arm: dominant vs. non-dominant) x 3 (trial: first vs. second vs. third trial with a given arm) design with the last two factors being within-subjects.

5.2.2.3 Procedure

As the procedure is reported in detail in Study 3, the focus here is placed on describing the specifics of the present study. After recruitment, participants were asked to fill in an online questionnaire five days prior to the experimental session. The variables assessed with this questionnaire were, however, not part of this investigation and are thus not explicated further. During the laboratory session, participants in the individual control condition performed all trials individually. After the first two trials, a monetary reward of €0.50 for every 10s of holding the weight above the trip rod of up to €50 was introduced. The added up performance of the last four trials thereby determined the monetary reward participants could receive based on the lottery draw.

In the group conditions, a team partner was introduced after the first two trials. The team partner was a confederate of the experimenter who had allegedly performed the task right before the participant and had been waiting in a separate room.[20] Participants were then told that they would subsequently work together as team "blue". One team member was to perform again the weight holding task. The other team member was to fill in questionnaires about different types of working conditions and was thus not able to influence the performance in the weight holding task. Similarly to the individual control condition, a monetary reward was introduced after Trial 2. Participants were told that based on the lottery system employed the group could gain up to €100 depending on their performance in the weight holding task. The reward would then be equally divided among the two team members. Ten seconds of holding the weight above the trip rod were thereby worth €1. When determining who would perform the weight holding task allegedly at random, the real participant was always chosen to perform the weight holding task. The confederate was then placed back to back to the participant with a stack of questionnaires which she was asked to fill in. While the participant was performing the task, the confederate pretended to fill in the questionnaires and made clear working noises (e.g., turning pages, marking items with crosses, writing short passages). The participant then performed two additional trials of the

[20] In the present study, five different confederates were used which were all intensively trained to provide support in a standardized manner.

weight holding task. Before continuing with Trial 5, the experimenter assembled the participant and the confederate again and reminded them of the team task and the monetary reward. In the group control condition, the confederate was then asked to return to her working space and to continue with the questionnaires. The participant was asked to continue with the next trial. In the two group support conditions (i.e., group with encouragement and group with recognition), the confederate was told that before continuing – each team partner with her assigned task – she could support her team partner with a few words. The confederate was gestured to stand at an angle of 45° 1m in front of the apparatus where the participant stood to perform the task. The confederate then waited about two seconds pretending to consider what to say (i.e., looking upwards to think, making a "mmh" sound). With a light smile and eye contact the confederate said in the encouragement condition (cf. Table B.1 in the appendix for the original message):

I think, you will do a really good job. You will surely hold the weight super long and you will certainly do absolutely great.

In the recognition condition the confederate said (cf. Table B.1):

I thought, in the last trials you did a really good job. You held the weight super long. You did certainly absolutely great.

The confederate was then told to return to her working space and to continue filling in the questionnaires. The participant was asked to perform the next trial. The participant performed another two trials after which the experiment was over and she was thanked and debriefed. During the entire session the confederate was trained to act neutrally friendly, avoiding in general smiles and eye contact in a natural way (e.g., concentrating on the experimenter instead of on the participant). Before Trials 3 through 6, participants were additionally asked to fill in questionnaires right before the task started assessing the mediating variables. In order to avoid potential artifacts in the results due to the scale order, two questionnaire versions with randomly determined scale orders were employed. In addition, participants were asked to fill in a short questionnaire assessing several control variables after each trial. The experiment took in total about one hour. Figure 5.1 provides an overview of the experimental procedure for the four employed conditions.

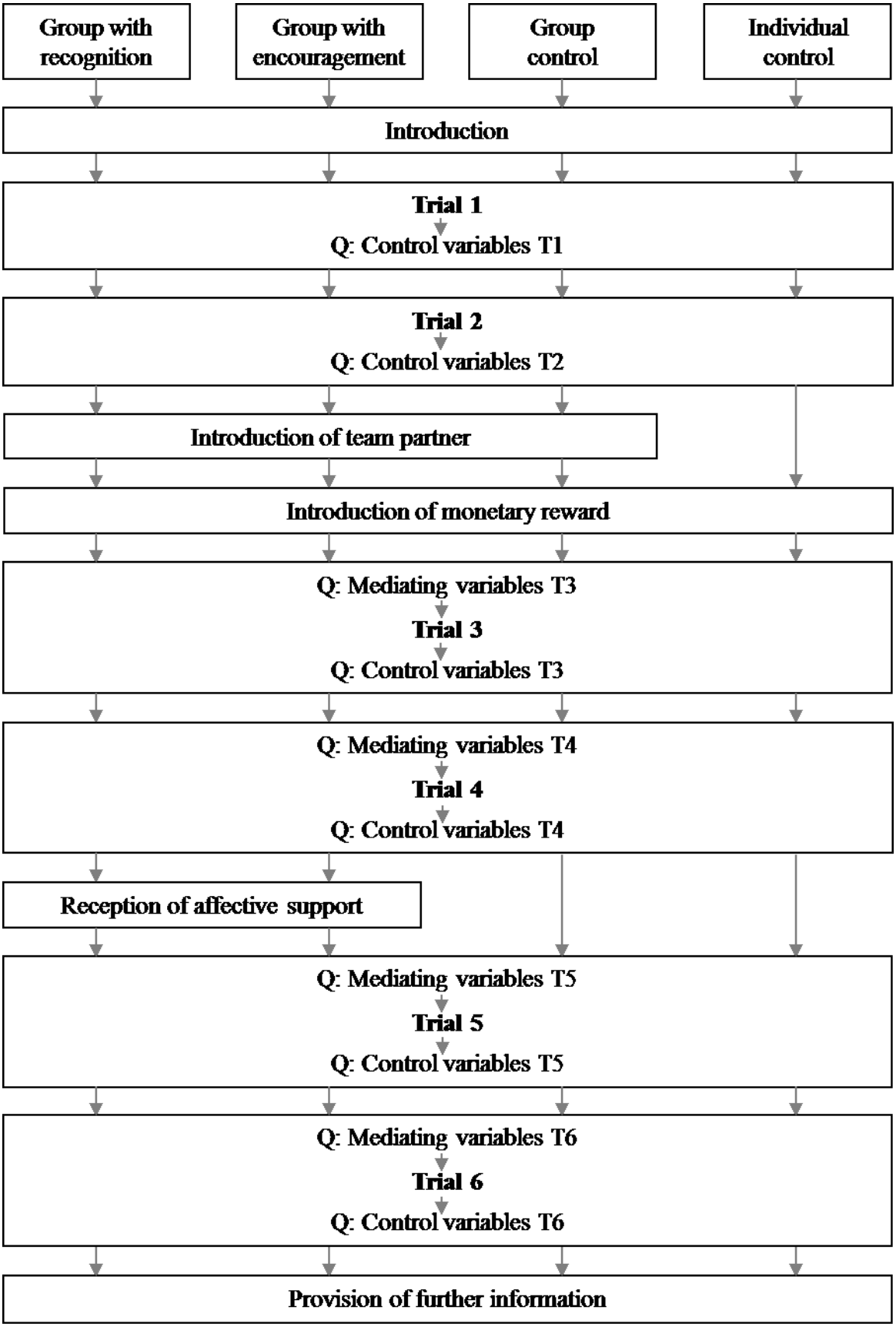

Figure 5.1. Overview of the experimental procedure for the four employed conditions. Q, questionnaire; T, trial.

5.2.2.4 Measures

The mediating variables were assessed with the items reported and pre-tested in Study 4. In the present study, the mediating variables were mostly assessed with three items. These three items were chosen from the pool of four items pre-tested in Study 4 according to their overall fit to their respective scale. The item with the lowest fit was removed from the scale. The items were when necessary adapted to the context of the present study. The questionnaire instruction asked participants to answer the items in relation to the next trial that would start subsequently. If not stated differently, all items were measured on a 7-point scale ranging from 1 ("do not at all agree") to 7 ("do completely agree"). All employed items can be found in Table B.2 in the appendix.

Positive affect was assessed with a single item ("Right now, my mood corresponds to the following smiley-face:") employing a smiley-face scale (cf. Jäger, 2004; Kunin, 1955) with 7 smiley-faces. The smiley-faces ranged from very sad to very happy. Self-efficacy beliefs were assessed with three items focusing on the perceived confidence to be able to perform well in the subsequent trial (e.g., "I am confident that I can master the task."). Cronbach's alpha ranged across the four trials from .93 to .96 (M = .95). Social pressure was measured with two items assessing explicitly pressure from one's fellow team member (e.g., "I feel that my team partner puts pressure on me to perform well on the task.") and one item focusing on high expectations ("My team partner expects me to spend high effort on the task."). For the present study, it was assumed that in contrast to Study 4 which employed the event reconstruction method (e.g., Grube et al., 2008) expectations might be more closely related to feeling pressured. As the team partner in the current study was present in the performance situation, she was able to in part monitor and evaluate the exerted effort of her fellow team member. In addition, the team partner's outcome depended solely on the accomplishment of the performing team member. This might not have been the case in Study 4. Under the experimental conditions of the present study, perceived expectations from one's team partner might turn into actual pressure. In addition, recalling a positive supportive event as in Study 4 might have biased the correct memory of potentially negative aspects of the support situation such as social pressure. This might have also contributed to the low association between performance expectations and social pressure in Study 4. In the present study, Cronbach's alpha ranged across the four trials from .79 to .88 (M = .84). Obligation to perform well was assessed with three items (e.g., "I feel obligated to exert high effort for my team partner in the task."). Cronbach's alpha ranged across the four trials from .62 to .87 (M = .76). Goal setting was assessed with three items focusing on setting high personal goals for

the subsequent trial (e.g., "I set myself high performance goals for the task."). Cronbach's alpha ranged across the four trials from .87 to .92 (M = .90).

Participants' performance was assessed as the amount of seconds the weight was held above the trip rod in each trial. The performance was measured and recorded by the experimenter with a stop watch. Furthermore, participants rated their invested effort after each trial with two items. The two items were adopted from Barrick, Stewart, and Piotrowski (2002, e.g., "I put a lot of effort into the last trial"). Correlations of the two items across the six trials ranged from .74 to .85 (M = .81). Perceived affective support was assessed in the group conditions after each trial starting from Trial 3 as manipulation check. Two items were adapted from the perceived affective support scale (Ducharme & Martin, 2000; e.g., "I felt that my team partner really cared about me."). Correlations of the two items across the four trials ranged from .77 to .89 (M = .84).

5.2.3 Results

Preliminary Analyses

In a first step, I analyzed the performance data in the individual control condition to investigate whether the order of the performing arm started with (dominant or nondominant) or the performing arm itself had any influence on performance in the subsequent trials. Furthermore, the data were analyzed to test and adjust for potential fatigue effects. Therefore, I conducted a 2 (starting arm: dominant vs. nondominant) x 2 (performing arm: dominant vs. nondominant) x 3 (repetition: first vs. second vs. third trial with respective arm) ANOVA with repeated measures on the last two factors. The results revealed a significant main effect for performing arm, $F(1,18) = 13.14$, $p < .01$, $\eta^2 = .42$, with significantly higher performance when performing with the dominant (M = 166.33, SD = 10.32) compared to the nondominant arm (M = 153.03, SD = 9.52). Furthermore, the analysis yielded a significant main effect for repetition, $F(2,36) = 20.62$, $p < .001$, $\eta^2 = .53$, indicating a decrease in performance from the first (M = 177.23, SD = 51.99), to the second (M = 166.48, SD =43.74), and the third time performing with a given arm (M = 136.85, SD = 39.81). In addition, this fatigue effect was qualified by the arm performed with as indicated by a significant interaction effect between performing arm and repetition $F(2,36) = 4.41$, $p < .05$, $\eta^2 = .20$. The overall fatigue effect (from Block 1 to Block 3) was thereby larger for the dominant (M_{total} = 45.50, SD = 33.13) than for the nondominant arm (M_{total} = 32.25, SD = 28.35). The third main effect as well as the other interaction effects were not significant, Fs < 1, indicating that the arm started with did not affect performance.

A subsequent investigation of outliers in performance scores revealed one participant in the group condition with recognition with an extreme value in the third trial, $z = 4.01$.[21] It seems likely that this participant did not follow the instructions to lower the performing arm once the task became too uncomfortable but that she persisted far beyond this point. The performance of this participant in all other subsequent trials was well within the expected boundaries as evidenced by the obtained standardized scores ($-3.29 > z < 3.29$). To retain this participant but nevertheless reduce the influence of the extreme value, the performance score in Trial 3 was altered to one unit larger than the second largest performance score (cf. Tabachnick & Fidell, 2013). Thus, the performance score remained the largest for that particular trial but its effect in further analyses of performance scores was reduced.

To adjust for the present fatigue effect, performance scores in Trial 3 to 6 were multiplied with ratios obtained from the individual control condition (for a similar procedure see Hertel et al., 2003; Hertel et al., 2000). The correction factors were thereby computed for the second trial performing with the respective arm (correction factor: ratio of performance in the first trail to performance in the second trial) and the third trial performing with the respective arm (correction factor: ratio of performance in the first trial to performance in the third trial) separately for the dominant and the nondominant arm. Performance scores in Trials 3 to 6 were then adjusted for fatigue in all conditions by the respective ratios. For the second trail with the dominant (nondominant) arm the ratio was 1.075 (1.035); for the third trial with the dominant (nondominant) arm the ratio was 1.324 (1.242). Subsequently, the corrected performance scores were combined across the dominant and the nondominant arm into three blocks: Trial 1 and 2 were combined for Block 1, Trial 3 and 4 for Block 2, and Trial 5 and 6 for Block 3. Performance scores in each block thereby represent the mean performance of the two trials summarized per block.

To investigate whether the randomization of participants across the employed conditions was successful a one-way ANOVA of performance data in Block 1 across the four employed conditions was conducted. The non-significant result, $F < 1$, revealed that participants showed no performance differences in Block 1 suggesting that the randomization was successful (see Table 5.1).

For further analyses, two overall indicators of changes in task performance across blocks reflecting performance based effort gains were computed. Performance in the first block was thereby compared to performance in the two subsequent blocks. Therefore, performance scores in Block 1 were subtracted from performance scores in Block 2 as well as

[21] The standardized z-score was obtained including participants in the three group conditions.

from performance scores in Block 3. For the group conditions with the first Block being individual work and the second and the third Block being group work, the difference scores indicate when positive effort gains in comparison to individual work and when negative effort losses. The obtained difference scores can thereby be easily interpreted as they directly depict the change due to the manipulation applied. However, analyses with difference scores might pose several problems (see Edwards & Parry, 1993). An alternative to the analysis with difference scores is to conduct the analysis with covariates so that performance in Block 1 is incorporated as covariate in the analyses of performance in Block 2 and Block 3 (see, for example, Lount, Kerr, Messé, Seok, & Park, 2008). In the present investigation, I utilized, however, for reasons of easier interpretability difference scores (cf. Hertel et al., 2008; Lount et al., 2008). Note, however, that the approach using covariates led to a virtually identical result pattern as the analyses with difference scores.

To explore whether performance scores and self-reported effort corresponded in the present study, the correlations between performance difference scores (i.e., performance based effort gains) and difference scores in self-reported effort (i.e., self-report based effort gains) were investigated. Difference scores for self-reported effort were computed similarly to difference scores for task performance. Analyses were then conducted separately for differences from Block 1 to Block 2 and from Block 1 to Block 3. Results revealed positive correlations between effort gains based on self-reports and based on performance, $r(83) = .28$, $p < .05$, in Block 2 and in Block 3, $r(83) = .30$, $p < .01$. The positive correlations were similar to previous studies (e.g., Hertel et al., 2003; Wittchen, Schlereth, & Hertel, 2007) and indicated that differences in performance corresponded with differences in self-reported effort.

Manipulation check

In order to investigate whether the support manipulation was successful, I first analyzed whether participants in the three group conditions differed in their initial perception of affective support, that is, before the manipulation was administered. A one-way ANOVA on perceived affective support in Block 2 across the three group conditions revealed as expected no significant differences between the groups, $F < 1$. Subsequently, I investigated whether changes from Block 2 to Block 3 of perceived affective support differed across the three group conditions. If the support manipulation before Block 3 was successful, participants in the two support conditions should show an increase in perceived support from Block 2 to Block 3 whereas no such increase would be expected in the group control condition. As

dependent variable, Block 2 ratings of perceived support were subtracted from Block 3 ratings.

The difference scores for perceived affective support were analyzed in a one-way ANOVA. The results revealed significant differences between the three group conditions, $F(2, 60) = 8.23$, $p < .01$, $\eta^2 = 0.22$. A more detailed analysis with a priori contrasts (first contrast: group with encouragement [1], group with recognition [1], group control [-2]; second contrast: group with encouragement [1], group with recognition [-1], group control [0]) revealed higher increases in perceived support for the group conditions with support ($M = 0.65$; $SD = 0.91$) than for the group control condition ($M = -0.06$; $SD = 0.39$), $t(55.11) = 4.42$, $p < .001$, $d = 1.01$. Furthermore, the difference between the group with recognition ($M = 0.90$; $SD = 1.01$) and the group with encouragement, ($M = 0.40$; $SD = 0.75$), was significant, $t(26.01) = 4.08$, $p < .001$, $d = 0.56$, with higher increases in perceived support in the recognition condition. A post-hoc comparison between the group with encouragement and the group control condition revealed further significantly higher increases in perceived support for the group with encouragement, $t(32.19) = 2.54$, $p < .05$, $d = 0.77$. In addition, none of the participants in the present study expressed any doubts about their fellow team member or the support they had received. Together, the support manipulation was successful in both support conditions.

Analyses of effort gains

Before investigating the effects of received affective support, I first conducted a one-way ANOVA on effort gains from Block 1 to Block 2 across the three group conditions. It was expected that effort gains in Block 2 would not differ between the group conditions as the support manipulation was employed after Block 2. The descriptive statistics are displayed in Table 5.1. The results revealed as expected no differences between the group conditions, $F < 1.14$.

To test my hypotheses, I subsequently conducted a one-way ANOVA on effort gains from Block 1 to Block 3 across the three group conditions. Thereby, I expected higher effort gains for the two support conditions compared to the group control condition. Contrary to my hypotheses, the results revealed, however, no significant differences between the group conditions, $F < 1$. Thus, although significant overall effort gains were present in the three group conditions in Block 2 ($M = 37.73$, $SD = 41.80$), $t(62) = 7.54$, $p < .001$, $d = 0.90$, and in Block 3 ($M = 31.71$, $SD = 47.02$), $t(62) = 5.35$, $p < .001$, $d = 0.67$, when comparing effort gain scores against zero, the reception of affective support did not increase effort gains in Block 3

beyond the level of group work without support. In order to account for small initial differences in effort gains in Block 2, I conducted a third one-way ANOVA on effort gains from Block 2 to Block 3 (effort gains in Block 3 – effort gains in Block 2). Results revealed, however, again no significant differences between the group conditions (M_{Enc} = -9.31, SD_{Enc} = 37.54; M_{Rec} = -2.84, SD_{Rec} = 40.83; $M_{Control}$ = -12.04, $SD_{Control}$ = 29.77), $F < 1$. The results are thus not in line with Hypotheses 3b and 3c.

Although no effort gains were found on the performance level, I explored whether effort gains were present at the level of self-reported effort and subsequently investigated self-report based effort gains. The descriptive statistics are displayed in Table 5.1. A one-way ANOVA on self-report based effort gains from Block 1 to Block 2 across the three group conditions revealed as expected no differences between groups, $F = 2.23$, $p = .12$.[22]

A one-way ANOVA on self-report based effort gains from Block 1 to Block 3 was conducted under the assumption that participants in the group support conditions should report higher effort after receiving support whereas participants in the group control condition should not change. Overall, the results revealed contrary to expectations again no differences between the three group conditions, $F < 1.4$, $p = .25$.[23] A final one-way ANOVA on self-report based effort gains from Block 2 to Block 3 was conducted which accounted for small initial differences in self-reported effort in Block 2. The results revealed, however, again no differences between the three group conditions, $F < 1$, but showed similar decreases in self-report based effort gains: M_{Enc} = -0.23, SD_{Enc} = 0.48; M_{Rec} = -0.13, SD_{Rec} = 0.86; $M_{Control}$ = -0.24, $SD_{Control}$ = 0.27).[24] Together, the results on self-report based effort gains paralleled the findings on performance based effort gains and revealed contrary to expectations no effect of

[22] For this analysis, one participant in the condition with encouragement was excluded due to an extremely large value in self-report based effort gains from Block 1 to Block 2, $z = 3.72$. Including this participant inflated the results to show significant differences between groups, $F(2, 60) = 3.22$, $p < .05$, $\eta^2 = 0.10$. Particularly, post-hoc comparisons showed (Bonferroni corrected significant levels: .05/2 = .025) a significant difference between the condition with encouragement and the condition with recognition, $t(60) = 2.31$, $p < .025$, $d = 0.63$ and a marginally significant difference between the encouragement condition and the group control condition, $t(60) = 2.03$, $p = .05$, $d = 0.67$.

[23] One participant in the condition with recognition showed an extremely low value in self-report based effort gains from Block 1 to Block 3, $z = -4.50$. As the results were virtually identical when including this participant, the participant was retained in the analysis.

[24] Two participants showed extremely large/low values in self-report based effort gains from Block 2 to Block 3, one participant from the condition with recognition, $z = 4.63$, and one participant form the condition with encouragement, $-z = -3.95$. As the results were virtually the same including both participants, participants were retained in the sample.

social encouragement and social recognition on effort. Hypotheses 3b and 3c are thus not supported.

Table 5.1

Means and standard deviations of performance scores (s) and ratings of effort in the experimental conditions (Study 6)

	Group with recognition $N = 21$		Group with encouragement $N = 22$		Group control $N = 20$		Individual control $N = 20$	
Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Performance								
Block 1	163.10	62.37	157.50	48.58	172.33	43.86	175.73	52.48
Difference Score Block 2 – Block 1	21.94	36.45	48.11	36.78	41.60	38.92	0.00	35.44
Difference Score Block 3 – Block 1	22.09	45.92	38.81	39.30	29.56	53.91	0.00	30.14
Self-reported effort								
Block 1	6.02	1.04	5.90	0.86	6.18	0.77	6.30	0.76
Difference Score Block 2 – Block 1[a]	0.25	0.72	0.64	0.58	0.33	0.43	0.05	0.38
Difference Score Block 3 – Block 1	0.15	1.24	0.52	0.78	0.10	0.43	-0.36	0.59

Note. Mean difference scores for performance in the individual condition are zero as a correction for fatigue effects was applied based on this condition. Block 1 = mean of Trial 1 and Trial 2; Block 2 = mean of Trial 3 and Trial 4; Block 3 = mean of Trial 5 and Trial 6.

[a] One participant was excluded from the encouragement condition (with inclusion: $M = 0.75$, $SD = 0.76$).

Explorative analyses of the mediation hypotheses

As no significant overall effect for received affective support on effort gains was obtained, I investigated the mediating hypotheses merely exploratively. First, I explored whether the reception of social encouragement or social recognition had a differential effect on the assumed mediating variables in the hypothesized direction. Second, the difference scores for the mediating variables were compared between the support groups combined and the group control condition. The difference scores for the mediating variables were thereby computed by subtracting ratings in Block 2 from ratings in Block 3.[25] Correlations of the study variables in Block 2 and Block 3 are reported in the appendix in Table B.3 and B.4. Results showed

[25] One participant was not included in the analyses of the mediating variables as this participant did not complete the mediator questionnaire prior to Trial 6. Furthermore, one participant only completed the first page of the mediator questionnaire prior to Trial 4. Thus, this participant is only included in the analyses of those mediating variables for which the measures were completed prior to each trial.

large correlations between obligation to perform well and goal setting. However, as indicated in Table 5.3, difference scores for obligations were not related to difference scores for goal setting. Thus, changes in obligation seemed to be independent from changes in goal setting or vice versa.

To explore the differential influence of receiving social encouragement or social recognition on the proposed mediating variables a set of independent *t*-tests on the difference scores of the mediating variables was conducted. The descriptive statistics are depicted in Table 5.2. The results revealed, however, that the difference scores for the mediating variables did not differ between the two support conditions, all ts < 1. This result is in accordance with the assumption that both subtypes of affective support influence positive affect to a similar degree. Comparing both support conditions combined to the group control condition revealed a significant decrease in positive affect for participants who did not receive support compared to participants who received affective support (cf. Table 5.2), $t(56) = 3.20$, $p < .01$, $d = 1.00$.

Although differences in the ratings of the other mediating variables (i.e., self-efficacy beliefs, social pressure, obligation to perform well, and goal setting) might have been expected between the two support conditions, some initial evidence for the mediation assumptions is nevertheless provided. Results for self-efficacy beliefs showed that self-efficacy beliefs were marginally significantly higher when social recognition was received compared to the group control condition, $t(39) = 1.73$, $p = .09$, $d = 0.54$. This finding is in line with Hypothesis 5a. A difference in self-efficacy ratings between the group with encouragement and the group control condition was not found, $t < 1$, which is contrary to Hypothesis 5b. These findings might be in accordance with the assumption that social recognition is particularly important for self-efficacy beliefs (cf. Hypothesis 5c).

Results for goal setting indicated that although not statistically significant goal setting tended to decrease less when either type of affective support was received compared to the group control condition, ts < 1.6. However, this result provided no insights into the assumed relevance of particularly social recognition for goal setting (cf. Hypothesis 8).

Concerning the mediating processes proposed only for social encouragement, results for social pressure showed a marginally significant higher increase when encouragement was received compared to the group control condition, $t(38) = 1.96$, $p = .06$, $d = 0.62$. This finding is in partial support of Hypothesis 7. A difference in social pressure ratings between the group with recognition and the group control condition was not found, $t < 1.2$. Finally, although obligation to perform well seemed to decrease in all group conditions (cf. Table 5.2), the ratings of obligations decreased significantly less in the encouragement condition compared to

the group control condition, $t(39) = 2.32$, $p < .05$, $d = 0.72$.[26] Thus, although it was assumed that the reception of social encouragement increased obligations to perform well (Hypothesis 6), an attenuated decrease might partially support Hypothesis 6. In addition, a difference in the ratings of obligation to perform well between the condition with recognition and the group control condition was not found, $t < 1.2$.

Table 5.2

Means and standard deviations of the mediating variables (Study 6)

	Group with recognition $N = 21$		Group with encouragement $N = 22$		Group control $N = 20$	
Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*
Positive affect						
Block 2	4.81	1.46	4.86	0.99	5.08	1.17
Difference Score Block 3 – Block 2	-0.07	0.86	-0.08	0.61	-.67	0.38
Self-efficacy						
Block 2	4.76	1.47	5.25	1.26	4.94	1.49
Difference Score Block 3 – Block 2	0.10	0.65	-0.02	0.58	-0.23	0.59
Social pressure						
Block 2	3.07	1.53	2.99	1.39	3.19	1.34
Difference Score Block 3 – Block 2	0.10	0.71	0.30	0.73	-0.21	0.90
Obligation to perform well						
Block 2	5.71	1.23	5.84	0.92	6.03	0.75
Difference Score Block 3 – Block 2	-0.19	0.63	-0.08	0.37	-0.41	0.53
Goal setting						
Block 2	5.56	1.28	5.95	1.11	5.92	1.02
Difference Score Block 3 – Block 2	0.01	0.48	-0.08	0.42	-0.31	0.79

Furthermore, I explored whether changes in the ratings of the mediating variables from Block 2 to Block 3 were associated as assumed with effort gains from Block 2 to Block 3 across both support conditions (see Table 5.3). I thereby focused on performance based as well as self-report based effort gains. As neither overall performance based nor self-report based effort gains were found, the relations are not assumed to be particularly strong but might provide indicative evidence for the hypothesized relations. Due to the rather small sample size, the support conditions were combined and the results are reported based on the size of the correlations as defined by J. Cohen (1988) and not based only on statistical

[26] Note that the different degrees of freedom are due to missing data in a few cases.

significance. In order to check for potential multivariate outliers which might bias the correlation coefficients, I investigated standardized Dfbeta values for the relationships between the mediating variables and effort gain scores. Standardized Dfbeta values quantify the influence of each observation in investigated relations between variables (Aguinis, Gottfredson, & Joo, 2013).[27] Values above/below a cutoff of ±1 indicate highly influential cases in small samples which can bias the results (e.g., J. Cohen, Cohen, West, & Aiken, 2003). Following the recommendations from Aguinis et al. (2013), I excluded influential outlying cases (N = 5) in the respective correlational analyses and reported the results including these cases in the appendix (see Table B.5 in the appendix).[28]

The results revealed that increases in positive affect as well as in self-efficacy beliefs showed small positive relations with performance based effort gains which is in line with assumptions (cf. Table 5.3). Contrary to assumptions, changes in social pressure and changes in goal setting showed no relation with performance based effort gains; changes in obligation to perform well showed a small negative relation (cf. Table 5.3). Paralleling the findings for performance based effort gains and in line with assumptions, increases in positive affect showed a small positive relation with self-report based effort gains. Moreover, in line with assumptions, increases in social pressure, obligation to perform well, and goal setting showed a small positive relation with self-report based effort gains. Changes in self-efficacy beliefs showed, in contrast, no relation with self-report based effort gains (cf. Table 5.3).

[27] Dfbeta values are derived by calculating the difference between regression coefficients estimated when a respective observation is included versus excluded from the data set. The difference is scaled by the standard error calculated excluding the respective observation (e.g., Aguinis et al., 2013).

[28] One participant was excluded from the analysis of the relation between performance based effort gains and positive affect. For the analysis of self-reported effort gains, one participant was excluded in the relation with positive affect, one in the relation with self-efficacy, and two participants in the relation with obligation to perform well.

Table 5.3

Correlations between the Block 3 – Block 2 difference scores for the study variables (Study 6; N = 43)

	1	2	3	4	5	6
1. Positive affect	-					
2. Self-efficacy	.35*	-				
3. Social pressure	-.24	-.08	-			
4. Obligation to perform well	.06	.08	.19	-		
5. Goal setting	-.05	.28Δ	.35*	.04	-	
6. Performance based effort gains	.24	.26+	-.06	-.15	-.01	-
7. Self-report based effort gains	.13	.01	.22	.10	.33*	.42**

Note. Exclusion of outlying cases for the relation with performance based effort gains: One participant was excluded in the relation with positive affect. Exclusion of outlying cases for the relation with self-reported effort gains: One participant was excluded in the relation with positive affect and self-efficacy, two participants were excluded in the relation with obligation to perform well.
$^{+}p < .10$, $^{\Delta}p < .08$, $^{*}p < .05$, $^{**}p < .01$.

5.2.4 Discussion

The present study aimed at investigating the independent effects of receiving social encouragement and social recognition on effort gains along with the assumed differing underlying process. The results were, however, not in support of Hypothesis 3b and 3c assuming that fellow team members' social encouragement and social recognition trigger additional effort gains beyond the level of group work without support. Effort gains were, in contrast, at a similar level whether or not affective support was received. Importantly however, the obtained results showed no decline in effort due to the reception of affective support as has been indicated by previous research (e.g., Irwin et al., 2013; Max, 2014). Several potential explanations might account for the lacking additional motivating effect of affective support in the present study.

First, participants performed the weight holding task for six consecutive trials and performed three times with each arm. Although breaks were in between the second and third time performing with a respective arm, it is conceivable that participants tired the more often they performed the task. It might thus be possible that the manipulation which was administered before Trial 5 was not able to affect performance substantially this late in the task as participants were too exhausted. Participants might have wanted to increase their

performance but were physically not able to do so anymore. It might thus be possible that exhaustion prevented additional effort gains from to the reception of fellow team members' affective support. However, previous research on effort gains employing the same persistence task over several consecutive trials has shown that differences in effort gains over several trials can be observed (cf. Lount et al., 2008). Although in the study by Lount et al. (2008) performance decreased in all group conditions over time, the rate of decrease varied between the treatment group and the control group. The treatment group showed a slower decrease than the control group. Thus, physical exhaustion might not be the only factor explaining the lacking effects of affective support on effort gains in the present study.

Second, the two team members performed rather different tasks. The task of the participant was physical and rather straining, the task of the alleged team member was cognitive and rather easy particularly in comparison to the weight-holding task. Furthermore, although both team partners performed their tasks simultaneously, the participant was the only team member contributing to the team outcome. According to equity theory (Adams, 1965), individuals attend in their relationships to their contributions and benefits compared to the contributions and benefits of the relationship partner. Due to the unequal tasks (although lottery based), participants might have experienced the setting as unfair with high contributions on their part and high benefits for their team partner (as the team partner benefitted without contributing). Furthermore, equivalence of contributions might be particularly attended to in new relations as in the present study (e.g., Sparrowe & Liden, 1997; Uhl-Bien & Maslyn, 2003). It might be possible that in this particular setting with a new relationship with highly unequal contributions, affective support from fellow team members was not effective in additionally increasing invested effort. The performing participant might have already felt that her team partner was overbenefitted. Any increase in invested effort and performance would have further increased the perceived inequity between contributions and benefits. In addition, providing support (only) once might have been too small of a contribution to equalize the perceived overbenefit of the team partner. Importantly though, potential feelings of exploitation were not that strong so that effort losses occurred (e.g., Kerr, 1983; Schnake, 1991).

Third, in contrast to the previous explanation, it might be possible that participants were due to the team setting highly motivated so that a ceiling effect in effort increases occurred. Participants were not only indispensable for their team which is an important trigger of effort gains (e.g., Hertel et al., 2000; Weber & Hertel, 2007) but they were chosen as the representative of the team. Consequently, the "burden" of a good team outcome was placed

entirely on their shoulders. Being the team's representative might have led to such strong increases in effort that additional motivating factors such as the reception of fellow team members' affective support could not further increase exerted effort.

Fourth, an additional potential explanation might be the low personal involvement of the alleged team member in the task and performance of her team partner. The alleged team member was most of the time asked to work quietly on completing the questionnaires not facing her fellow team partner. The experimental setting might thus have unintentionally led to the assumption that the team partner does not particularly care about the team outcome even though the setting was provided by the experimenter and not chosen by the alleged team member (N. L. Kerr, personal communication, May 16, 2014). Thereby, although exerted effort might be more strongly determined by one's own valence of the outcome (cf. Karau & Williams, 1993), it seems plausible to assume that a low outcome valence on the team partner's side reduces the motivation to invest additional effort for the team (N. L. Kerr, personal communication, May 16, 2014). The administered support which was received only once and after the experimenter gave the instructions might not have substantially altered this perception. Consequently, a rather low perceived partner valence might have impaired additional motivating effects of the affective support received.

Finally, the affective support was administered by confederates to all participants in the same manner (for the encouragement condition and the recognition condition respectively). Although the confederates were extensively trained to convincingly provide support, it might be possible that the provided support was not perceived as genuine (see also Irwin et al., 2013). Thus, it might be possible that differences exist between a trained confederate providing support and a real team partner. These potentially small differences might have, however, affected how the received support was interpreted with consequences on effort exertion. When support is perceived as not genuine, it might not lead to additional effort increases. Importantly, however, none of the participants expressed any doubts about their fellow team member and participants who received support felt more supported than participants who did not receive support.

Together, several explanations might be plausible and might account for the lacking effect of affective support on effort exertion in the present study. It might be possible that not a single explanation accounts for the present findings but that several aspects in combination led to the obtained results.

Furthermore, due to the lacking overall effect of affective social support the mediation hypotheses were merely investigated exploratively. Initial evidence in accordance with the assumptions was nevertheless found. Particularly, social encouragement and social recognition affected positive affect as assumed (cf. Hypothesis 4a and 4b) to a similar extend. Furthermore, social recognition was initially shown to affect self-efficacy beliefs (cf. Hypothesis 5a). Moreover, social encouragement tended to increase as assumed social pressure and affected obligation to perform well (cf. Hypothesis 6 and 7). However, goal setting processes were not specifically altered by social recognition (cf. Hypothesis 8). Importantly, the reception of affective support seemed to have prevented a decline in the ratings of the mediating variables (except for social pressure), rather than triggered increases. Specifically, participants who did not receive support tended to report lowered positive affect, self-efficacy beliefs, social pressure, obligation to perform well and goal setting over time. It might be possible that in the group control condition participants' perceptions of the mediating variables would have decreased even further in additional group trials. Considering that high levels of the mediating variables are assumed to increase effort, it is conceivable that a continued reduction in the mediating variables would also decrease effort over time. Thus, hypotheses consistent effort gains might have been observable in additional group trials. Together, although I expected increases in the mediating variables due to affective support and not an attenuated decrease, the results nevertheless point to the importance of fellow team members' affective support in motivating group work. Even short interactions among team members seem to affect factors which are assumed to positively relate to effort and performance (e.g., Eisenberger, et al., 2001; A. Erez & Isen, 2002; Maurer & Palmer, 1999; Tsai et al., 2007). Furthermore, considering that teamwork in various settings continues over a longer period of time some effects of affective support might – particularly when rather subtle – come into play in later stages of group work.

Moreover, the relations between changes of the mediating variables and changes in performance based as well as self-report based effort gains were partially in line with the assumptions. Performance based effort gains thereby profited by trend from positive affect as well as self-efficacy beliefs which is in line with assumptions and prior research (e.g., A. Erez & Isen, 2002; Seo & Illies, 2009; Stajkovic & Luthans, 1998; Tsai, et al., 2007). Contrary to assumptions, obligation to perform well tended to negatively affect performance based effort gains. It might be possible that feeling taken advantage of (e.g.; Adams, 1965; Kerr, 1983) led to a negative impact of increased perceived obligations on effort expenditure. Furthermore, self-report based effort gains profited from increases (or attenuated decreases) in positive

affect, social pressure, obligation to perform well, and particularly from goal setting in line with assumptions and prior research (e.g., Baumeister et al., 1985; Locke & Latham, 1990; Maurer & Palmer, 1999; Stajkovic & Luthans, 1998; Tsai, et al., 2007). As no overall effort gains were found, these relations might merely provide initial insights into the assumed effects.

Taken together, the results of Study 3 were not replicated in the present study. Several explanations might account for the lacking effects of social encouragement and social recognition on effort gains. Due to the lacking main effects the underlying processes in the relation between affective support and effort gains were merely investigated exploratively. Initial evidence for the assumed relations between affective support and the mediating processes were nevertheless offered.

The subsequent study aims at overcoming several of the potential methodical issues of the present investigation and at replicating the findings of Study 3. The following study focuses specifically on the reception of social encouragement and its effects on effort gains as well as on perceived affective support and the assumed specific underlying motivating processes.

5.3 Study 7

5.3.1 Introduction

The present study focused specifically on fellow team members' social encouragement within new teams. Social encouragement does not rely on information about past performance when communicating a belief in the other person and encouraging future effort (cf. Hüffmeier & Hertel, 2011; Meyerson, Weick, & Kramer, 1996). Although it might be argued that having knowledge about past performance can even without reference to it strengthen the encouraging message, knowledge of past performance is not a prerequisite for providing candid encouragement (Hüffmeier & Hertel, 2011). In contrast, social recognition relies on information about present or past performance to provide strong support such as knowledge about the recipients' earlier performance, or typical performance, or other's performance, or expected performance. In new teams, however, this information might not be available. In consequence, fellow team members who are not truly capable of evaluating others' performance might not be able to provide strong recognition and might even be judged as invalid sources of recognition (cf. Catano, 1975). This might render the provided support

ineffective or non-supportive but might also lead to a negative evaluation of the support provider. Thus, social encouragement might in the beginning of newly formed teams, such as project teams, be the only form of affective support that can be readily provided to fellow team members. The present study investigates whether receiving social encouragement in newly formed teams without any prior knowledge about the fellow team members' performance can increase exerted effort in a team task.

In order to overcome the potential problems discussed in Study 6, the present investigation employed a different task and a different teamwork setting. First, in the present study, both team members worked on the same task to contribute to equal shares to the common team outcome. This might reduce feelings of exploitation but might also address the potential ceiling effect in effort when performing as team representative. In addition, the employed setting is assumed to reduce perceptions of low partner valence of the outcome. Furthermore, it might be possible that support from a team partner who does not contribute to the team outcome is interpreted as egoistic support. The support providing fellow team member might be judged as only providing support for his/her own advantage which is getting a better outcome. The recipients of (overtly) egoistic support might not feel honestly supported and cared for and might subsequently not increase their effort. Second, although great care was taken to provide support as standardized as possible in a sincere and candid manner in Study 6, it cannot be ruled out that the verbal provision of support from the confederate was perceived as somewhat artificial. In the present study, participants received identical written support which allowed for a highly standardized provision of support. Investigating the effects of written support is particularly important for today's work settings. Teamwork is a very dominant form of structuring work and has become more and more distributed over the last decades with teams working to large extends virtually. Thus, not only task-related but also affective support might be (primarily) communicated via written messages. Previous studies have shown the effectiveness of written supportive messages from non-team sources such as the experimenter (e.g., Tardy, 1992). Third, a physically less straining cognitive task was employed. This task should, on the one hand, exclude potential exhaustion effects which might have undermined the additional motivating effects of support reception. On the other hand, findings from the employed cognitive task might be more generalizable to various other forms of cognitive or creative team tasks compared to physical tasks. Fourth, support was provided for a single trial and not a sequence of trials which might avoid a reduction of impact of the support in later trials. Finally, in extension of the previously presented studies which either assessed received support or perceived support, the

present investigation incorporates both aspects of social support. This allows for a direct assessment of the perceived supportiveness of the received acts of encouragement and the subsequent effect on effort and performance.

5.3.2 Method

5.3.2.1 Participants and design

Study participants consisted originally of 81 first semester psychology students from the University of Münster and high school students from various high schools in and around Münster. The psychology students were tested in the first three weeks of the semester to assure little to no prior knowledge about research designs and experimental manipulations. The high school students were tested following the psychology students on a single day where the students visited the open house of the University of Münster.

Ten participants were excluded from analyses. Two participants reported not believing that vouchers would be distributed which were said to be e-mailed to the participants at the end of the study. As this might have affected their perception of task significance, they were excluded from further analyses. Furthermore, one participant stating that the task was about accuracy and not about speed was excluded as this was contrary to task instructions. Finally, seven participants reporting that they were befriended with their team partner or knew their team partner very well were excluded. This step was taken to avoid confounding influences of the relationship closeness between team partners on the results. The described procedure led to a final sample size of 71 participants including 26 male and 45 female students with an age range from 15 to 29 (M_{age} = 17.72, SD = 2.02) and 16 psychology and 55 high school students.

The experiment consisted of three experimental conditions. Within these conditions two trials were performed. The first trial consisted of individual work. The second trial was either performed individually again (individual control), with a non-supporting team partner (group control), or with an encouraging team partner (group with support). Furthermore, two different orders of questionnaires were employed resulting in a 3 (task condition: individual control vs. group control vs. group with support) x 2 (questionnaire order: one vs. two) x 2 (trial: first vs. second), with the last factor measured within-subjects.

5.3.2.2 Procedure and task

The psychology students were recruited through posters on the Psychology Department's black board and through a Facebook group used by first semester psychology students. The high school students were recruited at the Department of Psychology on the day of the open house of the University of Münster by directly approaching the students. In addition, an official announcement in the program booklet of the open house informed students about the experiment so that some students came directly to the meeting point for the experiment. Participants were tested in groups of four or groups of six. Before the session started, participants were asked to store away any devices showing the time. In the experimental rooms, four or six tables were placed in a row with dividing walls between the tables. The dividing walls were placed in such a way that when sitting at the table it was not possible to see the neighboring participant. At the beginning of each session, participants were asked to choose one of the working spaces and to fill in a consent form as well as a form assessing the demographic information. The consent form and the demographic information as well as each following questionnaire were handed to and later collected from the participants in a non-transparent cardboard folder.

Participants were then asked to refrain from any communication during the entire experimental session and were if necessary reminded later during the session. Following this instruction, the task was explained leaving participants naïve about the number of trials and the experimental conditions. The task consisted of a number-connection task where the numbers from 1 to 10 had to be connected in a successive order with straight lines. The task was adapted from the Trail Making Test (Army Individual Test Battery, 1944; Partington & Leiter, 1949). Each number-square consisted of a 6.6cm x 6.6cm square made up of 49 white circles with a diameter of 0.55cm (cf. Figure 5.2). The circles were connected by a black line giving the impression of a grid with white circles placed over each connection of lines. The numbers from 1 to 10 were written in 10 of the 49 circles. The circle containing number 1 was light grey to aid finding the starting point. The numbers from 1 to 10 were placed in such a way that the angles of the connecting lines were either in an angle of 90° or 45°. For the practice trial three of the number-squares were placed on one sheet of paper with an A4 format. For the two experimental trials, task-booklets of 29 pages with six number-squares on each page were used. For the two trials, two task-booklets were used. The task-booklets differed only in the ordering of the numbers in the number-squares. Thereby, the numbers were always connected from 1 to 10, however, the number 1 in booklet A was changed to number 10 in booklet B for each respective number-square. Number 2 in booklet A was

changed to number 9 in booklet B, and so forth (cf. Figure 5.2). In this way, the lengths of the connecting lines which had to be drawn were the same in both task-booklets.

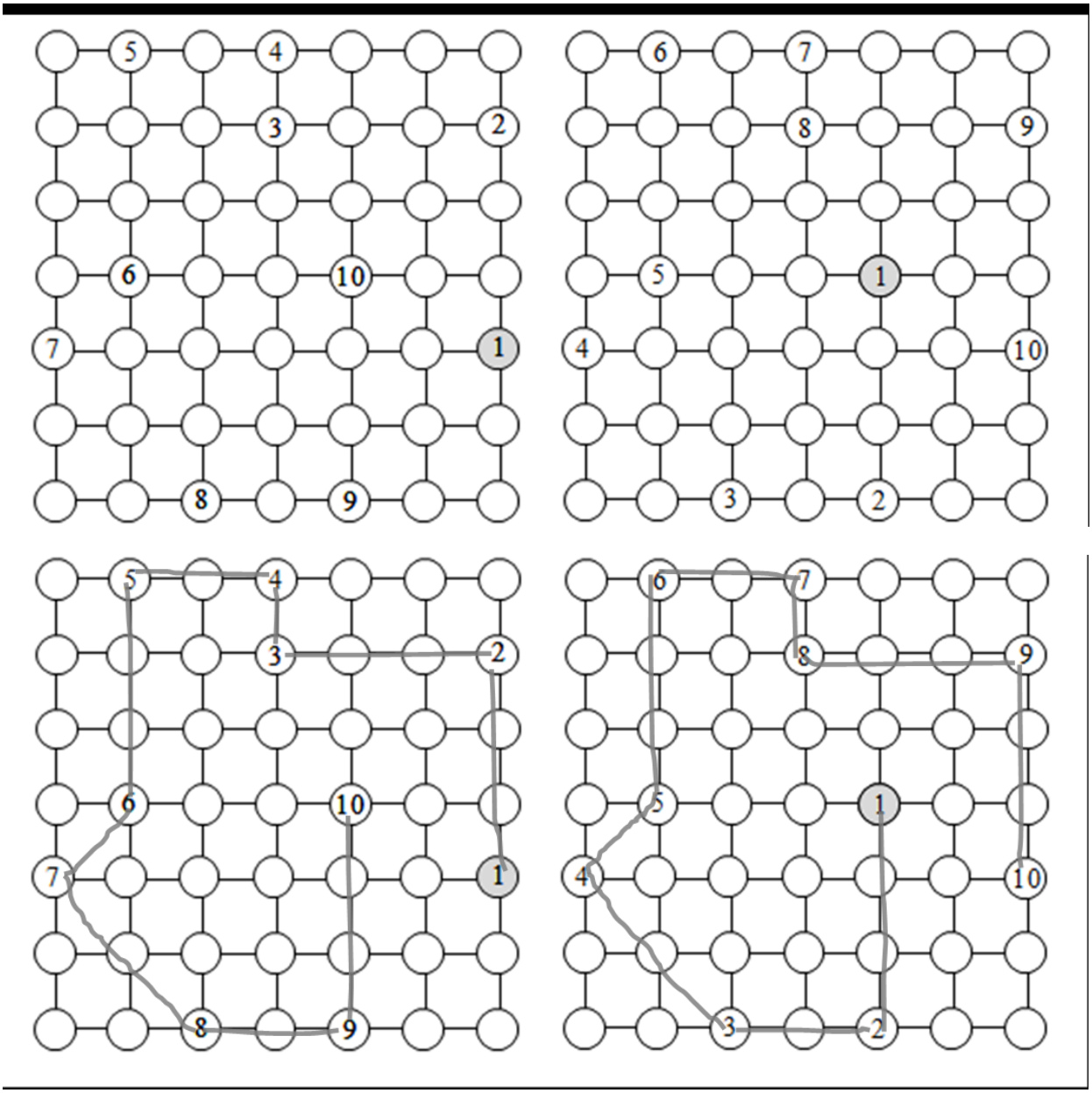

Figure 5.2. Examples of blank (upper panels) and completed (lower panels) number-squares utilized for booklet A (left panels) and booklet B (right panels). Note that the numbers for the left and right panels are structured vice versa.

Participants were instructed to work on the task as quickly as possible with as little errors as possible. Errors were defined as connecting the wrong numbers, skipping numbers, or connecting numbers without straight lines, that is, connecting numbers without crossing out the empty white circles in between numbers. The last error-type was introduced in order to

assure a similar working strategy of completing the number-squares for all participants. Participants were then handed the practice sheet which was completed subsequently. The experimenter thereby checked whether participants had understood how to work on the task and corrected participants when necessary. Participants were then told that the experimental session would start. In the first trial, participants were handed the task-booklet which was placed on the desk in front of the participant face down. Participants were told that they would have 7 minutes to complete as many number-squares as possible starting from a "go" signal from the experimenter. After the 7 minutes were over, the experimenter stopped the task and the participants filled in the first post-questionnaire with control variables.

For the second trial, participants worked either alone again, with a team partner who provided support, or with a team partner who did not provide support. Furthermore, a monetary reward was introduced in the second trial in order to ensure task meaningfulness. For the group condition with support, participants were asked to find a small colored piece of paper underneath their table. The colors assigned participants, depending on the laboratory room, to two or three two-person teams. The colored-papers had been placed underneath the tables in such a manner that participants sitting next to each other were not on the same team. Participants were then told that they would work subsequently as two-person teams according to their colored pieces of paper. Participants were asked to stand next to their team partner and were handed name tags displaying only the color of the team, for example, blue. The monetary reward was then introduced stating that the five best teams of the entire experiment would receive an Amazon voucher of €20 for each participant. Participants were further told that their team performance would be the added up individual team member's performance and would thus depend on how well each team member performs on the task. Before starting the second trial, it was said that one team member per team had the opportunity to write a short supportive message to his/her team partner while the other team member would be asked to fill in a short survey in the meantime. It was further explained that the task assignment would be randomly determined. The experimenter then provided (depending on the experimental room) four or six colored envelopes two in each team color. Participants were told that one of the envelopes in their team color would contain a piece of paper for the message along with instructions whereas the other envelope would contain the survey along with instructions. Participants were asked to draw one envelope in the color of their team. Unknown to the participants, each participant received the survey so that none of the participants wrote a supportive message. The survey asked participants to list at least three typical working areas in which they believed psychologists work today. Participants were then

asked to open their envelope at their working space, work on whichever task they had drawn, and put the message or the survey back in the envelope. After the recollection of the envelopes, participants were told that before starting with the following trial they would receive the second questionnaire and if they had not written a supportive message they would receive their team partner's message. Invisible but audible to the participants, the experimenter then pretended to open the returned envelopes, sort out the messages, and pin these onto the questionnaires. As each participant had received the survey and believed that their team partner had written a message, all participants received an alleged message. The message was placed on the questionnaire in such a way that the message would be read before answering the questionnaire. The second questionnaire employed assessed the mediating variables. As stated above, the questionnaires were placed in cardboard folders so that none of the participants was able to see whether or not the other participants would receive a message. On the messages the following instruction had been printed:

> *If you want to, you can write your team partner a few nice words before the task starts: (So that your team partner is able to read your message, it might be best to write in block letters).*

The following text had been written with the same felt pen that was used for the number-connection task:

> *Hey, you will for sure do great. I'm certain you carry it off very well. You can do it, you rock this :)*

After the questionnaires and the messages were recollected, the number-connection task was performed a second time, again for 7 minutes. Thereafter, the participants filled in a third questionnaire, again with control variables, after which the experiment was over.

In the group control condition without support, the procedure was identical to the group condition with support except that participants were neither instructed for nor did they receive supportive messages. Rather, participants were told that each participant would fill in a survey. In the individual condition no teams were formed and no name tags were provided. For the monetary reward, participants were told that the five best individuals of the entire experiment would receive an Amazon voucher of €20. Participants were also asked to fill in the survey but were provided with identically colored envelopes.

At the end of the experiment, participants were thanked for their participation and told that they would be contacted for the vouchers at the end of the study. The psychology students furthermore received experimental credits for participation which are required for the

fulfillment of the introductory module of the bachelor's degree. The experiment took in total about 45 minutes.

5.3.2.3 Measures

The study items were scored on a 7-point scale ranging from 1 ("do not at all agree") to 7 ("do completely agree") if not stated differently. All employed items can be found in Table C.1 in the appendix. Perceived affective support from fellow team members was measured with three items from Ducharme and Martin's (2000) subscale for affective social support before Trial 2. Two items from the original subscale did not fit the experimental context where team partners are new to each other and were thus not employed. The remaining three items were adapted to the present context (e.g., "I felt appreciated by my fellow team member."). A fourth item was adapted from the F-SozU K-14 scale of emotional support (Fydrich, Sommer, & Brähler, 2007; "I felt that my team partner takes me the way I am."). Cronbach's alpha was .74.

The further mediating variables were, except for positive affect, assessed with the items reported and tested in Study 4. Similarly to Study 6 the three items with the best overall fit to the scale were utilized. The items were when necessary adapted to the context of the present study. Positive affect was assessed with a single item ("Right now, my mood corresponds to the following smiley-face:") employing a smiley-face scale (cf. Jäger, 2004; Kunin, 1955) with 7 smileys ranging from very sad to very happy. The three items for measuring self-efficacy beliefs assessed the confidence that the following task could be successfully performed (e.g., "I am confident that I can master the task."). Cronbach's alpha was .83. The three items to assess social pressure incorporated similarly to Study 6 two items focusing explicitly on pressure from the fellow team member (e.g., "I feel that my team partner puts pressure on me to perform well on the task.") and one item focusing on high expectations ("My team partner expected me to spend high effort on the task."). Cronbach's alpha was .77. The three items measuring obligation to perform well targeted whether participants felt they owed their team partner a good performance in the subsequent task (e.g., "I feel obligated to exert high effort for my team partner in the task."). Cronbach's alpha was .78.

Participants' performance was measured by the amount of numbers that were correctly connected. In accordance with the errors explained to the participants, correct connections included a connection between two successive numbers in which both number circles were marked and the empty circles in between these two numbers were crossed out or at least

marked on the rim. Furthermore, participants reported their effort with two items (e.g., "I put a lot of effort into this trial") which were adapted from (Barrick et al., 2002). The correlation of the two items was .59 after Trial 1 and .70 after Trial 2.

Finally, in addition to the assessment of perceived affective support right after the manipulation, a manipulation check was administered after Trial 2 in the two group conditions. Perceived support was assessed with a single item ("I felt supported by my team mate.") adapted from the items employed in the Study 5. Furthermore, participants in the two group conditions reported whether they had known their team partner before by marking "yes" or "no". If they had known their team partner before, they were further asked to indicate how well they knew their team partner on a 7-point scale ranging from "seen him/her before" to "very good friends". Finally, it was explored whether participants in the group condition with support had read the received message. Participants were asked whether their team partner had written them anything and if yes to briefly note the content of the message.

5.3.3 Results

Preliminary analyses and manipulation check

All participants in the group condition with support reported that they had received a message and reproduced the content of the message correctly. In addition, none of these participants stated any doubts about the originality of the received message. In order to test whether the reception of the encouraging message was perceived as supportive, a *t*-test for independent groups was calculated comparing the ratings of perceived affective support after the message was received (right before the start of Trial 2) in the two group conditions. Results revealed a significant difference, $t(45) = 1.86$, $p = .035$, $d = 0.55$, (one-tailed) with greater perceived affective support in the group condition with support ($M = 5.50$, $SD = 0.94$) than in the group control condition ($M = 4.96$, $SD = 1.01$). A comparison of ratings of the single-item measure of perceived support after Trail 2 revealed no significant difference between the group with support ($M = 5.03$, $SD = 1.73$) and the group control condition ($M = 4.88$, $SD = 1.36$), $t < 1$. The supportive message thus seemed to have had an initial positive effect on the recipients' perception of support. However, this effect might not have lasted until the end of the Trial which was not expected.

I further analyzed the performance scores of the individual condition to investigate and adjust for learning and/or motivating effects due to the monetary incentive introduced before Trail 2. A comparison of performance scores in the individual condition in Trial 1 ($M = 337.75$, $SD = 90.88$) and in Trial 2 ($M = 426.17$, $SD = 105.75$) revealed a significant

performance increase of 88.42 number connections from Trial 1 to Trial 2, $t(23) = 9.96$, $p < .001$, $d = 0.90$. For hypotheses testing, a difference score reflecting effort gains was calculated by subtracting performance scores in Trial 1 from performance scores in Trail 2 (e.g., Hertel et al., 2000; Kerr et al., 2012; Weber, Wittchen, & Hertel, 2009). To adjust effort gains in the two group conditions for the obtained learning and/or reward effect, and to obtain net effort gain scores the constant improvement factor of 88.42 as estimated from the individual condition was subtracted from the obtained effort gain scores (for a similar procedure see Kerr, Messé, Park, & Sambolec, 2005; Kerr et al., 2007). Effort gains compared to individual work are thereby indicated by a positive difference score, effort losses by a negative difference score. [29]

Investigating the performance scores in Trial 1 across the three experimental conditions with a one-way ANOVA, revealed that the randomization had not led to an equal capability level in the three employed conditions, $F(2,68) = 4.08$; $p < .05$; $\eta^2 = 0.11$. Post-hoc comparisons employing Bonferroni corrected significance levels ($p = .05 / 3 = .017$) showed significantly higher performance in the group condition with support compared to the individual condition, $t(52) = 2.61$, $p < .017$, $d = 0.71$ (see Table 5.4 for more details). The Trial 1 performance in the group control condition did thereby neither differ from the group condition with support, $t < 1$, nor from the individual control condition, $t < 1.7$.

Furthermore, I explored whether effort gains reflected in performance corresponded with effort gains reflected in self-reports. Self-report based effort gains were computed by subtracting ratings after Trial 1 from ratings after Trail 2. The results indicated that self-report based and performance based effort gains showed a small non-significant relation, $r(71) = .12$, $p = .34$. Although some studies have found larger correlations between performance based and self-report based effort gains (e.g., Hertel et al., 2003), other studies have found a similarly small relation (e.g., Weber et al., 2009). Furthermore, the relation between self-reported effort and performance scores was positive and significant in Trial 2, $r(71) = .25$, $p < .05$ and small and non-significant in Trial 1, $r(71) = .12$, $p = .31$, indicating further that perceptions of invested effort corresponded merely mildly with actually exerted effort.

Moreover, a preliminary 2 (gender: male vs. female) x 2 (students: psychology students vs. high school students) x 2 (first task-booklet: A vs. B) ANOVA on performance

[29] Several previous studies have employed a multiplicative correction with a correction factor in order to correct for training or fatigue effects (e.g., Hertel et al., 2008; Hertel et al., 2000). However, in the present study this procedure led to an overcorrection of results likely caused by a non-successful randomization in the three employed conditions.

based effort gains across the three conditions revealed no significant main or interaction effects, all Fs < 1.01. These results suggest that effort gains were independent of participants' gender, whether they were psychology or high school students, and the order of task-booklets employed.[30]

Analyses of effort gains

In order to investigate Hypothesis 3c that the reception of fellow team members' social encouragement leads to additional effort compared to group work without support, effort gain scores were analyzed. An independent *t*-test between the group support condition and the group control condition revealed, contrary to assumptions, no significant difference in effort gains between the two groups, $t < 1$. The alternative analysis of performance scores in Trial 2 with performance scores in Trial 1 as covariate (see, for example, Lount et al., 2008) led to virtually the same result as the analysis with difference scores. Thus, although significant overall effort gains were present in the group conditions in Trial 2 (M = 13.35, SD = 44.64), $t(46) = 2.05$, $p < .05$, $d = 0.30$, when comparing effort gain scores against zero, the reception of encouragement did not increase effort gains in Trial 2 beyond the level of group work without support.

Although effort gains due to the reception of social encouragement were not reflected in actual effort expenditure, I investigated whether they were reflected in self-reports. The results of an independent *t*-test between the two group conditions on self-report based effort gains showed similarly to the findings on performance based effort gains no significant difference between the two groups, $t < 1$, (cf. Table 5.4).

[30] Furthermore, effort gains were neither affected by whether participants were tested in groups of six or groups of four nor whether participants were left- or right-handed, Fs < 1.

Table 5.4

Means and standard deviations of performance scores (Study 7)

	Group with support $N = 30$		Group control $N = 17$		Individual control $N = 24$	
Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*
Performance Trial 1						
Numbers connected	398.77	80.24	360.71	53.43	337.96	91.08
Numbers connected correctly	398.33	79.82	360.29	53.98	337.75	90.88
Performance difference scores						
Numbers connected	13.17	47.96	15.39	42.32	0.00	43.75
Numbers connected correctly	12.85	47.58	14.23	40.30	0.00	43.50
Self-reported effort						
Trial 1	5.11	1.39	5.71	1.52	4.94	1.77
Difference scores	0.73	1.10	0.76	1.80	0.52	1.34

Note. The mean difference scores for the individual control condition are zero as the additive correction employed in the group conditions was based on the individual control condition. Correction for numbers connected: 88.67; correction for numbers connected correctly: 88.42.

Finally, in order to investigate whether motivating effects of social encouragement were triggered only through perceived supportiveness of the received message (cf. Hypothesis 9), the relations between perceived affective support and performance based as well as self-report based effort gains were investigated in the group condition with support. Due to the small sample size the results are reported based on the size of the correlations as defined by J. Cohen (1988) and not based only on statistical significance. Contrary to assumptions, the results revealed, however, a small non-significant negative relation between perceived affective support and performance based effort gains, $r(30) = -.17$, $p = .37$ (cf. Table 5.6). Although not significant, this finding might point to potential performance decreases due to social encouragement. Perceived affective support showed, however, a small non-significant, positive relation with self-report based effort gains, $r(30) = .27$, $p = .15$. Thus, effort gains reflected in self-reports tended to increase the more supported participants felt after receiving social encouragement. This finding is paralleled by a significant positive relation between perceived affective support and self-reported effort in Trial 2, $r(30) = .45$, $p < .05$. Together, although the results on performance based effort gains were not in line with Hypothesis 9, the results on self-report based effort gains provided initial evidence in line with assumptions.

Explorative analyses of the mediation hypotheses

As no overall effect of social encouragement on effort gains was obtained, I investigated the mediating hypotheses exploratively. I first explored whether the ratings of the mediating variables differed between the two group conditions. It was expected that participants who received support would report higher ratings of the mediating variables compared to participants who did not receive support. The descriptive statistics are depicted in Table 5.5. A set of independent *t*-tests yielded only for obligation to perform well a marginally significant difference between the two group conditions, $t(45) = 1.70$, $p = .095$, $d = 0.54$. Inspecting the means (cf. Table 5.5) revealed, however, that contrary to Hypothesis 6, which assumed that social encouragement triggers obligation to perform well, ratings were higher in the group control condition. No other differences were obtained, *t*s < 1, which is contrary to assumptions.

Table 5.5

Means and standard deviations of the mediating variables (Study 7)

	Group with Support $N = 30$		Group control $N = 17$	
Measure	*M*	*SD*	*M*	*SD*
Positive affect	5.53	1.07	5.47	0.72
Self-efficacy	5.62	0.94	5.83	0.69
Social pressure	2.76	1.22	3.04	1.44
Obligation to perform well	5.42	1.22	6.00	0.91

Secondly, I explored whether according to Hypothesis 9 perceived affective support was contingent to the sequentially later mediating variables. When inspecting the correlations (cf. Table 5.6), perceived affective support showed a positive and significant relation with positive affect, $r(30) = .44$, $p < .05$, and with obligation to perform well, $r(30) = .39$, $p < .05$. Furthermore, the relation between perceived affective support and self-efficacy beliefs was positive and small, $r(30) = .16$, $p = .39$, and between social pressure positive and medium in size, $r(30) = .30$, $p = .11$, (J. Cohen, 1988). The obtained results were all, although partially not significant, in the assumed direction and in line with Hypothesis 9.

I subsequently explored whether according to the mediation hypotheses, the (sequentially later) mediating variables were related to performance based and self-report based effort gains. As can be seen in Table 5.6, none of the assumed mediating variables was

related to performance based effort gains which might be due to an overall absence of additional effort gains. These results are paralleled by a similar pattern for the relations between the mediating variables and task performance in Trial 2 (cf. Table 5.6). However, in line with the mediation hypotheses, self-report based effort gains showed a significant positive relation with self-efficacy beliefs, $r(30) = .37$, $p < .05$, (cf. Hypothesis 5b). Although the relations between self-report based effort gains and positive affect and obligation to perform well were not significant, the direction of these relations was as assumed.[31] Contrary to assumptions, social pressure showed a marginally significant negative relation with self-report based effort gains, $r(30) = -.35$, $p = .06$, and not as assumed a positive relation (cf. Hypothesis 7). Thus, in contrast to performance based effort gains, the correlational analysis of self-report based effort gains provided some indications for the assumed relations between the proposed mediating variables and effort gains.

Table 5.6

Correlations among the study variables (Study 7; N = 30)

	1	2	3	4	5	6	7	8
1. Perceived affective support	-							
2. Positive affect	.44*	-						
3. Self-efficacy	.16	.29	-					
4. Social pressure	.30	.29	-.24	-				
5. Obligation to perform well	.39*	.49**	-.09	.64**	-			
6. Performance based effort gains	-.17	.05	-.10	-.08	-.04	-		
7. Self-report based effort gains[a]	.27	.30	.37*	-.35Δ	.25	.24	-	
8. Performance Trial 2	-.01	.09	.08	-.04	-.07	.76**	.32§	-
9. Self-reported effort Trial 2	.45*	.38*	.31†	.01	.16	.33+	.35Δ	.42*

Note. †$p < .10$, §$p < .09$; +$p < .08$, Δ$p < .06$, *$p < .05$, **$p < .01$.

[a] One participant was excluded from the analysis with obligation to perform well due to a Dfbeta score of -1.33, with inclusion $r(30) = -.06$.

5.3.4 Discussion

The present study focused on investigating the motivating effects of written social encouragement from fellow team members' as important facet of affective support particularly in the context of new teams and distributed teamwork. Furthermore, the

[31] One participant was excluded from the analysis with obligation to perform well due to a Dfbeta score of -1.33 indicating an influential case, with inclusion $r(30) = -.06$, ns.

mediating variables specifically assumed for the effect of social encouragement on effort gains were investigated.

Contrary to Hypothesis 3c, receiving an encouraging message from a fellow team member lead to similar performance based and self-report based effort gains compared to teamwork without support. Although unexpected, this result might be in line with the reasoning of Hypothesis 9: If participants did not perceive the well-intended encouraging message as particularly supportive, additional effort beyond the level of group work without support might not occur. The results indicated that overall the encouraging message was perceived as supportive. However, the difference in perceived support between participants who actually received encouragement and participants who did not receive encouragement was not large and seemed not to last. The encouraging message in the present study might thus not have been perceived as supportive enough to trigger additional effort. Partially in line with Hypothesis 9, perceived affective support was nevertheless positively related to self-report based effort gains. This points in line with previous research (e.g., Beehr et al., 2010; J. L. Cohen et al., 2005; Deelstra et al., 2003; Fisher et al., 1982; Eisenberger et al., 2001; van Emmerik, 2008) to the importance of also considering perceived support when investigating the effect of social support on performance outcomes. However, contrary to Hypothesis 9, perceived affective support was negatively related to performance based effort gains. Although this relation was not particularly strong and effort gains were not shown to differ between the two group conditions, this result might indicate that social encouragement can attenuate additional effort under certain circumstances (cf. Irwin et al., 2013).

Beside the explanation suggested by a rather low and non-lasting level of perceived affective support (cf. Hypothesis 9), several other explanations might account for the lacking effect of social encouragement on performance based effort gains. First, the time participants were allowed to work on the task was rather short. Other studies employing time limited tasks (i.e., the end of the task is determined by a predefined time limit; e.g., Hertel et al., 2003; Hertel et al., 2008) rather than physically limited tasks (i.e., the end of the task is determined by muscle exhaustion; e.g., Hertel et al., 2000; Irwin et al., 2013) generally allowed for longer working periods such as 12 or 20 minutes. It might thus be possible that effects of social encouragement on additional effort require a longer working period to unfold especially in tasks in which persistence is an important determinant of performance.

Second, it might be possible that the number-connecting task was not sensitive enough to measure small changes in effort. This task was chosen based on face validity and not specifically pre-tested as has been done with other tasks (cf. Hertel et al., 2003). The small

relation between self-report based and performance based effort gains might point to a low sensitivity of the number-connecting task to assess motivational differences. However, it might be possible that in line with the previously mentioned explanation, the number-connecting task was merely not sensitive in the administered time span. In addition, previous research which found similarly small relations between self-report based and performance based effort gains was nevertheless able to show effort gains in teamwork settings (e.g., Weber et al., 2009).

Finally, similar to Study 6, participants' effort might have been already at such a high level due to factors inherent in the procedure that the encouragement administered did not further increase effort in the task. As the experiment was for participants (likely) their first time participating in a psychological study, they might have been highly motivated to perform as good as possible. Furthermore, although working spaces were separated by partition walls so that participants were not able to see their neighbours' working space, participants were able to hear the other participants working on their tasks. Based on the human drive to evaluate one's performance (Festinger, 1954), participants might have attended to the sound of turning pages which led to the motivation to perform equally well or better than the other participants. Comparison processes might thus have been unintentionally triggered which reduced the potential for social encouragement to further increase effort.

Although the mediation processes were merely investigated exploratively, some support in line with the mediation hypotheses and Hypothesis 9 was obtained. Relations between perceived affective support and all of the assumed mediating variables were shown to be in the hypothesized direction. As perceived affective support and the assumed sequentially later mediating variables were measured at the same time, no unambiguous evidence for the causal direction of effects can be provided in the present study. Nevertheless, the results might provide initial evidence for the postulated effects of perceived support on the proposed sequentially later mediating variables.

Contrary to the mediation hypotheses, none of the mediating variables was positively related to performance based effort gains. Self-efficacy beliefs, social pressure and obligation to perform well even showed each a (very) small negative relation to performance based effort gains. Although the relations were each small and should not be over-interpreted, they might in sum have contributed to the small negative relation between perceived affective support and performance based effort gains. Together, performance based effort gains were unaffected by encouragement reception, perceived support, and the assumed underlying motivating processes. However, in line with assumptions and previous research, the assumed

mediating variables were, except for social pressure, positively related to self-report based effort gains (e.g., Eisenberger et al., 2001; A. Erez & Isen, 2002; Seo & Illies, 2009; Stajkovic & Luthans, 1998; Tsai, et al., 2007). The results thereby indicated that the assumed consequences of social encouragement might incorporate not only motivating cheers and uplifts but also negative pressure. Importantly, although social pressure and obligation to perform well were related (cf. Table 5.6.), their relation to self-report based effort gains was in opposite directions indicating that both processes might share common aspects but are not identical in their effects.

5.4 General discussion

The main objective of the present studies was to investigate the independent effects of fellow team members' social encouragement and social recognition on effort gains over and above group work without support. Previous research on affective social support has typically not distinguished between social encouragement and social recognition (e.g., Andreacci et al., 2002, Guyatt et al., 1984, Irwin et al., 2013; Worthington et al., 1983) or has focused on one type of affective support stemming, however, from non-team sources (e.g., Bickers, 1993; Binboğa et al., 2013; Luthans et al., 2008; Stajkovic & Luthans, 2001; Tuckman & Sexton, 1991). The present investigations addressed this lack of research on fellow team members' affective support and focused additionally on the underlying processes assumed to mediate the effects of social encouragement and social recognition on effort gains.

Both studies, presented in this chapter showed similarly to previous research on effort gains in groups (e.g., Hertel et al., 2000; Lount et al., 2008), higher effort gains in group work settings compared to individual work. However, in both studies neither the reception of single acts of social encouragement nor of social recognition were shown to lead to additional effort gains above and beyond the level of group work without support. The results were thus not in line with the assumptions of this dissertation and the MSST (Hüffmeier & Hertel, 2011). As discussed above, several explanations might account for the lacking effects in each study. The two conducted studies can thus not unambiguously answer the question whether social encouragement and social recognition can function as independent triggers of additional effort in groups. It seems that single acts of affective support from an unknown team member might not suffice to trigger additional effort in the recipient. Importantly, however, contrary to previous research indicating negative effects of fellow team members' affective support on effort gains (e.g., Irwin et al., 2013) neither the reception of social encouragement nor of social recognition lead to lowered effort gains compared to group work without support. The

results along with previous research (e.g., Baruch et al., 2002; Campenella et al., 2000; Irwin et al., 2013, Max, 2014; Searle, Bright, & Bochner, 2001) might thereby rather point to context conditions which might account for the positive, negative, or neutral effects of affective social support. Some potentially relevant context conditions will be discussed in Chapter 6.

Furthermore, the conducted studies could not provide conclusive evidence for the differential mediating processes for social encouragement and social recognition. However, first insights were obtained: All of the proposed mediating variables seemed to play at least a certain role in explaining the effects of affective support on effort gains and should be further considered. Furthermore, the studies indicated that changes in perceptions of the mediating variables are important to consider. Moreover, the present studies employed a rather subtle support manipulation (providing support only once) which might underestimate the effects not only on effort gains (cf. Study 3) but also on the mediating variables. Furthermore, the assumed effects might be more pronounced in established teams with past as well as continuing teamwork and received support from known and valued sources.

In addition, the sample size in both studies was rather small but nevertheless comparable to previous research on effort gains in groups (e.g., Hertel et al., 2008; Messé, Hertel, Kerr, Lount, & Park, 2002; Wittchen et al., 2007). Post hoc power analyses for *t*-tests between two independent groups were calculated with G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009) for both studies as the initial aim was to detect differences in effort gains between group work with and without support. The effect size estimate was based on the results obtained in Study 3 when comparing effort gains in the group with and without support. The effect size of $d = 1.35$ was, however, lowered to 0.90 presenting nevertheless a large effect but taking into account that the findings of Study 3 might present a particularly large effect. Results revealed adequate power for both studies (.91 for Study 6; .83 for Study 7). However, in order to detect mediating effects, if present, the sample size might have to be larger. Furthermore, in small samples, participants with extreme values or combinations of values might influence the results more than in larger samples. These participants might present valid cases of the researched population and might provide important insights for future research (Aguinis et al., 2013). The present research with several (excluded) outliers particularly in self-reports might thereby indicate that a very similar support situation was experienced rather differently by individuals.

Chapter 6
General Discussion

6.1 Introduction

The majority of studies on social support has focused on the various effects of social support on health (e.g., Barth, Schneider, & von Känel, 2010; Holt-Lunstad et al., 2010; Pinquart & Duberstein, 2010) neglecting potential positive effects on work-related outcomes such as motivation. Several studies have, however, started to indicate effort enhancing effects of fellow team members' social support (e.g., Beehr et al., 2000; Chiaburu & Harrison, 2008; Osca et al., 2005). Furthermore, as the implementation of social support within teams might be a rather simple way to re-structure the work environment (Osca et al., 2005), it is promising to identify whether, how and under which conditions social support from fellow team members can have effort enhancing effects.

The objective of this dissertation was to provide a systematic investigation of the motivating effects of fellow team members' social support on different levels of psychological functioning. The present dissertation focused specifically on the motivating effects of affective social support with its subtypes – social encouragement and social recognition. The aim was furthermore to answer the question whether and how each type of fellow team members' affective support can trigger additional effort gains in group work settings above and beyond teamwork without support. Finally, this dissertation aimed at providing a first validation of the MSST (Hüffmeier & Hertel, 2011) as well as at extending the framework.

Consistent with the MSST (Hüffmeier & Hertel, 2011), the three studies presented in Chapter 2 – Study 1 through 3 – evidenced motivating effects from fellow team members' support on three levels of psychological functioning: beliefs about motivating group work, effort intentions, and actual effort expenditure. Particularly the latter finding replicates and extends previous research indicating manifest effort increases due to the reception of experimenter support (e.g., Bickers, 1993; Sarason & Sarason, 1986; Tardy, 1992; Tuckman & Sexton, 1991). Furthermore, the conducted diary study – Study 5 – evidenced a positive relation between fluctuations of day-level support perceptions and day-level work motivation. This finding replicates and extends previous research on general perceived support from various sources and its effects on performance outcomes (e.g., Eisenberger et al., 2001; Freeman & Rees, 2008; van Emmerik) as well as research on short-term effects of received team members' support (e.g., Xanthopoulou et al., 2008). In contrast, the two laboratory

studies presented in Chapter 5 – Study 6 and Study 7 – showed neither performance based nor self-report based additional effort gains due to the reception of fellow team member's social encouragement or social recognition. Thus, although previous research evidenced motivating effects of social encouragement or social recognition from various sources of support (e.g., Bickers, 1993; Binboğa et al., 2013; Luthans et al., 2008; Tuckman & Sexton, 1991), these effects were not found for fellow team members' encouragement or recognition. The results of this dissertation are only partially in line with the MSST (Hüffmeier & Hertel, 2001). It seems that the effects of fellow team members' affective support might have positive (cf. Study 2 and Study 3; Osca et al., 2005; Tsai et al., 2007; Xanthopoulou et al., 2008), negative (e.g., Irwin et al., 2013, Max, 2014), or no additional effects on effort (gains) (cf. Study 6 and 7; Baruch et al., 2002). It remains so far, however, unclear which aspects or characteristics of the support situation determine whether fellow team members' affective support has positive, no additional, or even negative consequences on effort. Among other factors, characteristics of the support situation which affect the evaluation or perceived supportiveness of the received support might be important to consider.

In the following, I will first discuss the mixed findings on the effort enhancing effect of fellow team members' affective support in this dissertation. Some aspects that might account for the mixed findings will be presented. Furthermore, some suggestions will be offered for conditions under which social encouragement and social recognition might be effort enhancing or effort impairing providing some starting points for future research. Subsequently, implications of the differentiation between received and perceived affective support will be briefly discussed. Following, I will summarize the findings on the mediating variables and discuss their relevance for the MSST (Hüffmeier & Hertel, 2011). Finally, practical implications and limitations of this dissertation will be discussed.

6.2 Theoretical implications and future research

6.2.1 Effort gains

Validity of support sources

One aspect to consider when aiming at explaining the mixed findings of this dissertation is the validity of the source of support which might (in part) determine the strength of the provided support. In order to provide effective support, the support provider needs to be accepted as a valid source of support. Sources of support with a low validity might nevertheless provide

affective support, the perceived supportiveness and thus the effort enhancing effects might, however, be lower than from highly valid sources. Valid sources of support might among other characteristics be able to evaluate performance, have knowledge of the task and potential inherent problems, and the performing team member. Certain groups of people might be readily accepted as valid sources of support. Supervisors, coaches, team leaders, and experts might be assumed to be able to evaluate performance against various standards (for example, earlier performance or average performance) and to be able to judge the individual's performance or competence. This assumption might particularly hold in new relationships. New supervisors, coaches, team leaders, and experts might profit from their status and/or the assumed knowledge about performance standards and the task itself whereas new fellow team members might still have to prove whether they are valid sources of support. In laboratory settings, several studies have shown that one-time provided verbal or written support from the experimenter – which might be similar to supervisory support – had a positive effect on the recipient's effort exertion (e.g., Sarason & Sarason, 1986; Tardy, 1992; for an exception see Searle et al., 2001). In contrast, in the present dissertation one-time provided written or verbal support from a fellow team member did not have the assumed additionally motivating effect. The new team member might not have been accepted as valid source of support rendering the one-time provided support as not particularly supportive and thus not strong enough to increase effort. Importantly, however, in new team settings fellow team members' might nevertheless be able to exert a substantial effect on the support recipients' effort, it might merely take them more supportive effort as indicated by Study 3. In new teams, fellow team members might be able to compensate for their initial low validity as source of support by providing support regularly and when it is indeed needed. Although, simply providing more affective support might not lead to motivating effects in new teams (cf. Irwin et al., 2013), providing support only once might have been an important aspect which hindered additional effort gains in Study 6 and Study 7.

Furthermore, the validity of a source of support and thus the effectiveness of particularly affective support might also depend on the quality of relationships team members share (e.g., Deelstra, 2003; Pierce et al., 1992; Sandler & Barrera, 1984). Kram and Isabella (1985) distinguished in their research several relations between peers who knew each other (well), for example, information peers, collegial peers, and special peers. Information peers exchange mainly work-related information, collegial peers exchange work-related information as well as personal information, and special peers are equivalent to friendships and are characterized by personal closeness. Other differentiations are of course thinkable, however, it

might be conceivable that the effectiveness of received support depends on the relationship quality between the support provider and recipient (e.g., Deelstra, 2003; Pierce et al., 1992; Sandler & Barrera, 1984). It might, for example, be possible that special peers as they know the fellow team member particularly well and are more trusted (on a personal level) are perceived as more valid sources compared to information peers. Future research is needed to investigate which aspects indeed affect the validity of team members as sources of support. This might be particularly important in determining which team members are truly strong sources of support within teamwork settings and which team members' affective support might be rather ineffective.

Focus of attention

Another aspect that might account for the mixed findings in this dissertation is a change in one's focuses of attention either on the self or on the task due to support reception. The changed focus of attention might enhance or impair performance depending on the task (e.g., Baumeister, 1984; Baumeister, Hutton, & Cairns, 1990; Kluger & DeNisi, 1996). Delin and Baumeister (1994) assumed that praise or recognition and the same might hold for encouragement provides information about the recipient of support. This might in turn focus attention more strongly on the self. Focusing the attention on the self incorporates being aware of one's internal processes as, for example, controlling consciously the correct execution of a task (Baumeister, 1984). This self-awareness or self-attention might impair automatic task execution particularly in well-learned tasks (see also Kluger & DeNisi, 1996). Baumeister and colleagues (1990) assumed that skilled performance and effort are not mutually exclusive such that support might increase effort but might in certain circumstances simultaneously impair performance.

In Study 7, support reception might have led support recipients to focus their attention more strongly on the self and thus on how they executed the task. Support recipients might have been motivated to perform well and might have consciously tried to put additional effort into the task. This in turn might, however, have led participants to pay more conscious attention to finding the right numbers, to connecting them correctly, to working fast, and to avoiding errors. However, if the automatic execution of a task is overridden by conscious processes, performance might be impaired (Baumeister, 1984). In Study 7, effort might have profited from the additional motivating effects of support but performance might at the same time have been impaired by the shift of attention on the self.

In the weight-holding task, the focus of attention might have by itself (that is without further influences) shifted quickly to the physical states as tension and potentially pain increased continuously. The more participants focused on the tension, the sooner they might have decided to lower the arm and quit the task. In Study 3, the performing participant might have through receiving ongoing support shifted her (self-)attention from her physical conditions back to the task (see also Kimbler et al., 2012). That is, the ongoing support might have aided participants to stay focused on the task (and the overall goal) and divert attention away from the muscle tension (e.g., Andreacci et al., 2002; Delin & Baumeister, 1994). Participants in Study 6 who received support only once might not have profited from a lasting shift of attention but might have quickly focused back on themselves and the increasing tension in the performing arm similarly to participants who did not receive support at all. Future research might investigate whether helpful or harmful shifts in attention occur due to fellow team members' affective social support as outlined above. If attention shifts play a role in the effectiveness of affective social support, knowing the context conditions of these helpful/harmful shifts might provide important guidelines of when to incorporate affective support in teamwork settings.

Equality in reciprocation

A third explanation for the obtained results might be provided by equity theories of social relationships. According to equity theories within social exchanges and the norm of reciprocity (e.g., Adams, 1965; P. M. Blau, 1964; Gouldner, 1960), the reception of benefits should be sooner or later returned in well-functioning relationships. These theories assume that "both overbenefit (receiving more support than one has provided) and underbenefit (providing more support than one has received) are psychologically distressing and that individuals are motivated to restore equity" (Gleason, Iida, Shrout, & Bolger, 2008, p. 3). A lack of reciprocity might result in negative consequences such as negative evaluations of the helper, negative mood, or decreased willingness to invest further effort (e.g., Buunk, Doosje, Jans, & Hopstaken, 1993; Gergen, Ellsworth, Maslach, & Seipel; 1975; Gleason, Iida, Bolder, & Shrout, 2003; Gross & Latané, 1974; Kerr, 1983; Uehara, 1995).

In this dissertation I argued that the reciprocation of the support received can take the form of additional effort as well as reciprocation in kind. Reciprocation in kind incorporates returning social support to the provider or another fellow team member. However, in all experimental studies reciprocation in kind was prevented. Participants in Study 3 received the largest amount of support and were able to reciprocate each act of support received

immediately with exerted effort, for example, by holding the weight just a little longer, lifting the arm a bit upwards again, or refraining from lowering the arm just yet. The immediate reciprocation of support with invested effort might have led to an equilibrium between giving and taking. In contrast, for participants in Study 6 and Study 7, giving and taking benefits might not have been on an equal level. Participants in Study 6 performing the weight-holding task received support only once and were asked to continue performing the weight-holding task without receiving support again. As the task continued for several trials, participants might have felt underbenefitted by their teammate. However, as participants also performed for their own monetary outcome, the perceived imbalance might not have led to reductions in effort but might have "merely" impaired or eliminated the additional motivating effects of support (cf. also the discussion section of Study 6).

Furthermore, participants in Study 7 performing the number-connecting task received support before working as team. Participants might have concluded from the supportive message that their team member will invest a great amount of effort in the task and thus in the team. Consequently, the recipients of support might have felt overbenefitted, on the one hand, by receiving social encouragement from their team partner and, on the other hand, by an ambitious team member from whose effort they would also benefit. Thus, merely increasing one's own effort might not have felt enough to reciprocate the favors received. Overbenefit might lead to feelings of indebtedness and guilt (e.g., Bowling, Beehr, & Swader, 2005; McClure et al., 2014). In turn, negative reactions might have occurred (even though the supportive message was well-intended). Gleason and colleagues (2003) showed that negative effects of overbenefit caused an increase in negative affect even on a daily basis. As affect is an assumed mediating process, decreased affect might subsequently have negative consequences on effort. In addition, Gergen and colleagues (1975) assumed that receiving a benefit without an attached obligation to reciprocate or a very strong obligation to return the favor might cause negative consequences for the perceived attraction of the support provider (see also Castro, 1974; Gross & Latané, 1974). The first case in which the benefactor violates the pervasive norm of reciprocity potentially causing irritation in the recipient or decreased attraction to the support provider (Gergen et al., 1975) might be assumed for Study 7. However, as effort gains in Study 7 were comparable for the group with and without support, feeling overbenefitted might have nullified the effort enhancing effects of support without causing actual decreases in effort.

As indicated by several theories of social exchange, equity and reciprocity of benefits can be considered important features of well-functioning social relationships (e.g., Adams,

1965; P. M. Blau, 1964; Gouldner, 1960). Future research is necessary to further determine whether and under which conditions the reception of affective support from fellow team members might lead to over- or underbenefit and in consequence to nil or negative effects on effort and performance. This might be particularly important in new teams in which trusted relationships still need to develop and the time span for reciprocation is assumed to be shorter compared to established relationships (e.g., Graen & Uhl-Bien, 1995; Sparrowe & Liden, 1997). Thereby, particularly lasting over- or underbenefit might impair effort investments for the team.

Threat-to-self-esteem

One final explanation for the obtained findings might be offered by the threat-to-self-esteem model (e.g., Fisher et al., 1982; Nadler & Fisher, 1986) which assumes that support can also be appraised as self-threatening. Is support perceived as self-threatening negative consequences such as negative evaluations of the provider or the aid itself, non-acceptance of the aid, and feelings of incompetence and/or inferiority might occur (e.g., Deelstra et al., 2003; Fisher et al., 1982; Nadler, Fisher, & Itzhak, 1983). Although the model focuses specifically on task-related support such as tangible aid, it might also apply to affective support. It might be possible that receiving, for example, encouragement for an upcoming task also leads to feelings of inferiority relative to the support provider (or the team) or to feelings of incompetence. Receiving support might incorporate the interpretation that the support provider felt a need to provide support as s/he believed that one is not capable of mastering the task otherwise (e.g., Meyer et al., 1979). Moreover, threat to self-esteem might also occur because the recipient of affective support is made aware that s/he has difficulties with a task (e.g., Fisher et al., 1982) and that these struggles are publicly known (e.g., Bolger et al., 2000). Research on instrumental support indicates that the most negative consequences occur when the recipient neither asked for help nor was in need of help (e.g., Deelstra et al., 2003). It might thus be that spontaneous provided affective support although well intended might under certain circumstances be harmful (e.g., Beehr et al., 2010) and might impair the assumed motivating effects of affective support (e.g., Irwin et al., 2013). Furthermore, involuntary support or support with little costs for the support provider might further stress feelings of incompetence or inferiority in the support recipient and might be perceived as more self-esteem threatening than voluntary and costly support (e.g., Fisher et al., 1982; Gergen et al., 1975; Goranson & Berkowitz, 1966).

In all laboratory studies presented in this dissertation, support was provided following a request to do so. Importantly, however, in Study 3 participants were free to support how often and much they wanted. Furthermore, the continuous support provision took effort from the support provider and might thus have been seen as costly. In addition, support providers likely matched their support provision more closely with the needs of the recipient (cf. Cutrona & Russell, 1990). That is, they might have provided support when they saw their team member was struggling. In contrast, support provided in Study 6 and Study 7 was a direct answer to the experimenters' request to offer support. Thus, the support might have been perceived as rather involuntary, not costly as it was only provided once, and might not have matched the needs of the recipient. Consequently, the provided support in these studies might have been perceived to a certain degree as self-threatening which might be rather unlikely for Study 3. According to the threat-to-self-esteem model (e.g., Fisher et al., 1982; Nadler & Fisher, 1986), received support should be perceived as predominantly self-threatening in order to have negative consequences. However, no effort decreases due to support reception were obtained in Study 6 and Study 7 compared to group work without support. It might thus be possible that the additional motivating effect of support reception was impaired by a certain degree of threat to self-esteem due to the involuntary, low-cost, and not matching support without actual decreases in effort. In addition, the ratings of the process variables were not shown to be negatively affected by support reception. However, a certain degree of threat to self-esteem might have impaired stronger increases in ratings of the mediating variables compared to group work without support. Future research is, however, necessary to investigate to what extend the model of threat-to-self-esteem (e.g., Fisher et al., 1982; Nadler & Fisher, 1986) is applicable to the reception of affective social support from fellow team members. Irwin et al. (2013) proposed in their investigation of fellow team members' encouragement that affective support from superior team members might be perceived as condescending which might result in threats to the recipients' self-esteem. Thus, under certain conditions affective support might indeed be interpreted as self-threatening.

Taken together, several potential explanations might either in isolation or combination account for the mixed findings on the motivation effects of fellow team members' affective support which might in addition to the study specific explanations (provided in the respective discussion sections) offer potential starting points for future research. It might be particularly important to consider the perceived supportiveness of the support received which might be dependent on several context conditions. It seems that various aspects of the support situation have to be "right" in order for affective support to lead to additional effort gains. Otherwise,

these aspects might impair the additional motivating effects of affective support. Importantly, however, the present dissertation also evidenced that when support conditions are not ideal, they do not necessarily lead to detrimental effects such as decreases in effort exertion.

6.2.2 Context conditions for social encouragement and social recognition

In the outset of this dissertation, I argued in line with the MSST (Hüffmeier & Hertel, 2011) that social encouragement and social recognition are two aspects of affective social support that independently increase effort gains in teams. Both types of affective social support were assumed to lead to similar increases in effort gains, however, through different underlying processes. As neither effort gains from the reception of social encouragement nor social recognition were obtained in the conducted studies (cf. Study 6 and Study 7), these assumptions were not supported. Several potential explanations for the lacking effect of fellow team members' affective support on effort gains were discussed above. In the following, I will propose some context conditions for the motivating effects of specifically fellow team members' social encouragement and social recognition.

Many team situations might allow for the provision of social encouragement as well as of social recognition. It might, however, be possible that only one type of affective support is adequate in a certain social situation rendering one type of affective support effective and the other type rather ineffective. This knowledge might also aid in understanding why providing both types of affective support might in some cases have negative effects (e.g., Irwin et al., 2013; Kanouse & Pullan as cited in Kanouse, Gumpert, & Canavan-Gumpert, 1981). Aspects which might be considered when deciding which type of support is best provided are characteristics of the support recipient, of the support provider, and of the task (cf. also Fisher et al., 1982; Pierce et al., 1992).

Recipient characteristics

The recipients' characteristics might provide some indications for which type of affective support is (most) effective. The underlying processes for social encouragement and social recognition might be furthermore considered. Social recognition might be particularly valuable for team members who are low on generalized or state self-efficacy and are not sure about whether or not they can successfully master a team task (e.g., Bandura, 1977; Scholz et al., 2002; Schyns & von Collani, 2002). As particularly social recognition is assumed to have a positive effect on self-efficacy beliefs, this type of affective support might be chosen over

social encouragement when a team member needs a boost in confidence. Although social encouragement is assumed to also increase self-efficacy beliefs, it is based on verbal persuasion (Bandura, 1977; 1981) which might be doubted or disproved by actual experience. Thus, individuals with a low generalized self-efficacy (e.g., Bandura, 1997) might rather profit from social recognition.

Furthermore, social encouragement might not only contain uplifts but also communicate social pressure (Hüffmeier & Hertel, 2011). Team members who experience a high level of work-related pressure or anxiety might not profit from social encouragement if it further increases the existing pressure or anxiety. For those team members a further increase in social pressure from the team might rather have detrimental effects on performance as indicated by curvilinear relations between pressure and performance outcomes (e.g., Baer & Oldham, 2006; Gardner & Cummings, 1988; Janssen, 2001; Schmitt, Ohly, & Kleespies, 2015). Thus, social encouragement might for some individuals push existing pressures beyond the optimal level causing decreases in performance.

In addition, individuals with a high desire to avoid ambiguity (e.g., Budner, 1962; Furnham & Ribchester, 1996) as, for example, ambiguity about their task or performance expectations might profit particularly from social recognition (e.g., Hüffmeier & Hertel, 2011; Sawyer, 1992). Social recognition provides some information about performance standards (e.g., Delin & Baumeister, 1994; Hüffmeier & Hertel, 2011) and thus indicates which level of effort or performance is valued and expected within the team. Social encouragement, in contrast, is less specific about expectations leaving room for uncertainty. People low in uncertainty avoidance might thereby profit equally well from social encouragement and social recognition.

Finally, individuals might have a need or desire for one type of affective support over the other which might be considered when providing support. Cutrona and Russell (1990) assume a needs-fit-model for the effectiveness of social support for well-being. The assumption is that provided support will only be effective or helpful if it fits the need of the recipient. People may vary in their general need for support as a personality trait and also in their need for a specific type of affective support (e.g., Dunkel-Schetter & Bennet, 1990; High & Solomon, 2014, Sarason & Sarason, 1986; Searle et al., 2001). In addition, team members might prefer one type of affective support from a certain team member over the other. Although it might not always be clear to the support provider if and which type of support is preferred in a certain situation, it might be fruitful to be sensitive to existing needs. In addition

to characteristics of the support recipient, characteristics of the support provider might be considered as further aspect when providing affective social support.

Provider characteristics

Considering the provider characteristics for the provision of effective support might include taking the team tenure of the support provider into account. It might not be effective to receive social recognition from a fellow team member who is new to the team. The same might hold true for team members who provide recognition in a domain in which they are not experienced. Underlying both assumptions is the notion that support might only be effort enhancing when received from a valid source. Recognition is in contrast to encouragement based on present or past performance (e.g., Delin & Baumeister, 1994; Hüffmeier & Hertel, 2011). Thus, for social recognition, among other aspects, it might be essential for the support providing team member to be able to adequately evaluate performance. New and /or inexperienced team members might not have adequate knowledge of performance standards within the team or prior performance of the respective team member to adequately judge past or present performance of a fellow team member. Social encouragement, in contrast, might be provided without prior knowledge of the recipients' (past) performance (Hüffmeier & Hertel, 2011) and might thus be preferred over providing social recognition by new or inexperienced team members.

Furthermore, social interactions also incorporate conflicts. Conflicted supporters are team members who, on the one hand, provide support and who are, on the other hand, sources of conflicts (e.g., Pierce et al., 1992; Sandler & Barrera, 1984). It might be reasonable to assume that individuals prefer receiving support from appreciated and liked sources rather than problematic sources. Particularly, receiving social encouragement from a conflicted supporter might not lead to increases in effort. The recipient might doubt the intentions of the support provider or might not believe the communicated trust and belief in the person or capabilities (e.g., Nadler, Fisher, & Streufert, 1974). Subsequently, no effort increases should occur. Receiving social recognition from a conflicted supporter might, in contrast, not impair the positive effects of support. Social recognition is more strongly based on general performance standards or existing expectations within the team and is thus more objective compared to a subjectively communicated belief in another person.

Finally, receiving affective support from a superior team member might impair the effort enhancing effects of affective support (cf. Irwin et al., 2013). It might be particularly feelings of inferiority that cause negative effects (e.g., Fisher et al., 1982; Peeters et al., 1995).

Particularly social encouragement might allow for the interpretation that the support provider communicates encouragement because s/he assumes that one has difficulties with the task and struggles to successfully complete it. The resulting feelings of incompetence or inferiority (e.g., Fisher et al., 1982; Irwin et al., 2013; Nadler et al., 1983; Peeters et al., 1995) might be detrimental for the effort enhancing effects of social encouragement. This might, however, only occur if the provider and recipient of support are somewhat similar and comparison processes take place (e.g., Festinger, 1954; Fisher & Nadler, 1974; Nadler et al., 1983). Receiving encouragement from highly superior others such as experts might lead to positive effects on effort as comparison processes might not occur (Festinger, 1954) and feelings of inferiority and incompetence might not arise.

In addition to characteristics of the support recipient and of the support provider, characteristics of the task may determine which type of affective support might be more effective in triggering effort gains. Task characteristics are thus discussed subsequently.

Task characteristics

Receiving recognition for past performance might be particularly effective for complex or difficult tasks (e.g., Stajkovic & Luthans, 2001). Appreciating past or present performance might aid in feeling competent to master a difficult task successfully and to overcome obstacles. Receiving recognition for a particularly easy task, in contrast, might not increase a feeling of competence but might even undermine it (e.g., Meyer et al., 1979). Meyer et al., (1979) reasoned that receiving recognition for simple tasks might lead to the inference that the support provider assumes a rather low level of competence in the support recipient. As consequence, the support recipient might then question his/her own competence level which might impair increases in effort.

Social encouragement might, in contrast, be valuable in tasks in which particularly perseverance is important (e.g., Wong, 2015). Encouragement focuses explicitly on the successful finish of a task (or of sub-goals); social recognition refers to the future more implicitly. Thus, when performance goals were set, encouragement might aid in focusing one's attention and resources on the task which might be particularly helpful towards the end of a task. In addition, assuming that an intermediate level of pressure or arousal might be ideal for effort exertion, tasks in which pressure or arousal is at a rather low level as, for example, in routine tasks effort and thus performance might profit from social encouragement (e.g., Gardner & Cummings, 1988; Janssen, 2001; Schmitt et al., 2015).

Together, as indicated in the present dissertation as well as previous research, affective support is not always effective in increasing effort gains (e.g., Baruch et al., 2002; Irwin et al., 2013; Max 2014). Future research thus needs to clarify the context conditions of the effective provision of social encouragement and social recognition. Several studies have investigated context conditions for task-related support (e.g., Deelstra, 2003; Deelstra et al., 2003; Nadler et al., 1983), however, research on context conditions of affective support is rather scarce. As suggested previously, context conditions for affective support might similarly to task-related support incorporate focusing on the characteristics of the support recipient, the characteristics of the provider, characteristics of the task, as well as the relationship between the provider and recipient of support (cf. Deelstra 2003; Deelstra et al., 2003; Fisher et al., 1982; Pierce et al., 1992; Vinokur, Schul, & Caplan, 1987). These context conditions might not only operate in isolation but might incorporate more complex combinations which determine the effectiveness of support.

In addition, the timing of support provision might play a crucial role. Specifically, it remains unclear whether support for a task should be provided some time in advance, and/or right before the task, and/or while already performing the task. Furthermore, the frequency of supportive interactions should be clarified. It is conceivable that receiving constant encouragement might increase pressure over time and lead eventually to decreases in performance (e.g., Baumeister, 1984; Irwin et al., 2013). Receiving constant social recognition might at some point lose its effectiveness as one either accustoms to the high level of recognition or one might doubt its genuineness. In contrast, receiving affective support very rarely might not be enough to increase performance substantially for an extended period of time (cf. Study 6 and Study 7). Finally, future research should investigate whether providing both types of affective social support might even be superior to providing only social encouragement or only social recognition. In the following, I will discuss the implications of the differentiation between received and perceived affective support.

6.2.3 Received and perceived affective support

The results of this dissertation add to previous research on fellow team members' social support as well as to the MSST (Hüffmeier and Hertel, 2011) by incorporating received and perceived support. Perceived support was in the present dissertation conceptualized as the evaluation or appraisal of available support including assumed available support and actually available that is received support. Initial insights are provided for the consequences of the

reception of actual acts of support as well as of situational and daily perceptions of support from one's team.

First, this dissertation contributes to the literature focusing on received support which has particularly in field settings assessed the reception of support from the support recipient only (e.g., Freeman & Rees, 2008; Helgeson, 1993; Rees & Freeman, 2007; Peeters et al., 1995; Xanthopoulou et al., 2008; for an exception see J. L. Cohen et al., 2005). This might leave room for inaccuracies such as flaws in remembering supportive events correctly. In order to understand the differential effects of various types of support, this dissertation focused on investigating specific and well-defined acts of fellow team members' affective support. Furthermore, receiving actual acts of support might have very different consequences on effort and the assumed effort enhancing processes compared to remembered acts of support. Specific acts of support might be assumed to have a stronger (immediate) effect on positive affect or obligation to perform well compared to remembered acts of support. Thus, by providing actual acts of support, it was possible to investigate more specifically the immediate consequences of support reception not only on effort and performance but also on the underlying processes. This dissertation indicates that receiving fellow team members' social encouragement and social recognition can (under certain circumstances) have positive effects on effort gains as well as on the assumed effort enhancing processes.

Second, this dissertation contributes to previous research on perceived social support. Previous field studies have typically understood and investigated perceived support as a rather stable perception of available support which is accumulated over various interactions and situations (e.g., Ducharme & Martin, 2000; Eisenberger et al., 2001; Freeman & Rees, 2008; Hobfoll, 2009; Sarason et al., 1986; van Emmerik, 2008; for an exception see Xanthopoulou et al., 2009). The present dissertation focused, however, on state like perceived affective support which was assumed and shown to vary between days: About one third of the variance in perceived affective support was attributable to daily fluctuations. Complementing earlier research, it seems that perceptions of affective support within team settings may vary over rather short periods of time and might have immediate motivational consequences.

Furthermore, this dissertation focused on perceived support as evaluation of the supportiveness of received support. It was suggested that it might be particularly important to consider what is indeed encoded or perceived from a received act of support. J. L. Cohen and colleagues (2005) showed that the provider and recipient of social support agreed more on received support than on perceived support. In addition, Priem, Solomon, and Steuber (2009) showed that the relation between the perceived supportiveness of an interaction as evaluated

by the provider of support, the recipient, and third-party observers was merely moderate. These studies further indicate that perceived supportiveness of an actual act of support is a subjective evaluation which might differ largely between individuals. Several characteristics of the support situation might as outlined above affect how supportive a received act of support is indeed perceived. Thus, incorporating received support along with an evaluation of its supportiveness might aid in understanding which aspects of a support situation among fellow team members might hinder or facilitate the effectiveness of affective support.

This dissertation thus also offers theoretical implications for the MSST (Hüffmeier & Hertel, 2011). As outlined above a specific distinction between actual acts of affective support as well as their subsequent appraisal might provide more conclusive insights into the effects of fellow team members' affective social support. Although linear relations are assumed, it might, however, be conceivable that the perceived supportiveness of a received act of support needs to surpass a certain threshold beyond which fellow team members' support actually increases effort and performance. At or below the threshold, as could have been the case in Study 6 and Study 7, no effort enhancing effects of received affective support might be expected. Incorporating perceived support as mediating process between received support and the proposed (sequentially later) motivating mediation processes might aid in understanding the effects of affective social support on effort and performance.

6.2.4 Mediation assumptions

Irrespective of the lacking effort enhancing effects of single acts of social encouragement and social recognition, this dissertation provides first evidence for the mediating processes. Positive affect and self-efficacy beliefs were assumed to partially mediate the effect of social encouragement and social recognition on effort gains. Implicit goal setting was assumed as partial mediating process for social recognition and social pressure as well as obligation to perform well were assumed as partial mediating processes for social encouragement.

Positive affect was shown to be consistently related to affective support with both social encouragement and social recognition showing a positive impact on positive affect. Furthermore, positive affect was consistently related to self-report based effort gains and received direct support as a mediating process in the relation between perceived support and work motivation. Thus, fellow team members' affective support seems to make people feel happy (e.g., Basch & Fisher, 2000; Maybery et al., 2006) which in turn increases the effort recipients invest for their team (e.g., A. Erez & Isen, 2002; Tsai et al., 2007). The initial evidence in support of the mediating role of positive affect needs, however, to be replicated

by future research in teamwork settings with actual effort gains. Nevertheless, based on the empirical findings obtained here, positive affect might be considered as additional mediating process between social encouragement as well as social recognition and effort gains in the MSST (Hüffmeier & Hertel, 2011).

Furthermore, although the assumed relations between self-efficacy beliefs and fellow team members' affective support as well as effort (gains) were not in all studies particularly strong, they were in general in the assumed direction and in line with previous research (e.g., Rees & Freeman, 2007; Seo & Illies, 2009; Stajkovic & Luthans, 1988; Xanthopoulou et al., 2008). Moreover, self-efficacy beliefs tended to mediate the effect of perceived support on work motivation (cf. Study 5) which provides initial evidence in line with the assumption of the MSST (Hüffmeier & Hertel, 2011). Future research is, however, necessary to clarify the specific role of self-efficacy beliefs as a mediating process for the effects of social encouragement and social recognition on effort gains. Furthermore, the assumed stronger effect of social recognition on self-efficacy beliefs compared to social encouragement did not receive strong evidence in this dissertation. The effects of affective support might, however, particularly in the case of social recognition be underestimated in the present dissertation. Self-efficacy beliefs have been shown to be particularly increased by mastery experiences (e.g., Usher & Pajares, 2006). However, Study 6 might not have incorporated very strong mastery experiences as social recognition was provided from a fellow team member with little information to accurately evaluate performance. Social recognition from fellow team members with considerable knowledge about performance standards such as previous performance or other's performance might incorporate strong mastery experiences. Social recognition with strong mastery experiences might then trigger self-efficacy beliefs more efficiently than in the present research and more strongly than social encouragement. Future research is, however, necessary to specifically investigate this assumption.

For goal setting, no evidence was found for the assumption that goal setting is triggered by social recognition. Thus, no evidence was provided in support of the assumption of the MSST (Hüffmeier & Hertel, 2011). The lack of the effect of recognition on goal setting might, however, be due to the fact that the employed teamwork setting did not allow for setting specific high goals (e.g., Locke & Latham, 1990; Wood et al., 1987; Zetik & Stuhlmacher, 2002). Future research is thus necessary to investigate goal setting processes after the reception of social recognition in an adequate teamwork setting.

For social pressure, the results were in part in line with the assumptions of this dissertation and the MSST (Hüffmeier & Hertel, 2011). As assumed, social encouragement

from fellow team members tended to increase perceived social pressure (e.g., Gabriele, et al., 2005; Vinokur & Caplan, 1987). However, for the relation between social pressure and effort gains, positive as well as negative relations were found. Social encouragement might contrary to the initial reasoning also be able to increase social pressure to such a level so that effort impairments occur. Previous research has provided evidence for a curvilinear relation between pressure and performance (e.g., Baer & Oldham, 2006; Gardner & Cummings, 1988; Janssen, 2001; Schmitt et al., 2015). Future research is necessary to investigate whether social pressure can indeed serve as effort enhancing mediating process in the social encouragement–effort relation as assumed.

For obligation to perform well as further mediating process for social encouragement, mixed findings were obtained. Perceived affective support but also specifically social encouragement were consistently related to obligation to perform well as assumed (e.g., Eisenberger et al., 2001; Gouldner, 1960; Mossholder et al., 2005). Increases in obligation were particularly strong for team members with a high preference for teamwork (cf. Study 5). However, obligation to perform well was inconsistently related to effort (gains) which might indicate the influence of context conditions. Individuals feeling a certain degree of obligation towards their team might refrain from investing additional effort when their fellow team members already profit strongly from their contributions (without contributing themselves; e.g., Adams, 1965; Kerr, 1983; cf. Study 6). Furthermore, it is conceivable that obligations to perform well might increase effort only when team members feel identified with their team. That is, obligations might not translate into additional effort when one does not particularly care about one's team. Finally, as mentioned in the discussion section of Study 5, obligations to perform well might particularly in established teams not occur immediately but at later points in time (e.g., Graen & Uhl-Bien, 1995; Sparrowe & Liden, 1997). Future research is needed to verify whether obligations to perform well mediate the effect of social encouragement on additional effort and to investigate potential context conditions.

Taken together, the present dissertation offers in line with as well as in extension of the MSST (Hüffmeier & Hertel, 2011) initial evidence for several mediating processes for the effect of social encouragement and social recognition on effort gains compared to individual work. Thus, first conclusions about the validity of the MSST can be drawn (Hüffmeier & Hertel, 2011). In addition, the empirical evidence presented here indicates that the consequences of affective support might not always be effort enhancing but might also cause potential impairments. It might be possible that potentially contrary underlying processes triggered by support reception might nullify the positive effect on effort gains: The positive

consequences of encouragement such as increased positive affect might be nullified by negative consequences such as increased social pressure in situations in which social pressure becomes too high. Future research is needed to replicate and further specify the initial findings on the mediating variables which were in part obtained in teamwork settings where no additional effort gains were present. The obtained findings might nevertheless be promising in that the relations can be assumed to be stronger when effort gains are indeed observed. Future studies might further consider more complex relations between particularly the mediating variables and effort gains (e.g., Pierce & Aguinis, 2011). Although, a linear relation was proposed and in general found, it is nevertheless possible that relations might show different patterns. Self-efficacy beliefs might, for example, lead to overconfidence which might suggest a better performance than is objectively given or a smaller discrepancy to reaching a goal so that further effort might not seem necessary. This might in turn hinder further effort increases (e.g., Vancouver et al., 2002). Furthermore, as indicated above the effects of social pressure might also be represented by a curvilinear relation with performance decreases when pressure becomes too large (e.g., Baer & Oldham, 2006; Gardner & Cummings, 1988; Janssen, 2001; Schmitt et al., 2015). Finally, as indicated in Study 6, the importance of fellow team members' affective support and the consequences on the proposed effort enhancing processes might become most clearly visible in a long-term perspective. Similarly to detrimental effects of lacking support for health and well-being (e.g., Barth et al., 2010; Holt-Lunstad et al., 2010), detrimental effects for effort and performance might be expected when team members do not provide support to one another (e.g., Kerr, Seok, Poulsen, Harris, & Messé, 2008). Thus, future studies might focus more specifically on the long-term effects of affective support in comparison to a lack thereof.

6.3 Practical implications

The results of this dissertation provide some implications for the management of teams in various contexts. The current findings suggest that support reception from fellow team members can have considerable positive consequences on exerted effort, work motivation and effort intentions, as well as effort enhancing processes. In order to profit from the positive consequences of fellow team members' affective support and to avoid potential negative consequences of a lack thereof, team leaders should encourage their team to provide frequent support to one another. Team leaders might take particular care to encourage support provision among equated team members (i.e., neither superior nor inferior partner).

The results further suggest that support which is provided most immediately when needed might have the strongest impact on performance. In teamwork settings it might be especially fellow team members who are most aware of when affective support is indeed needed (Hüffmeier & Hertel, 2011). Thus, team leaders might encourage their team members to provide support when they assume it needed. Furthermore, team leaders should rather refrain from directly instructing individual support provision but leave the timing of support provision to the team members. Beyond explicitly encouraging support provision within their team, team leaders can act as role model for the provision of regular affective support. Importantly, team leaders should create an atmosphere of mutual trust within the team so that support can be provided in a voluntary, candid, and meaningful way.

Furthermore, feeling supported from ones' team was shown to be important for performance related outcomes. It might be particularly important to draw from this perception of support when receiving support is not likely or possible, for example, during distributed teamwork, working shifts, or competitions. Consequently, team leaders might focus on creating a feeling of support within the team when possible so that team members can profit from it at a later point in time when performing for the team and meeting, for example, obstacles.

Moreover, in order to fully utilize the motivating potential of fellow team members' affective support, team leaders might consider preferences for teamwork or individual work when selecting new employees. Employees with a high preference for teamwork seem to feel more obligated towards their team when receiving support compared to employees with a preference for working individually (cf. Study 5). Feeling obligated towards the team might affect the effort one is willing to invest on behalf of the team and thus the performance quantity and quality (cf. Eisenberger et al., 2001; Yu & Frenkel, 2013). In addition, choosing team members with a similarly high preference for teamwork could ensure that obligated team members are not exploited (e.g., Kerr, 1983) by less obligated team members.

Although, no negative consequences for performance were obtained from support reception in the present investigations, team leaders should also be aware of potential risks inherent in the reception of affective support. Team members who already bear a high responsibility for the team outcome might not profit from affective support when it puts additional obligation on them to perform well. Furthermore, team members working in highly stressful situations might not profit from affective support when additional pressure from the team is communicated. As particularly social encouragement might increase obligations as well as pressure, social recognition might be preferable in these circumstances.

6.4 Limitations

It is important to note some of the limitations of this dissertation. First, perceived affective support was assessed with a general measure of feeling affectively supported from one's fellow team members. In order to invest in what way social encouragement and social recognition are perceived differently, it might be important to employ also a more differentiated measure focusing on feeling encouraged or feeling recognized. On the one hand, this measure might provide more detailed evidence for the appraisal of received support, that is whether or not a supportive message was perceived as intended. On the other hand, feeling specifically encouraged or feeling particularly recognized might further be more conclusive for the relations between the type of affective support and its respective mediating processes.

Second, for reasons of efficiency, I measured positive affect with a single item. Therefore, it was not possible to calculate a reliability index. Furthermore, a single item measure might be more susceptible to errors when filling in questionnaires. However, the single item measure of positive affect showed relations in the hypothesized direction which provides evidence for its validity. Furthermore, the single item which was also assessed in Study 4 showed a substantial positive correlation with the four item scale from the joviality dimension of the PANAS-X (Watson & Clark, 1994), $r = .72$, $p < .001$, which provides further support for the validity of the utilized item.

Third, the results obtained for the actual reception of support were investigated within student dyads potentially limiting the generalizability of the findings. The results of the studies with student samples and non-student samples were in this dissertation, however, in general consistent indicating that the student samples might not differ from the non-student samples. Moreover, as support provision and reception is a common social phenomenon which is not restricted to team settings, one might argue that the effects do not vary due to differing samples per se but rather due to context conditions. Furthermore, participants worked in the conducted studies with a single fellow team member. Although dyads can be considered a group, they also constitute a minimal group and might thus differ from larger groups (e.g., Levine & Moreland, 1990). I was specifically interested in the motivating effects of the reception of fellow team members' support which might in its basic form occur in dyads. Dyads can appear in work settings, but also in learning contexts or sports and might provide important initial evidence for the assumed positive consequences of support. However, dyads might also leave several questions unanswered such as whether support from a single team member can indeed increase the effort one invests on behalf of an entire group.

Fourth, although effort gains from fellow team members' affective support were not consistently found, it might be likely that the present investigations rather under- than overestimate the effects of the reception of affective support. Importantly, several of the results were obtained in rather restricted settings with new team partners, short-term teamwork, limited interactions, and instructed support provision which might in sum have reduced the effectiveness of affective support. The under suboptimal conditions obtained positive effects of support might point to more substantial effects under less restricted and less artificial conditions (cf. M. Erez & Somech, 1996; McGrath, 1991).

Finally, the present dissertation employed in all studies investigating effort gains a control group without the reception of support. As the control group is utilized as reference group to determine the additional effects of support reception, it seems of great importance to consider how teamwork is designed in this group. It seems that group work without support might under certain conditions be perceived as demotivating (cf. Study 3) whereas under other conditions this might not be the case (cf. Study 6 and Study 7). No communication between team members might resemble social ostracism (e.g., Kerr et al., 2008; K. D. Williams, 2007) or evoke perceptions of low interest of the team partner in the common outcome (N. L. Kerr, personal communication, May 16, 2014). Thus, the control group might distort the estimation of additional effort gains by unintentionally introducing motivating or demotivating within-team processes. A control group with a neutral interaction might alternatively be considered.

6.5 Conclusion

This dissertation provides a first comprehensive investigation of the motivating effects of fellow team members' affective social support and its two subtypes social encouragement and social recognition. The results document that the reception of fellow team members' affective support can lead to additional effort compared to group work without support and individual work. These effects seem, however, to be moderated by context conditions which call for further investigations. Initial insights for the underlying processes of the motivating effects of social encouragement and social recognition were furthermore provided with consistent evidence for positive affect. In addition, initial evidence was provided for the importance of considering perceived affective support when investigating the motivation effects of fellow team members' affective support. Together, this dissertation provides along with initial evidence for the MSST (Hüffmeier & Hertel, 2011) an important step in a continued journey towards better understanding the motivational consequences of fellow team members'

affective support. I hope that the present dissertation will initiate further research on the motivating effects of fellow team members' affective social support and its context conditions. It might for the utilization of affective social support be as Ginott (1965) put it: "Praise, like penicillin, must not be administered haphazardly. There are rules and cautions that govern the handling of potent medicines—rules about timing and dosage, cautions about possible allergic reactions. There are similar regulations about the administration of emotional medicine" (p. 39).

References

Adams, J. S. (1965). Inequity in social exchange. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 2, pp. 267–299). New York, NY: Academic Press.

Aguinis, H., Gottfredson, R. K., & Joo, H. (2013). Best-practice recommendations for defining, identifying, and handling outliers. *Organizational Research Methods*, *16*, 270–301. doi: 10.1177/1094428112470848

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211. doi:10.1016/0749-5978(91)90020-T

Allen, D. G., Shore, L. M., & Griffeth, R. W. 2003. The role of perceived organizational support and supportive human practices in the turnover process. *Journal of Management, 29*, 99-118. doi: 10.1177/014920630302900107

Amabile, T. M., Schatzel, E. A., Moneta, G. B., & Kramer, S. J. (2004). Leader behaviors and the work environment for creativity: Perceived leader support. *The Leadership Quarterly*, *15*, 5-32. doi:10.1016/j.leaqua.2003.12.003

Andreacci, J. L., Lemura, L. M., Cohen, S. L., Urbansky, E. A., Chelland, S. A., & Duvillard, S. P. V. (2002). The effects of frequency of encouragement on performance during maximal exercise testing. *Journal of Sports Sciences*, *20*, 345-352. doi: 10.1080/026404102753576125

Arbuckle, J. L. (2012). Amos (Version 22.0.0) [Computer Program]. Chicago: SPSS.

Army Individual Test Battery. (1944). *Manual of Directions and Scoring*. Washington, DC: War Department, Adjutant General's Office.

Baer, M., & Oldham, G. R. (2006). The curvilinear relation between experienced creative time pressure and creativity: moderating effects of openness to experience and support for creativity. *Journal of Applied Psychology*, *91*, 963-970. doi: 10.1037/0021-9010.91.4.963

Bakker, A. B., & Demerouti, E. (2008). Towards a model of work engagement. *Career Development International*, *13*, 209-223. doi: 10.1108/13620430810870476

Bakker, A. B., Vergel, A. I. S., & Kuntze, J. (2015). Student engagement and performance: A weekly diary study on the role of openness. *Motivation and Emotion*, *39*, 49-62. doi: 10.1007/s11031-014-9422-5

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review*, *84*, 191-215. doi: 10.1037/0033-295X.84.2.191

Bandura, A. (1981). Self-referent thought: A developmental analysis of self-efficacy. In J. H. Flavell & L. D. Ross (Eds.), *Social cognitive development: Frontiers and possible futures* (pp. 200-239). New York, NY: Cambridge University Press.

Bandura, A. (1991). Self-regulation of motivation through anticipatory and self-reactive mechanisms. In R. A. Dienstbier (Ed.), *Nebraska Symposium on Motivation, 1990: Perspectives of Motivation* (pp. 69-164). Lincoln, NE: University of Nebraska Press.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: Freeman.

Bandura, A. (2006). Guide for constructing self-efficacy scales. In F. Pajares & T. Urdan, (Eds.), *Self-efficacy beliefs of adolescents* (pp. 307–337). Greenwich, CT: Information Age Publishing.

Bargh, J. A., Gollwitzer, P. M., Lee-Chai, A., Barndollar, K., & Trötschel, R. (2001). The automated will: nonconscious activation and pursuit of behavioral goals. *Journal of Personality and Social Psychology*, *81*, 1014-1027. doi: 10.1037/0022-3514.81.6.1014

Barrera, M. (1986). Distinctions between social support concepts, measures, and models. *American Journal of Community Psychology*, *14*, 413-445. doi: 10.1007/ BF00922627

Barrera, M., (2000). Social support research in community psychology. In J. Rappaport & E. Seidman (Eds.), *Handbook of Community Psychology* (pp. 215–246). New York, NY: Plenum.

Barrera, M., & Ainlay, S. L. (1983). The structure of social support: A conceptual and empirical analysis. *Journal of Community Psychology*, *11*, 133-143. doi: 10.1002/1520-6629(198304)11:2<133::AID-JCOP2290110207>3.0.CO;2-L

Barrera, M., Sandler, I. N., & Ramsay, T. B. (1981). Preliminary development of a scale of social support: Studies on college students. *American Journal of Community Psychology*, *9*, 435-447. doi: 10.1007/BF00918174

Barrett, P. (2007). Structural equation modelling: Adjudging model fit. *Personality and Individual Differences*, *42*, 815-824. doi: 10.1016/j.paid.2006.09.018

Barrick, M. R., Stewart, G. L., & Piotrowski, M. (2002). Personality and job performance: Test of the mediating effects of motivation among sales representatives. *Journal of Applied Psychology*, *87*, 43-51. doi: 10.1037/0021-9010.87.1.43

Barth, J., Schneider, S., & von Känel, R. (2010). Lack of social support in the etiology and prognosis of coronary heart disease: A systematic review and meta-analysis. *Psychosomatic Medicine, 72,* 229–238. doi: 10.1097/PSY.0b013e3181d01611.

Baruch-Feldman, C., Brondolo, E., Ben-Dayan, D., & Schwartz, J. (2002). Sources of social support and burnout, job satisfaction, and productivity. *Journal of Occupational Health Psychology*, *7*, 84-93. doi: 10.1037//1076-8998.7.1.84

Basch, J., & Fisher, C. D. (1998). Affective events-emotions matrix: A classification of work events and associated emotions. *School of Business Discussion Papers*. Retrieved from http://epublications.bond.edu.au/discussion_papers/65

Baumeister, R. F. (1984). Choking under pressure: self-consciousness and paradoxical effects of incentives on skillful performance. *Journal of Personality and Social Psychology*, *46*, 610-620. doi: 10.1037/0022-3514.46.3.610

Baumeister, R. F., Hamilton, J. C., & Tice, D. M. (1985). Public versus private expectancy of success: Confidence booster or performance pressure? *Journal of Personality and Social Psychology*, *48*, 1447-1457. doi: 10.1037/0022-3514.48.6.1447

Baumeister, R. F., Hutton, D. G., & Cairns, K. J. (1990). Negative effects of praise on skilled performance. *Basic and Applied Social Psychology*, *11*, 131-148. doi: 10.1207/ s15324834basp1102_2

Baumeister, R., & Leary, M. R. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497–529. doi: 0033 2909/95/S3.00

Baumeister, R. F., & Steinhilber, A. (1984). Paradoxical effects of supportive audiences on performance under pressure: The home field disadvantage in sports championships. *Journal of Personality and Social Psychology*, *47*, 85-93. doi: 10.1037/0022-3514.47.1.85

Beattie, S., Fakehy, M., & Woodman, T. (2014). Examining the moderating effects of time on task and task complexity on the within person self-efficacy and performance relationship. *Psychology of Sport and Exercise*, *15*, 605-610. doi:10.1016/j.psychsport. 2014.06.007

Beck, J. W., & Schmidt, A. M. (2015). Negative Relationships Between Self-Efficacy and Performance Can Be Adaptive The Mediating Role of Resource Allocation. *Journal of Management*. Advance online publication. doi: 10.1177/0149206314567778

Beehr, T. A., Bowling, N. A., & Bennett, M. M. (2010). Occupational stress and failures of social support: when helping hurts. *Journal of Occupational Health Psychology*, *15*, 45-49. doi: 10.1037/a0018234

Beehr, T. A., Jex, S. M., Stacy, B. A., & Murray, M. A. (2000). Work stressors and coworker support as predictors of individual strain and job performance. *Journal of*

Organizational Behavior, 21, 391-405. doi: 10.1002/(SICI)1099-1379(200006)21:4<391::AID-JOB15>3.3.CO;2-0

Beehr, T. A., King, L. A., & King, D. W. (1990). Social support and occupational stress: Talking to supervisors. *Journal of Vocational Behavior*, *36*, 61-81. doi: 10.1016/0001-8791(90)90015-T

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*, 238–246. doi: 10.1037/0033-2909.107.2.238

Bentler, P. M. (1995). *EQS structural equations program manual*. Encino, CA: Multivariate Software Inc.

Bickers, M. J. (1993). Does verbal encouragement work? The effect of verbal encouragement on a muscular endurance task. *Clinical Rehabilitation*, *7*, 196-200. doi: 10.1177/026921559300700303

Binboğa, E., Tok, S., Catikkas, F., Guven, S., & Dane, S. (2013). The effects of verbal encouragement and conscientiousness on maximal voluntary contraction of the triceps surae muscle in elite athletes. *Journal of Sports Sciences*, *31*, 982-988. doi: 10.1080/02640414.2012.758869

Bishop, J. W., Scott, K. D., & Burroughs, S. M. (2000). Support, commitment, and employee outcomes in a team environment. *Journal of Management*, *26*, 1113-1132. doi: 10.1177/014920630002600603

Blau, P. M. (1964). *Exchange and power in social life*. New York, NY: John Wiley.

Blau, G., & Andersson, L. (2005). Testing a measure of instigated workplace incivility. *Journal of Occupational and Organizational Psychology*, *78*, 595-614. doi: 10.1348/096317905X26822

Bless, H., Bohner, G., Schwarz, N., & Strack, F. (1990). Mood and persuasion a cognitive response analysis. *Personality and Social Psychology Bulletin*, *16*, 331-345. doi: 10.1177/0146167290162013

Bless, H., Clore, G. L., Schwarz, N., Golisano, V., Rabe, C., & Wölk, M. (1996). Mood and the use of scripts: Does a happy mood really lead to mindlessness?. *Journal of Personality and Social Psychology*, *71*, 665-679. doi: 10.1037/0022-3514.71.4.665

Bodenhausen, G. V., Kramer, G. P., & Süsser, K. (1994). Happiness and stereotypic thinking in social judgment. *Journal of Personality and Social Psychology*, *66*, 621-632. doi: 10.1037/0022-3514.66.4.621

Bolger, N., Zuckerman, A., & Kessler, R. C. (2000). Invisible support and adjustment to stress. *Journal of Personality and Social Psychology*, *79*, 953-961. doi: 10.1037//0022-3514.79.6.953

Bowling, N. A., Beehr, T. A., & Swader, W. M. (2005). Giving and receiving social support at work: The roles of personality and reciprocity. *Journal of Vocational Behavior*, *67*, 476-489. doi:10.1016/j.jvb.2004.08.004

Brehm J. W. (1966). *A theory of psychological reactance.* New York, NY: Academic Press.

Brief, A. P., & Motowidlo, S. J. (1986). Prosocial organizational behaviors. *Academy of Management Review*, *11*, 710-725. doi: 10.5465/AMR.1986.4283909

Brissette, I., Scheier, M. F., & Carver, C. S. (2002). The role of optimism in social network development, coping, and psychological adjustment during a life transition. *Journal of Personality and Social Psychology*, *82*, 102-111. doi: 10.1037//0022-3514.82.1.102

Browne, M.W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K.A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136–162). Newbury Park, CA: Sage.

Budner, S. (1962). Intolerance of ambiguity as a personality variable. *Journal of Personality, 30,* 29-50. doi: 10.1111/j.1467-6494.1962.tb02303.x

Buunk, B. P., Doosje, B. J., Jans, L. G., & Hopstaken, L. E. (1993). Perceived reciprocity, social support, and stress at work: The role of exchange and communal orientation. *Journal of Personality and Social Psychology*, *65*, 801-811. doi: 10.1037/0022-3514.65.4.801

Cameron, J., & Pierce, W. D. (1994). Reinforcement, reward, and intrinsic motivation: A meta-analysis. *Review of Educational Research*, *64*, 363-423. doi: 10.3102/00346543064003363

Campenella, B., Mattacola, C. G., & Kimura, I. F. (2000). Effect of visual feedback and verbal encouragement on concentric quadriceps and hamstrings peak torque of males and females. *Isokinetics and Exercise Science*, *8*, 1-6.

Campion, M. A., & Lord, R. G. (1982). A control systems conceptualization of the goal-setting and changing process. *Organizational Behavior and Human Performance*, *30*, 265-287. doi:10.1016/0030-5073(82)90221-5

Cann, A. (2004). Rated importance of personal qualities across four relationships. *The Journal of Social Psychology*, *144*, 322-334. doi: 10.3200/SOCP.144.3.322-334

Caplan, G. (1974). *Support systems and community mental health: Lectures on concept development*. Behavioral Publications.

Carson, J. B., Tesluk, P. E., & Marrone, J. A. (2007). Shared leadership in teams: An investigation of antecedent conditions and performance. *Academy of Management Journal, 50*, 1217-1234. doi: 10.2307/20159921

Cassel, J. (1976). The contribution of the social environment to host resistance. *American Journal of Epidemiology*, *104*, 107-123.

Castro, M. A. C. (1974). Reactions to Receiving Aid as a Function of Cost to Donor and Opportunity to Aid. *Journal of Applied Social Psychology*, *4*, 194-209.

Catano, V. M. (1975). Relation of improved performance through verbal praise to source of praise. *Perceptual and Motor Skills*, *41*, 71-74.

Chen, Z. X., Aryee, S., & Lee, C. (2005). Test of a mediation model of perceived organizational support. *Journal of Vocational Behavior*, *66*, 457-470. doi: 10.1016/j.jvb.2004.01.001

Chiaburu, D. S., & Harrison, D. A. (2008). Do peers make the place? Conceptual synthesis and meta-analysis of coworker effects on perceptions, attitudes, OCBs, and performance. *Journal of Applied Psychology, 93*, 1082-1103. doi: 10.1037/0021-9010.93.5.1082

Chiaburu, D. S., Lorinkova, N. M., & Van Dyne, L. (2013). Employees' social context and change-oriented citizenship: A meta-analysis of leader, coworker, and organizational influences. *Group & Organization Management*, *38*, 291-333. doi: 10.1177/1059601113476736

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine, 38*, 300-314.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155-159.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Erlbaum.

Cohen, J. L., Lakey, B., Tiell, K., & Neeley, L. C. (2005). Recipient-provider agreement on enacted support, perceived support, and provider personality. *Psychological Assessment*, *17*, 375-378. doi: 10.1037/1040-3590.17.3.375

Cohen, S., Gottlieb, B. H., & Underwood, L. G. (2001). Social relationships and health: challenges for measurement and intervention. *Advances in Mind-Body Medicine, 17,* 129-141.

Cohen, S., Mermelstein, R., Kamarck, T., & Hoberman, H. (1985). Measuring the functional components of social support. In I. G. Sarason & B. Sarason (Eds.), *Social support: Theory, research and applications* (pp. 73-94). The Hague, Netherlands: Martinus Nijhoff.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*, 310-357. doi: 10.1037/0033-2909.98.2.310

Curran, P. J., West, S. G., & Finch, J. F. (1996). The robustness of test statistics to nonnormality and specification error in confirmatory factor analysis. *Psychological Methods*, *1*, 16-29. doi: 10.1037/1082-989X.1.1.16

Cutrona C. E., & Russell D. W. (1990). Type of social support and specific stress: Toward a theory of optimal matching. In Sarason B. R., Sarason I. G., & Pierce G. R. (Eds.), *Social support: An interactional view* (pp. 319–366). New York, NY: Wiley.

Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, *18*, 105-115. doi: 10.1037/h0030644

Deelstra, J. T. (2003). *The downside of social support. About the negative effects of social support at work* (Unpublished doctoral dissertation). *University of Utrecht: Utrecht, Netherlands*.

Deelstra, J. T., Peeters, M. C., Schaufeli, W. B., Stroebe, W., Zijlstra, F. R., & van Doornen, L. P. (2003). Receiving instrumental support at work: when help is not welcome. *Journal of Applied Psychology*, *88*, 324-331. doi: 10.1037/0021-9010.88.2.324324

Delin, C. R., & Baumeister, R. F. (1994). Praise: More than just social reinforcement. *Journal for the Theory of Social Behaviour*, *24*, 219-241. doi: 10.1111/j.1468-5914.1994.tb00254.x

Donovan, J. J., & Williams, K. J. (2003). Missing the mark: effects of time and causal attributions on goal revision in response to goal-performance discrepancies. *Journal of Applied Psychology*, *88*, 379-390. doi: 10.1037/0021-9010.88.3.379

Ducharme, L. J., & Martin, J. K. (2000). Unrewarding work, coworker support, and job satisfaction a test of the Buffering Hypothesis. *Work and Occupations*, *27*, 223-243. doi: 10.1177/0730888400027002005

Dunkel-Schetter, C., & Bennett, T. L. (1990). Differentiating the cognitive and behavioral aspects of social support. In B. R. Sarason, I. G. Sarason, & G. R. Pierce (Eds.), *Social support: An interactional view* (pp. 267–296). New York, NY: Wiley.

Dunkel-Schetter, C., Feinstein, L., & Call, J. (1986). *UCLA Social Support Inventory*. Unpublished manuscript. University of California, Los Angeles.

Eagly, A. H., & Crowley, M. (1986). Gender and helping behavior: A meta-analytic review of the social psychological literature. *Psychological Bulletin, 100*, 283-308. doi: 10.1037/0033-2909.100.3.283

Edwards, J. R., & Parry, M. E. (1993). On the use of polynomial regression equations as an alternative to difference scores in organizational research. *Academy of Management Journal*, *36*, 1577-1613. doi: 10.2307/256822

Eisenberger, R., Armeli, S., Rexwinkel, B., Lynch, P. D., & Rhoades, L. (2001). Reciprocation of perceived organizational support. *Journal of Applied Psychology, 86*, 42-51. doi:10.1037/0021-9010.86.1.42

Eisenberger, R., Cummings, J., Armeli, S., & Lynch, P. (1997). Perceived organizational support, discretionary treatment, and job satisfaction. *Journal of Applied Psychology*, *82*, 812-820. doi: 10.1037/0021-9010.82.5.812

Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology, 71*, 500-507. doi:10.1037//0021-9010.71.3.500

Erez, A., & Isen, A. M. (2002). The influence of positive affect on the components of expectancy motivation. *Journal of Applied Psychology*, *87*, 1055-1067. doi: 10.1037//0021-9010.87.6.1055

Erez, M., Earley, P. C., & Hulin, C. L. (1985). The impact of participation on goal acceptance and performance: A two-step model. *Academy of Management Journal*, *28*, 50-66. doi: 10.2307/256061

Erez, M., & Somech, A. (1996). Is group productivity loss the rule or the exception? Effects of culture and group-based motivation. *Academy of Management Journal*, *39*, 1513-1537. doi: 10.2307/257067

Estrada, C. A., Isen, A. M., & Young, M. J. (1994). Positive affect improves creative problem solving and influences reported source of practice satisfaction in physicians. *Motivation and Emotion*, *18*, 285-299. doi: 10.1007/BF02856470

Evans, M. G. (1985). A Monte-Carlo study of the effects of correlated method variance in moderated multiple regression analysis. *Organizational Behavior and Human Decision Processes*, *36,* 305–323. doi:10.1016/0749-5978(85)90002-0

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*, 1149-1160. doi:10.3758/BRM.41.4.1149

Feinberg, J. M., & Aiello, J. R. (2006). Social facilitation: A test of competing theories. *Journal of Applied Social Psychology, 36*, 1087-1109. doi: 10.1111/j.0021-9029.2006.00032.x

Fenlason, K. J., & Beehr, T. A. (1994). Social support and occupational stress: Effects of talking to others. *Journal of Organizational Behavior, 15*, 157-175. doi: 10.1002/job.4030150205

Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, *7*, 117-140. doi: 10.1177/001872675400700202

Fisher, J. D., & Nadler, A. (1974). The Effect of Similarity Between Donor and Recipient on Recipient's Reactions to Aid1. *Journal of Applied Social Psychology*, *4*, 230-243. doi: 10.1111/j.1559-1816.1974.tb02643.x

Fisher, J. D., Nadler, A., & Whitcher-Alagna, S. (1982). Recipient reactions to aid. *Psychological Bulletin*, *91*, 27. doi: 10.1037/0033-2909.91.1.27

Flaherty, J. A., & Richman, J. A. (1986). Effects of childhood relationships on the adult's capacity to form social supports. *The American Journal of Psychiatry, 143,* 851-855.

Foo, M. D., Uy, M. A., & Baron, R. A. (2009). How do feelings influence effort? An empirical study of entrepreneurs' affect and venture effort. *Journal of Applied Psychology*, *94*, 1086-1094. doi: 10.1037/a0015599

Freeman, P., & Rees, T. (2008). The effects of perceived and received support on objective performance outcome. *European Journal of Sport Science*, *8*, 359-368. doi: 10.1080/17461390802261439

Freeman, P., & Rees, T. (2010). Perceived social support from team-mates: Direct and stress-buffering effects on self-confidence. *European Journal of Sport Science*, *10*, 59-67. doi: 10.1080/17461390903049998

Furnham, A., & Ribchester, T. (1995). Tolerance of ambiguity: A review of the concept, its measurement and applications. *Current Psychology*, *14*, 179-199. doi: 10.1007/BF02686907

Fydrich, T., Sommer, G. & Brähler, E. (2007). *F-SozU: Fragebogen zur sozialen Unterstützung.* Göttingen: Hogrefe.

Gabriele, J. M., Walker, M. S., Gill, D. L., Harber, K. D., & Fisher, E. B. (2005). Differentiated roles of social encouragement and social constraint on physical activity behavior. *Annals of Behavioral Medicine*, *29*, 210-215. doi: 10.1207/s15324796abm2903_7

Gardner D. G., & Cummings L. L. (1988). Activation theory and job design: Review and reconceptualization. In Staw B., & Cummings L. (Eds.), *Research in organizational behavior* (Vol. 10, pp. 81-122). Greenwich, CT: JAI Press.

Geen, R. G. (1995). *Human motivation: A social psychological approach*: Pacific Grove, CA: Brooks/Cole.

George, J. M., & Bettenhausen, K. (1990). Understanding prosocial behavior, sales performance, and turnover: a group-level analysis in a service context. *Journal of Applied Psychology*, *75*, 698-709. doi: 10.1037/0021-9010.75.6.698

George, J. M., & Brief, A. P. (1996). Motivational agendas in the workplace: The effects of feelings on focus of attention and work motivation. In L. L. Cummings & B. M. Staw (Eds.), *Research in organizational behavior* (Vol. 18, pp. 75–109). Greenwich, CT: J. Press.

Gerbing, D. W., & Anderson, J. C. (1987). Improper solutions in the analysis of covariance structures: Their interpretability and a comparison of alternate respecifications. *Psychometrika*, *52*, 99-111.

Gergen, K. J., Ellsworth, P., Maslach, C., & Seipel, M. (1975). Obligation, donor resources, and reactions to aid in three cultures. *Journal of Personality and Social Psychology*, *31*, 390-400. doi: 10.1037/h0076482

Ginott, H. G. (1965). *Between parent and child.* New York, NY: Macmillan

Gist, M. E., & Mitchell, T. R. (1992). Self-efficacy: A theoretical analysis of its determinants and malleability. *Academy of Management Review*, *17*, 183-211. doi: 10.5465/AMR. 1992.4279530

Gleason, M. E., Iida, M., Bolger, N., & Shrout, P. E. (2003). Daily supportive equity in close relationships. *Personality and Social Psychology Bulletin*, *29*, 1036-1045. doi: 10.1177/0146167203253473

Gleason, M. E., Iida, M., Shrout, P. E., & Bolger, N. (2008). Receiving support as a mixed blessing: evidence for dual effects of support on psychological outcomes. *Journal of Personality and Social Psychology*, *94*, 824-838. doi:10.1037/0022-3514.94.5.824

Goranson, R. E., & Berkowitz, L. (1966). Reciprocity and responsibility reactions to prior help. *Journal of Personality and Social Psychology*, *3*, 227-232. doi: 10.1037/ h0022895

Gottlieb, B. H. (1978). The development and application of a classification scheme of informal helping behaviours. *Canadian Journal of Behavioural Science/Revue Canadienne des Sciences du Comportement*, *10*, 105-115. doi: 10.1037/h0081539

Gottlieb, B. H., & Bergen, A. E. (2010). Social support concepts and measures. *Journal of Psychosomatic Research*, *69*, 511-520. doi:10.1016/j.jpsychores.2009.10.001

Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review, 25*, 161-178.

Grace, M. K., & VanHeuvelen, J. S. (2015). Ties Received, Support Perceived A Test of the Theorized Relationships among Workplace Networks, Social Support, and Mental Health in a Neonatal Intensive Care Unit (NICU). *Society and Mental Health*, Advance online publication. doi: 10.1177/2156869314564221

Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *The Leadership Quarterly*, *6*, 219-247. doi:10.1016/1048-9843(95)90036-5

Graham, J. W. (1986). Principled organizational dissent: A theoretical essay. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior,* (Vol. 8, pp. 1–52). Greenwich, CT: JAI.

Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology, 78*, 1360-1380.

Graves, P. L., Wang, N. Y., Mead, L. A., Johnson, J. V., & Klag, M. J. (1998). Youthful precursors of midlife social support. *Journal of Personality and Social Psychology*, *74*, 1329-1336. doi: 10.1037/0022-3514.74.5.1329

Gross, A. E., & Latané, J. G. (1974). Receiving Help, Reciprocation, and Interpersonal Attraction. *Journal of Applied Social Psychology*, *4*, 210-223. doi: 10.1111/j.1559-1816.1974.tb02641.x

Grube, A., Schroer, J., Hentzschel, C., & Hertel, G. (2008). The event reconstruction method: An efficient measure of experience-based job satisfaction. *Journal of Occupational and Organizational Psychology*, *81*, 669-689. doi: 10.1348/096317907X251578

Guerin, B. (1986). Mere presence effects in humans: A review. *Journal of Experimental Social Psychology, 22*, 38-77. doi: 10.1016/0022-1031(86)90040-5

Guyatt, G. H., Pugsley, S. O., Sullivan, M. J., Thompson, P. J., Berman, L., Jones, N. L., Fallen, E.L., & Taylor, D. W. (1984). Effect of encouragement on walking test performance. *Thorax*, *39*, 818-822. doi:10.1136/thx.39.11.818

Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance*, *16*, 250-279. doi:10.1016/0030-5073(76)90016-7.

Harkins, S. G. (1987). Social loafing and social facilitation. *Journal of Experimental Social Psychology*, *23*, 1-18. doi:10.1016/0022-1031(87)90022-9

Harkins, S. G., & Petty, R. (1982). The effects of task difficulty and task uniqueness on social loafing. *Journal of Personality and Social Psychology*, *43*, 1214-1229. doi:10.1037/0022-3514.43.6.1214

Hart, P. M., Wearing, A. J., & Headey, B. (1993). Assessing police work experiences: Development of the police daily hassles and uplifts scales. *Journal of Criminal Justice*, *21*, 553-572. doi:10.1016/0047-2352(93)90043-M

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, *76*, 408-420. doi: 10.1080/03637750903310360

Hayes, A. F. (2012). Process. A versatile computational tool for observed variable mediation, moderation, and conditional process modeling [White paper]. Retrieved from http://www.afhayes.com/public/process2012.pdf.

Helgeson, V. S. (1993). Two Important Distinctions in Social Support: Kind of Support and Perceived Versus Received. *Journal of Applied Social Psychology*, *23*, 825-845. doi: 10.1111/j.1559-1816.1993.tb01008.x

Hertel, G. (2000). Motivation gains in groups: A brief review of the state of the art. *Zeitschrift für Sozialpsychologie, 31*, 169-175. doi: 10.1024//0044-3514.31.4.169

Hertel, G., Deter, C., & Konradt, U. (2003). Motivation gains in computer-supported groups. *Journal of Applied Social Psychology, 33*, 2080-2105. doi: 10.1111/j.1559-1816.2003.tb01876.x

Hertel, G., Kerr, N. L., & Messé, L. A. (2000). Motivation gains in performance groups: Paradigmatic and theoretical developments on the Köhler effect. *Journal of Personality and Social Psychology, 79*, 580-601. doi: 10.1037/0022-3514.79.4.580

Hertel, G., Kerr, N. L., Scheffler, M., Geister, S., & Messé, L. A. (2000). Exploring the Köhler motivation gain effect: Impression management and spontaneous goal setting. *Zeitschrift für Sozialpsychologie, 31,* 204–220. doi: 10.1024//0044-3514.31.4.204

Hertel, G., Niemeyer, G., & Clauss, A. (2008). Social indispensability or social comparison: The why and when of motivation gains of inferior group members. *Journal of Applied Social Psychology, 38,* 1329-1363. doi: 10.1111/j.1559-1816.2008.00350.x

Hertel, G., & Stamov-Roßnagel, C. (2013). Reconstruction methods: Using episodic memory traces to capture experiences at work efficiently. In A. B. Bakker & K. Daniels (Eds.), *A day in the life of a happy worker* (pp. 100–113). New York, NY: Psychology Press.

Herzberg, F., Mausner, B., & Snyderman B.B. (1959). *The motivation to work*. New York, NY: Wiley.

High, A. C., & Solomon, D. H. (2014). Motivational systems and preferences for social support strategies. *Motivation and Emotion*, *38*, 463-474. doi: 10.1007/s11031-014-9394-5

Hirsch, B. J. (1980). Natural support systems and coping with major life changes. *American Journal of Community Psychology*, *8*, 159-172. doi: 10.1007/BF00912658

Hirt, E. R., Melton, R. J., McDonald, H. E., & Harackiewicz, J. M. (1996). Processing goals, task interest, and the mood–performance relationship: A mediational analysis. *Journal of Personality and Social Psychology*, *71*, 245-261. doi: 10.1037/0022-3514.71.2.245

Hobfoll, S. E. (2009). Social support: The movie. *Journal of Social and Personal Relationships*, *26*, 93-101. doi: 10.1177/0265407509105524

Hofmann, D. A., & Gavin, M. B. (1998). Centering decisions in hierarchical linear models: Implications for research in organizations. *Journal of Management, 24*, 623–641. doi: 10.1177/014920639802400504

Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: a meta-analytic review. *PLoS Medicine, 7*, 1-20. doi: 10.1371/journal.pmed.1000316

House, J. S., Umberson, D., & Landis, K. R. (1988). Structures and processes of social support. *Annual Review of Sociology, 14*, 293-318.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*, 1-55. doi: 10.1080/10705519909540118

Hüffmeier, J., Dietrich, H., & Hertel, G. (2013). Effort intentions in teams: Effects of task type and teammate performance. *Small Group Research, 44*, 62-88. doi: 10.1177/1046496412472242

Hüffmeier, J., & Hertel, G. (2011). Many cheers make light the work: How social support triggers process gains in teams. *Journal of Managerial Psychology, 26*, 185-204. doi: 10.1108/02683941111112631

Humphrey, S. E., Nahrgang, J. D., & Morgeson, F. P. (2007). Integrating motivational, social, and contextual work design features: a meta-analytic summary and theoretical extension of the work design literature. *Journal of Applied Psychology*, *92*, 1332-1356. doi: 10.1037/0021-9010.92.5.1332

Ilies, R., Fulmer, I. S., Spitzmuller, M., & Johnson, M. D. (2009). Personality and citizenship behavior: The mediating role of job satisfaction. *Journal of Applied Psychology, 94*, 945-959. doi: 10.1037/a0013329

Irwin, B. C., Feltz, D. L., & Kerr, N. L. (2013). Silence is golden: Effect of encouragement in motivating the weak link in an online exercise video game. *Journal of Medical Internet Research, 15*, e104. doi: 10.2196/jmir.2551

Isen, A. M., & Reeve, J. (2005). The influence of positive affect on intrinsic and extrinsic motivation: Facilitating enjoyment of play, responsible work behavior, and self-control. *Motivation and Emotion*, *29*, 295-323. doi: 10.1007/s11031-006-9019-8

Jäger, R. (2004). Konstruktion einer Ratingskala mit Smilies als symbolische Marken. *Diagnostica*, *50*, 31-38. doi: 10.1026/0012-1924.50.1.31

Jamieson, J. P. (2010). The home field advantage in athletics: A meta-analysis. *Journal of Applied Social Psychology*, *40*, 1819-1848. doi: 10.1111/j.1559-1816.2010.00641.x

Janssen, O. (2001). Fairness perceptions as a moderator in the curvilinear relationships between job demands, and job performance and job satisfaction. *Academy of Management Journal*, *44*, 1039-1050. doi: 10.2307/3069447

Judge, T. A., & Bono, J. E. (2001). Relationship of core self-evaluations traits—self-esteem, generalized self-efficacy, locus of control, and emotional stability—with job satisfaction and job performance: A meta-analysis. *Journal of Applied Psychology*, *86*, 80-92. doi: 10.1037/0021-9010.86.1.80

Judge, T. A., & Ilies, R. (2004). Affect and job satisfaction: a study of their relationship at work and at home. *Journal of Applied Psychology*, *89*, 661-673. doi: 10.1037/0021-9010.89.4.661

Kaniasty, K. Z., Norms, F. H., & Murrell, S. A. (1990). Received and Perceived Social Support Following Natural Disaster. *Journal of Applied Social Psychology*, *20,* 85-114. doi: 10.1111/j.1559-1816.1990.tb00401.x

Kanner, A. D., Coyne, J. C., Schaefer, C., & Lazarus, R. S. (1981). Comparison of two modes of stress measurement: Daily hassles and uplifts versus major life events. *Journal of Behavioral Medicine*, *4*, 1-39. doi: 10.1007/BF00844845

Kanouse, D. E., Gumpert, P., & Canavan-Gumpert, D. (1981). The semantics of praise. In J. H. Harvey, W. Ickes, & R. F. Kidd (Eds.), *New directions in attribution research* (Vol. 3, pp. 97–115). Hillsdale, NJ: Erlbaum.

Kaplan, S., Bradley, J. C., Luchman, J. N., & Haynes, D. (2009). On the role of positive and negative affectivity in job performance: A meta-analytic investigation. *Journal of Applied Psychology*, *94*, 162–176. doi:10.1037/a0013115

Kaplan, B. H., Cassel, J. C., & Gore, S. (1977). Social support and health. *Medical Care, 15*, 47-58.

Karau, S. J., & Elsaid, A. M. M. (2009). Individual differences in beliefs about groups. *Group Dynamics: Theory, Research, and Practice*, *13*, 1-13. doi: 10.1037/a0013366

Karau, S. J., & Williams, K. D. (1993). Social loafing: A meta-analytic review and theoretical integration. *Journal of Personality and Social Psychology, 65*, 681-706. doi: 10.1037/0022-3514.65.4.681

Katz, D., & Kahn, R. L. (1978). *The social psychology of organizations.* New York, NY: Wiley.

Kavanagh, D. J. (1987). Mood, persistence, and success. *Australian Journal of Psychology*, *39*, 307-318. doi: 10.1080/00049538708259055

Kerr, N. L. (1983). Motivation losses in small groups: A social dilemma analysis. *Journal of Personality and Social Psychology, 45*, 819-828. doi: 10.1037/0022-3514.45.4.819

Kerr, N. L., & Bruun, S. E. (1983). Dispensability of member effort and group motivation losses: Free-rider effects. *Journal of Personality and Social Psychology, 44,* 78–94. doi:10.1037/0022-3514.44.1.78

Kerr, N. L., Feltz, D. L., & Irwin, B. C. (2012). To pay or not to pay? Do extrinsic incentives alter the Köhler group motivation gain? *Group Processes & Intergroup Relations*, *16*, 257-268. doi: 10.1177/1368430212453632

Kerr, N. L., & Hertel, G. (2011). The Köhler Group Motivation Gain: How to Motivate the 'Weak Links' in a Group. *Social and Personality Psychology Compass, 5*, 43-55. doi: 10.1111/j.1751-9004.2010.00333.x

Kerr, N. L., Messé, L. A., Park, E. S., & Sambolec, E. J. (2005). Identifiability, performance feedback and the Köhler effect. *Group Processes & Intergroup Relations*, *8*, 375-390. doi: 10.1177/1368430205056466

Kerr, N. L., Messé, L. A., Seok, D. H., Sambolec, E. J., Lount, R. B., & Park, E. S. (2007). Psychological mechanisms underlying the Köhler motivation gain. *Personality and Social Psychology Bulletin, 33*, 828-841. doi: 10.1177/0146167207301020

Kerr, N. L., Seok, D.-H., Poulsen, J. R., Harris, D. W., & Messé, L. A. (2008). Social ostracism and group motivation gain. *European Journal of Social Psychology, 38*, 736-746. doi: 10.1002/Ejsp.499

Kimbler, K. J., Margrett, J. A., & Johnson, T. L. (2012). The role of supportive messages and distracting thoughts on everyday problem-solving performance. *Experimental aging research*, *38*, 537-558. doi: 10.1080/0361073X.2012.726158

Kleinlein, N. (2008). *Management by motivation in global virtual teams – insights from empirical research in an international company* (Unpublished diploma thesis). University of Würzburg: Würzburg, Germany.

Kluger, A. N., & DeNisi, A. (1996). The effects of feedback interventions on performance: a historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin*, *119*, 254-284. doi: 10.1037/0033-2909.119.2.254

Köhler, O. (1926). Kraftleistungen bei Einzel- und Gruppenarbeit [Physical performance in individual and group situations]. *Industrielle Psychotechnik, 3*, 274-282.

König, C. J., Klehe, U. C., Berchtold, M., & Kleinmann, M. (2010). Reasons for being selective when choosing personnel selection procedures. *International Journal of Selection and Assessment*, *18*, 17-27. doi: 10.1111/j.1468-2389.2010.00485.x

Kram, K. E., & Isabella, L. A. (1985). Mentoring alternatives: The role of peer relationships in career development. *Academy of Management Journal*, *28*, 110-132. doi: 10.2307/256064

Kravitz, D. and Martin, B. (1986), Ringelmann rediscovered: the original article. *Journal of Personality and Social Psychology, 50*, 936-941.

Kunin, T. (1955). The Construction of a New Type of Attitude Measure. *Personnel Psychology*, *8*, 65-77. doi: 10.1111/j.1744-6570.1955.tb01189.x

Lakey, B. (1989). Personal and environmental antecedents of perceived social support developed at college. *American Journal of Community Psychology*, *17*, 503-519. doi: 10.1007/BF00931175

Lakey, B., & Cassady, P. B. (1990). Cognitive processes in perceived social support. *Journal of Personality and Social Psychology*, *59*, 337-343. doi: 10.1037/0022-3514.59.2.337

Latané, B. (1981). The psychology of social impact. *American Psychologist, 36,* 343-356. doi: 10.1037//0003-066x.36.4.343

Latané, B., Williams, K., & Harkins, S. (1979). Many hands make light the work: The causes and consequences of social loafing. *Journal of Personality and Social Psychology, 37,* 822–832. doi:10.1037/0022-3514.37.6.822

Levine, J. M., & Moreland, R. L. (1990). Progress in small group research. *Annual Review of Psychology*, *41*, 585-634. doi: 10.1146/annurev.ps.41.020190.003101

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting & task performance*: Englewood Cliffs, NJ: Prentice-Hall.

Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, *57*, 705-717. doi: 10.1037//0003-066X.57.9.705

Locke, E. A., & Latham, G. P. (2006). New directions in goal-setting theory. *Current Directions in Psychological Science*, *15*, 265-268. doi: 10.1111/j.1467-8721.2006.00449.x

Lount, R. B., Kerr, N. L., Messé, L. A., Seok, D. H., & Park, E. S. (2008). An examination of the stability and persistence of the Köhler motivation gain effect. *Group Dynamics: Theory, Research, and Practice*, *12*, 279-289. doi: 10.1037/1089-2699.12.4.279

Lount, R. B., & Wilk, S. L. (2014). Working harder or hardly working? Posting performance eliminates social loafing and promotes social laboring in workgroups. *Management Science*, *60*, 1098-1106. doi: 10.1287/mnsc.2013.1820

Lubbers, R., Loughlin, C., & Zweig, D. (2005). Young workers' job self-efficacy and affect: Pathways to health and performance. *Journal of Vocational Behavior*, *67*, 199-214. doi:10.1016/j.jvb.2004.03.002

Luthans, F., Rhee, S., Luthans, B. C., & Avey, J. B. (2008). Impact of behavioral performance management in a Korean application. *Leadership & Organization Development Journal*, *29*, 427-443. doi: 10.1108/01437730810887030

Luthans, F., & Stajkovic, A. D. (2000). Provide recognition for performance improvement. In E. A. Locke (Ed.), *Principles of organizational behavior* (pp. 166–180). Oxford, England: Blackwell.

Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: does happiness lead to success?. *Psychological Bulletin*, *131*, 803-855. doi: 10.1037/0033-2909.131.6.803

Maas, C. J. M., & Hox, J. J. (2005). Sufficient sample sizes for multilevel modeling. *Methodology, 1*, 86−92. doi: 10.1027/1614-2241.1.3.86

MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods*, *4*, 84-99. doi: 10.1037/1082-989X.4.1.84

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods, 7*, 83-104. doi:10.1037/1082-989x.7.1.83

Maertz, C. P., Griffeth, R. W., Campbell, N. S., & Allen, D. G. (2007). The effects of perceived organizational support and perceived supervisor support on employee turnover. *Journal of Organizational Behavior*, *28*, 1059-1075. doi: 10.1002/job.472

Mahlendorf, M. D., & Wallenburg, C. M. (2013). Public justification and investment in failing projects: the moderating effect of optimistic outcome expectations. *Journal of Applied Social Psychology*, *43*, 2271-2286. doi: 10.1111/jasp.12177

Mallinckrodt, B. (1992). Childhood emotional bonds with parents, development of adult social competencies, and availability of social support. *Journal of Counseling Psychology*, *39*, 453-461. doi: 10.1037/0022-0167.39.4.453

Marsh, H. W. (1987). The hierarchical structure of self-concept and the application of hierarchical confirmatory factor analysis. *Journal of Educational Measurement, 24*, 17-39.

Martin, L. L., Ward, D. W., Achee, J. W., & Wyer, R. S. (1993). Mood as input: people have to interpret the motivational implications of their moods. *Journal of Personality and Social Psychology*, *64*, 317-326. doi: 10.1037/0022-3514.64.3.317

Matsui, T., Matsui, K., & Ohnishi, R. (1990). Mechanisms underlying math self-efficacy learning of college students. *Journal of Vocational Behavior*, *37*, 225-238. doi:10.1016/0001-8791(90)90042-Z

Maurer, T. J., & Palmer, J. K. (1999). Management development intentions following feedback-Role of perceived outcomes, social pressures, and control. *Journal of Management Development*, *18*, 733-751. doi: 10.1108/02621719910300784

Max, E. J. (2014). *Communication effects on exercise duration of weaker group members with virtually-present partners* (Master's thesis). Available from ProQuest Dissertations and Theses database. (UMI No. 1554605).

Maybery, D. J., Jones-Ellis, J., Neale, J., & Arentz, A. (2006). The positive event scale: Measuring uplift frequency and intensity in an adult sample. *Social Indicators Research*, *78*, 61-83. doi: 10.1007/s 11205-005-4096-8

McClure, M. J., Xu, J. H., Craw, J. P., Lane, S. P., Bolger, N., & Shrout, P. E. (2014). Understanding the costs of support transactions in daily life. *Journal of Personality*, *82*, 563-574. doi: 10.1111/jopy.12061

McGrath, J. E. (1991). Time, interaction, and performance (TIP) A Theory of Groups. *Small Group Research*, *22*, 147-174. doi: 10.1177/1046496491222001

McNair, P. J., Depledge, J., Brettkelly, M., & Stanley, S. N. (1996). Verbal encouragement: effects on maximum effort voluntary muscle: action. *British Journal of Sports Medicine*, *30*, 243-245. doi: 10.1136/bjsm.30.3.243

McNemar, Q. (1947). Note on the sampling error of the difference between correlated proportions or percentages. *Psychometrika, 12*, 153-157. doi: 10.1007/Bf02295996

Messé, L. A., Hertel, G., Kerr, N. L., Lount, R. B., & Park, E. S. (2002). Knowledge of partner's ability as a moderator of group motivation gains: An exploration of the Köhler discrepancy effect. *Journal of Personality and Social Psychology*, *82*, 935-946. doi: 10.1037//0022-3514.82.6.935

Meyer, W.-U., Bachmann, M., Biermann, U., Hempelmann, M., Plöger, F.-O., & Spiller, H. (1979). The informational value of evaluative behavior: Influences of praise and blame on perceptions of ability. *Journal of Educational Psychology*, *71*, 259-268. doi: 10.1037/ 0022-0663.71.2.259

Meyerson, D., Weick, K. E., & Kramer, R. M. (1996). *Swift trust and temporary groups.* In R. M. Kramer & T. R. Tyler (Eds.), Trust in organizations: Frontiers of theory and Research (pp. 166-195). Thousand Oaks, CA: Sage.

Moorman, R. H., & Blakely, G. L. (1995). Individualism-collectivism as an individual difference predictor of organizational citizenship behavior. *Journal of Organizational Behavior*, *16*, 127-142. doi: 10.1002/job.4030160204

Morin, L., & Latham, G. (2000). The Effect of Mental Practice and Goal Setting as a Transfer of Training Intervention on Supervisors' Self-efficacy and Communication Skills: An Exploratory Study. *Applied Psychology*, *49*, 566-578. doi: 10.1111/1464-0597.00032

Morwitz, V. G., Johnson, E., & Schmittlein, D. (1993). Does measuring intent change behavior*? Journal of Consumer Research, 20,* 46-61.

Mossholder, K. W., Settoon, R. P., & Henagan, S. C. (2005). A relational perspective on turnover: Examining structural, attitudinal, and behavioral predictors. *Academy of Management Journal*, *48*, 607-618. doi: 10.5465/AMJ.2005.17843941

Mueller, C. M., & Dweck, C. S. (1998). Praise for intelligence can undermine children's motivation and performance. *Journal of Personality and Social Psychology, 75*, 33-52. doi:10.1037/ 0022-3514.75.1.33

Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology*, *38*, 30-38. doi: 10.1037/0022-0167.38.1.30

Muthén, L. K., & Muthén, B. O. (2012). *Mplus user's guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.

Nadler, A. & Fisher, J. D. (1986). The role of threat to self-esteem and perceived control in recipients reaction to help: Theory development and empirical validation. In: L.Berkowitz (Ed.), Advances in experimental social psychology (Vol. 19, pp. 81-122). San Diego, CA: Academic Press.

Nadler, A., Fisher, J. D., & Itzhak, S. B. (1983). With a little help from my friend: Effect of single or multiple act aid as a function of donor and task characteristics. *Journal of Personality and Social Psychology*, *44*, 310-321. doi: 10.1037/0022-3514.44.2.310

Nadler, A., Fisher, J. D., & Streufert, S. (1974). The Donor's Dilemma: Recipient's Reactions to Aid from Friend or Foe1. *Journal of Applied Social Psychology*, *4*, 275-285. doi: 10.1111/j.1559-1816.1974.tb02646.x

Near, J. P., & Miceli, M. P. (1985). Organizational dissidence: The case of whistle-blowing. *Journal of Business Ethics*, *4*, 1-16. doi: 10.1007/BF00382668

Ng, T. W. H., & Sorensen, K. L. (2008). Toward a further understanding of the relationships between perceptions of support and work attitudes: A meta-analysis. *Group & Organization Management, 33*, 243–268. doi: 10.1177/1059601107313307

Nunnally, J. (1978). *Psychometric methods*. New York, NY: McGraw-Hill.

Ohly, S., Sonnentag, S., Niessen, C., & Zapf, D. (2010). Diary studies in organizational research. *Journal of Personnel Psychology, 9*, 79-93. doi: 10.1027/1866-5888/a000009

Organ, D. W. (1988). *Organizational citizenship behavior: The good soldier syndrome.* Lexington, MA: Lexington.

Organ, D. W. (1990). The motivational basis of organizational citizenship behavior. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior* (Vol. 12, pp. 43-72). Greenwich, CT: JAI.

Organ, D. W. (1997). Organizational citizenship behavior: It's construct clean-up time. *Human Performance*, *10*, 85-97. doi: 10.1207/s15327043hup1002_2

Osca, A., Urien, B., Gonzalez-Camino, G., Martinez-Perez, M. D., & Martinez-Perez, N. (2005). Organisational support and group efficacy: A longitudinal study of main and buffer effects. *Journal of Managerial Psychology, 20*, 292-311. doi: 10.1108/02683940510589064

Partington, J. E., & Leiter, R. G. (1949). Partington's pathway test. *Psychological Service Center Bulletin, 1,* 9–20.

Pazy, A., & Ganzach, Y. (2009). Pay contingency and the effects of perceived organizational and supervisor support on performance and commitment. *Journal of Management, 35,* 1007–1025. doi:10.1177/0149206307312505

Peeters, M. C., Buunk, B. P., & Schaufeli, W. B. (1995). Social interactions and feelings of inferiority. *Journal of Applied Social Psychology*, *25*, 1073-1089. doi: 10.1111/j.1559-1816.1995.tb00618.x

Pierce, J. R., & Aguinis, H. (2013). The too-much-of-a-good-thing effect in management. *Journal of Management, 39*, 313-338. doi: 10.1177/0149206311410060

Pierce, G. R., Sarason, B. R., & Sarason, I. G. (1992). General and specific support expectations and stress as predictors of perceived supportiveness: an experimental study. *Journal of Personality and Social Psychology*, *63*, 297-307. doi: 10.1037/0022-3514.63.2.297

Pinquart, M., & Duberstein, P.R. (2010). Associations of social networks with cancer mortality: A meta-analysis. *Critical Reviews in Oncology/Hematology*, *75*, 122–137. doi: 10.1016/j.critrevonc.2009.06.003

Podsakoff, P. M., Ahearne, M., & MacKenzie, S. B. (1997). Organizational citizenship behavior and the quantity and quality of work group performance. *Journal of Applied Psychology*, *82*, 262-270. doi: 10.1037/0021-9010.82.2.262

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*, 879-903. doi:10.1037/0021-9010.88.5.879

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, *63*, 539-569. doi: 10.1146/annurev-psych-120710-100452

Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, *12*, 531-544. doi: 10.1177/ 014920638601200408

Powers, W. T. (1973). *Behavior: The control of perception.* Chicago: Aldine.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*, 879-891. doi: 10.3758/BRM.40.3.879

Priem, J. S., Solomon, D. H., & Steuber, K. R. (2009). Accuracy and bias in perceptions of emotionally supportive communication in marriage. *Personal Relationships*, *16*, 531-552. doi: 10.1111/j.1475-6811.2009.01238.x

Rees, T., & Freeman, P. (2007). The effects of perceived and received support on self-confidence. *Journal of Sports Sciences*, *25*, 1057-1065. doi: 10.1080/02640410600982279

Rees, T., Ingledew, D. K., & Hardy, L. (1999). Social support dimensions and components of performance in tennis. *Journal of Sports Sciences*, *17*, 421-429. doi: 10.1080/026404199365948

Renn, R. W., & Fedor, D. B. (2001). Development and field test of a feedback seeking, self-efficacy, and goal setting model of work performance. *Journal of Management*, *27*, 563-583. doi: 10.1177/014920630102700504

Rhoades, J. A., Arnold, J., & Jay, C. (2001). The role of affective traits and affective states in disputants' motivation and behavior during episodes of organizational conflict. *Journal of Organizational Behavior*, *22*, 329-345. doi: 10.1002/job.72

Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: A review of the literature. *Journal of Applied Psychology, 87*, 698-714. doi:10.1037//0021-9010.87.4.698

Rigotti, T., Schyns, B., & Mohr, G. (2008). A short version of the occupational self-efficacy scale: Structural and construct validity across five countries. *Journal of Career Assessment*, *16*, 238-255. doi: 10.1177/1069072707305763

Ringelmann, M. (1913). Research on animate sources of power: The work of man. *Annales de l'Institut National Agronomique, 12,* 1-40.

Rioux, S. M., & Penner, L. A. (2001). The causes of organizational citizenship behavior: A motivational analysis. *Journal of Applied Psychology, 86,* 1306-1314. doi: 10.1037//0021-9010.86.6.1306

Rosenfeld, L. B., Richman, J. M., & Hardy, C. J. (1989). Examining social support networks among athletes: Description and relationship to stress. *The Sport Psychologist*, *3*, 23-33.

Sandler, I. N., & Barrera, M. (1984). Toward a multimethod approach to assessing the effects of social support. *American Journal of Community Psychology*, *12*, 37-52. doi: 10.1007/BF00896927

Sarason, I. G. Test anxiety, stress, and social support. *Journal of Personality, 49,* 101–114.

Sarason, I. G., Levine, H. M., Basham, R. B., & Sarason, B. R. (1983). Assessing social support: the social support questionnaire. *Journal of Personality and Social Psychology*, *44*, 127-139. doi: 10.1037/0022-3514.44.1.127

Sarason, I. G., & Sarason, B. R. (1986). Experimentally provided social support. *Journal of Personality and Social Psychology*, *50*, 1222-1225. doi: 10.1037/0022-3514.50.6.1222

Sarason, I. G., Sarason, B. R., & Pierce, G. R. (1990). Social support, personality, and performance. *Journal of Applied Sport Psychology*, *2*, 117-127. doi: 10.1080/10413209008406425

Sarason, I. G., Sarason, B. R., & Pierce, G. R. (1994). Social support: Global and relationship-based levels of analysis. *Journal of Social and Personal Relationships*, *11*, 295-312. doi: 10.1177/0265407594112008

Sarason, I. G., Sarason, B. R., & Shearin, E. N. (1986). Social support as an individual difference variable: Its stability, origins, and relational aspects. *Journal of Personality and Social Psychology*, *50*, 845-855. doi: 10.1037/0022-3514.50.4.845

Sawyer, J. E. (1992). Goal and process clarity: Specification of multiple constructs of role ambiguity and a structural equation model of their antecedents and consequences. *Journal of Applied Psychology*, *77*, 130-142. doi: 10.1037/0021-9010.77.2.130

Schachter, S. (1951). Deviation, rejection, and communication. *The Journal of Abnormal and Social Psychology*, *46*, 190-207. doi: 10.1037/h0062326

Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, *7*, 147-177. doi: 10.1037//1082-989X.7.2.147

Scherbaum, C. A., & Ferreter, J. M. (2009). Estimating statistical power and required sample sizes for organizational research using multilevel modeling. *Organizational Research Methods*, *12*, 347-367. doi: 10.1177/1094428107308906

Schmidt, A. M., & DeShon, R. P. (2010). The moderating effects of performance ambiguity on the relationship between self-efficacy and performance. *Journal of Applied Psychology*, *95*, 572-581. doi: 10.1037/a0018289

Schmitt, A., Ohly, S., & Kleespies, N. (2015). Time pressure promotes work engagement: Test of illegitimate tasks as boundary condition. *Journal of Personnel Psychology*, *14*, 28–36. doi: 10.1027/1866-5888/a000119

Schnake, M. E. (1991). Equity in effort: The" sucker effect" in co-acting groups. *Journal of Management*, *17*, 41-55. doi: 10.1177/014920639101700104

Scholz, U., Gutiérrez Doña, G., Sud, S., & Schwarzer, R. (2002). Is general self-efficacy a universal construct? Psychometric findings from 25 countries. *European Journal of Psychological Assessment*, *18*, 242-251. doi: 10.1027//1015-5759.18.3.242

Schyns, B., & von Collani, G. (2002). A new occupational self-efficacy scale and its relation to personality constructs and organizational variables. *European Journal of Work and Organizational Psychology*, *11*, 219-241. doi: 10.1080/13594320244000148

Searle, B., Bright, J. E., & Bochner, S. (2001). Helping people to sort it out: The role of social support in the job strain model. *Work & Stress*, *15*, 328-346. doi: 10.1080/ 02678370110086768

Self, D. R., Holt, D. T., & Schaninger, W. S. (2005). Work-group organizational support: A test of distinct dimensions. *Journal of Occupational and Organizational Psychology, 78,* 133–140. doi:10.1348/ 096317904X22944

Seo, M. G., Barrett, L. F., & Bartunek, J. M. (2004). The role of affective experience in work motivation. *Academy of Management Review*, *29*, 423-439. doi: 10.5465/AMR.2004. 13670972

Seo, M. G., & Ilies, R. (2009). The role of self-efficacy, goal, and affect in dynamic motivational self-regulation. *Organizational Behavior and Human Decision Processes*, *109*, 120-133. doi:10.1016/j.obhdp.2009.03.001

Settoon, R. P., & Mossholder, K. W. (2002). Relationship quality and relationship context as antecedents of person-and task-focused interpersonal citizenship behavior. *Journal of Applied Psychology*, *87*, 255-267. doi: 10.1037//0021-9010.87.2.255

Sheeran, P. (2002). Intention—behavior relations: A conceptual and empirical review. *European Review of Social Psychology, 12*, 1-36. doi: 10.1080/14792772143000003

Sheldon, K. M., Ryan, R., & Reis, H. T. (1996). What makes for a good day? Competence and autonomy in the day and in the person. *Personality and Social Psychology Bulletin, 22*, 1270–1279. doi:10.1177/01461672962212007

Sherman, S. J. (1980). On the self-erasing nature of errors of prediction. *Journal of Personality and Social Psychology, 39,* 211-221. doi: 10.1037/0022-3514.39.2.211

Shrout, P. E., & Fleiss, J. L. (1979). Intraclass correlations: Uses in assessing rater reliability. *Psychological Bulletin, 86*, 420-428. doi: 10.1037/0033-2909.86.2.420

Siemsen, E., Roth, A., & Oliveira, P. (2010). Common method bias in regression models with linear, quadratic, and interaction effects. *Organizational Research Methods, 13*, 456–476. doi:10.1177/1094428109351241

Simbula, S. (2010). Daily fluctuations in teachers' well-being: a diary study using the Job Demands–Resources model. *Anxiety, Stress, & Coping*, *23*, 563-584. doi: 10.1080/10615801003728273

Sinclair, R. C., & Mark, M. M. (1995). The effects of mood state on judgemental accuracy: Processing strategy as a mechanism. *Cognition & Emotion*, *9*, 417-438. doi: 10.1080/02699939508408974

Smith, C., Organ, D. W., & Near, J. P. (1983). Organizational citizenship behavior: Its nature and antecedents. *Journal of Applied Psychology, 68,* 653-663. doi: 10.1037/0021-9010.68.4.653

Sparrowe, R. T., & Liden, R. C. (1997). Process and structure in leader-member exchange. *Academy of Management Review*, *22*, 522-552. doi: 10.5465/AMR.1997.9707154068

Spector, P. E. (2006). Method variance in organizational research truth or urban legend? *Organizational Research Methods*, *9*, 221-232. doi: 10.1177/1094428105284955

Sprott, D. E., Spangenberg, E. R., & Fisher, R. (2003). The importance of normative beliefs to the self-prophecy effect. *Journal of Applied Psychology, 88,* 423-431. doi: 10.1037/0021-9010.88.3.423

Stajkovic, A. D., & Luthans, F. (1998). Self-efficacy and work-related performance: A meta-analysis. *Psychological Bulletin*, *124*, 240-261. doi: 10.1037/0033-2909.124.2.240

Stajkovic, A. D., & Luthans, F. (2001). Differential effects of incentive motivators on work performance. *Academy of Management Journal*, *44*, 580-590. doi: 10.2307/3069372

Stajkovic, A. D., & Luthans, F. (2003). Behavioral management and task performance in organizations: conceptual background, meta-analysis, and test of alternative models. *Personnel Psychology*, *56*, 155-194. doi: 10.1111/j.1744-6570.2003.tb00147.x

Stark, E. M., Shaw, J. D., & Duffy, M. K. (2007). Preference for group work, winning orientation, and social loafing behavior in groups. *Group & Organization Management*, *32*, 699-723. doi: 10.1177/1059601106291130

Steiner, I. D. (1972). *Group process and productivity*. New York, NY: Academic Press.

Stroebe, W., Diehl, M., & Abakoumkin, G. (1996). Social compensation and the Köhler effect: Toward a theoretical explanation of motivation gains in group productivity. In E. H. Witte & J. H. Davis (Eds.), *Understanding group behavior: Small group processes and interpersonal relations* (pp. 37-65). Hillsdale, England: Erlbaum.

Szymanski, K., & Harkins, S. G. (1987). Social loafing and self-evaluation with a social standard. *Journal of Personality and Social Psychology*, *53*, 891-897. doi:10.1037/0022-3514.53.5.891

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Boston, MA: Allyn & Bacon.

Tajfel, H. (1970). Aspects of national and ethnic loyalty. *Social Science Information, 9*, 119-144. doi: 10.1177/053901847000900305

Tardy, C. H. (1985). Social support measurement. *American Journal of Community Psychology*, *13*, 187-202. doi: 10.1007/BF00905728

Tardy, C. H. (1992). Assessing the functions of supportive messages: Experimental studies of social support. *Communication Research, 19*, 175-192. doi: 10.1177/009365092019002003

Tauer, J. M., & Harackiewicz, J. M. (2004). The effects of cooperation and competition on intrinsic motivation and performance. *Journal of Personality and Social Psychology, 86*, 849-861. doi: 10.1037/0022-3514.86.6.849

Thoits, P. A. (2011). Mechanisms linking social ties and support to physical and mental health. *Journal of Health and Social Behavior*, *52*, 145-161. doi: 10.1177/0022146510395592

Torrente, P., Salanova, M., Llorens, S., & Schaufeli, W. B. (2012). Teams make it work: How team work engagement mediates between social resources and performance in teams. *Psicothema*, *24*, 106-112.

Totterdell, P. (1999). Mood scores: Mood and performance in professional cricketers. *British Journal of Psychology*, *90*, 317-332. doi: 10.1348/000712699161422

Triplett, N. (1898). The dynamogenic factors in pacemaking and competition. *The American Journal of Psychology, 9*, 507-533. doi: 10.2307/1412188

Tsai, W. C., Chen, C. C., & Liu, H. L. (2007). Test of a model linking employee positive moods and task performance. *Journal of Applied Psychology*, *92*, 1570-1583. doi: 10.1037/0021-9010.92.6.1570

Tuckman, B. W., & Sexton, T. L. (1991). The effect of teacher encouragement on student self-efficacy and motivation for self-regulated performance. *Journal of Social Behavior & Personality, 6,* 137-146.

Twenge, J. M., Baumeister, R. F., DeWall, C. N., Ciarocco, N. J., & Bartels, J. M. (2007). Social exclusion decreases prosocial behavior. *Journal of Personality and Social Psychology*, *92*, 56-66. doi: 10.1037/0022-3514.92.1.56

Uehara, E. S. (1995). Reciprocity reconsidered: Gouldner's moral norm of reciprocity' and social support. *Journal of Social and Personal Relationships*, *12*, 483-502. doi: 10.1177/0265407595124001

Uhl-Bien, M., & Maslyn, J. M. (2003). Reciprocity in manager-subordinate relationships: Components, configurations, and outcomes. *Journal of Management*, *29*, 511-532. doi: 10.1016/S0149-2063_03_00023-0

Usher, E. L., & Pajares, F. (2006). Sources of academic and self-regulatory efficacy beliefs of entering middle school students. *Contemporary Educational Psychology*, *31*, 125-141. doi:10.1016/j.cedpsych.2005.03.002

Vancouver, J. B., & Kendall, L. N. (2006). When self-efficacy negatively relates to motivation and performance in a learning context. *Journal of Applied Psychology*, *91*, 1146-1153. doi: 10.1037/0021-9010.91.5.1146

Vancouver, J. B., Thompson, C. M., Tischner, E. C., & Putka, D. J. (2002). Two studies examining the negative effect of self-efficacy on performance. *Journal of Applied Psychology*, *87*, 506-516. doi: 10.1037/0021-9010.87.3.506

van Dick, R., Tissington, P. A., & Hertel, G. (2009). Do many hands make light work?: How to overcome social loafing and gain motivation in work teams. *European Business Review, 21*, 233-245.

Van Dyne, L., & LePine, J. A. (1998). Helping and voice extra-role behaviors: Evidence of construct and predictive validity. *Academy of Management Journal*, *41*, 108-119. doi: 10.2307/256902

van Emmerik, I. J. H. (2008). It is not only mentoring: The combined influences of individual-level and team-level support on job performance. *Career Development International*, *13*, 575-593. doi: 10.1108/13620430810911065

Vinokur, A., & Caplan, R. D. (1987). Attitudes and Social Support: Determinants of Job-Seeking Behavior and Well-Being among the Unemployed. *Journal of Applied Social Psychology*, *17*, 1007-1024. doi: 10.1111/j.1559-1816.1987.tb02345.x

Vinokur, A., Schul, Y., & Caplan, R. D. (1987). Determinants of perceived social support: interpersonal transactions, personal outlook, and transient affective states. *Journal of Personality and Social Psychology*, *53*, 1137-1145. doi: 10.1037/0022-3514.53.6.1137

Viswesvaran, C., Sanchez, J. I., & Fisher, J. (1999). The role of social support in the process of work stress: A meta-analysis. *Journal of Vocational Behavior, 54*, 314-334. doi: 10.1006/jvbe.1998.1661

Watson, D., & Clark, L. A. (1994). *The PANAS-X: Manual for the Positive and Negative Affect Schedule–Expanded Form*. Ames, IA: University of Iowa.

Wayne, S. J., Shore, L. M., & Liden, R. C. (1997). Perceived organizational support and leader-member exchange: A social exchange perspective. *Academy of Management Journal*, *40*, 82-111. doi:10.2307/257021

Weber, B., & Hertel, G. (2007). Motivation gains of inferior group members: A meta-analytical review. *Journal of Personality and Social Psychology, 93*, 973-993. doi: 10.1037/0022-3514.93.6.973

Weber, B., Wittchen, M., & Hertel, G. (2009). Gendered ways to motivation gains in groups. *Sex Roles*, *60*, 731-744. doi: 10.1007/s11199-008-9574-4

Weinstein, N., & Ryan, R. M. (2010). When helping helps: autonomous motivation for prosocial behavior and its influence on well-being for the helper and recipient. *Journal of Personality and Social Psychology, 98*, 222-244. doi: 10.1037/A0016984

Weiss, H. M., & Cropanzano, R. (1996). Affective events theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior: An annual series of analytical essays and critical reviews* (Vol. 18, pp. 1–74). London, England: JAI Press.

West, S., Finch, J., & Curran, P. (1995). Structural equation models with nonnormal variables: Problems and remedies. In R.H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 56–75). Thousand Oaks, CA: Sage.

Wilder, D. A. (1986). Social categorization: Implications for creation and reduction of intergroup bias. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (pp. 293-356). Orlando, FL: Academic Press.

Williams, K. D. (2007). Ostracism. *Psychology*, *58*, 425-452. doi:10.1146/annurev.psych. 58.110405.085641

Williams, K. D., & Karau, S. J. (1991). Social loafing and social compensation: The effects of expectations of co-worker performance. *Journal of Personality and Social Psychology, 61*, 570-581. doi: 10.1037/0022-3514.61.4.570

Williams, L. J., & Anderson, S. E. (1991). Job satisfaction and organizational commitment as predictors of organizational citizenship and in-role behaviors. *Journal of Management, 17*, 601-617. doi: 10.1177/014920639101700305

Wills, T. A. (1991). Social support and interpersonal relationships. In M. S. Clark (Ed.), *Prosocial behavior. Review of personality and social psychology* (Vol. 12, pp. 265-289). Thousand Oaks, CA: Sage.

Wills, T. A., & Shinar O. (2000). Measuring perceived and received social support. In S. Cohen, L.G. Underwood & B.H. Gottlieb (Eds.), *Social support measurement and intervention: A guide for health and social scientists* (pp. 86–135). New York, NY: Oxford University Press.

Wittchen, M., Krimmel, A., Kohler, M., & Hertel, G. (2013). The two sides of competition: Competition-induced effort and affect during intergroup versus interindividual competition. *British Journal of Psychology, 104*, 320-338. doi: 10.1111/j.2044-8295.2012.02123.x

Wittchen, M., Schlereth, D., & Hertel, G. (2007). Social indispensability in spite of temporal and spatial separation: Motivation gains in a sequential task during anonymous cooperation on the internet. *International Journal of Internet Science*, *2*, 12-27.

Wittchen, M., van Dick, R., & Hertel, G. (2011). Intergroup competition as a trigger of motivation gains in groups: A review and process analysis. *Organisational Psychology Review, 1*, 257-272. doi: 10.1177/2041386611398166

Wong, Y. J. (2015). The Psychology of Encouragement Theory, Research, and Applications. *The Counseling Psychologist*, *43*, 178-216. doi: 10.1177/0011000014545091

Wood, R. E., Mento, A. J., & Locke, E. A. (1987). Task complexity as a moderator of goal effects: a meta-analysis. *Journal of Applied Psychology*, *72*, 416-425. doi: 10.1037/0021-9010.72.3.416

Worthington, E. L., Martin, G. A., Shumate, M., & Carpenter, J. (1983). The Effect of Brief Lamaze Training and Social Encouragement on Pain Endurance in a Cold Pressor Tank. *Journal of Applied Social Psychology*, *13*, 223-233. doi: 10.1111/j.1559-1816.1983.tb01736.x

Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2009). Work engagement and financial returns: A diary study on the role of job and personal resources. *Journal of Occupational and Organizational Psychology*, *82*, 183-200. doi: 10.1348/096317908X285633

Xanthopoulou, D., Bakker, A. B., Heuven, E., Demerouti, E., & Schaufeli, W. B. (2008). Working in the sky: a diary study on work engagement among flight attendants. *Journal of Occupational Health Psychology*, *13*, 345-356. doi: 10.1037/1076-8998.13.4.345

Yeo, G. B., & Neal, A. (2006). An examination of the dynamic relationship between self-efficacy and performance across levels of analysis and levels of specificity. *Journal of Applied Psychology*, *91*, 1088-1101. doi: 10.1037/0021-9010.91.5.1088

Yu, C., & Frenkel, S. J. (2013). Explaining task performance and creativity from perceived organizational support theory: Which mechanisms are more important? *Journal of Organizational Behavior*, *34*, 1165-1181. doi: 10.1002/job.1844

Zajonc, R. B. (1965). Social facilitation. *Science, 149*, 269-274.

Zelenski, J. M., Murphy, S. A., & Jenkins, D. A. (2008). The happy-productive worker thesis revisited. *Journal of Happiness Studies*, *9*, 521-537. doi: 10.1007/s10902-008-9087-4

Zellars, K. L., & Perrewé, P. L. (2001). Affective personality and the content of emotional social support: coping in organizations. *Journal of Applied Psychology*, *86*, 459-467. doi: 10.1037/0021-9010.86.3.459

Zetik, D. C., & Stuhlmacher, A. F. (2002). Goal setting and negotiation performance: A meta-analysis. *Group Processes & Intergroup Relations*, *5*, 35-52. doi: 10.1177/1368430202005001537

Appendix A

Supplemental material for Study 4

Table A.1

Instruction in German (Study 4)

Im weiteren Verlauf werden wir Sie bitten, sich verschiedene Ereignisse der letzten Arbeitstage ins Gedächtnis zu rufen. Bitte versuchen Sie sich so gut wie möglich an diese jeweiligen Arbeitssituationen zu erinnern. Jede Arbeitssituation kann dabei unterschiedliche Empfindungen und Einschätzungen beinhalten. Zu jeder dieser Situationen werden wir Ihnen mehrere Fragen stellen. Auch wenn einige der Fragen ähnlich klingen mögen, bilden sie unterschiedliche Aspekte der Situation ab. Daher bitten wir Sie, alle Fragen gewissenhaft zu beantworten. Hinweis: Die Reihenfolge, in der Sie im Folgenden Ihre Arbeitssituationen beurteilen, wird vom Computer zufällig bestimmt.

Denken Sie jetzt bitte an eine Arbeitsereignis der letzten Tage, in welchem Sie von einem oder mehreren Ihrer Teamkollegen (nicht von Ihre Vorgesetzten)
- für Ihre Leistung oder Ihren Einsatz für das Team gelobt wurden und/oder
- Sie Anerkennung für Ihre Leistung oder Ihren Einsatz für das Team erhalten haben und/ oder
- Ihre Leistung oder Ihr Einsatz für das Team wertgeschätzt wurde.

oder

Denken Sie jetzt bitte an eine Arbeitsereignis der letzten Tage, bei dem Sie von einem oder mehreren Ihrer Teamkollegen (nicht von Ihrem Vorgesetzten)
- bezüglich einer anstehenden Teamaufgabe ermutigt wurden und/oder
- für eine anstehende Teamaufgabe Zuspruch bekommen haben und/oder
- bezüglich einer anstehenden Teamaufgabe Vertrauen entgegengebracht bekamen, dass Sie die Aufgabe gut erledigen werden und/oder
- für eine anstehende Teamaufgabe angespornt wurden.

Bitte nehmen Sie sich einen Moment Zeit, um sich an diese Situation zu erinnern.

Table A.2

Intercorrelations of the social pressure items for Event 1 (N = 262) and Event 2 (N = 118) (Study 4)

	SP 1	SP 2	SP 3	SP 4
SP 1	-	.56**	.83**	.51**
SP 2	.40**	-	.45**	.88**
SP 3	.79**	.35**	-	.42**
SP 4	.39**	.85**	.35**	-

Note. The intercorrelations for Event 1 are shown below the diagonal, the intercorrelations for Event 2 are shown above the diagonal.
SP, social pressure.
**$p < .01$.

Appendix B

Supplemental material for Study 6

Table B.1

Supportive messages in German (Study 6)

Type of support	*Message*
Social encouragement	Ich glaube, dass Du das gleich richtig gut machen wirst. Du wirst die Stange sicher superlange hoch halten und machst das bestimmt total gut.
Social recognition	Ich fand, eben in den Durchgängen warst Du richtig gut. Du hast die Stange super lange hoch gehalten. Das hast Du echt total gut gemacht.

Table B.2

Employed items in German (Study 6)

Scale	*Items*
Positive affect	Meine Stimmung entspricht gerade folgendem Gesicht:
Self-efficacy beliefs	Ich bin mir sicher, dass ich die Aufgabe gut erfüllen kann.
	Ich bin überzeugt davon, dass ich bei der Aufgabe eine sehr gute Leistung zeigen kann.
	Ich weiß, dass ich die Anforderungen der Aufgabe erfüllen kann.
Goal setting	Ich setze mir für die Aufgabe ein sehr hohes Leistungsziel.
	Ich nehme mir vor bei der Aufgabe eine sehr gute Leistung zu erbringen.
	Mein eigener Anspruch an meine Leistung in der Aufgabe ist sehr hoch.
Social pressure	Ich fühle mich von meiner Teampartnerin unter Druck gesetzt, bei der Aufgabe eine sehr gute Leistung zu erbringen.
	Meine Teampartnerin erwartet für die Aufgabe einen hohen Arbeitseinsatz von mir.
	Meine Teampartnerin hat für die Aufgabe einen hohen Leistungsdruck aufgebaut.

(continued)

Table B.2 *(continued)*

Scale	*Item*
Obligation to perform well	Ich fühle mich verpflichtet, mich bei der Aufgabe für mein Team anzustrengen.
	Ich fühle mich verpflichtet bei der Aufgabe für mein Team möglichst gut zu sein.
	Ich habe das Gefühl, meinem Team bei der Aufgabe eine gute Leistung schuldig zu sein.
Self-reported effort	Ich habe mir im letzten Durchgang viel Mühe gegeben.
	Ich habe mich im letzten Durchgang angestrengt.
Perceived affective support	Ich hatte das Gefühl meiner Teampartnerin wichtig zu sein.
	Ich hatte das Gefühl, dass meine Teampartnerin mich schätzt.

Table B.3

Correlations between the study variables in Block 2 (Study 6; N = 43)

	1	2	3	4	5	6
1. Positive affect	-					
2. Self-efficacy	.51**	-				
3. Social pressure	-.29†	-.24	-			
4. Obligation to perform well	.02	.10	.50**	-		
5. Goal setting	.09	.34*	.39*	.80***	-	
6. Performance based effort gains	-.38*	-.14	.17	.28†	.31*	-
7. Self-report based effort gains	.08	.01	.35*	.59***	.58***	.30+

Note. †$p < .07$, +$p < .06$, *$p < .05$, **$p < .01$, ***$p < .001$.

Table B.4

Correlations between the study variables in Block 3 (Study 6; N = 43)

	1	2	3	4	5	6
1. Positive affect	-					
2. Self-efficacy	.59***	-				
3. Social pressure	-.13	-.21	-			
4. Obligation to perform well	.15	.24	.53***	-		
5. Goal setting	.21	.38*	.41**	.84***	-	
6. Performance based effort gains	.13	.04	-.06	.29†	.28†	-
7. Self-reported effort gains	.42**	.30+	.37*	.75***	.67***	.38*

Note. †$p < .07$, +$p < .06$, *$p < .05$, **$p < .01$, ***$p < .001$.

Table B.5

Correlations between the Block 3 – Block 2 difference scores for the study variables including outlying cases (Study 6; N = 43)

	1	2	3	4	5	6
1. Positive affect	-					
2. Self-efficacy	.35*	-				
3. Social pressure	-.24	-.08	-			
4. Obligation to perform well	.06	.08	.19	-		
5. Goal setting	-.05	.28+	.35*	.04	-	
6. Performance based effort gains	.10	.26Δ	-.06	-.15	-.01	-
7. Self-reported effort gains	.28†	.25	.22	-.10	.33*	.42**

Note. Δ$p < .10$, †$p < .08$, +$p < .07$, *$p < .05$, **$p < .01$.

Appendix C

Supplemental material for Study 7

Table C.1

Supportive message and employed items in German (Study 7)

Supportive message

Hey, du machst das bestimmt richtig gut. Ich bin sicher du kriegst das super hin. Hau rein, du rockst das ☺

Scale	*Item*
Perceived affective support	Ich habe das Gefühl meinem Teampartner wirklich wichtig zu sein.
	Ich fühle mich von meinem Teampartner wertgeschätzt.
	Ich finde, dass mein Teampartner mir gegenüber freundlich ist.
	Ich habe das Gefühl, dass mein Teampartner mich so nimmt wie ich bin.
Positive affect	Meine Stimmung entspricht gerade folgendem Gesicht:
Self-efficacy beliefs	Ich bin mir sicher, dass ich die Aufgabe gut erfüllen kann.
	Ich bin überzeugt davon, dass ich bei der Aufgabe eine sehr gute Leistung zeigen kann.
	Ich weiß, dass ich die Anforderungen der Aufgabe erfüllen kann.
Social pressure	Ich fühle mich von meinem Teampartner unter Druck gesetzt, bei der Aufgabe eine sehr gute Leistung zu erbringen.
	Mein Teampartner erwartet für die Aufgabe einen hohen Arbeitseinsatz von mir.
	Mein Teampartner hat für die Aufgabe einen hohen Leistungsdruck aufgebaut.
Obligation to perform well	Ich fühle mich verpflichtet, mich bei der Aufgabe für mein Team anzustrengen.
	Ich fühle mich verpflichtet bei der Aufgabe für mein Team möglichst gut zu sein.
	Ich habe das Gefühl, meinem Team bei der Aufgabe eine gute Leistung schuldig zu sein.

(continued)

Table C.1 *(continued)*

Scale	*Item*
Self-reported effort	Ich habe mir in diesem Durchgang viel Mühe gegeben.
	Ich habe mich in diesem Durchgang angestrengt.
Control perceived affective support	Ich habe mich von meinem Teampartner unterstützt gefühlt.