Perception of team diversity: Determinants and consequences

Vom Fachbereich Wirtschaftswissenschaften
der Technischen Universität Kaiserslautern
zur Verleihung des akademischen Grades
Doctor rerum politicarum (Dr. rer. pol.)
genehmigte

D i s s e r t a t i o n

vorgelegt von

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Tag der mündlichen Prüfung:	10. März 2020
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D 386

(2020)

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List of abbreviations

AGG	Allgemeines Gleichbehandlungsgesetz [general anti-discrimination law]
ASW	average silhouette width
CEM	categorization-elaboration model
CI	confidence interval
EU	European Union
IMOI model	input-mediator-output-input model
IPO model	input-process-outcomes model
LLCI	lower level confidence interval
SEA model	selection-extraction-application model
ULCI	upper level confidence interval

Abstract

This thesis aims to examine various determinants of perceived team diversity on the on hand, and, on the other hand, the individual consequences of perceived team diversity. To ensure a strong theoretical foundation, I integrate and discuss different conceptualizations of and theoretical approaches to team diversity, empirically examined in three independent studies. The first study investigates the relationship between objective team diversity and perceived team diversity, and as moderators individual attitudes toward diversity and perception of one's own work team's diversity. The second study answers the questions of why and when dirty-task frequency impairs employees' work relations and the third study examines how different cognitive mechanisms mediate the relationships between employees' perceptions of different types of subgroups and their elaboration of information and perspectives. Taken together, study results provide support for the selection-extraction-application model of people perception and the assumption that individuals can integrate objective team characteristics into their mental representation of teams, using them to judging the team. Moreover, results show that a fit between perceived supervisor support and perceived organizational value of diversity can buffer the effects of dirty-task frequency on perception of identity-based subgroups, as well as perceived relationship conflict and surface acting, through employees' perceptions of identity-based subgroups. Also, perceived social-identity threat and perceived procedural fairness but not perceived distributive fairness and perceived transactive memory systems serve as cognitive mechanisms of the relationships between employees' perceptions of different types of subgroups and their elaboration of information and perspectives. These results contribute to diversity literature, such as the theory of subgroups in work teams and the categorization-elaboration model. In addition, I propose the input-mediator-output-input model of perceived team diversity, based on the study results, and recommend practitioners to develop diversity mindsets in teams.

1. Introduction

1.1 Research problem and objective of the work

Over the last decades, teams have become the main driver of organizational performance (Kozlowski & Bell, 2013). To achieve their goals and objectives, today's organizations continuously shift from work structures that emphasize individual jobs to those that emphasize teamwork (Lawler, Mohrman, & Ledford, 1995). This is particularly important for fulfilling the demands of an increasingly changed organizational environment (Kozlowski & Bell, 2013). For example, the ongoing global competition calls for diverse knowledge, skills, and experiences (Kozlowski & Bell, 2013), which employees can achieve by working together as a team to attain organizational goals. Consequently, teams are an important part of modern organizations. They might take responsibility for explicit goals such as generating suitable solutions for a specific problem (e.g., Guzzo & Dickson, 1996), organizational innovation, or change processes (S. G. Cohen & Bailey, 1997; for an overview and conceptualization of different team types see Hollenbeck, Beersma, & Schouten, 2012).

Vitally important to achieving organizational goals and performing essential tasks, teams are not free from influences in their environment. For instance, organizational impacts resulting from societal and technological changes immediately affect the composition of teams, which, in turn, might challenge team emergent states – i.e., dynamic team properties that represent cognitive, affective, or motivational states of the team (Marks, Mathieu, & Zaccaro, 2001) – as well as team processes and team performance. In particular, societal changes (e.g., migration waves, decreasing birth rates, aging population) and technological changes (e.g., technologically mediated communication, artificial intelligence) imply organizational changes for both the employee (e.g., more frequent job changes, human-machine interaction) and the organization (e.g., agile working, virtual teamwork, increasing employment rates of women, a diverse workforce).

These organizational changes also have consequences for team composition. For example, a workforce that is diverse due to employees with migration background (e.g., due to migration), more female employees (e.g., due to increasing employment rates of women), and an increasing number of older employees (e.g., due to an aging society) likely also has a higher probability of its teams being diverse. Thus, a diverse workforce causes teams to consist of members whose diversity represents several attributes, such as age, sex, nationality, functional background, tenure, work experience, and even work location. This diversity can have either positive (e.g., higher creativity and innovation) or negative (e.g., higher levels of conflict, less team cohesion) consequences for work teams. (For reviews see Meyer, 2017; Roberson, 2019; van Dijk, Meyer, van Engen, & Loyd, 2017; Williams & O'Reilly, 1998. For meta-analyses, see Bell, Villado, Lukasik, Belau, & Briggs, 2011; Carter, Mead, Stewart, Nielsen, & Solimeo, 2019; Horwitz & Horwitz, 2007; Joshi & Roh, 2009; van Dijk, van Engen, & van Knippenberg, 2012.)

Yet, diversity research has produced inconsistent results regarding the relationships between team diversity and team outcomes (e.g., Guillaume, Dawson, Otaye-Ebede, Woods, & West, 2017). Researchers have provided different conceptualizations to capture team diversity and different operationalizations to measure it – e.g., dissimilarity, diversity, faultlines, subgroups (Carton & Cummings, 2012; Harrison & Klein, 2007; Lau & Murnighan, 1998; Meyer & Glenz, 2013; Reinwald & Kunze, 2019) – and propose different theoretical frameworks to explain the inconsistent effects (Carton & Cummings, 2012; Lau & Murnighan, 1998; Shemla, Meyer, Greer, & Jehn, 2016; van Knippenberg, De Dreu, & Homan, 2004). Nonetheless, the great amount of diversity research has rather neglected some aspects of this field.

First, despite efforts to differentiate between the two conceptualizations of objective team diversity and perceived team diversity, research regarding the relationship between them is lacking. For example, Shemla et al. (2016) review perceived team diversity and Meyer (2017)

reviews both objective and perceived team diversity. This necessitates examining how objective team diversity may trigger employees' perceptions of team diversity. Certain team dynamics, such as getting to know each other might change team members' perceptions of team diversity over time (Zellmer-Bruhn, Maloney, Bhappu, & Salvador, 2008). Therefore, this thesis aims to examine the relationship between objective team diversity and the perception of team diversity from an outsider's perspective focusing solely on the perception process and ruling out alternative explanations that occur through those certain team dynamics.

Second, researchers differentiate between demographic diversity (e.g., age, sex, nationality) and job-related diversity (e.g., tenure, educational background, functional background) (van Dijk et al., 2012). However, this differentiation only captures dimensions directly related to the employee. A somewhat neglected research stream in the field of team diversity lies in the distribution of task characteristics among team members. Team diversity may originate in differences between team members based on task content or task frequency. Thus, this thesis aims to examine the relationship between task-related determinants of team diversity, on the one hand, and, on the other hand, employees' perceptions of team diversity.

Third, diversity research lacks focus on the cognitive processes associated with employees' perceptions of team diversity and their relationship with individual performance and work relations (Roberson, 2019). Although team diversity is a team-level phenomenon, the individual team member confronts team diversity (Guillaume et al., 2014), and his or her reaction consequently shapes interaction with other team members (Hobman, Bordia, & Gallois, 2004). Each team member is likely to react differently to team diversity, based on his or her individual attitudes, experiences, or beliefs. For instance, team members might feel excited to get to know various individuals, motivated to come into contact with different cultures, or even disgusted by dissimilar others. In turn, these different team-member reactions will shape interactions between them, such as team communication, conflict, or coordination. Consequently, the perception of team diversity is more likely than objective team diversity to

affect team processes, emergent states, and performance. Thus, this thesis examines different determinants that foster the perception of team diversity, on the one hand, and, on the other hand, individual consequences that result from the perception of team diversity.

1.2 Research overview

This overall aim implies specific research questions that Figure 1 depicts and outlines.

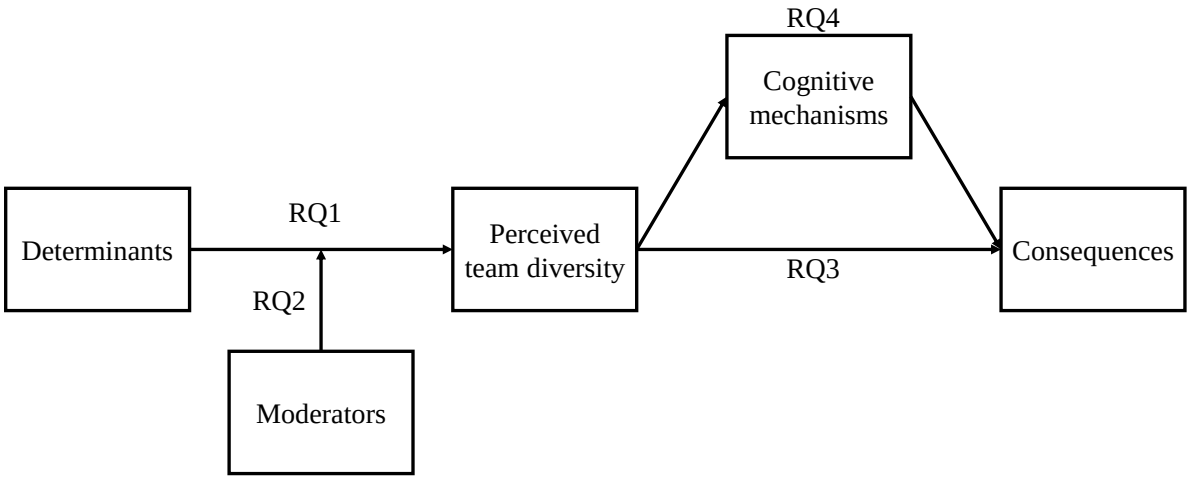


Figure 1. Research model for perceived team diversity.

First is the need to explain how different determinants relate to the perception of team diversity. Thus, a specific interest lies in the relationship between objective team diversity and perceived team diversity. Although we know much about how individuals perceive individuals, research into how individuals perceive teams is scarce (Phillips, Weisbuch, & Ambady, 2014). Specifically, how individuals transfer objective team diversity to mental impressions of that team diversity is an open research question (Shemla et al., 2016). Individuals react to their perceptions rather than to objective team characteristics (Hobman et al., 2004). Thus, understanding how objective team diversity relates to perceived team diversity is important, particularly for explaining inconsistent results of diversity research on team outcomes.

Apart from objective team diversity eliciting perception of team diversity (e.g., Jehn & Bezrukova, 2010; Jehn, Bezrukova, & Thatcher, 2008), other determinants also can trigger the perception of team diversity (Chrobot-Mason, Ruderman, Weber, & Ernst, 2009). Specifically, task characteristics will likely create impressions of how team members differ from each other

(Crawford & LePine, 2013). For example, varying task content or different frequencies with which team members must perform a specific task might go along with the perception of team diversity. Therefore, examining task-related determinants of perceived team diversity (more easily changed in practice than team composition) is essential to prevent or foster the perception of team diversity. Accordingly, the first research question is:

Research Question 1: How do various determinants relate to individuals' perceptions of team diversity?

This research question immediately raises another, namely: How can the perception of team diversity based on different determinants be weakened if the perception is associated with negative consequences, or be strengthened if the perception is associated with positive consequences. Diversity research shows that context plays an important role in explaining the inconsistent effects of diversity (Joshi & Roh, 2009). The research also proposes individual characteristics that influence the effects of team diversity (Guillaume et al., 2014; Homan, 2019). Considering individual characteristics in team perception, such as attitudes or prior experiences, plays an important role because these can alter the selection of team members, as well as the creation of mental impressions of the team (Phillips et al., 2014). Individual factors, such as attitudes toward diversity (Nakui, Paulus, & van der Zee, 2011) or prior experiences with team diversity, will likely influence individual reactions to objective team diversity. Individuals who are open-minded regarding diversity or who have had positive experiences with diverse teams presumably integrate these aspects into the process of perceiving a team. They might have different impressions than those of individuals with negative attitudes toward diversity or negative experiences with diverse teams. This thesis proposes that individual attitudes toward diversity and prior experience with diverse teams alter the relationship between objective team diversity and perceived team diversity.

Regarding the aforementioned task-related determinants of perceived team diversity, individual perceptions of supporting contextual factors, such as perceived supervisor support

and perceived organizational value of diversity, are proposed to weaken the relationship with perceived team diversity. They can provide employees with appreciation and positive self-esteem that task content might threaten. Therefore, perceiving a supportive organizational environment might keep task characteristics from triggering the perception of team diversity. Consequently, the second research question is:

Research Question 2: How do individual and contextual factors moderate the relationship between various determinants of perceived team diversity and perceived team diversity?

Hobman et al. (2004) point out that individuals rely on their perceptions of teams to interact with team members instead of relying on objective team characteristics. For instance, if an employee perceives his or her work team to be diverse regarding expertise and knowledge, he or she will likely ask team members for their perspective on solving a problem, even if the team is objectively less diverse than perceived. Consistent with arguments by Harrison and Klein (2007) and Carton and Cummings (2012) associating different types of objective team diversity with different team outcomes, different types of perceived team diversity are likely associated with different individual-level reactions because team outcomes arise from individual-level cognition, behavior, or interactions (Klein & Kozlowski, 2000; Kozlowski & Chao, 2012; Kozlowski & Klein, 2000). These outcomes are either negative (e.g., perceived relationship conflict or surface acting) or positive (e.g., the elaboration of information and perspectives). Therefore, the third research question states:

Research Question 3: How do individuals' perceptions of team diversity relate to various individual-level outcomes?

It is also necessary to understand the cognitive processes associated with the perception of team diversity. These lead to further positive or negative individual outcomes because teamwork is a dynamic process (Cronin, Weingart, & Todorova, 2011) and emerges from individual-level phenomena (Klein & Kozlowski, 2000; Kozlowski & Chao, 2012; Kozlowski & Klein, 2000). This means that individual-level phenomena further influence team dynamics.

Associations of these phenomena with negative outcomes (e.g., perceived social-identity threat) will likely result in negative team outcomes. Thus, investigating cognitive processes associated with the perception of team diversity is important in explaining negative team dynamics and finding contingencies for buffering these processes. This will help to create a team environment in which team members and teams can fully exploit their potential to contribute to organizational performance. Thus, the fourth research question is:

Research Question 4: Which cognitive mechanisms mediate the relationships between perceived team diversity and various individual-level outcomes?

Figure 2 shows an overview of the research questions of this thesis and how each chapter addresses them.

Chapter 2:
Conceptual and theoretical basis

Research question	Chapter 3: Study 1	Chapter 4: Study 2	Chapter 5: Study 3
RQ1: *How do various determinants relate to individuals' perceptions of team diversity?*	Relationship between objective team diversity and perceived team diversity	Relationship between dirty-task frequency and employees' perceptions of identity-based subgroups	
RQ2: *How do individual and contextual factors moderate the relationship between various determinants of perceived team diversity and perceived team diversity?*	Moderating effects of individuals' attitudes toward diversity and perceptions of one's own work team's diversity on the relationship between objective team diversity and perceived team diversity	Moderating effects of perceived supervisor support and perceived organizational value of diversity on the relationship between dirty-task frequency and the perceptions of identity-based subgroups	
RQ3: *How do individuals' perceptions of team diversity relate to various individual-level outcomes?*		Relationships between the perceptions of identity-based subgroups and perceived relationship conflict and surface acting	Relationship between employees' perceptions of different types of subgroups and their elaboration of information and perspectives
RQ4: *Which cognitive mechanisms mediate the relationships between perceived team diversity and various individual-level outcomes?*			Perceived social-identity threat, perceived fairness, and perceived transactive memory system as cognitive mechanisms mediating the relationship between employees' perceptions of different types of subgroups and their elaboration of information and perspectives

Chapter 6:
Overall discussion and implications for research and practice

Figure 2. Overview of the dissertation.

1.3 Structure of the work

Chapter 2 of this thesis describes the conceptual and theoretical basis for the work. It includes the definition of "team" and a model of team effectiveness. Then, it outlines different conceptualizations of team diversity and integrates them with associated theoretical underpinnings. The last part of the second chapter describes the model of people perception.

Prof. Dr. Tanja Rabl co-authored chapter 3, which presents an empirical study investigating the relationships between objective team diversity (as reflected by objective diversity and objective faultlines) and perceived team diversity (as reflected by perceived diversity and perceived faultlines). Moreover, we examine the moderating effects of individuals' attitudes toward diversity and their experiences with diverse teams on these relationships. With this study, we contribute to the model of people perception (Phillips et al., 2014) by showing that different objective team characteristics can transfer to mental representations of these characteristics and can be used to judging a team. In turn, prior experiences can influence these processes (e.g., perception of one's own work team's diversity), such as the study shows for prior experiences with age diversity. This knowledge could help practitioners to design diversity training particularly for employees who work in multiteam settings, have multiple team memberships, or work in project teams for a short time.

Also co-authored by Prof. Dr. Tanja Rabl, chapter 4 describes an empirical study in the caregiving sector that examines the perception of identity-based subgroups as a cognitive mechanism explaining the effects of dirty-task frequency on perceived relationship conflict and surface acting. It also investigates the perceived organizational value of diversity and perceived supervisor support as contextual factors assumed to prevent employees' perceptions of identity-based subgroups. By taking a diversity perspective on dirty tasks, we contribute to both the dirty-task literature and the diversity literature. We emphasize the importance of differentiating between types of dirty tasks, as well as types of perceived subgroups. Moreover, we highlight

contextual factors that serve as resources for preventing perception of identity-based subgroups, on the one hand, and, on the other hand, negative consequences for employees' work relations. Thus, the study advises practitioners to create an organizational environment to help employees at a disadvantage due to frequently performing dirty tasks to feel valued and perceive their work as an important contribution to organizational performance.

Also co-authored by Prof. Dr. Tanja Rabl, chapter 5 involves the examination of the perception of three different types of subgroups: identity-based, resource-based, and knowledge-based. We investigate cognitive mechanisms that arise based on the perceptions of these types of subgroups and their consequences for employees' elaboration of information and perspectives. Thereby, we integrate the categorization-elaboration model of team diversity (van Knippenberg et al., 2004) with the theory of subgroups in work teams (Carton & Cummings, 2012) to explain how individuals react to perceiving their team as split into different types of subgroups. Understanding the effects of perceiving different types of subgroups helps practitioners to prevent negative and foster positive team outcomes.

Chapter 6 presents the overall summary of this thesis and highlights implications for theory and practice. For instance, it offers the input-mediator-output model of perceived team diversity. Moreover, it describes some limitations of this thesis and proposes avenues for future research. Finally, chapter 7 offers the thesis conclusion.

2. Conceptual and theoretical basis

2.1 Team

Over the last decades, teams have become the core driver of organizational performance (e.g., Kozlowski, 2018; Salas, Rico, & Passmore, 2017). Yet, no random group of people is also a team. Kozlowski and Ilgen (2006) provide a definition of a team, based on seven characteristics. A team is composed of 1) two or more individuals who 2) socially interact to 3) perform organizationally relevant tasks. Therefore, team members must 4) possess one or more common goals, 5) exhibit interdependencies (e.g., common workflow or work outcomes), and 6) perform different team roles that entail responsibilities for different work aspects. Finally, a team is 7) embedded in an organizational structure that determines its scope of action and regulates its interactions with the organizational environment (Kozlowski & Ilgen, 2006). Thus, a team is not only its structural properties but also team members' common efforts to accomplish team goals.

To achieve these goals and contribute to organizational performance, teams must not only engage in task-related work activities (*taskwork*) but also perform activities that foster *teamwork* (e.g., Salas, Shuffler, Thayer, Bedwell, & Lazzara, 2015; Tuckman, 1965). Whereas "taskwork" means performing specific tasks that must be completed to achieve the team's goals (Salas et al., 2015; Tuckman, 1965), "teamwork" describes the interpersonal interactions between several team members which, for example, help build relationships and foster cooperation and coordination (Morgan, Salas, & Glickman, 1993; Tuckman, 1965). Thus, teamwork is a dynamic and adaptive process between team members combining their thoughts, feelings, and behaviors and aiming to achieve their common goals (Salas et al., 2015). Teamwork defines how the team might accomplish tasks and goals and, in combination with taskwork, determines a team's effectiveness (Salas et al., 2015).

To examine team effectiveness, researchers (e.g., Grossman, Friedman, & Kalra, 2017; Ilgen, Hollenbeck, Johnson, & Jundt, 2005; Mathieu, Maynard, Rapp, & Gilson, 2008) have recently relied on the input-mediator-output[1]-input (*IMOI*) model shown in Figure 3. The IMOI model advances early input-processes-output (*IPO*) models (e.g., Hackman, 1987) by accounting for team processes and emergent states as possible mediators of the relationship between team inputs and outcomes (Grossman et al., 2017). *Team processes* are defined as "members' interdependent acts that convert inputs to outcomes through cognitive, verbal, and behavioral activities directed toward organizing taskwork to achieve collective goals" (Marks et al., 2001, p. 357). Processes can be further distinguished in transition processes, i.e., team processes during periods of evaluation and action planning to accomplish team goals (e.g., goal specification); action processes, i.e., team processes during periods of conducting activities to accomplish team goals (e.g., team coordination); and interpersonal processes, i.e., processes to manage interpersonal relationships (e.g., conflict management) (Marks et al., 2001).

While team processes involve members' interactions, *emergent states* represent cognitive, affective, or motivational states, such as team members' attitudes or values (Marks et al., 2001). Emergent states are dynamic team properties that vary based on team context, inputs, processes, and outcomes. They reflect the quality of a team and its members rather than interactional processes between team members (Marks et al., 2001). Thus, team processes describe actions between team members, whereas emergent states describe outcomes of these processes, that in, turn affect other processes (e.g., low team cohesion – an emergent state – can affect actions to build confidence in the team – a team process –, which, in turn, enhances team satisfaction). By considering both team processes and emergent states, the IMOI model provides a broader perspective than the IPO model on the mechanisms that transfer a team's inputs into outcomes (Grossman et al., 2017). Team processes and emergent states build the

[1] Output and outcomes are often used interchangeably.

center of the IMOI model. Three types of mechanisms – affective, behavioral, and cognitive – reflect them (Grossman et al., 2017; Kozlowski & Ilgen, 2006; Marks et al., 2001). *Affective* mechanisms reflect those team processes and emergent states that involve relationships between team members and affective reactions, such as emotions or moods, as well as motivational aspects (Kozlowski & Bell, 2013; Kozlowski & Ilgen, 2006). Examples are team trust and team cohesion (Grossman et al., 2017). *Behavioral* mechanisms reflect interactions between team members aiming at the achievement of team goals and objectives (e.g., goal specification, team coordination, conflict management) (Grossman et al., 2017; Marks et al., 2001). Finally, *cognitive* mechanisms describe the cognitive activities that arise in teams (Wildman et al., 2012) and capture team knowledge acquisition, storage, and distribution (Kozlowski & Ilgen, 2006). Examples are team learning and transactive memory systems (Grossman et al., 2017; Kozlowski & Ilgen, 2006). While affective and cognitive mechanisms predominantly reflect team emergent states, behavioral mechanisms rather reflect team processes (Grossman et al., 2017) (see Table 1).

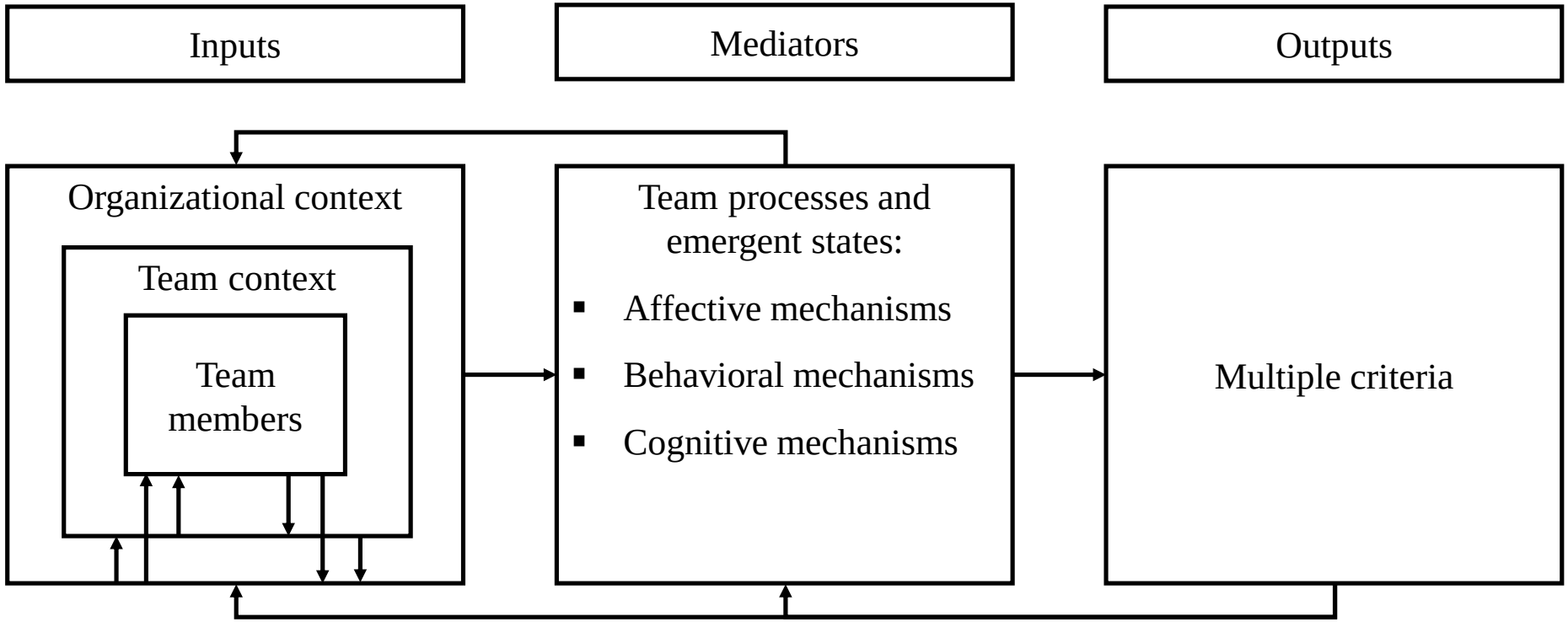


Figure 3. Input-mediator-output-input model of teamwork. Adapted from "Teamwork processes and emergent states" by R. Grossman, S. B. Friedman, and S. Kalra, 2017, in E. Salas, R. Rico, and J. Passmore (Eds.), *The Wiley Blackwell handbook of the psychology of team working and collaborative processes* (p. 247), Chichester, England: Wiley Blackwell. Copyright 2017 by John Wiley and Sons.

Table 1

Examples of affective, behavioral, and cognitive team processes and emergent states

Type of mechanism	Processes	Emergent states
Affective		**Team trust:** "a shared psychological state among team members comprising willingness to accept vulnerability based on positive expectations of a specific other or others" (Fulmer & Gelfand, 2012, p. 1174) **Team cohesion:** "tendency for a [team] to stick together and remain united in the pursuit of its goals and objectives" (Carron, 1982, p. 124)
Behavioral	**Goal specification:** "identification and prioritization of goals and subgoals for mission accomplishment," *transition process* (Marks et al., 2001, p. 365) **Team coordination:** "process of orchestrating the sequence and timing of interdependent actions," *action process* (Marks et al., 2001, p. 367f) **Conflict management:** "establishing conditions to prevent, control, or guide team conflict before it occurs" and "working through task, process, and interpersonal disagreements among team members," *interpersonal process* (Marks et al., 2001, p. 368)	
Cognitive	**Team learning:** "a process through which a [team] creates knowledge for its members, for itself as a system, and for others" (Kasl, Marsick, & Dechant, 1997, p. 229)	**Transactive memory systems:** "a shared system that people in close relationships develop for encoding, storing, and retrieving information from different domains" (Ren, Carley, & Argote, 2006, p. 671)

According to the IMOI model, team inputs from different contexts (i.e., individual team members context, team context, organizational context) can influence these team processes and emergent states. On the one hand, team member characteristics, such as prior experiences and the individual personality, but also a team member's perception of the team and its composition can have an impact on team processes and emergent states. On the other hand, antecedents, such as task structure, team composition (e.g., team diversity), or team leadership, are facets of the *team context* that can influence team processes and emergent states (Mathieu et al., 2008). Also, the *organizational context* offers supplementary factors (e.g., organizational structure or culture) that might relate to team processes and emergent states. The connections between these different contexts, which the IMOI model suggests (Grossman et al., 2017), also merit attention. For example, an organization's personnel recruiting and selection strategies influence the composition of the workforce. In turn, the composition of the workforce with each employees' personal attributes, serves as the basis for team composition.

Inputs influence team processes and emergent states; in turn, these influence the output in teams. Output or team outcomes represent several criteria for characterizing the effectiveness of the team (Kozlowski & Bell, 2013). For example, Horwitz and Horwitz (2007) name criteria for effective teams as decision-making – "choose from a set of specified alternatives . . . typically preceded by discussion of the merits of each alternative" (Stasser & Titus, 1985, p. 1467), problem-solving – transferring one problem state into another to find the problem solution in a more or less limited problem space (Anderson, 1993), as well as creativity and innovation – "the production of novel and useful ideas by an individual or small group working together" and "the successful implementation . . . within an organization", Amabile, 1988, p. 126).

Moreover, the IMOI model provides feedback loops that account for possible backward influences (Grossman et al., 2017). On the one hand, outputs can influence mediators. For instance, successful team performance (output) may enhance team cohesion (mediator). On the

other hand, outcomes can affect inputs – for instance, negative team performance might enhance turnover intentions in some team members who, consequently, will leave the team changing the team's composition. Team processes and emergent states can also influence input factors. For example, low team cohesion or team trust might cause members to leave the team altering its composition.

As mentioned, organizations increasingly rely on teams to perform organizational tasks (Kozlowski & Bell, 2013) and these teams become increasingly diverse due to changes in society (e.g., migration, age distribution) or technology (e.g., virtual teams). Regarding the IMOI model, this means that team diversity is an important team-level context factor that influences team effectiveness (see Horwitz & Horwitz, 2007, for a meta-analytic review). On the individual level, team members' perceptions of team diversity are also a noteworthy input factor for teams and their members. Thus, the IMOI model provides a strong theoretical base for examining the relationships between diversity-related context factors (e.g., team diversity, perception of team diversity) and team processes and emergent states (e.g., perceived relationship conflict, elaboration of information and perspectives).

2.2 Team diversity

Research on the effects of team diversity has a long tradition (e.g., Pelled, 1996; Pfeffer, 1983). Yet, many inconsistencies have appeared in the results so far (e.g., Bell et al., 2011; Guillaume et al., 2017; Joshi & Roh, 2009; Williams & O'Reilly, 1998). Explanations vary for the lack of consistency in the effects of team diversity on team outcomes, from selecting the early bi-theoretical approach to diversity over the contingency approach, to conceptual differentiations – e.g., objective versus perceived team diversity; diversity versus faultlines (see Meyer, 2017, for an overview) – which the following chapters describe further.

2.2.1 Theoretical approaches to team diversity

2.2.1.1 Bi-theoretical approach to team diversity

The bi-theoretical approach to team diversity often explains inconsistent research results (Meyer, 2017). This approach takes account of two different theoretical perspectives: the social categorization/similarity attraction perspective and the information/decision-making perspective (Williams & O'Reilly, 1998). The *social categorization/similarity attraction perspective* on team diversity derives its arguments from social identity theory (Tajfel & Turner, 1979), self-categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987), and the similarity/attraction paradigm (Byrne, 1971), explained in the following sections.

Social categorization/similarity attraction perspective

Tajfel and Turner (1979) postulate in their *social identity theory* that individuals strongly identify with social groups, defined as the "collection of individuals who perceive themselves to be members of the same social category" (p. 40) and, to some degree, share their emotions and common goals. This helps individuals make sense of their social environment – for example, by enabling them to order or classify others by groups (*social categorization*) or to define their own place in society (*self-reference*). Thereby, individuals create a *social identity* that consists of "those aspects of an individual's self-image that derive from the social categories" (p. 40) to which the individual belongs. Tajfel and Turner (1979) argue that individuals strive to maintain a positive social identity or try to enhance it.

As each social group is associated with a rather positive or negative image, social identity is rather positive or negative as well. Hence, its relation to other relevant social groups determines the evaluation of an individual's social group. The result of this comparison is either positive or negative distinction, i.e., one's own social group (*ingroup*) has a more positive or a more negative image than the other social group (*outgroup*). The authors' arguments imply that individuals strive for favorable comparisons that lead to positive distinction and positive social

identity increasing the likelihood of social competition and intergroup conflicts (Tajfel & Turner, 1979). Transferring these insights to diverse teams, social identity theory explains how differing from other team members may lead to a preference for the team members of one's ingroup, which in turn can foster intergroup competition and social conflicts (Tajfel & Turner, 1979). Thus, explanations of the negative effects of team diversity often refer to social identity theory.

Besides social identity theory, *self-categorization theory* (Turner et al., 1987) also explains why team diversity can relate to negative team outcomes. In contrast to social identity theory, self-categorization theory takes a broader look at an individual's self-concept (Turner et al., 1987). The authors postulate that individuals categorize themselves and their social environments into groups based on their self-concept, understood as a "cognitive component of the psychological system or process referred to as the self" (Turner et al., 1987, p. 44). Thus, the self-concept rests upon a set of cognitive representations about oneself (Turner et al., 1987), creating a cognitive grouping of information about a class of people perceived to be similar (e.g., German, student, or dentist). These cognitive groupings are called *self-categorizations* because the individual also classifies him- or herself into the category (Turner et al., 1987). Accordingly, an individual's perceptions of similarities and differences among several human beings, leading to distinct categorizations, form the self-concept.

Self-categorizations can take the form of ingroup-outgroup categorizations if individuals focus on social similarities and differences between persons (Turner et al., 1987). At the same time, the individual bases defining him- or herself as part of the ingroup on his or her membership in specific social groups. Then, similar others are placed in the same category, whereas dissimilar others are considered part of outgroups. As a consequence of salient social categories, Turner et al. (1987) hypothesize that individuals who define themselves as an ingroup member might favor specific ingroup goals rather than overall group goals or outgroup goals. Moreover, they will especially cooperate with ingroup members but not with outgroup

members. Thus, competition between the ingroup and an outgroup is more likely (Turner et al., 1987). For diverse teams, this means that dissimilarity from other team members might lead to self-categorizations in the form of ingroup-outgroup categorizations (e.g., in a team of physicians and psychologists, the physicians might build one subgroup and the psychologists another). In turn, these self-categorizations might decrease team cohesion and cooperation and increase competition between members of different social categories.

Byrne's (1971) *similarity/attraction paradigm* starts from the premise that the similarity between individuals, regarding demographic attributes, personality, or values and beliefs, enhances interpersonal liking and attraction. In turn, interpersonal attraction can facilitate interaction between individuals. Williams and O'Reilly (1998) argue that similar individuals share a common background and, thus, may communicate with each other more easily and reinforce each other positively. Hence, the similarity between individuals is associated with increased interpersonal liking, enhanced performance, or success in the relationship between the individuals (Byrne, 1971). In the case of diversity in work teams, this means that in teams with a heterogeneous membership, possibilities for interpersonal attraction decrease, compared to teams with a homogeneous membership. Consequently, the similarity/attraction paradigm (Byrne, 1971) leads to the expectation that homogeneous work teams should outperform diverse work teams.

Taken together, these three theoretical approaches – social identity theory, self-categorization theory, and the similarity/attraction paradigm – jointly state that differences between team members may engender classifying them into distinct categories (van Knippenberg & Schippers, 2007). Thus, the social categorization/similarity attraction perspective assumes that if team members are similar to the perceiver, they will be classified as ingroup members; if team members are dissimilar to the perceiver, they will be described as outgroup members (van Knippenberg & Schippers, 2007). Since categorization processes are associated with disruptive team processes and performance (van Knippenberg & Schippers,

2007), diversity researchers use the social categorization/similarity attraction perspective to explain the negative effects of team diversity (Meyer, 2017). They argue that homogeneous teams share a common identity and pursue common team goals that are easier to achieve when their similarity fosters interaction and interpersonal liking among team members (Williams & O'Reilly, 1998). As a result, team performance will increase. In contrast, diverse teams experience conflicts and mistrust, due to distinct identities on the one hand, and, on the other hand, conflicting goals due to predominantly pursuing the goals of one's ingroup instead of the team's goals (Williams & O'Reilly, 1998). This explains suggestions that team diversity hinders team performance.

Information/decision-making perspective

The information/decision-making perspective considers different experiences, knowledge, and perspectives as a valuable resource of diverse teams (van Knippenberg & Schippers, 2007). Research on information processing has shown that teams whose diversity reflects its team members' knowledge resources derive benefit from that in their team performance (Gruenfeld, Mannix, Williams, & Neale, 1996). This larger pool of knowledge resources helps teams develop more qualified strategies for problem-solving and decision-making processes, making creative or innovative outcomes more likely (van Knippenberg & Schippers, 2007). Thus, the information/decision-making perspective underlines the positive effects of diversity in work teams because the diversity in skills, knowledge, or expertise adds a broad range of information to the team, helpful for tasks such as innovation, complex problem-solving, or decision-making (Williams & O'Reilly, 1998). Moreover, this diversity increases such resources as different perspectives on problems and the availability of different information, which helps the team carefully analyze situations and make better use of information (Williams & O'Reilly, 1998).

2.2.1.2 Contingency approach: The categorization-elaboration model of team diversity

To address the inconsistent findings of diversity research and to adequately integrate the social categorization/similarity attraction perspective with the information/decision-making perspective, van Knippenberg et al. (2004) postulate a theoretical framework that incorporates the interaction of both perspectives – the *categorization-elaboration model* (CEM) (see Figure 4). The authors assume a positive relationship between diversity and elaboration of task-relevant information and perspectives, based on the principles of the information/decision-making perspective. They argue that the benefit of diverse teams lies in the different perspectives and knowledge sources on which a diverse team can draw. However, in line with the social categorization/similarity attraction perspective, the differentiation between ingroup (team members similar to the individual) and outgroup (team members dissimilar to the individual) might evoke disruptive individual reactions and team processes that, in turn, hinder elaboration of task-relevant information and perspectives (van Knippenberg et al., 2004).

More precisely, social categorization is more likely if team members can easily activate the distinction between different categories (*cognitive accessibility of categorization*) and if this distinction makes subjectively sense (*normative fit of categorization*) and yields homogeneous subgroups (*comparative fit*) (van Knippenberg et al., 2004). Then, if the identity of one's subgroup is threatened or challenged (*identity threat*), team members will likely react (*affective/evaluative reactions*) with negative affect or evaluations (e.g., low team cohesion) manifested in disruptive team processes (e.g., relationship conflict). In turn, CEM suggests that these negative reactions hinder diversity to foster the *elaboration of task-relevant information and perspectives* (van Knippenberg et al., 2004). Besides this negative influence based on social categorization processes, other contingencies derived from the information/decision-making perspective may affect the relationship between team diversity and elaboration of task-relevant information and perspectives. Prerequisites for effective information processing in a diverse

team, leading to elaboration of task-relevant information and perspectives, include task informational and decision requirements (task characteristics that foster team members' information-processing or decision-making, such as task complexity), task motivation (team members' motivation to perform the task), and task ability (team members' skills or knowledge to perform the task) (van Knippenberg et al., 2004). In turn, the elaboration should lead to higher *performance* (e.g., creativity, innovation, decision quality) (van Knippenberg et al., 2004).

To sum up, CEM proposes a theoretical framework for how team diversity may result in positive outcomes, on the one hand, and, on the other hand, which processes may account for negative outcomes of team diversity. Moreover, it proposes contingencies that may weaken or strengthen the relationship between team diversity and the elaboration of task-relevant information and perspectives.

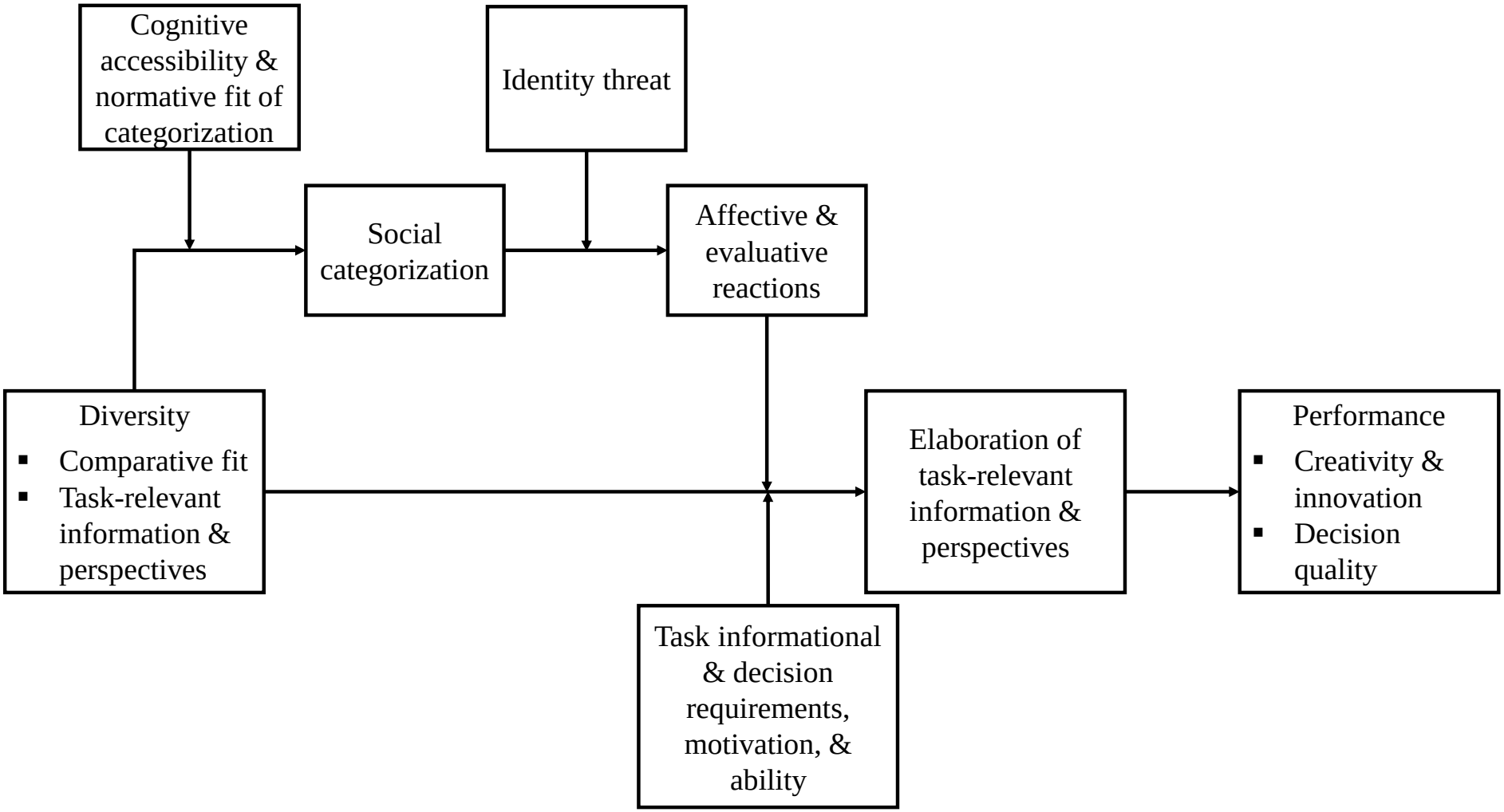


Figure 4. Categorization-elaboration model. Adapted from "Work group diversity and group performance: An integrative model and research agenda" by D. van Knippenberg, C. K. W. De Dreu, and A. C. Homan, 2004, *Journal of Applied Psychology*, *89*, p. 1010. Copyright 2004 by American Psychological Association.

2.2.1.3 Multilevel approach to team diversity

Team researchers suggest that macro phenomena often emerge through lower-level phenomena (e.g., Klein & Kozlowski, 2000; Kozlowski & Chao, 2012; Kozlowski & Klein, 2000). Regarding team diversity research, Guillaume et al. (2014) account for this argument in their multilevel approach to team diversity. The authors propose a model that explains the individual-level outcomes of team diversity. They argue that the interaction of the composition of the work team (team-level construct) and employees' attitudes (individual-level construct) results in team diversity (e.g., objective dissimilarity or perception of team diversity). In turn, they assume that team diversity affects employees' performance through work team identification and intrinsic and extrinsic work motivation (Guillaume et al., 2014).

Guillaume et al. (2014) also account for the possibility that various team members react differently to team diversity. Therefore, the authors propose individual attributes (e.g., self-efficacy or identity concerns) to influence the relationship between team diversity and individual-level outcomes. Team-level attributes (e.g., inclusion in decision making) can affect these individual attributes. In turn, organizational factors (e.g., diversity management) influenced by societal factors (e.g., culture) might affect these team-level attributes (Guillaume et al., 2014). Thus, the multilevel approach integrates four different levels of analysis and highlights the importance of investigating individual-level outcomes of team diversity, from which higher-level outcomes emerge (e.g., Klein & Kozlowski, 2000). Thus, the model provides a strong theoretical base for investigating individual-level outcomes affected by employees' perceptions of team diversity.

2.2.2 Conceptualization of team diversity

Figure 5 shows various ways of expressing team diversity as a construct. A first differentiation can occur between objective team diversity and perceived team diversity. Whereas *objective team diversity* reflects the actual distribution of an attribute among members

of a specific work team, *perceived team diversity* encompasses the individual's cognitive representation of the distribution of the attribute, which might be biased, e.g., by prior experiences with some team members but not with others (Phillips et al., 2014).

Within the categories of objective and perceived team diversity lies another possible distinction between different constructs. On the one hand, *dissimilarity* characterizes the differences between a specific team member and the rest of the team (Chattopadhyay, Tluchowska, & George, 2004). Thus, dissimilarity symbolizes a *relational approach* to diversity (Guillaume, Brodbeck, & Riketta, 2012; van Dijk et al., 2017), reflecting "the relationship between an individual's characteristics . . . and the distribution of these characteristics in the individual's [work] unit" (Guillaume et al., 2012, p. 81). On the other hand, *diversity* and *faultlines* take an outsider's perspective on the team and describe the composition of the team as a whole (Guillaume et al., 2012; van Dijk et al., 2017). This *compositional approach* reflects the "distribution of differences among the members of a unit" (Guillaume et al., 2012, p. 81). The compositional approach serves as the basis for this thesis, aiming to investigate, on the one hand, the relationship between actual team composition and individuals' perceptions of the team's composition as reflected in perceived diversity and perceived subgroups, and, on the other hand, the determinants and consequences of individuals' perceptions of the team diversity. Thus, the following chapters deal particularly with diversity, as well as faultlines and subgroups.

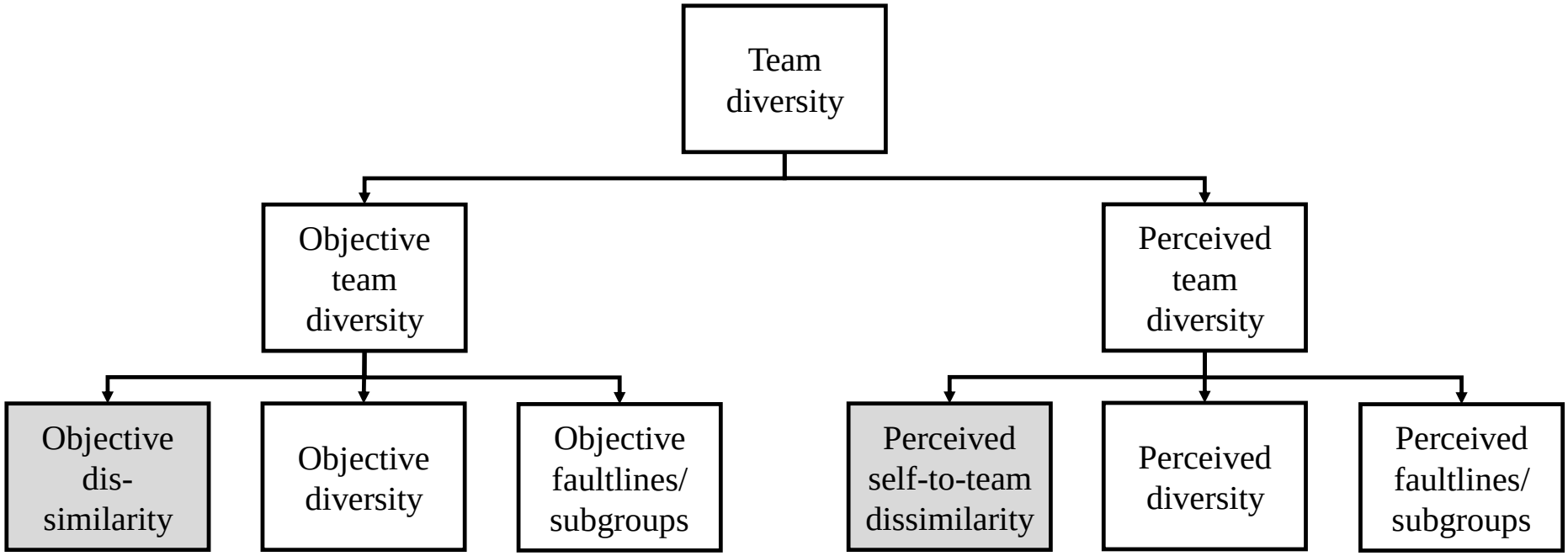


Figure 5. Different conceptualizations of team diversity. For the lowest row, grey shaded boxes reflect the relational approach, white boxes the compositional approach.

2.2.2.1 Objective team diversity

Definitions of diversity are as diverse as the construct itself. For instance, Williams and O'Reilly (1998) define diversity as "any attribute people use to tell themselves that another person is different" (p. 81), reflecting a relational approach to diversity rather than a compositional approach. The same is true for the definition van Knippenberg and Schippers (2007) provide, namely, "differences between individuals on any attribute that may lead to the perception that another person is different from self" (p. 517). In contrast, Roberson (2019) describes diversity as "any compositional differences among people within a work unit" (p. 70), highlighting the team-compositional perspective. Harrison and Klein (2007) take a broader look at diversity and include in their definition the difference among team members "with respect to a common attribute, X" (p. 1200). This differentiation takes account of diversity always referring to a specific attribute (or *diversity dimension*, e.g., age, sex, pay, functional background) more or less distributed among team members. As one purpose of this work is to examine the relationship between actual team compositions and perceived team compositions, I take the compositional perspective and refer to diversity as the distribution of a common attribute among members of the same unit.

One of the various reasons for many inconsistent results in diversity research may lie in the different conceptualizations of diversity. One approach distinguishes between *surface-level diversity* and *deep-level diversity* (Harrison, Price, & Bell, 1998). Surface-level diversity covers readily detectable demographic attributes (Harrison et al., 1998), such as age, sex, or race. In contrast, deep-level diversity encompasses underlying attributes (Harrison et al., 1998) that one discovers through several interactions with another person (e.g., values, personality, beliefs).

Harrison and Klein (2007) developed another, more recent approach to classifying different diversity dimensions into broader categories or types of diversity, as Figure 6 shows.

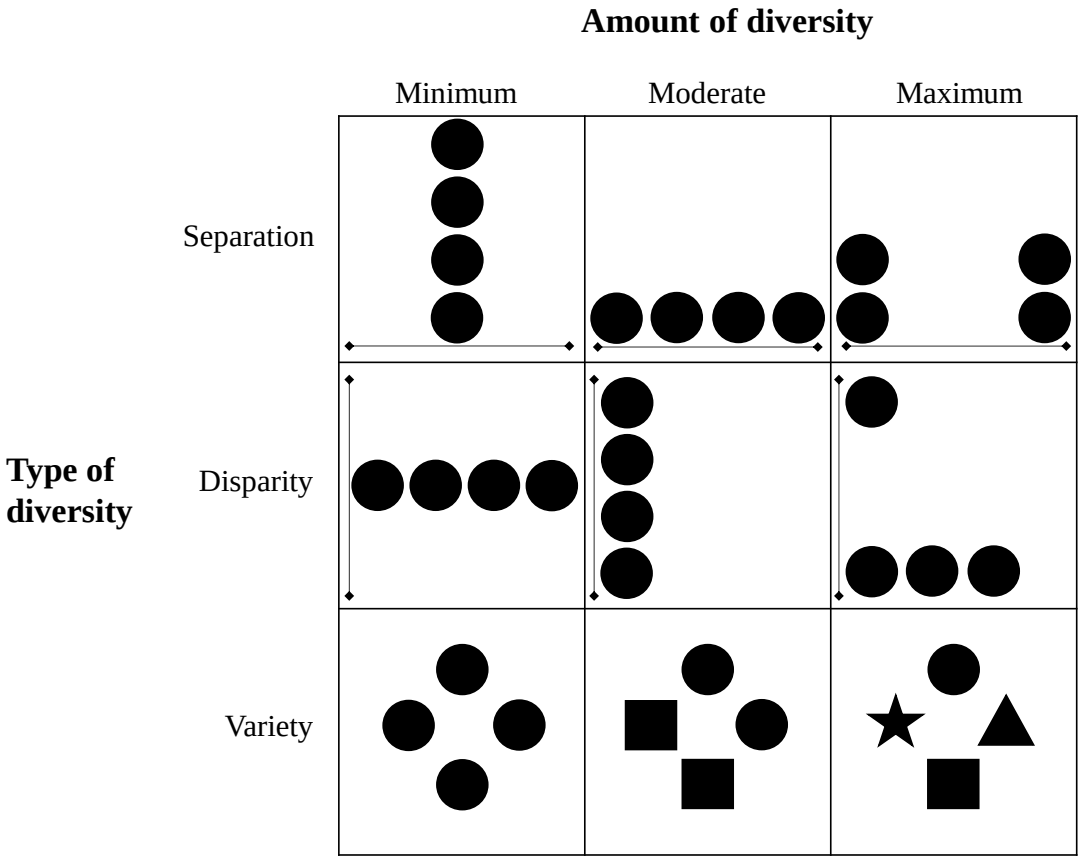


Figure 6. Exemplary representation of types and amounts of diversity. Adapted from "What's the difference? Diversity constructs as separation, variety, or disparity in organizations." by D. A. Harrison and K. J. Klein, 2007, *Academy of Management Review, 32*, p. 1202. Copyright 2007 by Academy of Management.

The authors distinguish among separation, disparity, and variety to describe the composition of differences in teams. The first type is *separation*, derived from the theoretical approaches of social identity theory (Tajfel & Turner, 1979), self-categorization theory (Turner et al., 1987), and the similarity/attraction paradigm (Byrne, 1971). Separation means a lateral distribution of differences among team members, best described on a horizontal continuum. Examples of attributes that can separate team members in a work team are values, beliefs, opinions, or attitudes. Such a team displays maximum diversity when half of the team members are at one endpoint of the continuum (e.g., members with traditional viewpoints) and the other half are at the opposite endpoint of the continuum (e.g., members with neo-liberal viewpoints) (Harrison & Klein, 2007). The second type of diversity is *disparity*, expressing the distribution of differences on a vertical continuum (e.g., pay, income, status, decisive power) and derived

from research on inequity (e.g., Blau, 1977) and tournament theory[2] (Lazear & Rosen, 1981). In the case of disparity, a positively skewed distribution displays maximum diversity (Harrison & Klein, 2007), such that one team member is at the highest endpoint of the continuum (e.g., with the highest income), and the other team members are at the lowest endpoint of the continuum (e.g., with the lowest income). Harrison and Klein's (2007) third type of diversity is *variety*, with its theoretical origin in the information/decision-making perspective on diversity. Variety is the distribution of differences among team members, describing the type, source, or category of relevant knowledge or experience (e.g., functional background, expertise, industry experience). Each team member having his or her unique knowledge achieves maximum diversity (Harrison & Klein, 2007).

Although the distinction among separation, disparity, and variety allows researchers to conceptualize any diversity dimension as any of the three types, thus proposing that any dimension can produce negative (separation and disparity) and positive outcomes (variety) (Meyer, 2017), a first meta-analysis could only provide mixed support for this assumption (see Bell et al., 2011). Nevertheless, the distinction that Harrison and Klein (2007) make is an important step toward creating awareness of different types of diversity requiring different conceptualizations. Moreover, researchers apply the distinction to other conceptualizations of objective team diversity, such as faultlines and subgroups (Carton & Cummings, 2012).

Early diversity research faced some limitations, such as only looking at one diversity dimension at a time or considering several diversity dimensions simultaneously and not accounting for their overlap. Therefore, Lau and Murnighan (1998) propose the alignment of different diversity dimensions. Specifically, the authors introduce the concept of faultlines –, defined as "hypothetical dividing lines that may split a group into subgroups" (p. 328) that

[2] Tournament theory explains behavior based on reward structures derived from employee rank compared with absolute levels of output (Connelly, Tihanyi, Crook, & Gangloff, 2014). The key assumption is that employees compete to reach higher ranks associated with a pay raise (Connelly et al., 2014). In turn, competition is associated with more productive outputs, fostering organizational performance (Connelly et al., 2014).

should be relatively homogeneous (Meyer, Glenz, Antino, Rico, & González-Romá, 2014). Faultline theory (Lau & Murnighan, 1998) emphasizes that this split may be based on one or more diversity dimensions (e.g., age, sex), and the strength of the faultline depends on the number of involved attributes, their alignment, and the number of potential subgroups. For example (see Table 2), work team A consists of two 30-year-old women and two 60-year-old men. Thus, the team may split into two homogeneous subgroups based on alignment by age and sex. In work team B, the two women are 30 and 60 years old, respectively, as are the two men. With no alignment between age and sex, the work team may only split into subgroups based on one dimension, either age or sex. Thus, the resulting subgroups are less homogeneous than the subgroups in work team A.

Table 2

Examples of work teams with different amounts of diversity and faultlines

Work team	**Member 1**	**Member 2**	**Member 3**	**Member 4**	**Diversity**	**Faultline Strength**
A	Female 30 years old	Female 30 years old	Male 60 years old	Male 60 years old	0.5[a] 15[b]	*Strong* (2 align, 1 way)
B	Female 30 years old	Female 60 years old	Male 30 years old	Male 60 years old	0.5[a] 15[b]	*Weak* (1 align, 2 ways)

Note. Faultline strength is described by the number of attributes that *align* hypothetically, separating team members into homogeneous subgroups (e.g., if the subgroups are separated by age and sex, two attributes align) and possible *ways* attributes can align (e.g., if subgroups can be divided either by age or sex, there are two ways of alignment). Diversity is calculated based on the methods Harrison and Klein (2007) recommend.

[a] Sex diversity expressed by Blau's index.

[b] Age diversity expressed by standard deviation.

Adapted from "Demographic diversity and faultlines: The compositional dynamics of organizational groups" by D. C. Lau and J. K. Murnighan, 1998, *Academy of Management Review, 23*, p. 330. Copyright 1998 by Academy of Management.

These two examples show that although diversity may be the same in two teams, the strengths of the faultlines differ (work team A has a stronger split than work team B). This leads Lau and Murnighan (1998) to the proposition that faultlines may be the reason for the negative

effects of diversity. Similar to social identity theory (Tajfel & Turner, 1979) and self-categorization theory (Turner et al., 1987), they argue that group members try to make sense of their social environment and teams with faultlines enhance the likelihood of subgroups. Differentiation between groups may cause harms to intergroup processes, such as conflicts, ingroup favoritism, or intergroup competition, to become more likely (Tajfel & Turner, 1979; Turner et al., 1987). Previous research also has found negative effects of faultlines (Meyer et al., 2014; Thatcher & Patel, 2012).

There is a distinction between different types of faultlines as well. Consistent with Harrison and Klein's (2007) categorization of different types of diversity, Carton and Cummings (2012) distinguish between separation-based, disparity-based, and variety-based faultlines. *Separation-based faultlines* express a possible horizontal split of teams, based on different values of team members. *Disparity-based faultlines* display a possible vertical split between team members, based on the resources they possess. *Variety-based faultlines* hypothetically divide the team, based on different team members' qualitatively distinct knowledge.

However, Lau and Murnighan's (1998) definition of faultlines shows that these are *hypothetical* alignments that must not manifest in team processes. Yet, if they do, the *theory of subgroups in work teams* states that different types of subgroups can arise in the work team: identity-based subgroups, resource-based subgroups, and knowledge-based subgroups (Carton & Cummings, 2012). Although each type of faultline may trigger each type of subgroup, *identity-based subgroups* most likely arise from separation-based faultlines (Carton & Cummings, 2012). Splits into subgroups based on different social identities (e.g., cliques or social subgroups) characterize this type. Social-identity dynamics best describe inter-subgroup processes between identity-based subgroups, such as the occurrence of *identity threat* – i.e., "threats to the value of a [team] identity or its distinctiveness" (Branscombe, Ellemers, Spears, & Doosje, 1999, p. 36) and *identity fragmentation* – i.e., subgroup members' perceptions that

they no longer belong to the same work team as members of other subgroups (Carton & Cummings, 2012).

The second type of subgroup is *resource-based subgroups*. Pre-eminently associated with disparity-based faultlines, they display a split into subgroups (e.g., coalitions, alliances) due to different access to resources (Carton & Cummings, 2012). Processes between resource-based subgroups are linked with concepts of *social dominance theory* (Sidanius & Pratto, 1999), such as the asymmetrical perception of fairness and centralization of power (Carton & Cummings, 2012). *Asymmetrical perception of fairness* refers to differences between members of high-status subgroups (or dominant subgroups) and members of low-status subgroups (or subordinate subgroups) regarding access to and control of important resources (e.g., financial resources). Members of dominant subgroups will have great access and control, thus perceiving the status quo to be justified. Members of subordinate subgroups will perceive less fairness because they have less access to resources and do not control them (Sidanius & Pratto, 1999). These differences in the perception of fairness are asymmetrical because, in general, high-status subgroups will consist of only a few members whose perceptions of fairness are rather high. In contrast, many members of low-status groups have minimal access to resources and, thus, do not perceive fairness. This distribution also causes *centralization of power* around the few dominant subgroup members, leaving the many subordinate-subgroup members with only slight power (Carton & Cummings, 2012).

The third type of subgroup is *knowledge-based subgroups* (e.g., cohorts, clusters, task units). They most likely arise from variety-based faultlines and divide the team along lines of different expertise and knowledge (Carton & Cummings, 2012). Inter-subgroup processes between knowledge-based subgroups are characterized by information processing, such as the consideration of alternative sources of knowledge and the convergence of a shared mental model (Carton & Cummings, 2012). In line with the information/decision-making perspective (Williams & O'Reilly, 1998) and the categorization-elaboration model (van Knippenberg et al.,

2004), Carton and Cummings (2012) argue that having informational diversity in a team fosters *consideration of alternative resources*. Team members can draw from different knowledge bases and experiences to solve problems and make decisions. This also fosters the *convergence of a shared mental model*. Mental models are a "mechanism whereby humans generate descriptions of system purpose and form, explanations of system functioning and observed system states, and predictions of future system states" (Rouse & Morris, 1986, p. 360). Thus, individuals rely on mental models to describe, explain, and predict interactions with their environment. In teams, members rely on a shared mental model to predict other members' needs, resources, information, and actions, to adjust their own actions and efficiently interact with each other (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000), which knowledge-based subgroups should foster.

2.2.2.2 Perceived team diversity

People tend to react based on their perception of reality, rather than to reality per se (e.g., Hobman et al., 2004). Therefore, diversity scholars propose that actual or objective team diversity might not be the same as perceived or subjective team diversity (Harrison & Klein, 2007), in line with the classic role of perception in central definitions – e.g., "perception that another person is different from self" (van Knippenberg & Schippers, 2007, p. 517) – in conceptualizations – e.g., surface-level diversity (Harrison et al., 1998) – and in models of team diversity – e.g., social-categorization processes in the CEM (van Knippenberg et al., 2004). Researchers' attention shifts toward the effects of perceived team diversity to improve the understanding of the effects of diversity in work teams (Shemla et al., 2016). Shemla et al. (2016) emphasize that team members must recognize another's differences and their internal mental representation of the team's composition must reflect this awareness. Such awareness is also theoretically distinct from individual evaluations of heterogeneity, such as diversity beliefs (e.g., Homan, van Knippenberg, Van Kleef, & De Dreu, 2007), which also consider

cognitive and affective reactions to diversity or long-term experiences with diversity (Shemla et al., 2016).

In their review, Shemla et al. (2016) distinguish between three different types of perceived team diversity. First, *perceived self-to-team dissimilarity* reflects the degree to which a team member perceives him- or herself as different from his or her other team members (Shemla et al., 2016). It describes the individual team member's perspective on the rest of the team and therefore mirrors the relational approach of team diversity. Second, *perceived splits into subgroups* (or *perception of subgroups*) refers to the "extent to which team members gauge their team to be split into subgroups" (Shemla et al., 2016, p. 93), conceptually related to perceived or actual faultlines (Lau & Murnighan, 1998). Third, *perceived diversity*[3] refers to the perception that the team is different in its composition as a whole, e.g., regarding the functional background of its members (Shemla et al., 2016). Because the whole work team is under examination, both perceived splits into subgroups and perceived diversity can be ascribed to the compositional approach of diversity, which is the basis for this work.

2.3 People perception

Before examining how objective characteristics, such as diversity and faultlines, relate to team members' perceptions of these characteristics, we must understand how individuals form their impressions about a group of people. For this purpose, the selection-extraction-application model (*SEA model*) (see Figure 7) of people perception provides an appropriate theoretical framework (Phillips et al., 2014). It explains how members of a visible collection of people are selected into a group, how statistical summaries are visually extracted from the chosen group members, and how these perceptual summaries are used to make judgments about the group (Phillips et al., 2014).

[3] Shemla et al. (2016) name this aspect *perceived team diversity as a whole* and *perceived group heterogeneity*. To maintain congruence between objective and perceived types of diversity, I choose the term *perceived diversity*.

Thereby, Phillips et al. (2014) propose *ensemble coding* as the central cognitive process, since it "reflects an adaptive mechanism that allows for the efficient representation of a large amount of information" (Haberman & Whitney, 2009, p. 718). Ensemble coding proceeds spontaneously, uncontrollably, and efficiently, explaining how different visual information from rather similar stimuli (e.g., human faces) is integrated into a single cognitive representation of the group (Phillips et al., 2014). The result of this process is a statistical summary of the features of the perceived group such as the average height of the members. (For a review of ensemble coding see Whitney, Haberman, and Sweeny (2014).)

Based on the cognitive mechanisms of ensemble coding, Phillips et al. (2014) offer a three-stage model of people perception, defined as the formation of judgments of a perceived group (Phillips et al., 2014). The first stage (*selection stage*) entails processes by which perceived individuals are categorized as a group member or as not a group member. Individuals within a visible collection of people – e.g., people who are standing at a campus place – are spontaneously selected as members of a group – e.g., a student team that discusses its class work – or as outsiders – e.g., a student who just passes by. Thereby, several principles can influence the selection process (Phillips et al., 2014): bottom-up influences, more passive, automatic influences based on properties of the perceived object (Kornmeier, Hein, & Bach, 2009; Phillips et al., 2014) in the form of perceptual grouping principles (e.g., proximity or similarity); processing goals, "intentions to engage in a particular type of thought process" (e.g., visual search process) (Phillips et al., 2014, p. 108); existing knowledge (e.g., knowledge about the relationship between persons in the visible collection of people); expectations (e.g., stereotypes about specific groups of people represented in the visible collection). For example, a professor could recognize students from his or her university lecture, and group them together.

After selecting the members of the group, individuals extract summary statistics (e.g., the average height of the team members or average facial expression) about the group members in the *extraction stage* (Phillips et al., 2014). Phillips et al. (2014) expect individuals to produce

several summaries of different characteristics simultaneously. Moreover, they describe the process as spontaneous and taking priority over the perception of single group members. For example, the perceiver can judge the average group height more easily and rapidly than the height of a specific group member. Yet, top-down influences – volitional control of perceptual awareness based on social cognitions (Kornmeier et al., 2009; Phillips et al., 2014) – can direct visual attention to specific members of the visible collection of people and bias the extraction of perceptual summaries (Phillips et al., 2014). For example, prior experience with some group members (e.g., knowing a group member from prior meetings) or expectations (e.g., about the age diversity of the group) may bring different group members into focus and, thus, bias extracted summaries toward these members. Other principles that shape the process of extracting statistical summaries are an updating process over time, e.g., individuals applying their summaries when new members of the group are detected, and the robustness to diversity, i.e., persistence of variability among group members even after selection (Phillips et al., 2014). Thus, average statistics can be drawn from a diverse set of group members.

At the last stage (*application stage*), individuals apply their perceptual summaries about a group to decision-making, judgments, and behavior towards the group (Phillips et al., 2014). However, prior relevant semantic knowledge about the group or group members can influence the application – i.e., if individuals have no semantic knowledge about the group they are going to judge, they will use their summary statistics to do so. Otherwise, they will rely on their prior knowledge (Phillips et al., 2014). Moreover, perceptual summaries will likely influence first impressions of groups, particularly if the visual dimension and the judgment dimension are similar (e.g., perceiving facial expressions and judging the team's mood) (Phillips et al., 2014). Moreover, other summary statistics (e.g., activated stereotypes), motivational resources (e.g., low motivation to make efforts to give a correct judgement), or cognitive resources (e.g., resource depletion) can bias the application of summary statistics (Phillips et al., 2014). Lastly, individuals will also vary their judgment based on the perception of entitativity, that is the

degree to which an individual perceives a group to be “a viable entity rather than a mere collection of people” (Hamilton, 2007, p. 1087).

To sum up, the SEA model of people perception proposes a process for visually selecting people into a group, extracting statistical summary representations about the chosen members, and applying these summaries to judging the group. In the case of diversity, “visual perceptions of homogeneity should influence judgments of group homogeneity or diversity” (Phillips et al., 2014, p. 116), already shown with subtle facial cues as stimuli (Phillips, Slepian, & Hughes, 2018). This means that individuals can transfer impressions about diversity dimensions (e.g., age) into perceptual representations and, in turn, use these perceptual representations to judge the group’s diversity and guide their behavior towards the group.

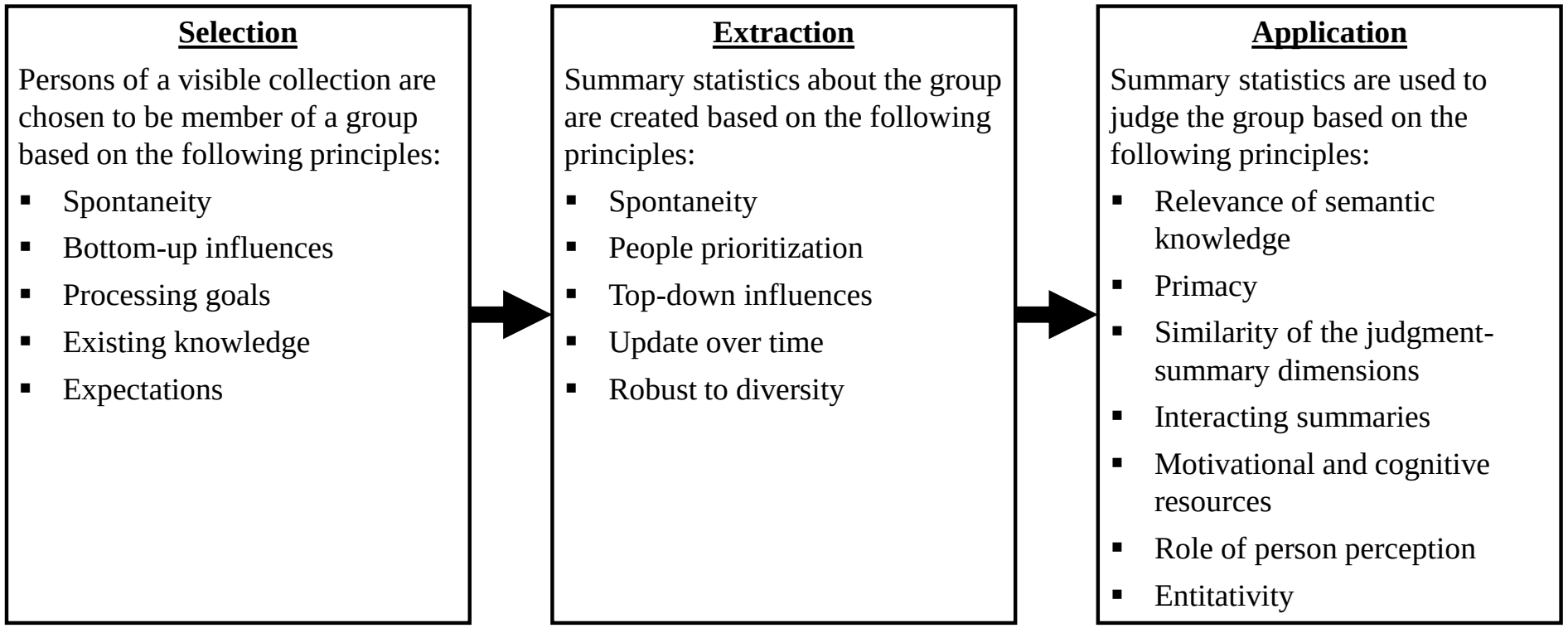


Figure 7. Selection-extraction-application model of people perception. Adapted from "People perception: Social vision of groups and consequences for organizing and interacting." by L. T. Phillips, M. Weisbuch, and N. Ambady, 2014, *Research in Organizational Behavior, 34*, p. 106. Copyright 2014 by Elsevier.

3. Perception of work team diversity: The roles of attitudes and experiences

3.1 Abstract

Relying on the selection-extraction-application model of people perception, this paper examines the relationships between objective diversity and objective faultlines, on the one hand, and, on the other hand, employees' perceptions of diversity and faultlines. It also investigates as moderators employees' attitudes toward diversity and perceptions of one's own work team's diversity. We conducted an experimental online-survey study with 295 German employees. Results show statistically significant and positive relationships of objective diversity with perceived diversity and a statistically significant and positive relationship of objective faultlines with perceived faultlines. Perception of one's own work team's age diversity was found to be a statistically significant moderator of the relationship between objective age diversity and perceived age diversity, supporting the assumptions of people-perception model. Our findings have theoretical implications for the model of people perception and practical implications for the design of diversity training.

Keywords: attitude toward diversity, diversity, faultlines, people perception, perceived diversity, perceived faultlines

3.2 Introduction

Skill shortages are one of the current and future key challenges for organizations worldwide (Hays plc, 2019). For example, in the European Union (EU) 39% of companies have problems finding employees possessing required skills, with the manufacturing industry reporting the biggest problems (European Foundation for the Improvement of Living and Working Conditions, 2013). Attempts to address this key challenge in the EU include the sustainable integration of migrants into the labor market and the increase in employment rates of women and older people (European Foundation for the Improvement of Living and Working Conditions, 2010; Vogler-Ludwig, Düll, & Kriechel, 2015). As a result of these attempts, work teams will increasingly consist of many differences among members relating to not only their demographic backgrounds (e.g., age, sex, ethnicity) but also their work experience and task-specific knowledge. Thus, work teams will consist of members who are increasingly different based on several attributes – that is increasingly diverse.

However, the consequences of team diversity are still not fully understood. Research on the effects of team diversity on team processes, emergent states, and outcomes (such as team communication, conflict, cohesion, or performance) provides mixed results. (For reviews and meta-analyses, see Bell et al., 2011; Carter et al., 2019; Guillaume et al., 2012; Harrison & Klein, 2007; Joshi & Roh, 2009; Lee, Kirkpatrick-Husk, & Madhavan, 2017; Meyer, 2017; Milliken & Martins, 1996; Nkomo, Bell, Roberts, Joshi, & Thatcher, 2019; Roberson, 2019; Thatcher & Patel, 2012; van Dijk et al., 2012, 2017; van Knippenberg & Mell, 2016; van Knippenberg & Schippers, 2007; Williams & O'Reilly, 1998). One explanation for these inconsistent results relies on the different conceptualizations of diversity (e.g., Meyer, 2017).

Many different descriptions of team diversity exist (see chapter 2.2.2 for an overview) – for example, in terms of objective diversity or objective faultlines. According to Jackson, Joshi, and Erhardt (2003), *objective diversity* refers to the "distribution of personal attributes

among interdependent members" (p. 802) of a team. Examples of such personal attributes include age, sex, nationality, and functional background. Consequently, the more diverse a team is, the more differences characterize its members.

However, as this research stream shows inconsistent results, some researchers suggest that considering only one attribute at a time does not depict reality very well (e.g., Bezrukova, Jehn, Zanutto, & Thatcher, 2009; Lau & Murnighan, 1998). They argue that characterizing team members by a composition of different attributes and the interaction of several attributes, rather than by single attributes, may influence team processes, emergent states, and outcomes (Bezrukova et al., 2009; Lau & Murnighan, 1998). That is why scholars examine objective faultlines to explain effects (particularly negative effects) on team processes, emergent states, and outcomes in diverse teams (see Meyer et al., 2014; Thatcher & Patel, 2012, for reviews).

Objective faultlines are hypothetical dividing lines that separate a work team into rather homogeneous subgroups (Lau & Murnighan, 1998). Thereby, some team members share the same characteristics of several attributes (e.g., female and marketing manager), distinct from characteristics of other team members (e.g., male and human resource manager). This *alignment* of attributes causes stronger splits into subgroups and more homogeneous subgroups (Bezrukova et al., 2009; Lau & Murnighan, 1998). While this approach consistently affects team outcomes negatively (Carter et al., 2019; Meyer, 2017; Thatcher & Patel, 2012), differences still exist in the conceptualization of faultlines. For example, scholars (e.g., Bezrukova et al., 2009; Meyer & Glenz, 2013) distinguish between *dormant faultlines* and *active faultlines*, which might have different effects on teams. Dormant faultlines are "potential faultlines based on demographic characteristics" (Jehn & Bezrukova, 2010, p. 24). In contrast, if "members actually perceive subgroups based on the demographic characteristics" (Jehn & Bezrukova, 2010, p. 24), faultlines are active.

This differentiation echoes another approach to explaining inconsistent results in diversity research, namely, the differentiation between objective team diversity and perceived team diversity (Meyer, 2017). Whereas objective team diversity refers to the factual team composition best mirrored by mathematical expressions (e.g., Harrison & Klein, 2007), perceived team diversity refers to the "degree to which individuals are aware that others differ along any salient dimension" (Shemla et al., 2016, p. 91). Although objective team diversity can be conceptualized as perceived team diversity, some authors emphasize that objective and perceived diversity are two different constructs that need not fully relate to each other (see, e.g., Curry & Kenny, 1974; Harrison & Klein, 2007; Harrison, Price, Gavin, & Florey, 2002; Hentschel, Shemla, Wegge, & Kearney, 2013). For example, Shemla et al. (2016) distinguish between perceived diversity and perceived faultlines as the perceptual counterparts of objective diversity and objective faultlines, respectively. This aligns the assumption that individuals react on the basis of their perception of reality rather than on the basis of reality per se (Hobman et al., 2004). Hence, if individuals' perceptions do not fully include reality, objective team diversity will differ from subjective perceptions of team diversity. Thus, our study aims to answer the question of how objective team diversity (i.e., objective diversity and objective faultlines) relates to perceived team diversity (i.e., perceived diversity and perceived faultlines).

By answering this question, we contribute to diversity research. Our study calls attention to simultaneously including conceptualizations of both objective team diversity and perceived team diversity in diversity research. Since we show that objective team characteristics may raise the perception of these characteristics, explaining inconsistent results should consider perception of team diversity along with objective team diversity. On the other hand, this study seeks a better understanding of the so-far relatively unknown process of forming perceptions of entire teams based on objective team characteristics (Phillips et al., 2014). Thus, we empirically test the assumptions of the selection-extraction-application (SEA) model (Phillips

et al., 2014). The SEA model postulates integrating these objective team characteristics (e.g., the average age of team members) into mental impressions of a team, used to judge it (e.g., age diversity). Our study shows that this process can apply to the perception of different conceptualizations of team diversity.

Our study also investigates contingencies that may strengthen or weaken the relationship between objective team diversity and perceived team diversity. As an individual cognitive process, perception is vulnerable to interindividual differences (Phillips et al., 2014). In the case of the perception of team diversity, interindividual differences, such as prior experiences with diverse teams or individual attitudes toward diversity, may influence the cognitive process and lead to different impressions. Thus, we propose that negative attitudes toward diversity and employees' perceptions of their own work team's diversity strengthen respectively weaken the positive relationship between objective and perceived team diversity, respectively. Investigating these interindividual differences as moderators of the relationship between objective and perceived team diversity will explain why different individuals build different mental representations of the same team, thereby testing assumptions of the SEA model of people perception (Phillips et al., 2014). Thus, it helps us better understand how interindividual differences influence perceptual processes, a precondition for designing more efficient treatments (e.g., diversity training) to enhance the positive outcomes of collaborations in diverse work teams.

3.3 Theory and hypotheses

3.3.1 Conceptualizations of objective team diversity and perceived team diversity

Several definitions of team diversity emphasize its subjective character. For example, van Knippenberg and colleagues define diversity as "the degree to which objective or subjective differences exist between [team] members" (van Knippenberg & Schippers, 2007, p. 516), enabling perception of these differences between individuals (van Knippenberg et al., 2004). In

these definitions, van Knippenberg and his colleagues highlight that, on the one hand, team diversity can refer to objective mathematical descriptions of a team's composition (e.g., standard deviation) (see review by Harrison & Klein, 2007), as expressed in different conceptualizations of objective team diversity (i.e., objective dissimilarity, objective diversity, objective faultlines/subgroups) (see section 2.2.2.1 for an overview). On the other hand, the authors emphasize that team diversity, can refer to subjective or perceived differences between team members as expressed in different conceptualizations of perceived team diversity (i.e., perceived self-to-team dissimilarity, perceived diversity, perceived faultlines/subgroups; see section 2.2.2.2 for an overview). This means that in the case of perceived team diversity, the amount of diversity lies in the eye of the beholder and might even differ between members of the same team.

Other conceptualizations of team diversity also stress differences between objective and perceived team diversity. For instance, a common distinction is the one between *surface-level diversity* and *deep-level diversity* (Meyer, 2017). Surface-level diversity refers to readily observable dimensions, such as age, sex, or race, while deep-level diversity refers to dimensions more deeply grounded in the person, such as educational background, functional background, or attitudes (e.g., Harrison et al., 2002; Mohammed & Angell, 2004). Thus, surface-level diversity and deep-level diversity encompass different perceptual aspects. Whereas surface-level diversity relates to rather obvious diversity dimensions readily detected through visual perception, deep-level diversity includes more information processing since interpersonal contact over time reveals differences.

Taken together, both definitions of team diversity and its conceptualizations accentuate team diversity as not only the pure objective mathematical description of a team's composition but also the subjective impressions of individual team members. This also implies that team members' perceptions and individual impressions play a central role in the effects of team

diversity on team outcomes and, thus, in understanding how objective team characteristics relate to team members' perceptions of these characteristics.

3.3.2 The relationship between objective team diversity and perceived team diversity

To examine the relationship between objective team diversity and individuals' perceptions of team diversity, we first must know how individuals form impressions of whole groups of people. Compared with research on the perception of a single person (*person perception*), research on the perception of teams (*people perception*) is rather neglected (Phillips et al., 2014). According to Phillips et al. (2014), people perception shapes cognitions about teams through *selecting* persons as members of the team, *extracting* summaries of team characteristics, and, finally, *applying* perceptual summaries to judging teams (see section 2.3 for a more detailed description of the SEA model of people perception). The SEA model makes the important suggestion that "people perception does *not* simply describe the summation of impressions of individual […] members" (Phillips et al., 2014, p. 106). In other words, people perception is more than just summing up the impression of each team member and forming an average impression.

Selection processes describe the first stage in the SEA model (Phillips et al., 2014). Selection includes visually encountering several persons (e.g., a group of people waiting for a train on a platform), on the basis of which individuals spontaneously differentiate between persons characterized as members of a specific group and persons who are not selected as belonging to the group – e.g., some people who are talking and interacting with each other can be selected as a family, whereas bystanders who do not interact with the others might be selected as not belonging to the family (Phillips et al., 2014). Thereby, aspects of similarity can influence inclusion in the team. For example, more similar people are included in the team and people who are dissimilar from those others are excluded. Expectations and existing knowledge about the team, as well as individual processing goals, such as the focus of attention, can also

shape selection processes (Phillips et al., 2014). Thus, selection processes highlight both similarities and differences between people.

The second stage in the SEA model is extraction, the processing of all team members simultaneously without the typical generation of single impressions of individual team members (Phillips et al., 2014). This means that the perceiver creates a spontaneous impression of the whole team (e.g., its diversity by sex). However, this cognitive mechanism proceeds without creating impressions of each team member. Thus, the result of the extraction stage is a single multidimensional perceptual summary representation of the team's characteristics (e.g., sex distribution). According to Phillips et al. (2014), these summaries are robust against intragroup variability, which means that summary statistics can be equally well processed regardless of the degree of dissimilarity between team members.

Application processes occur in the last stage of the SEA model, meaning that perceptual summaries are an input for the judgment of team characteristics. Phillips et al. (2014) postulate that the less semantic knowledge a person has about a team, the stronger is the influence of the perceptual summaries on judgments about the team. Perceptual summaries strongly influence first impressions. The authors state that "in the unfamiliar context, basic judgments . . . can only be extracted from immediate perceptual representations" (p. 112). Thus, perception may be the only way to be able to receive useful information about unknown teams.

To summarize, the SEA model explains how individuals perceive teams, form first impressions of them, and use impressions to characterize or judge the team. Transferring these assumptions to teams characterized as diverse, an individual should infer perceptual summaries of objective team characteristics and, in turn, apply them to judging the team's homogeneity or diversity. Consequently, Phillips et al. (2014) propose that "perceptual summaries of more variability along some dimension should lead to judgments of more [team] diversity" (p. 116). Of the relationship between objective diversity and perceived diversity, Harrison and Klein

(2007) note in their review that the two constructs might relate but need not. They argue that individuals may lack information to accurately judge team diversity and may have biased perceptions. In line with these arguments, previous research finds only partial support for a positive relationship between objective diversity and perceived diversity (e.g., Harrison et al., 2002). For instance, Harrison et al. (2002) find positive and significant relationships between objective diversity and perceived diversity based on age, race, marital status, task meaningfulness, and outcome importance, but not sex, conscientiousness, and values. Yet, other research by de Chermont (2008) hints at rather strong relationships between objective and perceived diversity for surface-level and deep-level dimensions over time. Thus, relying on the mechanisms of people perception that Phillips et al. (2014) propose and the predominantly positive empirical evidence, we state our first hypothesis:

Hypothesis 1: Objective diversity is positively related to perceived diversity.

Regarding the relationship between objective faultlines and perceived faultlines, empirical results are inconsistent. Van der Kamp (2014) finds a statistically significant and positive relationship between objective faultlines and perceived faultlines, while Homan, Greer, Jehn, and Koning (2010) find no relationship. However, a study by Park, Ryan, and Judd (1992) provides evidence for objective subgroup formation leading to greater perceived dissimilarity. The authors examined two different types of information processes by using two distinct treatments – one in which participants only had to read short phrases about team members, and another in which participants had to create subgroups out of the team members. Only those participants who processed information about team members more deeply by forming subgroups rated the whole team as more dissimilar. Although prior research provides inconsistent results, the SEA model (Phillips et al., 2014) offers strong arguments for a positive relationship between objective faultlines and perceived faultlines. Thus, we propose:

Hypothesis 2: Objective faultlines are positively related to perceived faultlines.

3.3.3 The moderating effects of individuals' attitudes toward diversity

Team members' feelings, thoughts, and behavior regarding diversity are prominent contingencies in explaining outcomes of teams composed of different members or split into subgroups based on faultlines (e.g., Guillaume et al., 2017; Hentschel et al., 2013; Homan, 2019; Homan, Buengeler, Eckhoff, van Ginkel, & Voelpel, 2015; Meyer & Schermuly, 2012; Nakui et al., 2011; Schölmerich, Schermuly, & Deller, 2016; van Knippenberg, Haslam, & Platow, 2007; van Knippenberg & Schippers, 2007; van Knippenberg, van Ginkel, & Homan, 2013). Thereby, conceptualizations differ across studies – for example, between diversity beliefs (e.g., van Knippenberg et al., 2007), diversity mindsets (e.g., Homan, 2019; van Knippenberg et al., 2013), openness to diversity (e.g., Hobman et al., 2004), and attitudes toward diversity (e.g., Nakui et al., 2011). These different conceptualizations share their expression of a person's internal representation about team diversity. In particular, *attitudes toward diversity* represent an evaluation of diversity in work teams and the feelings experienced when working with people with different demographic backgrounds (Nakui et al., 2011). On the one hand, these attitudes can have an *affective* connotation, reflecting social or emotional associations with team diversity (e.g., enjoying work in diverse teams). On the other hand, attitudes toward diversity might originate in associations regarding the productivity of diverse teams. These *productive* attitudes toward diversity reflect positive outcomes related to working in diverse teams (e.g., appreciating the social exchange to efficiently solve problems).

Individual contingencies, such as diversity beliefs, attitudes toward diversity, or openness to diversity, are proposed as moderators of the effects of team diversity in previous approaches to team diversity (e.g., Guillaume et al., 2014) and empirically shown to moderate the relationship between perceived diversity and team functioning (e.g., Hentschel et al., 2013). The SEA model also suggests that these individual characteristics influence people perception, particularly in the selection and extraction stages (Phillips et al., 2014). The authors argue that

these expectations do not refer to specific team members (e.g., experiences with a specific team member and knowledge of his or her relationships with others) and are independent of existing knowledge. Thus, they are rather general expectations, based (for example) on implicit attitudes or stereotypes that will likely influence the perception of an unknown team – either positively or negatively – until more information about the unknown team is obtained.

Implicit attitudes are "introspectively unidentified (or inaccurately identified) traces of past experience that mediate favorable or unfavorable feeling, thought, or action toward social objects" (Greenwald & Banaji, 1995, p. 8). This means that implicit attitudes originate in former contact with a specific social object (e.g., a work team) and manifest in an internal representation of this object, which unconsciously influences further interactions with the object. Moreover, implicit attitudes can be projected from a familiar object to an unfamiliar or novel object (Greenwald & Banaji, 1995). For instance, interacting with a diverse team raises implicit attitudes that may apply when interacting with another team.

Moreover, from research on stereotypes, we know that negative stereotypes about individuals or teams are more easily activated than positive stereotypes and directly shape individuals' behavior toward the associated stimulus, even unconsciously (e.g., Devine, 1989). Furthermore, those people whose personal beliefs (such as positive attitudes) contradict the automatically activated stereotypes use cognitive effort to close this gap (e.g., Devine, 1989). Thus, confronting an unknown team composed of different members will first trigger negative stereotypes about team diversity (e.g., age, sex, or nationality diversity). However, individuals with positive attitudes toward diversity will use cognitive effort to minimize the dissonance between triggered stereotypes and their true attitudes. For example, they might look for similarities between members so that their focus of attention shifts from team diversity – no matter whether reflected as diversity or faultlines – to similarities between team members. Consequently, they are likely to judge the team as less diverse and less split into subgroups. In

contrast, primary negative stereotypes will not influence individuals with negative attitudes toward diversity upon meeting an unknown team. Thus, their focus of attention will remain on team diversity as reflected in diversity and faultlines, and they will perceive the team as more diverse and more split into subgroups. Thus, we propose:

Hypothesis 3a: The more negative individuals' affective attitude toward diversity, the stronger is the positive relationship between objective diversity and perceived diversity.

Hypothesis 3b: The more negative individuals' affective attitude toward diversity, the stronger is the positive relationship between objective faultlines and perceived faultlines.

Hypothesis 4a: The more negative individuals' productive attitude toward diversity, the stronger is the positive relationship between objective diversity and perceived diversity.

Hypothesis 4b: The more negative individuals' productive attitude toward diversity, the stronger is the positive relationship between objective faultlines and perceived faultlines.

3.3.4 The moderating effects of employees' perceptions of their own work team's diversity

With work teams increasingly consisting of different members, many employees might already experience diversity at their workplace. As outlined above, experiences with teams will influence the perception of a new team (Greenwald & Banaji, 1995). Thus, the perceived characteristics of one's own work team also might influence the perception of other work teams. In particular, selecting and extracting stages of people perception might depend on individuals' processing goals and previous experiences (Phillips et al., 2014). Depending on individuals' foci of attention, they may select different persons as team members and, thus, shape perceptual

summary representations of the team. However, not only selection depends on attentional foci; extraction does, as well (Phillips et al., 2014). *Top-down influences* – "cognitive influences and higher-order representations that impinge on earlier steps in information processing" (Gilbert & Li, 2013, p. 350) – such as expectations and processing goals, may influence the creation of perceptual summaries (Phillips et al., 2014). Thus, due to different foci of attention, some individuals might be more biased than others in extracting perceptual summaries from a team. For example, research shows that even young children already prefer novelty to familiarity (e.g., Houston-Price & Nakai, 2004). This means that based on prior experience, attention might shift to new or unfamiliar objects. In contrast, individuals likely spend less attention on already-known or familiar objects.

In the case of team diversity, individuals may pay more attention to team characteristics that they do not experience daily in their own work team. For example, if an individual faces high levels of nationality diversity in his or her work team, nationality diversity in other teams may not predominantly influence the perceptual summary representations of the newly met team. Therefore, unfamiliar attributes, such as a high level of age diversity, will rather characterize perceptual summary representations of the new team. Thus, we propose:

> *Hypothesis 5: The higher the level of perception of one's own work team's diversity, the weaker is the positive relationship between objective diversity and perceived diversity.*

In line with the argument by Harrison and Klein (2007) that specific dimensions of diversity should be measured instead of using a composed measure capturing several diversity dimensions, we do not expect the perception of specific diversity dimensions in one's own work team to influence the relationship between objective faultlines and perceived faultlines. This is because faultlines combine several attributes, whereas diversity contains only a single attribute that faultline formation might not include. Besides, every team might align different attributes.

In one work team, work experience and personality might align to split the team into homogeneous subgroups; in another team, alignment of religion and sexual orientation might prompt subgroups. This complicates transferring diversity experiences with one team to another team, particularly since the SEA model suggests that prior experiences direct visual attention to specific team members who represent these prior experiences in their attributes (Phillips et al., 2014). However, a specific team member cannot represent the alignment of subgroups. Thus, we do not assume that prior experiences with faultlines influence the relationship between objective faultlines and perceived faultlines.

3.3.5 Summary of hypotheses

Figure 8 shows our research model of objective and perceived team diversity.

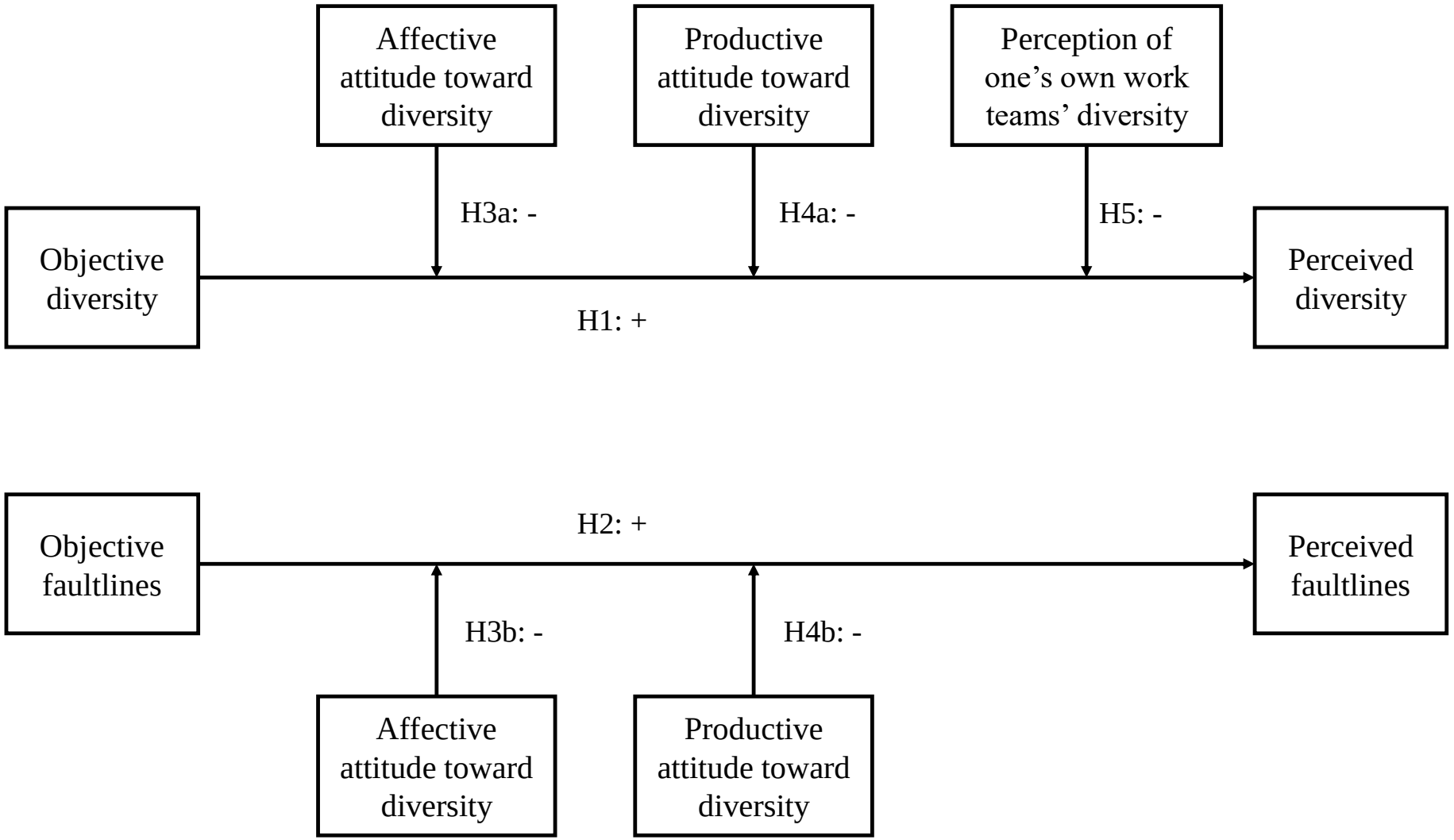


Figure 8. Research model of objective and perceived team diversity. + indicates "the stronger . . ., the stronger . . ."; - indicates "the weaker . . . , the stronger . . ."/ "the stronger . . ., the weaker . . ."

3.4 Method

3.4.1 Sample

We invited 392 German employees from different organizations to take part in an experimental online-survey study. In sum, 295 employees participated, reflecting an overall response rate of 75.26%. Ten participants were excluded from our analyses due to incomplete responses. The final sample of 285 participants was 48.80% female, with an average age of 38.43 years old (*SD* = 12.06; *MIN* = 20 years; *MAX* = 66 years) and an average length of work experience of 15.13 years (*SD* = 12.92; *MIN* < 6 months; *MAX* = 50 years). In total, 3.90% of the participants had a secondary school qualification, 18.60% had a high school diploma, 18.20% had a general qualification for university entrance, 53.30% had a university degree, and 4.90% had a PhD[4]. Participants' organizational tenure was 11.25 years on average (*SD* = 11.59; *MIN* < 6 months; *MAX* = 48 years).

3.4.2 Study design

We conducted an experimental online-survey study using a between-participant design with nine experimental conditions (see Table 3). Examining the full range of objective diversity and objective faultlines from low to maximum required to control the objective descriptions of the teams. We presented a constructed team to participants, who then had to judge the team's diversity and faultlines. We constructed nine different teams of six members each. Each team member was shortly described in business-card style by his or her full name, sex, age, nationality, and functional background (see Figure 9 for an example and Appendix A for all constructed teams). We chose these diversity dimensions because they depict readily observable characteristics of team members, recognizable early with a real team. Team compositions occurred by varying objective diversity and objective faultlines. As Harrison and

[4] A total of 1.1% indicated "others" as their educational background.

Klein (2007) recommend, objective diversity was calculated through Blau's index for nominal data (sex, nationality, and functional background) and through standard deviation for age. Objective faultlines were calculated with the average silhouette width (ASW[5]) cluster-based algorithm introduced by Meyer and Glenz (2013). Experimental manipulations such as objective team diversity depicted in mathematical expressions, serve as natural instrumental variables (Antonakis, Bendahan, Jacquart, & Lalive, 2010), allowing causal interpretations of the results, which means that our data are not threatened by endogeneity.

Table 3

Variation of objective diversity and objective faultlines across the nine constructed teams

Team	Age diversity	Sex diversity	Nationality diversity	Functional diversity	Faultlines
Team 1	10.13	.50	.50	.50	.90
Team 2	10.13	.50	.50	.50	.47
Team 3	10.13	.50	.50	.50	.39
Team 4	15.27	.50	.67	.67	.37
Team 5	18.69	.50	.83	.83	.37
Team 6	1.71	.28	.28	.28	.37
Team 7	9.15	.44	.67	.67	.60
Team 8	4.43	.28	.78	.78	.12
Team 9	11.96	.44	.44	.44	.71

Note. Age diversity expressed through standard deviation. Sex, nationality, and functional diversity expressed by Blau's index. Faultlines expressed by ASW, weighting categorical variables by 10, as Thatcher, Jehn, and Zanutto (2003) recommend.

[5] ASW uses cluster analysis to detect splits into subgroup, accounting for similarity within the clusters and dissimilarity between them, thus providing the optimal number of subgroups in a diverse team (Meyer & Glenz, 2013).

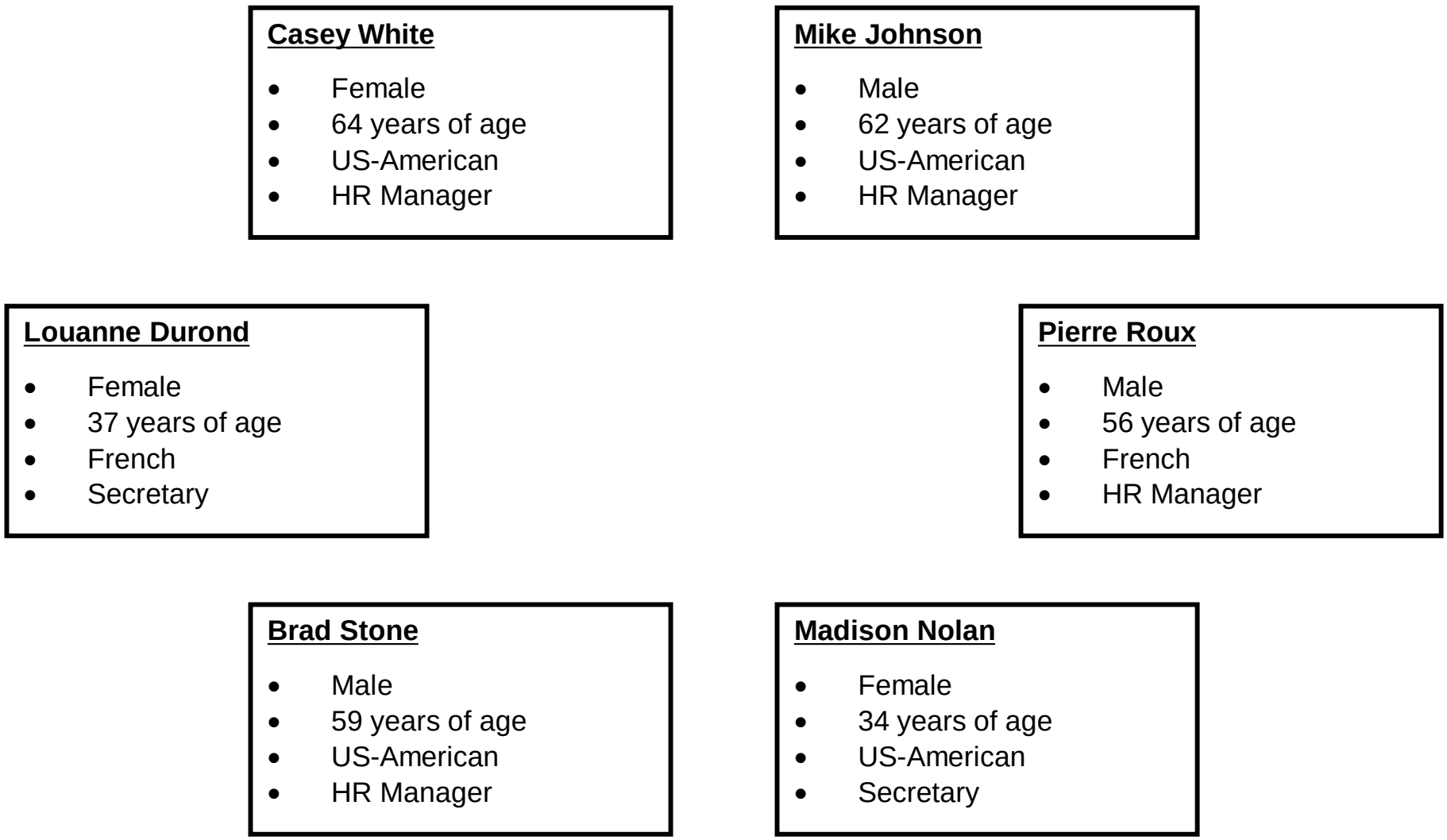


Figure 9. Example of a constructed team. Teams were presented in German to the participants in the study.

3.4.3 Procedure

Participants were randomly assigned to one experimental condition. They were sent an e-mail invitation to take part in the study and received a link to the online survey. Participants first had to answer questions about their sociodemographic background, before being presented with a constructed team and giving their judgments on perceived diversity and perceived faultlines. Next, participants had to answer questions about their attitudes toward diversity. Finally, they had to report the perceived diversity of the team members in their actual work team and to answer some more questions about sociodemographics.

3.4.4 Measures

Perceived team diversity. We asked participants to rate the perceived diversity (age, sex, nationality, and functional background) of the constructed team on a five-point scale ranging from 0 = "fully diverse" to 4 = "not diverse at all." Perceived faultlines were indicated by participants rating the possibility that the constructed team would split in several subgroups on a five-point scale from 0 = "not possible at all" to 4 = "very possible."

Attitudes toward diversity. We assessed individuals' affective and productive attitudes toward diversity using a modified version of the attitudes toward diverse workgroups scale by Nakui et al. (2011). Participants were asked to indicate their level of agreement with the items on a five-point scale ranging from 1 = "strongly disagree*"* to 5 = "strongly agree." We measured individuals' productive attitude toward diversity with a scale of eleven items ($\alpha = .81$) and individuals' affective attitude toward diversity with a scale of six items ($\alpha = .80$). A sample item for productive attitude toward diversity was: "Working in teams whose members have different demographic backgrounds increases one's understanding of those who are different from me." A sample item for affective attitude toward diversity was: "I do not enjoy working with people who have different demographic backgrounds." A confirmatory factor analysis, run

in AMOS 25, confirmed the discriminant validity of the measures of attitudes toward diversity. A two-factor solution (affective attitude toward diversity, productive attitudes toward diversity) was a better fit for the data (χ^2 = 246.18, *df* = 113, $p < .01$, CFI = .90, IFI = .90, RMSEA = .06) than a one-factor solution (χ^2 = 510.71, *df* = 114, $p < .01$, CFI = .70, IFI = .70, RMSEA = .11; $\Delta \chi^2$ = 264.53, Δ *df* = 1, $p < .01$).

Perception of one's own work team's diversity. We asked participants to rate the perceived diversity (age, sex, nationality, and functional background) of their own work team on a five-point scale ranging from 0 = "fully diverse" to 4 = "not diverse at all."

Controls. The SEA model (Phillips et al., 2014) argues that several individual factors might influence people perception. *Age*, *sex*, and *migration background* are demographics that can result in a specific social identity and foster social categorizations (Tajfel & Turner, 1979), which might highlight ingroup-outgroup perceptions. Thus, we included these demographics as controls. Moreover, the SEA model argues that experience is an important contingency in people perception (Phillips et al., 2014). Employees who have worked in their teams for a longer time may have had more possibilities for interacting with their colleagues and detecting either similarities or differences between them. Thus, we also controlled for *team tenure*. In addition, we controlled for team size because larger teams offer more possibilities for having more different members and, consequently, for objective and perceived team diversity.

3.4.5 Analyses

To test our hypotheses, we conducted hierarchical regression analyses following the procedure described by J. Cohen and Cohen (1983) and J. Cohen, Cohen, West, and Aiken (2003). As Aiken and West (1991) recommend, we first centered our predictor and moderator variables. Regarding the relationships of objective diversity with perceived diversity, we conducted separate hierarchical regression analyses for each diversity dimension. This is in line with the advice from Harrison and Klein (2007) to conduct analyses for single diversity

dimensions instead of a composed measure. Consequently, we entered the control variables age, sex, migration background, team tenure, and team size in the first steps of the hierarchical regression analyses. In the second steps, we entered objective (age/sex/nationality/functional) diversity and the moderator variables, i.e., productive and affective attitudes toward diversity and perception of one's own work team's (age/sex/nationality/functional) diversity. The two-way interaction terms of objective diversity with each moderator variable were entered in the third steps. Regarding the relationship between objective faultlines and perceived faultlines, the control variables age, sex, migration background, team tenure, and team size were entered in the first step of the hierarchical regression analysis. In the second step, we entered objective faultlines and the moderator variables, i.e., productive and affective attitudes toward diversity. In the third step, the two-way interaction terms of objective faultlines with each moderator variable were entered.

3.5 Results

3.5.1 Descriptive statistics

Table 4 presents descriptive statistics and correlations for all variables.

Table 4

Descriptive statistics and correlations for study 1 variables

Variables	Mean	*SD*	1	2	3	4	5	6	7	8	9	10
1. Age	38.43	12.06	-									
2. Sex[a]			-.07	-								
3. Migration background[b]			-.18**	.06	-							
4. Team tenure	6.80	7.85	.58**	.09	-.13*	-						
5. Team size	17.19	30.63	.02	-.06	-.02	.08	-					
6. Objective age diversity	10.10	4.76	-.04	-.03	.00	-.08	-.02	-				
7. Objective sex diversity	0.44	0.09	-.03	-.04	-.03	-.09	-.01	.82**	-			
8. Objective nationality diversity	0.58	0.17	.02	-.01	-.03	-.06	.03	.48**	.15*	-		
9. Objective functional diversity	0.58	0.17	.02	-.01	-.03	-.06	.03	.48**	.15*	1.00**	-	
10. Objective faultlines	0.48	0.22	-.01	-.00	.03	-.04	-.04	.21**	.49**	-.39**	-.39**	-
11. Affective attitude toward diversity	3.46	0.67	.02	.11	-.08	-.09	-.10	-.09	-.09	-.03	-.03	-.04
12. Productive attitude toward diversity	3.65	0.51	-.01	.02	-.09	-.03	-.08	-.09	-.05	-.11	-.11	.06
13. Perception of one's own work team's age diversity	3.43	1.11	.13*	.03	-.07	.12*	.13*	-.06	-.04	-.15*	-.15*	.10

Table 4 continued

Descriptive statistics and correlations for study 1 variables

Variables	Mean	*SD*	1	2	3	4	5	6	7	8	9	10
14. Perception of one's own work team's sex diversity	2.63	1.31	-.01	.11	.08	.03	.13*	-.12*	-.17**	.05	.05	-.11
15. Perception of one's own work team's nationality diversity	1.85	1.14	-.09	.06	.33**	-.04	.06	-.09	-.12*	.01	.01	-.11
16. Perception of one's own work team's functional diversity	2.35	1.19	.23**	-.06	-.03	.10	.00	-.21**	-.12	-.18**	-.18**	-.03
17. Perceived age diversity	1.94	1.11	.07	-.09	.05	-.01	-.06	.62**	.50**	.32**	.32**	.03
18. Perceived sex diversity	2.01	0.99	.01	.00	.02	-.01	-.03	.12*	.23**	-.08	-.08	.26**
19. Perceived nationality diversity	2.19	1.02	.06	.01	-.06	.01	-.03	.34**	.11	.43**	.43**	-.17**
20. Perceived functional diversity	1.85	0.91	.04	-.13*	-.03	.01	-.00	.11	.00	.28**	.28**	-.16**
21. Perceived faultlines	2.70	1.10	-.08	.13*	.06	-.09	.00	-.00	.08	-.04	-.04	.17**

Table 4 continued

Descriptive statistics and correlations for study 1 variables

Variables	Mean	*SD*	11	12	13	14	15	16	17	18	19	20
12. Productive attitude toward diversity	3.65	0.51	.35**	-								
13. Perception of one's own work team's age diversity	3.43	1.11	.15*	.07	-							
14. Perception of one's own work team's sex diversity	2.63	1.31	.05	-.07	.23**	-						
15. Perception of one's own work team's nationality diversity	1.85	1.14	-.04	-.14*	.03	.21**	-					
16. Perception of one's own work team's functional diversity	2.35	1.19	.12*	.06	.26**	.10	.10	-				
17. Perceived age diversity	1.94	1.11	-.09	-.09	.02	-.03	-.01	-.02	-			
18. Perceived sex diversity	2.01	0.99	-.04	.00	.01	.08	.05	-.03	.25**	-		
19. Perceived nationality diversity	2.19	1.02	-.05	-.08	.01	.07	-.02	-.13*	.45**	.17**	-	
20. Perceived functional diversity	1.85	0.91	-.03	-.02	.03	.12*	-.02	.03	.39**	.21**	.51**	-
21. Perceived faultlines	2.70	1.10	-.01	.10	.10	.04	.05	-.13*	-.05	.07	-.09	-.14*

Note. $N = 285$; means and standard deviations are only reported for interval-scaled variables. [a]Sex: 0 = "male," 1 = "female;" [b]migration background: 0 = "no migration background," 1 = "with migration background."

* $p < .05$

** $p < .01$

3.5.2 Test of hypotheses

The relationship between objective diversity and perceived diversity was analyzed along the four different diversity dimensions: age, sex, nationality, and functional background. Supporting Hypothesis 1, results for age diversity (see Table 5) show a statistically significant and positive main effect of objective age diversity on perceived age diversity ($\beta = .62$, $p < .01$). If an unknown team is objectively more age-diverse, individuals also perceive the team to be more age-diverse. We could not find any statistically significant moderating effects, neither for affective attitude toward diversity ($\beta = .09$, $p = .08$) nor for productive attitude toward diversity ($\beta = .07$, $p = .17$). Thus, there is no support for Hypotheses 3a and 4a. However, perception of one's own work team's age diversity statistically significantly and negatively moderated the relationship between objective age diversity and perceived age diversity ($\beta = -.13$, $p < .01$).

We followed Aiken and West (1991) and plotted the two-way interaction between objective age diversity of the constructed team and perception of one's own work team's age diversity on individuals' perceptions of the constructed team's age diversity at values of one standard deviation above and below the mean (see Figure 10). The simple slope analysis (Aiken & West, 1991) revealed statistically significant and positive relationships for low levels of perception of one's own work team's age diversity (simple slope = 0.17, $t(284) = 11.64$, $p < .01$) as well as for high levels of perception of one's own work team's age diversity (simple slope = 0.12, $t(284) = 7.86$, $p < .01$). These results further indicate that the positive relationship between objective age diversity and perceived age diversity was stronger for individuals who perceived their own work team to be highly homogeneous regarding age than for individuals who perceived their own work team as highly age-diverse, which supports Hypothesis 5.

Table 5

Results of the hierarchical regression analysis for perceived age diversity

	Perceived age diversity		
Variables	Step 1	Step 2	Step 3
Control			
Age	.10	.09	.11
Sex	-.09	-.07	-.05
Migration background	.07	.07	.06
Team tenure	-.04	.00	-.01
Team size	-.07	-.07	-.06
Independent and moderator			
Objective age diversity		.62**	.62**
Affective attitude toward diversity		-.03	-.04
Productive attitude toward diversity		-.03	-.02
Perception of one's own work team's age diversity		.07	.08
2-way interactions			
Objective age diversity x affective attitude toward diversity			.09
Objective age diversity x productive attitude toward diversity			.07
Objective age diversity x perception of one's own work team's age diversity			-.13**
R^2	.02	.42**	.44**
ΔR^2		.39**	.02**

Note. $N = 285$; standardized beta is reported.

* $p < .05$

** $p < .01$

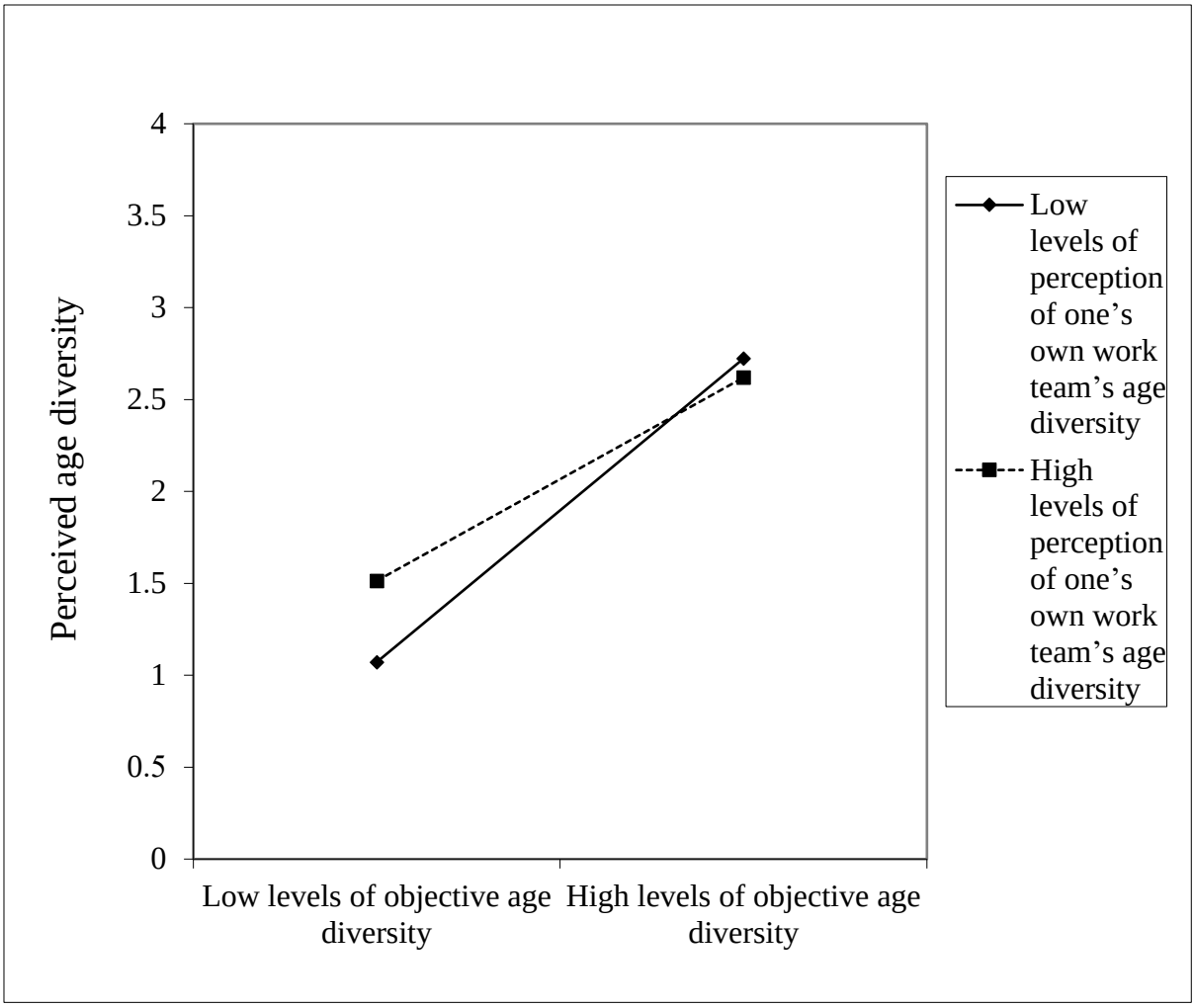


Figure 10. Moderating effect of perception of one's own work team's age diversity on the relationship between objective age diversity and perceived age diversity.

The results for sex diversity (see Table 6) unexpectedly revealed a statistically significant and positive relationship between the perception of one's own work team's sex diversity and the perceived sex diversity of the constructed teams, regardless of the constructed team's objective sex diversity (β = .13, p = .03). Moreover, we found statistically significant and positive main effect of objective sex diversity on perceived sex diversity (β = .25, p < .01), which supports Hypothesis 1. However, we could not find any statistically significant moderating effect, neither for affective (β = .07, p = .30) nor productive attitude toward diversity (β = .08, p = .19) nor for perception of one's own work team's sex diversity (β = -.06, p = .31). Thus, Hypotheses 3a, 4a, and 5 must be rejected for sex diversity.

Table 6

Results of the hierarchical regression analysis for perceived sex diversity

	Perceived sex diversity		
Variables	Step 1	Step 2	Step 3
Control			
Age	.03	.03	.03
Sex	.00	-.00	.00
Migration background	.02	.02	.02
Team tenure	-.02	-.00	-.00
Team size	-.03	-.05	-.04
Independent and moderator			
Objective sex diversity		.25**	.24**
Affective attitude toward diversity		-.04	-.05
Productive attitude toward diversity		.04	.04
Perception of one's own work team's sex diversity		.13*	.13*
2-way interactions			
Objective sex diversity x affective attitude toward diversity			.07
Objective sex diversity x productive attitude toward diversity			.08
Objective sex diversity x perception of one's own work team's sex diversity			-.06
R^2	.00	.07*	.09*
ΔR^2		.07**	.02

Note. N = 285; standardized beta is reported.
* $p < .05$
** $p < .01$

For nationality diversity (see Table 7), we find a statistically significant and positive relationship between objective nationality diversity and perceived nationality diversity (β = .43, $p < .01$), supporting Hypothesis 1. Moderating effects for affective (β = .09, $p = .14$) and productive attitudes toward diversity (β = .06, $p = .31$) and perception of one's own work team's nationality diversity (β = -.06, $p = .31$) did not reach significance, so Hypotheses 3a, 4a, and 5 are not supported.

Table 7

Results of the hierarchical regression analysis for perceived nationality diversity

	Perceived nationality diversity		
Variables	Step 1	Step 2	Step 3
Control			
Age	.08	.05	.07
Sex	.02	.02	.02
Migration background	-.05	-.04	-.05
Team tenure	-.04	.00	-.00
Team size	-.03	-.06	-.06
Independent and moderator			
Objective nationality diversity		.43**	.43**
Affective attitude toward diversity		-.04	-.03
Productive attitude toward diversity		-.03	-.01
Perception of one's own work's team nationality diversity		-.01	-.03
2-way interactions			
Objective nationality diversity x affective attitude toward diversity			.09
Objective nationality diversity x productive attitude toward diversity			.06
Objective nationality diversity x perception of one's own work team's nationality diversity			-.06
R^2	.01	.20**	.22**
ΔR^2		.19**	.02

Note. N = 285; standardized beta is reported.
* $p < .05$
** $p < .01$

Supporting Hypothesis 1, results of the hierarchical regression analysis for perceived functional diversity (see Table 8) reveal a statistically significant and positive relationship between objective functional diversity and perceived functional diversity ($\beta = .30$, $p < .01$). Yet, we could not find any significant moderating effect for either affective ($\beta = .07$, $p = .27$) or productive attitudes toward diversity ($\beta = .04$, $p = .47$) or for perception of one's own work team's functional diversity ($\beta = .01$, $p = .86$). Thus, Hypotheses 3a, 4a and 5 are not supported.

Table 8

Results of the hierarchical regression analysis for perceived functional diversity

	Perceived functional diversity		
Variables	Step 1	Step 2	Step 3
Control			
Age	.02	-.02	-.01
Sex	-.13*	-.12*	-.13*
Migration background	-.02	-.02	-.02
Team tenure	.00	.04	.03
Team size	-.01	-.03	-.03
Independent and moderator			
Objective functional diversity		.30**	.29**
Affective attitude toward diversity		-.02	-.02
Productive attitude toward diversity		.01	.02
Perception of one's own work team's functional diversity		.08	.07
2-way interactions			
Objective functional diversity x affective attitude toward diversity			.07
Objective functional diversity x productive attitude toward diversity			.04
Objective functional diversity x perception of one's own work team's functional diversity			.01
R^2	.02	.10**	.11**
ΔR^2		.09**	.01

Note. N = 285; standardized beta is reported.
* $p < .05$
** $p < .01$

Table 9 presents the results of the hierarchical regression analysis for perceived faultlines. In support of Hypothesis 2, we find a statistically significant and positive relationship between objective faultlines and perceived faultlines ($\beta = .15$, $p < .01$), showing that when objective faultlines were stronger, participants also perceived a higher possibility of subgroup splits. Neither affective ($\beta = .04$, $p = .55$) nor productive attitudes toward diversity ($\beta = -.05$, $p = .39$) statistically significantly moderated the positive relationship between objective and perceived faultlines. Therefore, Hypotheses 3b and 4b are not supported.

Table 9

Results of the hierarchical regression analysis for perceived faultlines

	Perceived faultlines		
Variables	Step 1	Step 2	Step 3
Control			
Age	-.01	-.01	-.01
Sex	.13*	.14*	.14*
Migration background	.04	.04	.03
Team tenure	-.10	-.09	-.09
Team size	.02	.03	.03
Independent and moderator			
Objective faultlines		.15**	.16**
Affective attitude toward diversity		-.05	-.05
Productive attitude toward diversity		.10	.10
2-way interactions			
Objective faultlines x affective attitude toward diversity			.04
Objective faultlines x productive attitude toward diversity			-.05
R^2	.03	.06*	.07*
ΔR^2		.04*	.00

Note. $N = 285$; standardized beta is reported.

* $p < .05$

** $p < .01$

3.6 Discussion

This study aimed to examine the relationships between objective team diversity (objective diversity and objective faultlines) and perceptions of team diversity (perceived diversity and perceived faultlines). As predicted, objective diversity by age, sex, nationality, and functional background is positively related to perceived age, sex, national, and functional diversity. Results also reveal a positive relationship between objective faultlines and perceived faultlines. Moreover, we find a statistically significant and negative moderating effect of perception of one's own work team's age diversity on the relationship between objective age diversity and perceived age diversity. In contrast, affective and productive attitudes toward diversity do not moderate the relationships between objective diversity and faultlines, on the one hand, and, on the other hand, perceived diversity and faultlines, respectively.

3.6.1 Theoretical implications

The positive relationships between objective team diversity (objective diversity, objective faultlines) and perceived team diversity (perceived diversity, perceived faultlines) are in line with the assumptions of the SEA model. Phillips et al. (2014) state that variability in a team directly relates to the perception of this variability. Our experimental study discovered that individuals perceived as highly diverse the teams objectively characterized as highly diverse. Teams showing low objective diversity were perceived as being more homogeneous. In addition, the positive relationship between objective faultlines and perceived faultlines reveals that individuals can detect subgroups out of an arbitrary collection of persons.

In contrast to our hypotheses, neither affective nor productive attitudes toward diversity moderate the relationships between objective team diversity and perceived team diversity. An individual's attitudes do not seem to influence people perception regarding team diversity. This is a rather surprising finding since attitudes toward diversity have been shown to affect several relationships between team diversity and its outcomes (e.g., Nakui et al., 2011; Rabl & Triana, 2014; van Oudenhoven-van der Zee, Paulus, Vos, & Parthasarathy, 2009). An explanation for these nonsignificant moderating effects might lie in the measurement of attitudes toward diversity. Harrison and Klein (2007) propose not combining several diversity dimensions into one measure. This might be true also for the measurement of attitudes toward diversity. Our reasoning for measuring affective and productive attitudes toward diversity in general was that general attitudes might influence both perceiving objective diversity and perceiving objective faultlines. However, this measurement of attitudes toward diversity might have been too broad to influence relationships between objective and perceived team diversity for specific diversity dimensions. Thus, affective and productive attitudes toward *specific* diversity dimensions – for instance, attitudes toward age diversity – might be more adequate moderators for the specific relationships between objective diversity and perceived diversity, such as the relationship between objective age diversity and perceived age diversity. Thus, future research should

include specific measurements of attitudes toward diversity to examine their influence on the perception of objectively diverse teams.

In line with our hypothesis, perception of one's own work team's age diversity negatively moderated the relationship between objective age diversity and perceived age diversity. Perception of age diversity in individuals' work teams weakens the positive relationship between objective age diversity and perceived age diversity, so individuals who perceive their own work team to be age-diverse judge an objectively age-diverse team to be less age-diverse than do individuals who perceive their own work team to be age-homogeneous. However, this was only the case for age diversity, not for sex diversity, nationality diversity, and functional diversity. Nationality diversity and functional diversity are likely to differ from team to team because of a wider range of possible manifestations due to nearly 200 countries in the world and countless professions. In contrast, the age of employees is naturally limited and, therefore, the variation of team members based on different ages is smaller per se. As the SEA model outlines (Phillips et al., 2014), prior experiences might go along with specific stereotypes. Yet, these stereotypes might refer to specific groups (e.g., Germans or psychologists) not represented in a newly met team (e.g., a team of French physicians). Thus, if the newly met team does not consist of the same or at least similar nationalities and professions as one's actual work team, an interactive effect by the perception of one's own work team's nationality or functional diversity on the judgment an unknown team's nationality or functional diversity is less likely.

Perception of one's own work team's sex diversity also did not influence the relationship between objective and perceived sex diversity. However, perception of one's own work team's sex diversity influences people perception in an unexpected way, with a statistically significant and positive relationship between perception of one's own work team's sex diversity and perception of sex diversity of other teams. Individuals who perceive their own work team as highly sex-diverse also judge other teams to be highly sex-diverse, regardless of objective sex

diversity. Individuals also seemingly rely on their daily experience when judging sex diversity. Thus, there might be a top-down influence of one's own work team's sex diversity on the perception of sex diversity, which future studies should explore further.

By examining the relationships between objective and perceived team diversity, we provide some empirical support for the SEA model of people perception (Phillips et al., 2014). We find a statistically significant relationships between objective team diversity and perceived team diversity, indicating that people can create efficient summaries of groups. In addition, the influence of top-down processes on people perception appears in the statistically significant negative moderating effect of perception of one's own work team's age diversity on the relationship between objective and perceived age diversity. This finding is in line with Park et al.'s (1992) results that outgroup members are rated as more homogeneous and ingroup members as more diverse. Future research should examine whether this influence is also observable for real teams and other diversity dimensions.

Furthermore, we strongly recommend that researchers examine both types of team diversity, objective and perceived, to explain team processes, emergent states, and outcomes (Curry & Kenny, 1974; Harrison et al., 2002; Harrison & Klein, 2007; Hentschel et al., 2013). Some team processes, emergent states, and outcomes may be strongly influenced by objective team diversity (e.g., team conflict), and others more strongly influenced by perceived team diversity (e.g., team cohesion). Yet, there might also be team processes, emergent states, and outcomes influenced by both types of team diversity at the same time (e.g., team innovation). Thus, a promising avenue for future research might examine the perception of team diversity as a cognitive mediating mechanism between objective team diversity and both individual-level and team-level outcomes of team diversity (Guillaume et al., 2014).

3.6.2 Practical implications

In particular, the finding that the perception of one's own work team's age diversity weakens the positive relationship between objective age diversity and perceived age diversity has direct practical implications for people who work simultaneously in several work teams, i.e., with multiple team memberships (Margolis, 2020). Multiple team membership is defined as "membership interdependencies across teams" (Margolis, 2020, p. 51) and occurs, for example, when working in different project teams. This definition highlights that individuals experience several memberships in different teams and that these experiences influence each other. In terms of team diversity, this means that an employee can work, for example, 75% of his or her work time in an age-diverse team, and 25% of his or her work time in an age homogeneous team. In light of our study results, it is likely that in such a case, experiencing age diversity in one team will influence the perception of it in the other team, and vice versa. However, this will result in several problems.

First, based on prior experience, each member of a team might perceive the team differently. This means that each member has a different mental representation of the team, which is detrimental to team success (Mathieu et al., 2000). In particular, the relationship between team diversity and team performance is proposed to benefit from a shared diversity mindset – that is, the "mental representations of team diversity" (van Knippenberg et al., 2013, p. 183). A shared understanding of diversity is likely to result in better interaction processes between team members (e.g., communication, coordination), which, in turn, facilitate team performance in a diverse team (van Knippenberg et al., 2013). Thus, if team members do not share the representation of their team diversity, the negative effects of team diversity are more likely to appear.

Second, if team members share a diversity mindset, they are also more likely to unpack the potential benefits of team diversity. For instance, if some members do not discover the beneficial effects of different perspectives in a team, such as age diversity capturing diversity

with regard to work experience (Harrison & Klein, 2007), they might not engage in information elaboration or perspective-taking (van Knippenberg et al., 2004), which, in turn, hinders team performance. Thus, we recommend that practitioners create a common understanding of a teams' diversity, e.g., a diversity mindset (van Knippenberg et al., 2013).

Third, perceptions of the team's supervisor also might be biased, particularly perception of age diversity. Supervisors are a significant factor in creating a diversity mindset in the team (van Knippenberg et al., 2013). Supervisors should advocate the understanding of team diversity as an informational resource, stimulate its elaboration of these resources, and engender team reflexivity[6] (van Knippenberg et al., 2013). However, since prior experiences might influence the process of people perception, supervisors might not discover the full potential of their team – e.g., the beneficial aspects of an age-diverse team, in which older employees may share their unique knowledge and longstanding experience with inexperienced or younger employees. As a consequence, the supervisors themselves might not be able to develop a diversity mindset in the team that fits the objective composition of its members.

Therefore, organizations could implement diversity training for teams for discussion of different perceptions of diversity and implementation of a shared diversity mindset, under the supervision of a neutral trainer. Consequently, team members and the supervisor share the diversity mindset to develop a common basis for effective teamwork. Otherwise, organizations may rely on shared leadership in teams – that is, the distribution of leadership among multiple team members (Carson, Tesluk, & Marrone, 2007). This has several advantages. First, biased perceptions can be corrected by discussing team diversity with other members. This helps to create a shared diversity mindset within the complete team. Second, multiple members can account for the development of this diversity mindset and perform the necessary tasks to do so, such as advocating diversity as a resource, stimulating information elaboration, and

[6] Team reflexivity is the "extent to which teams collectively reflect upon and adapt their working methods and functioning" (Schippers, West, & Dawson, 2012, p. 769).

engendering team reflexivity (van Knippenberg et al., 2013), so positive effects of team diversity become more likely. Third, shared leadership has been shown to relate to team performance, particularly in diverse teams (Hoch, 2014). Thus, combining the positive effects of shared leadership with the positive effects of a diversity mindset promises beneficial effects for teams in which perceptions of diversity differ between team members.

3.6.3 Limitations and implications for future research

As we relied on constructed teams in this study, we could only test a small sample of objective team characteristics. For a complete understanding of the effects of objective diversity and objective faultlines on people perception, future research should investigate real teams, which provide several advantages. First, a wider range of mathematical values of objective diversity and objective faultlines than could be depicted in this experimental study would provide a more accurate depiction of reality. Second, interactions of objective diversity with objective faultlines and their effect on team outcomes can only be examined in actual teams. As both characteristics have been shown to influence individuals' perceptions and team outcomes (e.g., Shemla et al., 2016; van Dijk et al., 2012), examining the interaction of both factors is an important avenue for future research. Third, examining real teams allows researchers to compare different points of view of separate team members. The perception of a team may differ among ingroup members and outgroup members or depend on the status of the team members (e.g., perception of the supervisor). Fourth, real teams provide more options for subgroup formation, so the number of subgroups can be studied as an additional factor (Carton & Cummings, 2012). Finally, there are cognitive mechanisms, such as belongingness motives, proposed to transfer objective team diversity into perceived team diversity (see Ormiston, 2016). These could only be tested in real work teams since judging an unknown constructed team will not trigger such motives.

For future research, we suggest integrating social identity theory (Tajfel & Turner, 1979) and self-categorization theory (Turner et al., 1987) for consideration in research on people perception. Both theories suggest that people define themselves in terms of their social environments through social-classification processes (Ashforth & Mael, 1989). For example, individuals with high independent self-construal – the constellation of thoughts, feelings, and actions concerning one's relationship to others, and the self as distinct from others – are likely to compare themselves with other individuals on a person-to-person level, making individual attributes more salient (Singelis, 1994). Thus, they are likely to have an attentional focus on individuals. Therefore, at the extracting stage, they may rely more strongly on individual differences to judge team diversity than on intergroup differences. In contrast, individuals with high interdependent self-construal will likely focus on the team as a whole and intergroup differences. Thus, in teams with strong faultlines, those individuals may focus on subgroups and judge team diversity by comparing subgroups rather than individuals.

3.7 Conclusion

Our study demonstrates the positive relationship between objective diversity and objective faultlines, on one hand, and, on the other, perceived diversity and perceived faultlines. In addition, results show a moderating effect of the perception of one's own work team's age diversity on the relationship between objective age diversity and perceived age diversity. These findings support the SEA model on people perception: individuals can precisely build summaries about a collection of individuals, then use these summaries to judge the team. Also, the supposed top-down influences on people perception are partially demonstrated. Thus, particularly employees working in multiple teams (e.g., project teams) should attend diversity training to avoid a biased perception when switching between two or more teams, as experiences in one team can influence perception of the other team.

4. A diversity perspective on dirty tasks: Perception of identity-based subgroups as a mediator between dirty-task frequency and the quality of work relations

4.1 Abstract

Building on social identity theory and conservation of resources theory, this paper examines whether employees' perceptions of identity-based subgroups mediate the relationship between dirty-task frequency and the quality of work relations as reflected in perceived relationship conflict and surface acting. Furthermore, this paper explores the moderating role of perceived supervisor support, in conjunction with perceived organizational value of diversity on these mediated relationships. We conducted a two-phase online-survey study with 93 employees in the caregiving sector and focused on end-of-life care as a physically tainted task. Our findings support the proposed mediation and the proposed moderated moderated mediation for perceived relationship conflict and surface acting. Frequent involvement in the dirty task leads to higher levels of perceived relationship conflict and surface acting through the cognitive mechanism of employees' perceptions of identity-based subgroups. In addition, a high level of perceived supervisor support in conjunction with a high or a medium level of perceived organizational value of diversity reduces the perception of identity-based subgroups related to dirty-task frequency and inhibits it as a mechanism triggering perceptions of relationship conflict and surface acting.

Keywords: dirty tasks, identity-based subgroups, organizational value of diversity, quality of work relations, supervisor support

4.2 Introduction

Although employees who frequently perform dirty tasks often serve the common good (e.g., caregivers, firefighters, prison guards), tough working conditions pose a tremendous challenge for these employees. Dirty tasks are tasks that society sees as degrading, disgusting, or objectionable (Ashforth & Kreiner, 1999; Ashforth, Kreiner, Clark, & Fugate, 2007; Hughes, 1958, 1962). In the eyes of a significant part of society, these tasks stigmatize employees performing them (Ashforth, Kreiner, Clark, & Fugate, 2017). The literature distinguishes among three sources of this stigmatization: physical taint, social taint, and moral taint (e.g., Ashforth & Kreiner, 1999; Hughes, 1958). Physical taint originates from the direct contact with "dirty" objects (e.g., excrement, garbage, death, corpses) or from working under dangerous or potentially harmful conditions (e.g., fighting fires, working on an oil platform or in a mine). Social taint arises from regular contact with stigmatized populations (e.g., psychiatric patients, prisoners) or from servile duties during work (e.g., shoe cleaning). Moral taint occurs when occupations are seen as morally doubtful (e.g., pawnbrokers) or sinful (e.g., exotic dancers) or when employees make use of morally dubious tactics (e.g., bill collectors). Although some dirty-task occupations can have great prestige (e.g., firefighters, lobbyists), "the existence of taint reduces that prestige somewhat" (Ashforth & Kreiner, 2014a, p. 423), compared to occupations that do not involve dirty tasks.

Research shows that frequently performing a dirty task results in negative outcomes for employees, such as lower levels of well-being, higher levels of reluctance to discuss work with outsiders, and lower levels of work satisfaction (Baran et al., 2012; Baran, Rogelberg, & Clausen, 2016). To understand why and when negative outcomes are associated with frequently performing dirty tasks, we must acquire insights into the cognitive mechanisms that dirty-task frequency triggers and the contingencies that buffer these negative effects. Thus, our study aims to answer questions about why dirty-task frequency relates to impaired quality of work relations, as reflected in perceived relationship conflict and surface acting, and whether and

how supportive contextual factors, as reflected in perceived supervisor support and perceived organizational value of diversity, buffer these negative relationships. By investigating employees' perceptions of relationship conflict and surface acting as individual-level outcomes, we illuminate impairments of employees' work relations when frequently performing dirty tasks. Hence, we contribute to the dirty-task literature that predominantly focuses on the examination of outcomes related to non-work relations (e.g., work-life conflict or reluctance to discuss work with outsiders) (Baran et al., 2012).

To answer our research questions, we take a diversity perspective on dirty tasks. Diversity in work teams is defined as "the distribution of differences among the members of a unit with respect to a common attribute" (Harrison & Klein, 2007, p. 1200). These attributes include those only indirectly relevant to work, such as sex, age, or race, or they can be directly relevant to work, such as status, tenure, or pay (Jackson et al., 2003). Team diversity may also reside in the specific characteristics of the tasks that members perform (Joshi & Roh, 2009). For instance, in teams where some members frequently perform dirty tasks, and others do so less often or never, dirty-task frequency and associated stigmatization may be seen as a task-related dimension of diversity.

The diversity literature (e.g., Joshi & Roh, 2009; van Knippenberg et al., 2004) often explains the negative effects of diversity based on social identity theory (Tajfel & Turner, 1979). Building on this theory, we propose employees' perceptions of identity-based subgroups as a relevant cognitive mechanism that transmits the negative effects of dirty-task frequency on the quality of work relations. Identity-based subgroups consist of members who share the same social identity but whose social identity strongly differs from that of members of other subgroups in the same work team (Carton & Cummings, 2012). We argue that employees who frequently perform dirty tasks and therefore are constantly confronted with stigmatization constitute a specific social identity that significantly differs from the social identity of employees who perform these tasks less frequently or never, and use social comparisons to

manage their stigmatized identity (Ashforth & Kreiner, 1999). This makes the perception of splits into identity-based subgroups more likely. We further argue that this subgroup perception results in an impaired quality of work relations, due to social-identity threat (Carton & Cummings, 2012). Thus, in this study, we open the black box of why frequently performing dirty tasks harms employees' work relations and answer the call of Baran et al. (2012) to integrate aspects of social identity theory (Tajfel & Turner, 1979), such as the perception of splits into identity-based subgroups, into research on the consequences of dirty tasks.

Moreover, based on conservation of resources theory (Hobfoll, 1989, 2001), we propose perceived supervisor support and perceived organizational value of diversity as contingencies that buffer the negative effects of dirty-task frequency on the quality of work relations. Investigating personal resources in performing dirty tasks, dealing with stigmatization, and managing one's identity prevents investing them in other tasks (Hobfoll, 1989). However, social support may substitute for those lost resources (Hobfoll, Freedy, Lane, & Geller, 1990), particularly if it stems from supervisors who are important representatives of the organization (Eisenberger et al., 2010). We argue that employees who frequently perform dirty tasks and perceive to be supported by their supervisor, will feel valued and appreciated (Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002) and, in turn, will not need to use social comparisons to find positive self-esteem. We further argue that organizations strengthen this effect when employees perceive a supportive organizational environment that values differences between employees (i.e., the organization values diversity instead of homogeneity, Avery, McKay, Wilson, & Tonidandel, 2007). Since supervisors in these organizations act in line with organizational rules of fairness, employees will benefit to an even greater extent from perceived supervisor support and substitute even more personal resources lost to performing dirty tasks. Thus, we propose perceived supervisor support combined with the perceived organizational value of diversity as a buffer that prevents the perception of identity-based subgroups based on dirty-task frequency and, in turn, hinders the perception of relationship

conflict and the occurrence of surface acting. Investigating these contingencies extends our understanding of preventing perception of identity-based subgroups based on dirty-task frequency and reducing its negative outcomes. These insights will also help practitioners to create a supportive organizational environment, in which employees frequently performing dirty tasks face fewer impairments of their work relations.

4.3 Theory and hypotheses

4.3.1 Dirty-task frequency and employees' perceptions of identity-based subgroups

Regardless of how stigmatization emerges – whether due to physical, social, or moral taint – the question that describes reactions to dirty tasks best is: "How can you do it?" (Ashforth & Kreiner, 1999, p. 415). Thus, the "dirt" of the tasks lies not only in the task content but also in society's aversion to the task (Ashforth & Kreiner, 1999) and its cultural and situational background (Ashforth & Kreiner, 2014a). Confrontation with stigmatization threatens one's general goal of appreciation and acceptance by others (Richman & Leary, 2009), resulting in a challenge to self-esteem and engagement in tactics to manage one's social identity (Ashforth & Kreiner, 1999).

Social identity theory (Tajfel & Turner, 1979) proposes that an individual's social identity resides in those aspects of self-image derived from the social categories to which one belongs. Since each individual is a member of various social groups (e.g., family, friends, organization), several identities shape his or her social identity (Ashforth & Mael, 1989). In each group, individuals build a specific identity (i.e., who one is in the specific group) that in turn influences their overall identity (i.e., who one is in general). As work is a central aspect of employees' life, their work-related identity also influences their social identity. Employees build impressions about their work-related identity based, for example, on their belonging to a certain work team, their relationships with supervisors, colleagues, and customers, or society's reaction to their job and their organization (Dutton, Roberts, & Bednar, 2010).

We argue that several elements shape the work-related identity of employees who frequently perform dirty tasks. First, their work-related identity is likely to entail the negative aspects of doing so. Task contents, such as experiencing another person's death or working in a servile relationship, challenge employees' identity and raise the question of who they really are (Ashforth, Harrison, & Corley, 2008; Pratt, 2000). Second, this question also emerges due to society's aversion to dirty tasks. Outsiders and even coworkers who do not frequently perform dirty tasks may react by stigmatizing those who do, challenging employees' self-esteem (Ashforth & Kreiner, 1999). In particular, employees who perform dirty tasks less frequently may serve as daily validation that the identity of employees who frequently perform dirty tasks is less valued than that of their coworkers. This may be due, on the one hand, to fewer challenges to the identities of those coworkers because they perform dirty tasks less frequently and, thus, encounter less stigmatization. On the other hand, by stigmatizing them, these coworkers may actively devalue the identity of employees who frequently perform dirty tasks.

Performing the dirty task itself and society's reaction to it result in a sensebreaking process (Ashforth et al., 2008; Pratt, 2000) – that is, the emergence of a gap between one's current identity (e.g., devalued, degraded, and stigmatized identity) and the desired identity (e.g., valued contributor to the organization and to society). To close this gap, employees engage in identity work (see Caza, Vough, & Puranik, 2018) and try to make sense of their social belonging (Ashforth et al., 2008; Pratt, 2000). In particular, employees who perform physically tainted dirty tasks – i.e. tasks that demand contact with dirty objects, are dangerous, and threaten one's life (Ashforth & Kreiner, 1999) – try to secure themselves psychologically and make sense of their social environment. To do so, they seek faith in an identity that supports their belief that they are a valuable contributor to a meaningful world, e.g., family, organization, work team, or subgroup (Greenberg, Pyszczynski, & Solomon, 1986; Solomon, Greenberg, & Pyszczynski, 1991). Thus, we propose that they build a specific work-related identity that

further differentiates them from employees who perform dirty tasks less frequently. As a result, the team is diverse with some members frequently performing dirty tasks, repetitively experiencing a gap between their current and a desired identity, and engaging in identity work, and other team members not doing so. Therefore, Baran et al. (2012) conclude that "conducting a central dirty task differentiates groups of employees from other groups of employees who do *not* conduct the task" (p. 599).

Based on social identity theory (Tajfel & Turner, 1979), we argue that these subgroups are separated based on their different identities (*identity-based subgroups*, Carton & Cummings, 2012). However, these splits into identity-based subgroups may be obvious particularly to those team members who frequently perform dirty tasks. As they need to manage their identity, due to the repetitive stigmatization and challenged sense of self, they strive to identify like-minded others (i.e., ingroup members) who share the same values and may help them find a positive identity (Tajfel & Turner, 1979). Therefore, they conduct social comparisons with the identities of relevant others (e.g., team members) to sharpen their own identity (Haslam, Powell, & Turner, 2000) and to find outgroups from which their identity is positively distinct (Tajfel & Turner, 1979). As a result of these social comparisons, differences between identities become more visible. Thus, employees who frequently perform dirty tasks and, in turn, frequently engage in social comparisons to manage their social identity, will be more likely to perceive identity-based subgroups in their work team, compared to those employees who perform dirty tasks less frequently. This is in line with the findings of a qualitative study by Chrobot-Mason et al. (2009), who show that having different values and acting abusively or to humiliate (e.g., stigmatizing or discriminating) trigger awareness of subgroups with different social identities.

In sum, frequently performing dirty tasks may lead to a unique work-related identity that differs meaningfully from the work-related identity of other team members who perform dirty tasks less frequently. Due to the on-going challenge to their self-esteem and sense of self,

this gap will be particularly obvious to those who frequently perform dirty tasks because they use social comparisons to manage their identity. Thus, we propose:

Hypothesis 1: Dirty-task frequency is positively related to employees' perceptions of identity-based subgroups.

4.3.2 Employees' perceptions of identity-based subgroups and the quality of work relations

In teams in which diversity relates to the frequency with which team members perform dirty tasks, those frequently performing them will feel devaluation of their identity and categorization against their will, due to stigmatization (Branscombe et al., 1999). In contrast, those members who less frequently engage in dirty tasks do not want to lose positive distinctiveness from those who frequently perform dirty tasks (Branscombe et al., 1999; Tajfel & Turner, 1979). Carton and Cummings (2012) use social identity theory (Tajfel & Turner, 1979) to explain these processes between two or more identity-based subgroups. Carton and Cummings (2012) assume that a division into subgroups, based on different subgroup-member identities, results in social-identity threat characterizing intergroup processes. Employees feel threats to their social identity if, for example, their group's value or positive group distinctiveness is undermined or if they are categorized in a group against their will (Branscombe et al., 1999). To either achieve a positive identity or maintain positive distinctiveness, employees can adopt two distinct strategies. They may engage either in rather aggressive intergroup behaviors, such as negative stereotyping, discrimination, or stigmatization (as in the case of dirty tasks), or in more lenient behaviors, such as intragroup solidarity or gentle intergroup competition (Hornsey & Hogg, 2000).

As a result of both possible strategies, individuals will feel more related to ingroup members than to outgroup members. Consequently, subgroup members primarily pursue the interests and goals of their own ingroup (Tajfel & Turner, 1979) and compete against the interests and goals of outgroups, only because they have another identity. As a consequence,

relationship conflict is more likely – that is, socio-emotional conflict over interpersonal issues not related to work (Jehn, 1995). Moreover, social-identity threat is associated with increased subgroup differentiation and dislike (Hewstone, 1996). Destructive behaviors, such as discrimination, stereotyping, or disliking members of other subgroups, may serve as a base for relationship conflict in a work group that is split into identity-based subgroups.

Research supports the assumption of a positive relationship between employees' perceptions of identity-based subgroups and perceived relationship conflict. Results of Li and Hambrick (2005) as well as Jehn and Bezrukova (2010) provide support that activated faultlines positively relate to different types of conflict. Faultlines are hypothetical dividing lines that may split a group into several homogeneous subgroups, based on the alignment of one or more attributes of the group members (Lau & Murnighan, 1998) and linked with the perception of splits into subgroups (Shemla & Wegge, 2019). Thus, based on our theoretical rationale and previous empirical findings, we propose:

Hypothesis 2a: Employees' perceptions of identity-based subgroups is positively related to perceived relationship conflict.

Social-identity threat may not only impair relationships with other team members as proposed above. Research shows (e.g., Swim, Hyers, Cohen, & Ferguson, 2001; Vescio, Gervais, Snyder, & Hoover, 2005) social-identity threat also linked to emotional reactions, such as anger or depression. Yet, expressing these emotions in public (e.g., in front of customers or other organizational members, such as team members or supervisors) is often not appropriate in the organizational context (Hochschild, 1979). Furthermore, showing negative emotions may violate organizational display rules, especially in the service industry (Ashforth & Humphrey, 1993). In organizations that place importance on display rules, employees must show expected situational emotions even if they do not actually feel them – that is, they must engage in surface acting (Ashforth & Humphrey, 1993). For example, employees who frequently perform dirty

tasks must display humor or hopefulness while actually feeling angry or hopeless about stigmatization or disgusted by task content.

This is particularly true for employees who perceive their work team to be split into identity-based subgroups. Since social-identity threat characterizes processes between identity-based subgroups (Carton & Cummings, 2012), socially comparing oneself with members of other identity-based subgroups challenges one's own identity and raises negative emotions, such as anger or anxiety. In addition, being a victim of stereotypes or discrimination by outgroup members or performing tasks involuntarily may derogate the value of one's own identity and cause anger or depression (Eatough et al., 2016; Swim et al., 2001; Vescio et al., 2005). As members of the same subgroup share emotions, particularly if the subgroup is of great importance to the individual (Mackie, Smith, & Ray, 2008), negative emotions are felt more extensively. For example, if subgroup members hear a story about the victimization of an ingroup member through stigmatization or discrimination, these subgroup members will also feel anger, even without experiencing the situation themselves or being blamed themselves. Thus, stigmatization of a subgroup member means that every other subgroup member who takes notice of the stigmatization will share negative emotions. Since these negative emotions are inappropriate to show in front of colleagues and customers, employees need to hide their true feelings. Consequently, they are likely to engage in surface acting to meet organizational display rules and show other emotions than they are actually feeling (Ashforth & Humphrey, 1993). Thus, we propose:

> *Hypothesis 2b: Employees' perceptions of identity-based subgroups are positively related to surface acting.*

4.3.3 Employees' perceptions of identity-based subgroups as a mediator of the relationships between dirty-task frequency and the quality of work relations

In our Hypotheses 1 and 2a/b, we posit that frequently performing dirty tasks positively relates to employees' perceptions of identity-based subgroups, and, in turn, these perceptions positively relate to perceived relationship conflict and surface acting. Combining these hypotheses, we expect employees' perceptions of identity-based subgroups to mediate the relationship between dirty-task frequency and the quality of work relations. Jervis's (2001) qualitative study of caregiving services supports these expectations. Her findings show that although team members should have worked together as a team to serve the clients, some members tried to pass dirty tasks and leave them for other team members. However, attempts to delegate dirty tasks to others trigger the perception of subgroups and devaluating reactions such as stereotyping ("typical attitude", Jervis, 2001, p. 89) and defaming ("lazy", Jervis, 2001, p. 89). This example illustrates that the team members who frequently performed dirty tasks differentiated between ingroup members (those who frequently perform dirty tasks) and outgroup members (those who do so less frequently). In turn, the perception of subgroups leads to enhanced relationship conflict due to performing different tasks. Thus, building on our theoretical rationale in Hypotheses 1 and 2a/b and based on Jervis's (2001) qualitative findings, we propose:

> *Hypothesis 3: Employees' perceptions of identity-based subgroups positively mediate the relationships between dirty-task frequency and a) perceived relationship conflict and b) surface acting.*

4.3.4 The moderating role of perceived supervisor support

In line with Baran et al. (2012), we argue that employees who frequently perform dirty tasks need to invest cognitive resources in dealing with the tasks and the associated negative consequences. However, personal resources are not infinite and, once exhausted, cannot be applied to other tasks (Hobfoll, 1989). Conservation of resources theory (Hobfoll, 1989, 2001)

suggests that the exhaustion of one's physical and psychological resources goes along with perceiving work events and conditions as very demanding. Psychological stress occurs when there is a) a threat of losing resources, b) an actual loss of resources, or c) a failure of gaining new resources after resource investment (Hobfoll, 1989).

However, stress can be prevented if depleted personal resources are replaced by substitutes (Hobfoll et al., 1990). Social support is the most important factor outside the self to enhance one's resources (Hobfoll et al., 1990). It encompasses those "social interactions or relationships that provide individuals with actual assistance or with a feeling of attachment to a person or group that is perceived as caring or loving" (Hobfoll & Stokes, 1988, p. 499). Thus, Hobfoll et al. (1990) postulate that stress motivates people to seek social support not only as a substitute for personal resources but also to protect or maintain their sense of self. However, employees frequently performing dirty tasks resist discussing work with outsiders and, consequently, to some degree are socially isolated in their private life (Baran et al., 2012). Therefore, having fewer opportunities to gain new resources through social support outside the organization likely hinders gaining sufficient resources following resource investment. Inside the organization, social support by team members may also be hindered by tensions between different subgroups linked to perceived relationship conflict (see Hypothesis 2a), further depleting resources and making social support from coworkers less likely.

Yet, perceived supervisor support – that is, the perception that one's supervisor contributes to and cares about one's well-being (Eisenberger et al., 2002) – may substitute for lost resources. By showing appreciation for the performance of employees who frequently perform dirty tasks, supervisors provide those employees with a way to perceive themselves positively and counteract the challenged identity by making them feel safe (Kahn, 1990). Both effects may inhibit employees' constant search for a positive identity and the use of social comparisons that stress the perception of identity-based subgroups. Giving those employees the attention and recognition for their valuable work will likely provide supplementary resources

that compensate for the threat of losing resources or an actual loss of resources due to stigmatization. In turn, replenished resources will allow employees to invest these resources in examining their social environment at work more intensely instead of relying on cognitive heuristics such as stereotypes and categorizations (Phillips et al., 2014). Thus, the detection of similarities to outgroup members will be more likely and splits into subgroups less likely.

Taken together, we propose that supervisors are an important factor in preventing the perception of splits into identity-based subgroups. Thus, we propose:

> *Hypothesis 4: Perceived supervisor support negatively moderates the positive relationship between dirty-task frequency and employees' perceptions of identity-based subgroups, such that it is weaker for employees who feel strongly supported by their supervisor than for employees who feel less supported by their supervisor.*
>
> *Hypothesis 5: Perceived supervisor support negatively moderates the mediated relationships between dirty-task frequency and a) perceived relationship conflict and b) surface acting, through employees' perceptions of identity-based subgroups, such that they are weaker for employees who feel strongly supported by their supervisor than for employees who feel less supported by their supervisor.*

4.3.5 The moderating role of perceived organizational value of diversity

In groups in which some employees perform dirty tasks frequently, and some do so less frequently, employees are diverse with regard to their work content and work-related identity. Particularly in cases that disadvantage employees due to the task they must perform, considering them significant contributors to organizational performance is vitally important (McKay, Avery, & Morris, 2009), and organizations can signal that by valuing diversity. Thus, as a resource in this study, we also consider perceived organizational value of diversity, defined as employees' perceptions of the efforts an organization makes to build and maintain a diverse workforce, as well as to act fairly toward all employees (Avery et al., 2007). If organizations

strongly value diversity, they equally appreciate all employees, both those who frequently perform dirty tasks and those who do not, thus helping those frequently performing dirty tasks to maintain a positive sense of self.

As supervisors are important representatives of the organization (Eisenberger et al., 2010), they must act in line with organizational rules and guidelines to meet employees' expectations, such as how supervisors represent the psychological contract between employees and organizations (Rousseau, 1989). If supervisor support meets their expectations, employees will consequently perceive themselves as valued and cared-about. Thus, it is vitally important that supervisors' actions fit the organizational context, to provide social support that helps employees to maintain self-esteem (Porter & McLaughlin, 2006) and, according to conservation of resources theory (Hobfoll, 1989, 2001), to substitute for lost resources (Hobfoll et al., 1990). If perceived organizational context and perceived supervisor support do not fit – for example, if organizations value diversity highly, but supervisors prefer employees of a specific group – employees belonging to other groups will perceive a breach of the psychological contract and feel dissatisfied (Chrobot-Mason, 2003; Triana, García, & Colella, 2010). If organizations value homogeneity instead of diversity, employees who do not fit will feel discriminated against, even if they receive supervisor support. In this case, supervisor support alone will not sufficiently substitute for lost resources due to frequent performance of dirty tasks and thus will not counteract employees' perceptions of identity-based subgroups.

In sum, those dirty-work organizations that place a high value on diversity enable their supervisors to provide more effective support to employees who frequently perform dirty tasks and feel threatened by social stigmatization. Consequently, in case of high levels of perceived organizational value of diversity, perceived supervisor support will buffer the positive relationship between dirty-task frequency and employees' perceptions of identity-based subgroups as well as the positive mediated relationships, more strongly than in the case of low levels of perceived organizational value of diversity. Thus, we propose:

Hypothesis 6: Perceived organizational value of diversity negatively moderates the moderation stated in Hypothesis 4. If employees perceive a high rather than a low level of organizational value of diversity, perceived supervisor support weakens to a greater extent the positive relationship between dirty-task frequency and employees' perceptions of identity-based subgroups.

Hypothesis 7: Perceived organizational value of diversity negatively moderates the moderated mediation stated in Hypothesis 5. If employees perceive a high rather than a low level of organizational value of diversity, perceived supervisor support weakens to a greater extent the positive mediated relationship between dirty-task frequency and a) perceived relationship conflict and b) surface acting, through employees' perceptions of identity-based subgroups.

4.3.6 Summary of hypotheses

Figure 11 shows our overall research model.

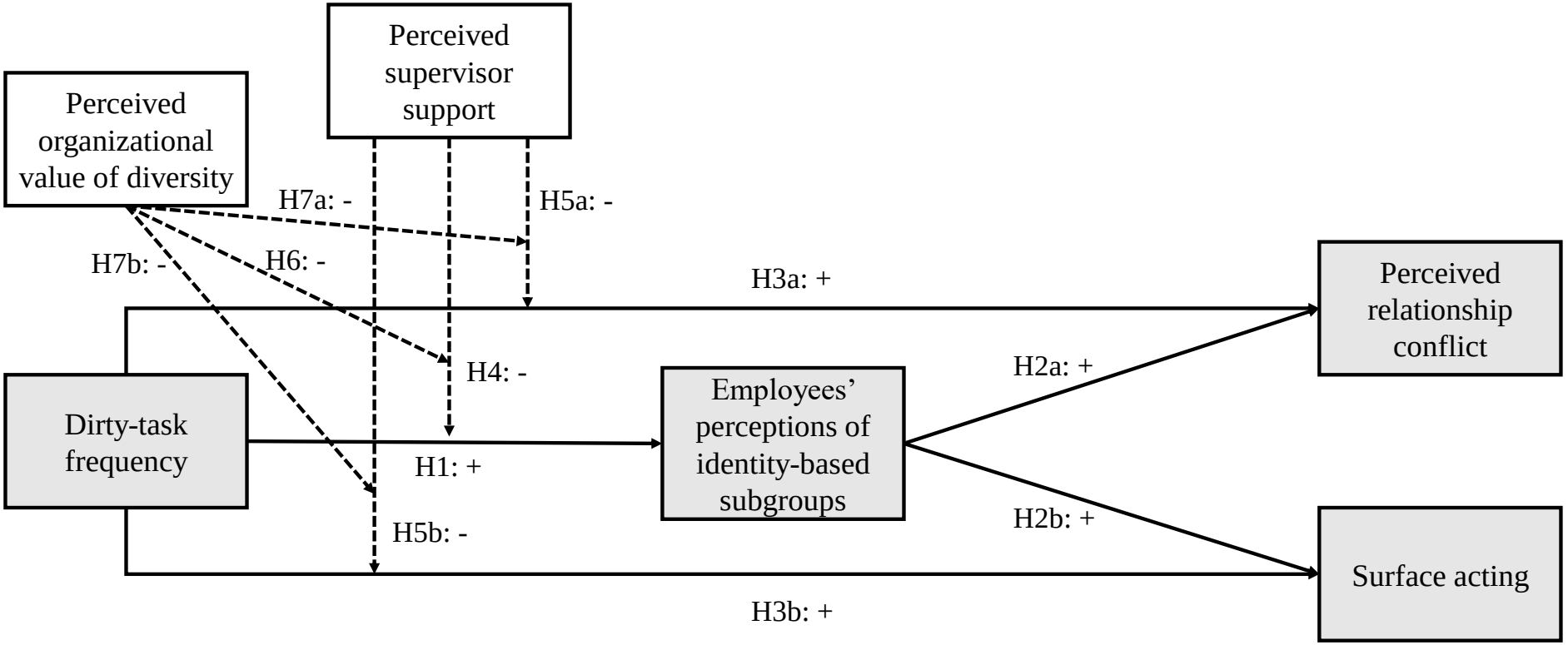


Figure 11. The moderated moderated mediation research model for dirty-task frequency. Relationships symbolized by solid arrows are proposed based on social identity theory (Tajfel & Turner, 1979); relationships symbolized by dashed arrows are proposed based on conservation of resources theory (Hobfoll, 1989, 2001). + indicates "the stronger . . ., the stronger . . ."; - indicates "the weaker . . . , the stronger . . ."/ "the stronger . . ., the weaker . . ."

4.4 Method

4.4.1 Research context

We chose to examine our hypotheses in the context of caregiving services in Germany. Although caregiving enjoys high job prestige in Germany and is recognized as serving the common good (Deutscher Beamtenbund, 2016), society stigmatizes some of the tasks that caregivers perform. In Germany, caregivers are typically responsible for helping clients to dress, assisting them with dining, or motivating them to physical activities (Bundesagentur für Arbeit, 2018). Moreover, caregivers are also involved in stigmatized tasks such as cleaning clients and end-of-life care (Bundesagentur für Arbeit, 2018). The stigma of both these tasks originates from physical taint (Ashforth & Kreiner, 1999, 2014b). Whereas cleaning clients means direct contact with dirt (e.g., excrement), end-of-life care describes care in the clients' last days of life, until death. Typical tasks include giving solace to clients and their relatives, stilling the clients' fears, and allaying pain. Moreover, caregivers handle corpses (e.g., washing, changing clothes) to prepare for the family's farewell. Thereby, caregivers encounter death emotionally and physically, characteristic of physically tainted dirty tasks (Ashforth & Kreiner, 1999, 2014b) and conceptualized as such in both theory (e.g., Ashforth & Kreiner, 2014a) and empirical research (e.g., Johnston & Hodge, 2014). Some people may honor employees for performing certain dirty tasks (i.e., counseling people in their last days of life) and may even call it a noble task. Ashforth and Kreiner (1999) highlight that in general, individuals keep a psychological and behavioral distance between themselves and both the dirty tasks and those who perform them. They are glad that someone else does these tasks, so they do not have them.

Although both tasks – cleaning clients and end-of-life care – comply with the requirements for dirty tasks, we propose that the latter has a stronger impact on the formation and perception of identity-based subgroups in work teams than cleaning clients, due to the following reasons. First, employees of the German Federal Employment Agency report that

particularly tasks involving experiencing older people's death and handling corpses are seen as deterrent aspects of a caregiver's job, leading to disfavor for these occupations (Institut für Public Health und Pflegeforschung, 2010). Compared with nurses, they describe job seekers as rather avoiding work as a caregiver, because it is seen as caring for someone until death instead of healing someone's pains. Thus, end-of-life care is the primary cause of society's aversion to caregiving occupations. Second, encountering another person's death makes one's own mortality salient, resulting in a search for a positive identity (e.g., Greenberg et al., 1986; Solomon et al., 1991). Research shows that death and dying are linked with emotional exhaustion (Payne, 2001) and seen as deterrent aspects of a job (Johnston & Hodge, 2014). Third, other domains in life also include cleaning other persons (e.g., caring for one's baby), which might make cleaning others a more common task compared to experiencing another person's death. Thus, we focus on end-of-life care as a dirty task in this study.

4.4.2 Sample and procedures

To recruit as study participants employees in the caregiving sector, we contacted 242 nursing home directors in Western Germany. Nine agreed to ask their employees to take part in the study. To increase our sample size, we also asked employees in the caregiving sector directly, via social media, to take part in our study. A total of 178 employees in the caregiving sector agreed to participate in the study that was conducted as an online-survey study in two phases. To reduce common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), we assessed our independent and dependent variables at two different points in time. Employees who agreed to take part received an e-mail invitation providing the link to the Phase 1 survey. After approximately three weeks, participants who had completed the Phase 1 survey received an e-mail providing the link to the Phase 2 survey. All participants who finished both surveys could participate in a lottery for vouchers and had the option to receive a summary of the main results of our study. Data for demographic variables, dirty-task frequency, employees'

perceptions of identity-based subgroups, perceived supervisor support, and perceived organizational value of diversity were collected in Phase 1; data for perceived relationship conflict, surface acting, and a subset of the demographics already included in Phase 1 were collected in Phase 2. To match participants' responses from both phases, participants were asked to create an individual code consisting of six digits.

Of the 178 invited employees in the caregiving sector, 113 took part in Phase 1 (63.48% response rate) and 94 in Phase 2 (52.81% overall response rate; 83.19% response rate from Phase 1). One participant was excluded from the analysis due to nonmatching codes. Thus, the final sample consisted of 93 employees from different organizations, meeting criteria for detecting medium to large effects (J. Cohen et al., 2003). A total of 84.90% were female, 2.15% had a migration background, and 29.00% had a leadership position. The average age was 39.04 years (*SD* = 12.75; *MIN* = 21 years; *MAX* = 65 years), and the average length of work experience was 14.94 years (*SD* = 12.18; *MIN* < 6 months; *MAX* = 45 years). Among the participants, 8.60% had a secondary school qualification, 40.90% had a high school diploma, 34.40% had a general qualification for university entrance, and 16.10% had a university degree. On average, they had been working in their current team for 4.85 years (*SD* = 5.53; *MIN* < 6 month; *MAX* = 23 years). Team size varied from 2 to 50 members (*M* = 16.12, *SD* = 12.48). Participants' average organizational tenure was 6.75 years (*SD* = 7.72; *MIN* < 6 month; *MAX* = 44 years).

To test for nonresponse bias, we compared those respondents who completed both study phases with those who only completed the first phase because the latter are best compared with nonrespondents. *T*-tests yielded no statistically significant results for number of team members, $t(112) = -1.03$, $p = .31$ and work experience, $t(112) = 1.54$, $p = .13$, and an χ^2-test for sex was also not statistically significant ($\chi^2 = .32$, $p = .85$). However, the *t*-test for age showed that respondents were statistically significantly older (*M* = 39.04 years; *SD* = 12.75; $t(112) = 2.47$, $p = .02$) than nonrespondents (*M* = 31.62, *SD* = 10.87). However, respondents' mean age and

their age distribution represent the age distribution of employees in the German caregiving sector very well (Gesundheitsberichterstattung des Bundes, 2018).

4.4.3 Phase 1 measures

If no German version of the respective measure was available, we applied a back-translation approach with the help of a bilingual committee, to ensure construct validity (Brislin, 1970; Douglas & Craig, 2007).

Dirty-task frequency. To assess the frequency of employee involvement in dirty tasks in the caregiving sector, we asked participants to indicate on a seven-point scale ranging from 1 = "never" to 7 = "always," how often they perform end-of-life care.

Perception of identity-based subgroups. We developed a five-item scale to measure perception of identity-based subgroups (α = .88), as proposed by Carton and Cummings (2012) and Harrison and Klein (2007). We checked for the content validity of these items by collecting subject matter experts' feedback. Participants indicated their level of agreement on a five-point scale ranging from 1 = "strongly disagree" to 5 = "strongly agree." A sample item was: "My work team splits into subgroups due to similar values of subgroup members." Appendix B shows all items.

Perceived supervisor support. A scale of six items from Eisenberger, Armeli, Rexwinkel, Lynche, and Rhoades (2001) was used to assess perceived supervisor support (α = .93). We asked participants to indicate their level of agreement on a five-point scale ranging from 1 = "strongly disagree" to 5 = "strongly agree." A sample item was: "My manager really cares about my well-being."

Perceived organizational value of diversity. A five-item scale developed by Avery et al. (2007) was used to measure perceived organizational value of diversity (α = .91). Participants were asked to indicate their level of agreement on a five-point scale ranging from

1 = “strongly disagree” to 5 = “strongly agree.” A sample item was: “I am aware of my company’s efforts to create diversity in the workplace.”

Control variables. We controlled for age and sex because these demographic attributes can result in different identity-based subgroups (Tajfel & Turner, 1979). Moreover, we controlled for core self-evaluations that reflect a broad, higher-order personality construct and shape individuals’ view of themselves and their environment (Judge, Erez, Bono, & Thoresen, 2003). Thus, core self-evaluations reflect an individual resource that can counteract the resource loss resulting from frequently performing dirty tasks consequently reducing the perception of splits into identity-based subgroups. We assessed core self-evaluations with the German version (Stumpp, Muck, Hülsheger, Judge, & Maier, 2010) of the core self-evaluations scale (Judge et al., 2003), which includes 12 items ($\alpha = .80$). We asked participants to indicate their level of agreement on a five-point scale ranging from 1 = “strongly disagree” to 5 = “strongly agree.” A sample item was: “I am confident I get the success I deserve in life.”

We also controlled for employees’ social dominance orientation, which describes “the extent to which one desires that one’s in-group dominate[s] and [is] superior to out-groups” (Pratto, Sidanius, Stallworth, & Malle, 1994, p. 742). Members of high-status groups prefer group-based hierarchies and inequality, whereas members of low-status groups prefer social equality (Küpper & Zick, 2011). Performing dirty tasks and being tainted may lead, on the one hand, to the assumption that one belongs to a low-status group and, on the other hand, to the preference for equality. Consequently, these assumptions influence perceptions of social groups and judgments of subgroups. To assess social dominance orientation, we used a scale of six items ($\alpha = .73$) from the German version (Zick & Six, 1997, as cited in Geißler, 2008) of the social dominance scale (Sidanius, Pratto, & Mitchell, 1994). Participants indicated their level of agreement on a five-point scale from 1 = “strongly disagree” to 5 = “strongly agree.” A sample item was: “Social equality should increase” (reverse coded).

Check for discriminant validity. A confirmatory factor analysis in AMOS 25 was conducted to show the discriminant validity of the measures. A four-factor solution (dirty-task frequency, employees' perceptions of identity-based subgroups, perceived supervisor support, perceived organizational value of diversity) was the best fit for the data (χ^2 = 206.36, *df* = 114, $p < .01$, CFI = .92, IFI = .92, RMSEA = .09). A four-factor solution was a better fit than a three-factor solution that merged perceived organizational value for diversity and perceived supervisor support onto one factor (χ^2 = 354.46, *df* = 117, $p < .01$, CFI = .79, IFI = .79, RMSEA = .15; $\Delta \chi^2$ = 148.10, Δ *df* = 3, $p < .01$). A four-factor solution was also a better fit than a one-factor solution (χ^2 = 968.29, *df* = 120, $p < .01$, CFI = .25, IFI = .26, RMSEA = .28; $\Delta \chi^2$ = 761.93, Δ *df* = 6, $p < .01$).

Check for common method variance. As recommended by Lindell and Whitney (2001) and Richardson, Simmering, and Sturman (2009), we conducted a confirmatory factor analysis with openness to aesthetics as a marker variable to detect common method variance. Openness to aesthetics is a facet of the Big Five-dimension openness to experience (McCrae & Costa, 1985), describing one's interest in culture, music, and poetry, and thus assumed not to relate to any other variable of interest. We assessed openness to aesthetics with an eight-item scale (α = .80) of a German version (Schreiber & Iller, 2016) of the NEO-PI-R (Costa & McCrae, 1992). The comparisons of the fully constrained model (χ^2 = 454.13, *df* = 273, $p < .01$, CFI = .87, IFI = .87, RMSEA = .09) with the unconstrained one (χ^2 = 434.56, *df* = 256, $p < .01$, CFI = .87, IFI = .87, RMSEA = .09; $\Delta \chi^2$ = 19.57, Δ *df* = 17, p = .30) showed no statistically significant differences. Thus, we can assume that common method variance might not be a large problem in our data.

4.4.4 Phase 2 measures

For both Phase 2 measures, we applied a back-translation approach with the help of a bilingual committee, to ensure construct validity (Brislin, 1970; Douglas & Craig, 2007).

Perceived relationship conflict. We used four items of Jehn's (1995) intragroup conflict scale to assess perceived relationship conflict (α = .93). Participants reported the perceived frequency of relationship-conflict situations at work on a seven-point scale ranging from 1 = "never" to 7 = "always." A sample item was: "How much friction is there among members in your work unit?"

Surface acting. We measured surface acting with three items (α = .79) developed by Brotheridge and Lee (2003). Employees indicated the frequency with which they experience different emotional states at work, on a seven-point scale from 1 = "never" to 7 = "always". A sample item was: "On an average day at work, how often do you resist expressing your true feelings?"

Check for discriminant validity. A confirmatory factor analysis in AMOS 25 was conducted to show the discriminant validity of the measures. A two-factor solution (perceived relationship conflict, surface acting) was the best fit for the data (χ^2 = 18.82, *df* = 13, *p* = .13, CFI = .99, IFI = .99, RMSEA = .07). A two-factor solution was a better fit than a one-factor solution (χ^2 = 101.49, *df* = 14, *p* < .01, CFI = .78, IFI = .78, RMSEA = .26; Δ χ^2 = 82.67, Δ *df* = 1, *p* < .01).

Check for common method variance. A confirmatory factor analysis with openness to aesthetics as a marker variable yielded no statistically significant differences between the fully constrained model (χ^2 = 158.67, *df* = 90, *p* < .01, CFI = .89, IFI = .89, RMSEA = .09) and the unconstrained one (χ^2 = 147.40, *df* = 83, *p* < .01, CFI = .90, IFI = .90, RMSEA = .09; Δ χ^2 = 11.27, Δ *df* = 7, *p* = .13). Thus, we can assume that common method variance might not be a large problem in our dependent variables.

4.4.5 Analyses

To account for the proposed moderated moderated mediation, we used Hayes's (2013) process tool in IBM SPSS Statistics 25 to test our hypotheses. We standardized all variables

and used bootstrapping to estimate standard errors (n = 5000 bootstrap samples). To test Hypotheses 1 and 2a/b, we additionally ran hierarchical linear regression analyses with standardized predictor and moderator variables.

4.5 Results

4.5.1 Descriptive statistics

Table 10 presents descriptive statistics and correlations for all study variables. Employees in the caregiving sector performed end-of-life care with medium frequency (M = 3.40). However, the variation in frequency between employees was rather high (SD = 1.84[7]) and they saw end-of-life care as a factor that significantly shapes the reputation of their occupation in public[8] (M = 3.44, SD = 1.10).

4.5.2 Test of hypotheses

Table 11 shows the results of the regression analyses for employees' perceptions of identity-based subgroups and the two dependent variables. Control variables had no statistically significant effects on employees' perceptions of identity-based subgroups. In support of Hypothesis 1, we found a statistically significant and positive relationship between dirty-task frequency and employees' perceptions of identity-based subgroups (β = .21, p = .03). Employees who frequently perform dirty tasks perceived more splits into identity-based subgroups than employees less involved in dirty tasks.

[7] A total of 26.90% of the employees indicated that they "never" perform end-of-life care, 10.80% indicated that they perform end-of-life care "very rarely," 5.40% "rarely," 23.70% "occasionally," 21.50% "often," 9.70% "very often," and 2.20% "always."

[8] We asked employees to rate how strong end-of-life care shapes the reputation of their occupation in public on a five-point scale ranging from 1 = "does not shape reputation at all" to 5 = "shapes reputation very much."

Table 10

Descriptive statistics and correlations for study 2 variables

Variables	Mean	*SD*	1	2	3	4	5	6	7	8	9	10
1. Sex[a]	-	-	-									
2. Age	39.04	12.75	-.02	-								
3. Core self-evaluations	3.76	0.50	-.34**	.11	-							
4. Social dominance orientation	1.90	0.57	-.01	-.17	-.11	-						
5. Dirty-task frequency	3.40	1.84	.08	-.13	.05	-.01	-					
6. Perception of identity-based subgroups	3.01	0.94	.11	-.10	-.16	-.08	.27**	-				
7. Perceived supervisor support	3.58	0.97	-.09	.21*	.16	-.17	-.10	-.24*	-			
8. Perceived organizational value of diversity	3.13	0.92	-.07	.20	.16	-.16	-.16	-.36**	.67**	-		
9. Perceived relationship conflict	3.77	1.27	.01	-.18	-.08	.09	.42**	.49**	-.34**	-.31**	-	
10. Surface acting	3.44	1.21	-.19	-.08	-.22*	.08	-.09	.27**	-.08	-.12	.19	-

Note. $N = 93$; means and standard deviations are only reported for interval-scaled variables. [a]Sex: 0 = "male," 1 = "female."

* $p < .05$

** $p < .01$

Table 11

Results of the hierarchical regression analyses for perception of identity-based subgroups, perceived relationship conflict, and surface acting

	Perception of identity-based subgroups				Perceived relationship conflict		Surface acting	
Variables	Step 1	Step 2	Step 3	Step 4	Step 1	Step 2	Step 1	Step 2
Control								
Sex	.06	.03	.03	-.01	-.01	-.05	-.36**	-.38**
Age	-.10	-.02	.00	.03	-.21	-.14	-.05	-.02
Core self-evaluations	-.13	-.11	-.09	-.12	-.07	.02	-.38**	-.33**
Social dominance orientation	-.10	-.13	-.12	-.07	.07	.14	.04	.08
Independent and moderator								
Dirty-task frequency		.21*	.19*	.31**				
Perceived supervisor support		-.01	-.04	-.06				
Perceived organizational value of diversity		-.29*	-.33*	-.31*				
2-way interactions								
Dirty-task frequency x perceived supervisor support			-.09	-.13				
Dirty-task frequency x perceived organizational value of diversity			.13	.14				
Perceived supervisor support x perceived organizational value of diversity			-.13	-.14				
3-way interactions								
Dirty-task frequency x perceived supervisor support x perceived organizational value of diversity				-.17*				
Mediator								
Perception of identity-based subgroups						.63**		.32**
R^2	.05	.21**	.25**	.28**	.04	.27**	.13*	.20**
ΔR^2		.16**	.03	.04*		.24**		.07**

Note. $N = 93$; standardized coefficients are reported. * $p < .05$; ** $p < .01$

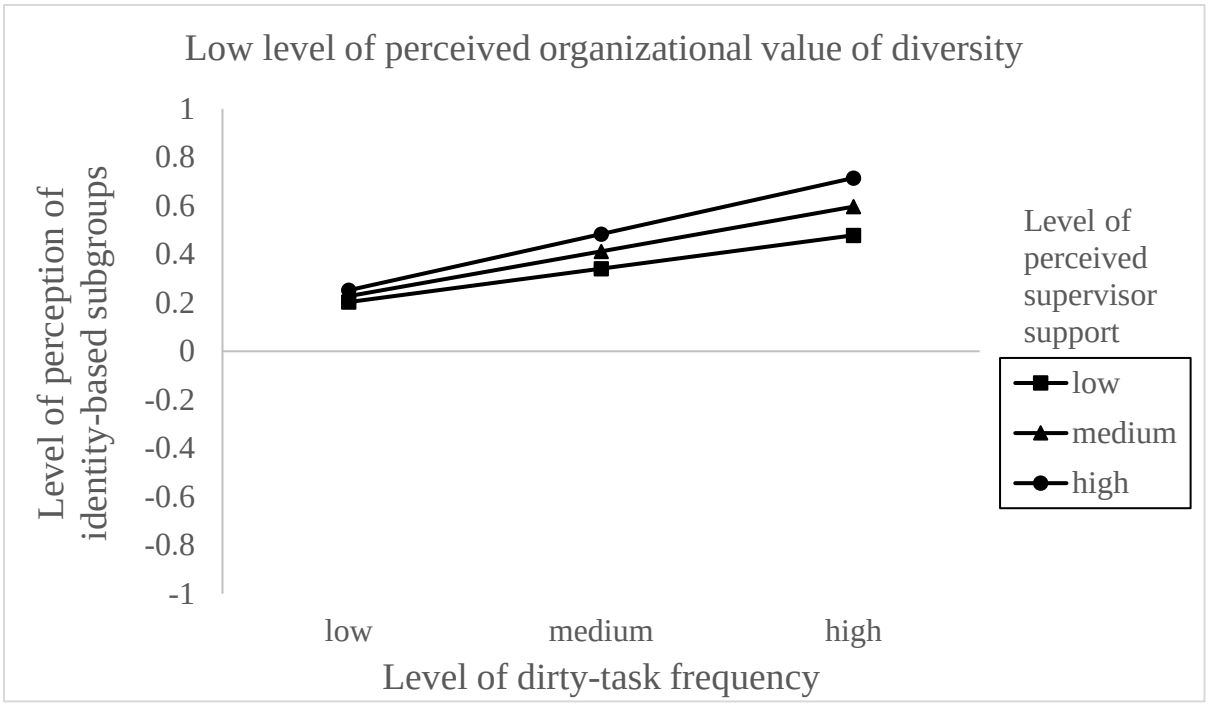
We find no statistically significant moderating effect of perceived supervisor support on the relationship between dirty-task frequency and employees' perceptions of identity-based subgroups (β = -.09, *p* = .48). Thus, Hypothesis 4 was rejected. However, in line with Hypothesis 6, there was a statistically significant and negative three-way interaction between dirty-task frequency, perceived supervisor support, and perceived organizational value of diversity on employees' perceptions of identity-based subgroups (β = -.17, *p* = .04). As predicted and displayed in Table 12 and Figure 12, high levels of perceived supervisor support weakened the relationship between dirty-task frequency and employees' perceptions of identity-based subgroups, but only if employees perceived high (Panel C) or medium (Panel B), instead of low (Panel A) levels of organizational value of diversity.

Table 12

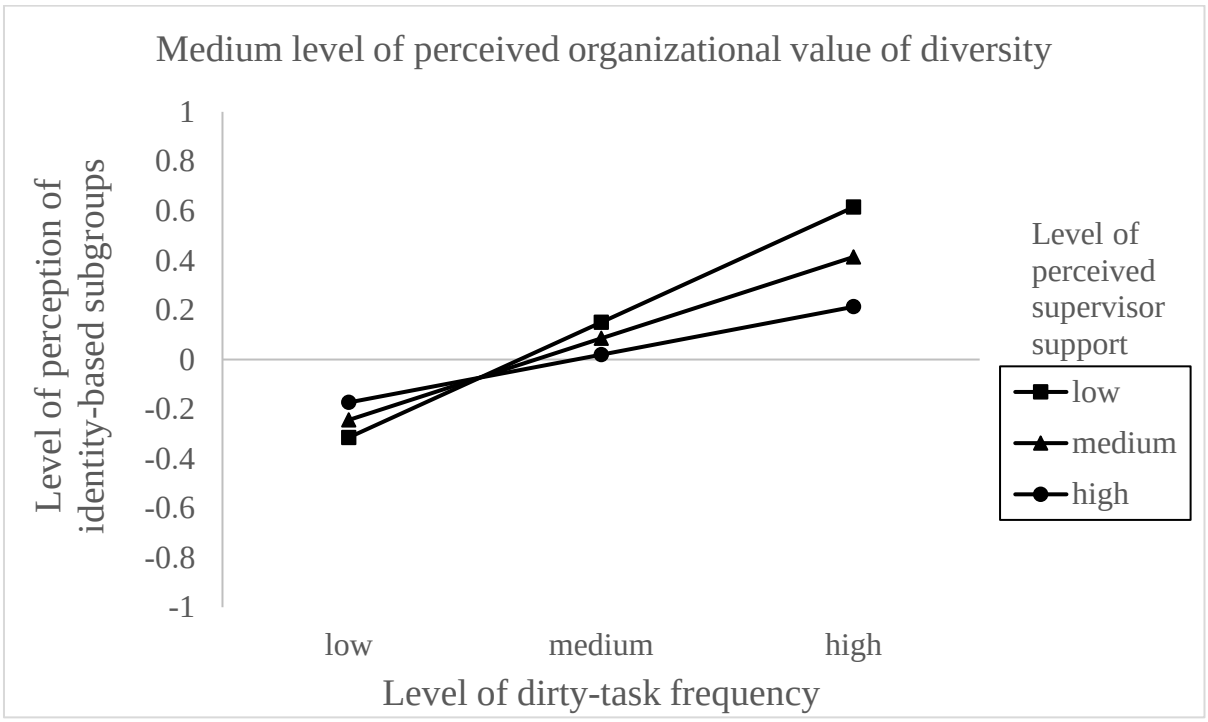
Conditional effects of dirty-task frequency on employees' perceptions of identity-based subgroups at different levels of perceived supervisor support and perceived organizational value of diversity

Perceived supervisor support	Perceived organizational value of diversity	Effect	LLCI	ULCI
low	low	.14	-.17	.44
medium	low	.18	-.16	.53
high	low	.23	-.32	.79
low	medium	.47	.10	.83
medium	medium	.33	.10	.56
high	medium	.19	-.14	.52
low	high	.79	.20	1.38
medium	high	.47	.15	.80
high	high	.15	-.14	.45

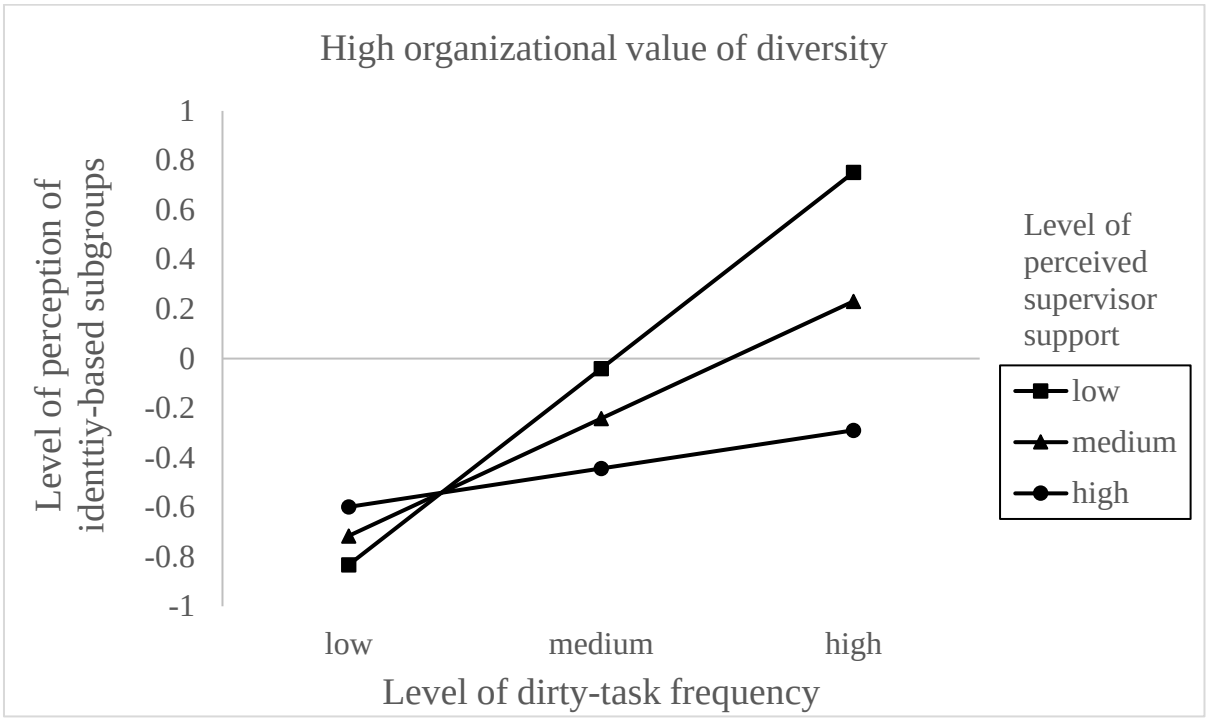
Note. Low = - 1 *SD* from mean, medium = mean, high = +1 *SD* from mean, LLCI = Lower level confidence interval, ULCI = Upper level confidence interval. Confidence intervals are calculated at the 95% level.



Panel A.



Panel B.



Panel C.

Figure 12. The interactive effect of dirty-task frequency, perceived supervisor support, and perceived organizational value of diversity on employees' perceptions of identity-based subgroups. Plotted using standardized regression coefficients.

Controls were not statistically significantly related to perceived relationship conflict. Supporting of Hypothesis 2a was data revealing a statistically significant and positive relationship between perceived identity-based subgroups and perceived relationship conflict ($\beta = .63$, $p < .01$). Employees perceive more relationship conflict when they perceive a split into identity-based subgroups. This relationship was also statistically significant and positive in the mediation model ($\beta = .41$, $p < .01$). In addition, the mediation model revealed a statistically significant and positive relationship between dirty-task frequency and perceived relationship conflict ($\beta = .30$, $p < .01$). As involvement in dirty tasks increases, employees perceive more relationship conflict. Moreover, the indirect effect of dirty-task frequency on perceived relationship conflict mediated by employees' perceptions of identity-based subgroups was statistically significant (indirect effect = .14, 95% confidence interval (CI) = [.04, .25]), supporting Hypothesis 3a. Taken together, employees' perceptions of identity-based subgroups

partially mediated the positive relationship between dirty-task frequency and perceived relationship conflict.

Perceived supervisor support was not a statistically significant moderator of the indirect path between dirty-task frequency and perceived relationship conflict (β = -.06, 95% CI = [-.18, .11]). Thus, Hypothesis 5a was rejected. However, as the 95% CI for the index of the moderated moderated mediation does not include zero (β = -.08, 95% CI = [-.18, -.01]), we found support for Hypothesis 7a, as perceived supervisor support together with perceived organizational value of diversity statistically significantly and negatively moderate the mediated relationship between dirty-task frequency and perceived relationship conflict, through employees' perceptions of identity-based subgroups. We further investigated conditions under which the indirect effect is statistically significant by testing combinations of moderators at the mean and at plus and minus one standard deviation, respectively. As Table 13 depicts, employees' perceptions of identity-based subgroups statistically significantly mediate the relationship between dirty-task frequency and perceived relationship conflict, when perceived supervisor support was at medium level and perceived organizational value of diversity was at medium or high level. Furthermore, the effect size of the indirect effect decreased as perceived supervisor support increased, when perceived organizational value of diversity was at medium or high level. Indirect effects did not reach statistical significance when perceived supervisor support was at low level and perceived organizational value of diversity was at medium or high level, but the pattern of results aligns with Hypothesis 7a.

Table 13

Conditional indirect effects at different levels of perceived supervisor support and perceived organizational value of diversity.

Perceived supervisor support	Perceived organizational value of diversity	Perceived relationship conflict			Surface acting		
		Effect	LLCI	ULCI	Effect	LLCI	ULCI
low	low	.06	-.10	.18	.04	-.09	.13
medium	low	.08	-.05	.25	.06	-.04	.19
high	low	.10	-.12	.41	.07	-.08	.32
low	medium	.19	-.02	.38	.14	-.02	.28
medium	medium	.14	.04	.25	.10	.01	.19
high	medium	.08	-.05	.25	.06	-.03	.20
low	high	.33	-.02	.64	.24	-.03	.49
medium	high	.20	.02	.36	.14	.00[a]	.28
high	high	.06	-.07	.18	.05	-.04	.13

Note. Low = - 1 *SD* from mean, medium = mean, high = +1 *SD* from mean, LLCI = Lower level confidence interval, ULCI = Upper level confidence interval. Confidence intervals are calculated at the 95%-level.
[a] .00 due to rounding off to two decimal places, value is greater than zero.

Regarding levels of surface acting, we found statistically significant and positive relationships with employees' sex (β = -.36, $p < .01$) and core self-evaluations (β = -.38, $p < .01$). Thus, women and employees with high core self-evaluations performed less surface acting than men and employees with low core self-evaluations. Consistent with Hypothesis 2b, we found a statistically significant and positive relationship between employees' perceptions of identity-based subgroups and surface acting (β = .32, $p < .01$), which also reached statistical significance in the mediation model (β = .30, $p < .01$).

The mediation model revealed a statistically significant indirect effect (indirect effect = .10, 95% CI = [.01, .20]). With no statistically significant relationship between dirty-task frequency and surface acting (β = -.14, $p = .17$), employees' perceptions of identity-based subgroups fully mediated the relationship between dirty-task frequency and surface acting, supporting Hypothesis 3b. Perceived supervisor support alone did not statistically significantly moderate the indirect effect (β = -.04, 95% CI = [-.13, .08]), so Hypothesis 5b is rejected.

Nonetheless, perceived supervisor support together with perceived organizational value of diversity statistically significantly weakened the indirect effect (β = -.05,

95% CI = [-.15, -.00[9]]). To further investigate conditions under which the indirect effect is statistically significant, we tested combinations of moderators at the mean as well as at plus and minus one standard deviation, respectively. As Table 13 depicts, employees' perceptions of identity-based subgroups statistically significantly mediate the relationship between dirty-task frequency and surface acting only when perceived supervisor support was at medium level and perceived value of diversity was at medium or high level. However, the size of the indirect effect decreased as perceived supervisor support increased when perceived organizational value of diversity was at medium or high level. Although indirect effects did not reach statistical significance when perceived supervisor support was at low level and perceived organizational value of diversity was at medium or high level, the pattern of results is consistent with Hypothesis 7b.

4.5.3 Robustness checks

To demonstrate the robustness of our results, we conducted our analyses without the controls. We found a statistically significant and positive relationship between dirty-task frequency and employees' perceptions of identity-based subgroups (β = .21, p = .02) and statistically significant and positive relationships between employees' perceptions of identity-based subgroups and perceived relationship conflict (β = .63, p < .01) on the one hand, and, on the other hand, surface acting (β = .32, p < .01). Moreover, there was no statistically significant two-way interaction of dirty-task frequency and perceived supervisor support on employees' perceptions of identity-based subgroups (β = -.05, p = .66). However, the three-way interaction of dirty-task frequency, perceived supervisor support, and perceived organizational value of diversity was statistically significant and negative (β = -.17, p = .03). We also found statistically significant and positive mediating effects of employees' perceptions of identity-based subgroups for the relationships between dirty-task frequency and perceived relationship conflict

[9] -.00 due to rounding off to two decimal places, value is below zero.

(indirect effect = .13, 95% CI = [.03, .24]) and surface acting (indirect effect = .10, 95% CI = [.02, .19]), respectively. In addition, the moderated moderated mediations (perceived supervisor support and perceived organizational value of diversity as moderators) were also statistically significant for perceived relationship conflict (β = -.07, 95% CI = [-.15, -.01]) and surface acting (β = -.06, 95% CI = [-.14, -.01]), whereas we found no statistically significant moderated mediations (perceived supervisor support as moderator) for perceived relationship conflict (β = -.05, 95% CI = [-.16, .08]) and surface acting (β = -.04, 95% CI = [-.12, .07]). Thus, the same pattern of results emerges when excluding or including control variables, indicating that our results are not sensitive to their inclusion.

To secure our results against potential problems of endogeneity, we tested the mediation models against models with two instruments for perceived identity-based subgroups, with the two-stage least squares regression approach (Antonakis et al., 2010). We used perception of identity-based subgroups in the whole organization and perceived reputation of caregiving as an occupation as instruments for surface acting as the dependent variable. Both instruments significantly correlated with employees' perceptions of identity-based subgroups ($r_{ab.c}$ = .46, p <.01 and $r_{ab.c}$ = .27, p <.01, respectively) but not with surface acting ($r_{ab.c}$ = .16, p = .13 and $r_{ab.c}$ = .16, p = .14, respectively), when controlling for age, sex, core-self evaluations and social dominance orientation. For perceived relationship conflict as the dependent variable, we used perceived sex diversity of the team and perceived diversity of personality and values of the team as instruments. Both instruments produced statistically significant correlations with employees' perceptions of identity-based subgroups ($r_{ab.c}$ = .28, p <.01 and $r_{ab.c}$ = .23 p <.05, respectively) but not with perceived relationship conflict ($r_{ab.c}$ = .20, p = .06 and $r_{ab.c}$ = .20, p = .07, respectively) when controlling for age, sex, core-self evaluations, and social dominance orientation. Since the results of the two-stage least squares tests yielded neither any differences in the direction of the path coefficients nor in the significance levels, we can assume that endogeneity might minimally influence our results.

4.5.4 Supplementary analyses

Another dirty task in caregiving sector is cleaning clients (e.g., washing clients, changing diapers). The task contains contact with excrements and other excretions (e.g., wound secretions) characteristic of physically tainted tasks (Ashforth & Kreiner, 2014b). However, the frequency with which employees perform such cleaning tasks did not statistically significantly relate to the perception of identity-based subgroups (β = .04, p = .66), perceived relationship conflict (β = .08, p = .44), or surface acting (β = -.04, p = .67). Moreover, the case of cleaning clients as dirty task yielded neither a statistically significant two-way interaction of dirty-task frequency and perceived supervisor support (β = -.12, p = .41) nor a statistically significant three-way interaction of dirty-task frequency, perceived supervisor support, and perceived organizational value of diversity (β = -.00, p = .99) on the perception of identity-based subgroups.

4.6 Discussion

The goal of our study was to examine why and when dirty-task frequency impairs the quality of work relations. In line with our assumptions, we show that employees' perceptions of identity-based subgroups mediate the relationships between dirty-task frequency and perceived relationship conflict and surface acting. Employees who frequently perform a dirty task are more likely to perceive splits into identity-based subgroups within their work team, which, in turn, relates to more perceived relationship conflict and surface acting. In contrast to our expectations, supervisor support did not moderate the relationship between dirty-task frequency and perception of identity-based subgroups. However, we found a buffering effect of perceived supervisor support in conjunction with perceived organizational value of diversity. In organizations perceived as valuing diversity, a high level of perceived supervisor support prevented the perception of identity-based subgroups; in organizations perceived as valuing homogeneity, the perception of identity-based subgroups was always at a high level, regardless

of the frequency with which employees perform dirty tasks. These findings contribute to both the dirty-task literature and the diversity literature, explained in the following section.

4.6.1 Theoretical implications

Investigating how and when dirty-task frequency impairs the quality of employees' work relations extends dirty-task literature in several ways. First, we extend research on the negative effects of performing dirty tasks (cf. Baran et al., 2012) by investigating consequences of dirty tasks for relationships with co-workers (perceived relationship conflict, surface acting) and customers at work (surface acting). Thereby, we address the important question of how frequently performing dirty tasks influences employees' work relations. Our results suggest that employees frequently involved in dirty tasks are somewhat stuck in a vicious cycle. As indicated, performing dirty tasks involves a high investment of employees' resources to cope with the task itself and to manage one's identity. However, as identity work likely results in the perception of identity-based subgroups that, in turn, fosters perceived relationship conflict and surface acting, employees must invest even more resources dealing with these consequences (e.g., performing surface acting demands cognitive resources to adjust one's emotions to those required). In line with previous findings (e.g., Baran et al., 2012), employees' personal resources are depleted at work, making meeting demands from other domains of life more difficult (e.g., family and friends) (ten Brummelhuis & Bakker, 2012). Thus, employees continuously face a threat of depleted resources, which explains negative effects on their well-being and work-life interference that previous studies identify (Baran et al., 2012).

Second, our research opens the "black box" of cognitive processes that transmit the negative effects of dirty-task frequency. Responding to the call of Baran et al. (2012), we integrate social identity theory into dirty-task research by investigating the perception of identity-based subgroups as a mediator between dirty-task frequency and the quality of work relations. Employees who frequently perform dirty tasks build a specific work-related identity

that differs from other employees' work-related identities. Handling stigmatization and stereotypes and achieving a positive sense of self, leads to more frequent engagement in social-comparison processes. In turn, social comparisons highlight splits into identity-based subgroups associated with perceived relationship conflict and surface acting. Having found the perception of identity-based subgroups to be only a partial mediator in the relationship between dirty-task frequency and perceived relationship conflict, but a full mediator in the relationship between dirty-task frequency and surface acting, we accentuate that different sets of cognitive mechanisms account for different dirty-task outcomes. Therefore, future research should examine additional mediators (e.g., perceived social-identity threat) to deepen our understanding of why employees must face relationship conflict when they frequently perform dirty tasks.

Third, we extend dirty-task research by taking a diversity perspective. Today's organizations increasingly emphasize on team-work in achieving their goals (Mathieu, Tannenbaum, Donsbach, & Alliger, 2014). Thus, dirty-task frequency may become a diversity dimension that characterizes team structure. In this case, some team members may frequently perform a specific dirty task whereas others do so less frequently or never. This diversity can separate team members on the basis of different identity dynamics (Harrison & Klein, 2007). Stigmatization can cause employees to perceive a gap between the desired identity of "valued contributor" to the organization and society, and the devalued or degraded identity. To close this gap, employees may try to make sense of their identity and create a specific work-related identity different from those who less often or never perform dirty tasks.

In such separated teams, identity-based subgroups are likely to occur (Carton & Cummings, 2012), particularly visible among employees who frequently perform dirty tasks and, therefore, repetitively engage in identity work. Separation-based diversity is associated with negative team outcomes (e.g., more relationship conflict, less cohesion, and lower performance) (Harrison & Klein, 2007). Negative individual-level outcomes may also originate

in this kind of diversity. Thus, future research should see dirty tasks from the perspective of diversity and further examine their consequences in multilevel designs. To do so, researchers should explore dirty-task frequency on the team level and outcomes on both the individual level and the team level to draw inferences for teams, subgroups, and individuals. This would also extend our understanding of (negative) spillover effects on employees not involved in dirty tasks but working in a team where other members frequently perform (e.g., stigmatization due to team members' performance of dirty tasks without doing the task oneself).

However, not every type of dirty task seems to relate to employees' perceptions of identity-based subgroups. Supplementary analyses, for cleaning client excrement or wound secretions as another physically tainted dirty task, revealed a different pattern of results. For this dirty task, frequency did not relate to employees' perceptions of identity-based subgroups, perceived relationship conflict, and surface acting. Thus, our results suggest that whether the frequency with which employees perform a dirty task affects their work-related identity depends on the content of the specific task (i.e., end-of-life care or cleaning clients). In turn, if the task content does not relate to employees' work-related identity, employees need not engage in social comparisons and managing their social identity, which may foster employees' perceptions of splits into identity-based subgroups. This requires investigating explicit (dirty) tasks and their specific relationships with the perception of different types of subgroups, on the one hand, and, on the other hand, (negative) consequences for employees. This differentiation is also in line with diversity research that suggests investigating specific dimensions of diversity instead of overall measures (Harrison & Klein, 2007). Moreover, other types of dirty tasks, such as morally or socially tainted tasks, should also be investigated more deeply in the future to draw a complete picture. For example, in teams where only some members perform tasks displaying a servile relationship with customers (i.e., socially tainted dirty tasks), and other members do not, status differences might become more visible for those frequently performing the dirty task (*perception of resource-based subgroups,* Carton & Cummings, 2012).

Our finding that a fit between perceived supervisor support and perceived organizational value of diversity can buffer negative consequences of dirty-task frequency (i.e., perception of identity-based subgroups, perception of relationship conflict, surface acting) highlights the importance of considering contextual factors in research on dirty tasks. Organizations differ in their efforts to support employees who frequently perform dirty tasks, so future research designs must account for such differences. Investigating the contingencies of employees' performing dirty tasks helps to identify contextual factors that, on the one hand, diminish the exploitation of personal resources and, on the other hand, improve employees' well-being.

Moreover, the buffering effect of combining perceived supervisor support with perceived organizational value of diversity on the relationship between dirty-task frequency and employees' perceptions of identity-based subgroups delivers important insights for diversity research. As people react to the perception of reality rather than to objective characteristics (Hobman et al., 2004) and associating the perception of (identity-based) subgroups with rather negative outcomes (e.g., Carton & Cummings, 2012; Harrison & Klein, 2007; Shemla et al., 2016), knowing whether organizational and situational factors foster or hinder the perception of identity-based subgroups in work teams is vitally important. Varying results in the diversity literature cause researchers to draw attention to contextual factors that explain these inconsistencies (e.g., Joshi & Roh, 2009; van Knippenberg et al., 2004). We contribute by investigating perceived supervisor support and its fit with the organizational value of diversity as contextual factors that prevent dirty-task frequency from triggering perception of identity-based subgroups.

However, the buffering effect of perceived supervisor support only occurs in combination with the perceived organizational value of diversity. This contrasts with our proposition, based on conservation of resources theory (Hobfoll, 1989; Hobfoll et al., 1990), that supervisor support alone is an efficient substitute for lost resources. An explanation for this finding lies in the organizational context in which supervisor support takes place. As our results

suggest, supervisor support is a valuable resource if an organization values workforce diversity instead of homogeneity. In this case, the organization creates a supportive environment where employees experience appreciation for performing dirty tasks and are valued as vitally important contributors to organizational performance. If supervisors also support their team members by appreciating them and treating them equally fairly, they provide valuable resources that substitute for employee resources lost in performing dirty tasks. Thereby, supervisor support helps to create a positive sense of self, closes gaps between identity-based subgroups, and prevents the perception of identity-based subgroups. However, an organization that values homogeneity in its workforce may cause a general threat to employees who differ from the norm, since they work in an organization that does not appreciate their differing from others. To fight this threat, employees invest resources that they will lack in other situations. As performing dirty tasks also demands many personal resources, supervisor support is not sufficient to substitute for them all. Thus, supervisors' behavior and organizational values must fit, to make support a valuable resource for employees who frequently perform dirty tasks.

Moreover, our results complement the qualitative findings of Chrobot-Mason et al. (2009). Their study names different values, differential treatment, and insulting or humiliating actions as triggers that evoke social-identity conflict that dirty task performance can also elicit. If a team is diverse regarding its members' dirty-task frequencies, other organizational members and society treat team members differently. Stereotypes and stigmatization can appear as insulting or humiliating actions, especially if they stem from co-workers. As a consequence of these devaluing experiences, employees who frequently perform dirty tasks build a specific work-related identity that further differentiates them from team members not frequently involved in dirty tasks. Thus, task content or frequency of performing a specific task can be triggers that activate the perception of identity-based subgroups.

4.6.2 Practical implications

Our research has implications for organizations performing dirty tasks, as well as for managers and employees in these organizations. For example, the organization should highlight and value diversity instead of homogeneity by shaping a corporate image that attracts a diverse workforce (Avery & McKay, 2006). By doing so, organizations not only provide current employees with support and appreciation but also signal to possible future employees in the job market the worth of working for this organization. Moreover, if an organization demonstrates that it truly values diversity (e.g., by promoting a diverse workforce or publicly appreciating the contribution of its employees to the common good), it should also make its supervisors accountable for the success of these initiatives and for treating all members equally fairly. If supervisors do not act in compliance with organizational rules of fairness, particularly employees outside of the predominant group will perceive not only a psychological contract breach (Chrobot-Mason, 2003) but also splits into identity-based subgroups that, in turn, will result in perceived relationship conflict and surface acting.

Offering a mix of diversity and leadership training could address this. On the one hand, training should provide supervisors with a diversity mindset (van Knippenberg et al., 2013) to ensure their compliance with organizational rules regarding diversity and fairness. On the other hand, cultivating specific leadership styles, such as considerate and transformational leadership, could weaken the effects of (perceived) subgroups and guide supervisors toward providing appreciation to all employees and interacting fairly with them (cf. Homan & Greer, 2013; Kunze & Leicht-Deobald, 2014). Managers should learn how to prepare employees to perform dirty tasks frequently and to deal with the consequences. For example, Ashforth et al. (2017) advise managers to prepare employees for possible stigmatization in a new job that requires dirty-task performance. They also suggest that supervisors foster social support among employees and offer team-based debriefing (e.g., after traumatic events, such as a death) to help prevent resource depletion and increase employees' well-being.

Organizations should also help employees prevent arriving at a lack of resources. In order to feel valued, employees who frequently perform dirty tasks need to know that their work makes an essential contribution to organizational performance – for example, showing appreciation by valuing their tasks in public (e.g., on homepages, in interviews). As a result, caregiving services fight stigmatization, thus reducing another source of threats and creating better working conditions that prevent turnover and attract new applicants.

In addition, supervisors should distribute equally among members of work teams the frequency with which employees perform dirty tasks. This counteracts "dirty-task frequency" becoming a task-related diversity dimension preventing identity dynamics that lead to identity-based subgroups. Also, it could reconcile differences in resource investment among employees and prevent some feeling physically and psychologically exhausted. Employees could perceive more fairness and support and fewer splits into identity-based subgroups.

When supervisors act in line with organizational rules of fairness and show appreciation to all employees equally, they also prevent relationship conflict in work teams that hinders team performance (De Dreu & Weingart, 2003). Furthermore, supervisors can implement mentoring programs in regular meetings with more experienced employees to talk about their feelings and worries, helping employees to cope with emotional exhaustion due to performing dirty tasks. This not only assists in building up resources but also prevents surface acting. If employees can show their true feelings in a psychologically safe setting and feel better afterwards, they do not need to hide their true feelings before customers and perform surface acting. This confirms advice from Ashforth et al. (2017), who suggest that managers should also coach their employees on interacting with customers (e.g., in cases of direct confrontation by stigmatization), protecting employees from hazards (e.g., defending them and counteracting stigmatization).

4.6.3 Limitations and implications for future research

Our study has some limitations. First, our data rely on employee self-reported measures, appropriate when assessing phenomena that employees can best judged, such as the perception of subgroups, perceived relationship conflict, and surface acting (Spector, 1994). However, to measure characteristics of the supervisor (e.g., supervisor support) or the organization (e.g., organizational value of diversity), future research may avoid same-source bias by including a second rating by the supervisor.

Second, to reduce common method variance, we used a two-phase study design that assessed independent and dependent variables at two different points in time (Podsakoff, MacKenzie, & Podsakoff, 2012). To address same source problems, we used a post hoc confirmatory factor analysis, applying the marker technique (Lindell & Whitney, 2001; Richardson et al., 2009) to detect common method variance. Although results indicate common method variance may not strongly threaten our data, to better account for the relevance of time precedence when examining mediation models (Shadish, Cook, & Campbell, 2002), having three different time points for measuring independent variables, mediator variables, and dependent variables would have further reduced the threat of common method variance. We also used post hoc measures to account for possible endogeneity problems. Although we find no support that endogeneity influences our results, future studies should manipulate the perception of identity-based subgroups in experiments (e.g., align teams according to objective faultlines and trigger their perception by task design). As experimental manipulations are natural instruments (Antonakis et al., 2010), they allow causal interpretation of the results.

Third, our sample is rather small, even if it meets the criteria for powerful statistical tests that detect medium to large effects (J. Cohen et al., 2003). Despite a huge public debate in Germany about the caregiving sector and how to improve caregivers' work situation, the rates of response to take part in this study were somewhat poor. One reason may be the involvement in dirty tasks. As Baran et al. (2012) show, employees who perform dirty tasks do not want to

talk with outsiders about their job. They try to hide their tasks and do not want to admit what they do for a living. Although we positively framed our invitation to the study, fear of losing face might be a reason for caregivers not taking part in the study. Moreover, our sample came only from the caregiving sector and addressed only one type of dirty task. To generalize our findings, future research should expand this work to other sectors (e.g., occupations with distinct prestige and other kinds of taint) and other types of dirty tasks.

Fourth, beyond dirty tasks, future diversity research must investigate the relation of certain tasks to the perception of certain subgroups. For example, tasks that require creative input (e.g., brainstorming) may foster the perception of knowledge-based subgroups (e.g., subgroups based on different expertise). Members with different expertise will provide distinct ideas and opinions. Consequently, team members will recognize various approaches to problem-solving and integrate these into their mindset of who knows best (Carton & Cummings, 2012). If another task requires similar solutions, team members likely become aware of the different expertise of various members and perceive knowledge-based subgroups. In contrast, tasks (e.g., bargaining) or situations (e.g., meetings about resource allocation) that highlight different status or distinct access to resources will rather elicit the perception of resource-based subgroups than the perception of identity-based or knowledge-based subgroups.

4.7 Conclusion

The current study aimed to investigate why and when dirty-task frequency results in perceived relationship conflict and surface acting. Employees' perceptions of identity-based subgroups mediate the relationship between dirty-task frequency and perceived relationship conflict and surface acting. Our results also show a buffering effect of perceived supervisor support in conjunction with perceived organizational value of diversity. Only in organizations perceived as valuing diversity do high levels of perceived supervisor support prevent perception of identity-based subgroups of employees frequently performing dirty tasks.

5. Perceived subgroups and employees' elaboration of information and perspectives

5.1 Abstract

Integrating the theory of subgroups in work teams and the categorization-elaboration model, this paper examines the indirect effects of employees' perceptions of different types of subgroups on their elaboration of information and perspectives through perceived social-identity threat (for identity-based subgroups), perceived procedural and distributive fairness (for resource-based subgroups), and perceived transactive memory system (for knowledge-based subgroups). It also explores the moderating effects of perceived employee status for resource-based subgroups. We conducted a three-phase online-survey study with 200 German employees. Findings support the proposed negative indirect effect of perceived identity-based subgroups on employees' elaboration of information and perspectives through perceived social-identity threat. In addition, the findings also show a negative indirect effect of perceived resource-based subgroups on employees' elaboration of information (but not perspectives), through perceived procedural fairness (but not distributive fairness), only moderated by perceived employee status for information-sharing as the outcome variable. We found no statistically significant indirect effect of perceived knowledge-based subgroups on employees' elaboration of information and perspectives through the perceived transactive memory system. Implications for the diversity literature and managerial practice are discussed.

Keywords: diversity, elaboration of information and perspectives, perceived fairness, perceived social-identity threat, subgroup, transactive memory system

5.2 Introduction

While teams in today's organizations continue to be vitally important and a key factor of organizational success (Kozlowski & Bell, 2013), the composition of teams has changed over the years. Societal and demographic changes are only two causes of teams becoming increasingly diverse. Some teams spread all over the globe and must nonetheless interact successfully to accomplish desired goals. However, diverse teams are not always successful. Contingent on various individual and situational factors, diversity may lead to either positive or negative outcomes (e.g., Bell et al., 2011; Joshi & Roh, 2009). In particular, splits into subgroups can impair team processes (cf. Thatcher & Patel, 2012). However, some types of subgroups also might have positive effects (Carton & Cummings, 2012; van Knippenberg et al., 2004).

Our study aims to complement diversity research and gain further insights into why the perception of different types of subgroups can result in either positive or negative individual-level outcomes. Thus, integrating the theory of subgroups in work teams (Carton & Cummings, 2012) and the categorization-elaboration model (van Knippenberg et al., 2004), our study examines how employees' perceptions of different types of subgroups results in enhanced or decreased elaboration of information and perspectives. We assume that individuals' elaboration of information and perspectives is an important predictor of team-level elaboration of information and perspectives because teamwork emerges from individual-level phenomena (Klein & Kozlowski, 2000; Kozlowski & Chao, 2012; Kozlowski & Klein, 2000). Elaboration of information and perspectives in teams has been proposed as a precondition for team performance (van Knippenberg et al., 2004). Also, empirical research has shown that elaboration of information and information-sharing benefit for team performance (e.g., Maynard, Mathieu, Gilson, Sanchez, & Dean, 2019; Mesmer-Magnus & DeChurch, 2009). Some studies, such as that by Roh, Chun, Ryou, and Son (2019) show that information-sharing

is positively related to firm performance (e.g.,). Thus, individuals' elaboration of information and perspectives is an important step toward effective teamwork.

Diversity research draws on the social categorization/similarity attraction perspective to account for negative effects of team diversity and on the information/decision-making perspective to illuminate the positive effects of team diversity (for a review, see Williams & O'Reilly, 1998). To clarify the positive and negative effects of diversity in work teams, van Knippenberg et al. (2004) propose the categorization-elaboration model that combines these two perspectives to explain the elaboration of information and perspectives in work teams. Based on the information/decision-making perspective, they propose that team diversity is positively related to the elaboration of task-relevant information and perspectives in teams. This means that team members should be more likely to exchange and discuss information and ideas if the team consists of members who are different from each other on any diversity dimension (e.g., age, sex, nationality, beliefs, values). However, based on the social categorization perspective, they further propose that if social categorization (i.e., the differentiation between one's ingroup and one or more outgroups) takes place, problematic inter-subgroup processes can occur, particularly outgroups threaten an employee's own identity. Low levels of cohesion and commitment, and a high amount of relational conflict reflect these problematic inter-subgroup processes in teams where social categorization takes place. In turn, such processes decrease the likelihood that diversity will help to elaborate information and perspectives in teams (van Knippenberg et al., 2004).

Van Knippenberg et al. (2004) point out "that all dimensions of diversity may elicit elaboration of task-relevant information [and perspectives] as well as social categorization processes" (p. 1011). However, in their theory of subgroups in work teams, Carton and Cummings (2012) propose that different types of faultlines – i.e., hypothetical dividing lines that separate a team into several homogeneous subgroups based on the alignment of at least one diversity dimension (Lau & Murnighan, 1998) – may elicit different types of subgroups. Based

on Harrison and Klein's (2007) differentiation, Carton and Cummings (2012) distinguish between separation-based faultlines reflecting differences in values, disparity-based faultlines reflecting differences in the possession of resources, and variety-based faultlines reflecting qualitative differences in team members' knowledge and information processing. Carton and Cummings (2012) propose that separation-based faultlines, formed based on different social identities of the subgroup members (e.g., based on values or beliefs), will most likely result in identity-based subgroups. Disparity-based faultlines, characterized by a split based on resources, such as status or decisive power, will most likely result in resource-based subgroups. Variety-based faultlines, based on different knowledge, expertise, or functional background of the subgroup members, will most likely elicit knowledge-based subgroups. Carton and Cummings (2012) conclude that in line with the information/decision-making perspective, knowledge-based subgroups should benefit team outcomes; in line with the social categorization/similarity attraction perspective, identity-based and resource-based subgroups should have more negative effects on team outcomes.

Our study contributes to the theory of subgroups in work teams by theoretically explaining why the perception of different types of subgroups results in the cognitive processes that Carton and Cummings (2012) propose, and by empirically testing these cognitive processes. We examine them as explaining mechanisms for employees' perceptions of different types of subgroups resulting in enhanced or decreased elaboration of information and perspectives. This helps us to understand how the perception of subgroups relates to cognitive processes that serve as the basis for employees' behavior (i.e., elaboration of information and perspectives), which, in turn, also shapes team behavior (Kozlowski & Chao, 2012). Moreover, we answer the call of the categorization-elaboration model (van Knippenberg et al., 2004) for empirical testing the effects of different types of diversity on employees' elaboration of information and perspectives, to get a broader understanding of why some teams benefit from diversity and some do not. In addition, by investigating employees' elaboration of information

and perspectives as an individual-level outcome, we follow the arguments of Guillaume et al. (2014), who propose that team diversity has its basic effects in individual team members' reactions to diversity, which, in turn, influence team processes.

5.3 Theory and hypotheses

5.3.1 Processes between identity-based subgroups and the elaboration of information and perspectives

Building on social identity theory (Tajfel & Turner, 1979), Carton and Cummings (2012) propose that social-identity threat is a key process between identity-based subgroups. Thus, in the first step, we elaborate the theoretical rationale for the proposed process between identity-based subgroups, arguing that employees' perceptions of identity-based subgroups will positively relate to perceived social-identity threat. Then, we explain why perceived social-identity threat will negatively relate to employees' elaboration of information and perspectives.

According to social identity theory, individuals form groups with like-minded others to maintain a positive self-concept. Evaluating one's ingroup occurs by making social comparisons with relevant outgroups (Tajfel & Turner, 1979). Consequently, in work teams that split into identity-based subgroups, members of one identity-based subgroup compare themselves with prototypes of other identity-based subgroups. Tajfel and Turner (1979) propose that these comparisons can result in two different outcomes. On the one hand, comparisons can result in positive distinctiveness, with subgroup members feeling high self-esteem, trying to defend the positive distinction, and likely taking actions that harm outgroup members, such as discrimination and stereotyping. On the other hand, comparisons can result in negative distinct evaluations, with individuals feeling low self-esteem and dissatisfaction with their current subgroup membership, and likely striving to leave the subgroup and join a more positively evaluated one or try to enhance their self-esteem.

From an ingroup perspective, these different results might originate in two possible causes of social-identity threat. On the one hand, if one's ingroup has a positive distinct identity,

social-identity threats may arise through attempts by outgroup members to gain a more valuable social identity. These attempts (e.g., high competition between subgroups or discrimination and stereotyping) aim to decrease the positive self-esteem of the ingroup, thus threatening ingroup members' social identity (Tajfel & Turner, 1979). On the other hand, one's ingroup having a negative distinct identity may serve as a basis for experiencing discrimination or stereotyping by outgroups with more positive identities and, in turn, threaten ingroup members' identity.

Outgroup members might also feel threats to their social identity, becoming either victims of stereotypes and discrimination (if they have negative distinct identities) or in direct competition with the ingroup (if they have positive distinct identities). Taken together, we assume that members of a team that splits into identity-based subgroups must deal with threatened identity, regardless of whether the comparison of their social identity with those of other subgroups results in a positive or a negative distinct identity.

What are the consequences of feeling threats to one's social identity? On the team level, Carton and Cummings (2012) propose perceived social-identity threat as a key process that hinders overall team performance. Since team elaboration of information and perspectives is a significant determinant of team performance (Resick, Murase, Randall, & DeChurch, 2014), we assume that perceived social-identity threat also decreases elaboration of information and perspectives. This should also hold at the individual-level because team information elaboration involves individual team members sharing their information with others and elaborating information they receive from others (van Knippenberg et al., 2004).

According to the categorization-elaboration model of van Knippenberg et al. (2004), a threatened identity impairs team processes, such as communication and cohesion, and increases relationship conflicts. Since these processes propose to decrease the relationship between diversity and the elaboration of information and perspectives, perceived threats to social identity will likely hinder that elaboration. Social identity theory argues in the same way. Feeling one's social identity under threat fosters competition instead of collaboration,

enhancing ingroup favoritism (Tajfel & Turner, 1979). Thus, members of different identity-based subgroups will not share relevant information and we can infer that members of one identity-based subgroup do not try to take the perspective of other subgroups to understand their point of view or find other solutions to a problem.

Previous research also shows inhibited team processes between identity-based subgroups. Teams with faultlines are found to experience more conflict and to lack cohesion and performance (Thatcher & Patel, 2012). Mistrust and rivalry instead of cooperation and cohesion characterize team climate, and such teams pursue subgroup goals are pursued more than the goals of the overall team (for a review, see Thatcher & Patel, 2012). Since individual-level processes shape team processes (Kozlowski & Chao, 2012), we assume that impaired individual performance contributes to negative effects in teams with subgroups. Consequently, employees who perceive stronger splits into identity-based subgroups within their work team will also perceive greater social-identity threats. In turn, employees perceiving threats to their social identity will decrease their elaboration of information and perspectives. Thus, we propose:

> *Hypothesis 1: There is a negative indirect effect of employees' perceptions of identity-based subgroups on employees' elaboration of information and perspectives through perceived social-identity threat.*

5.3.2 Processes between resource-based subgroups and the elaboration of information and perspectives

Carton and Cummings (2012) point out that a key process between resource-based subgroups is the asymmetrical perception of fairness. Thus, we first theoretically corroborate this proposition in light of social dominance theory (Sidanius & Pratto, 1999) and explain why perceived employee status moderates, on the one hand, the relationships between employees' perceptions of resource-based subgroups and perceived fairness and, on the other hand, between perceived fairness and elaboration of information and perspectives.

In diverse teams, employees' own status determines whether they perceive as fair or unfair (Carton & Cummings, 2012) the procedures in their teams "that lead to decision outcomes" (*procedural fairness*) (Colquitt, 2001, p. 386) and the final distribution of decision outcomes, such as status or access to resources (*distributive fairness*) (Colquitt, 2001). Social dominance theory (Sidanius & Pratto, 1999) can explain this assumption, in that it describes how a hierarchy between two or more groups develops and why the hierarchy often maintains stablility over a long time period (Pratto, Sidanius, & Levin, 2006). On the one hand, members of high-status groups have access to more resources of positive value (e.g., money, decisive power) than members of low-status groups (Sidanius & Pratto, 1999). On the other hand, because they have more power than low-status groups, members of high-status groups can also allocate things of negative value to low-status groups, such as additional tasks (Sidanius & Pratto, 1999). Since the goal of high-status groups is to keep status differences as they are, or even enhance them to the group's advantage, they also promote the idea that social hierarchies are fair (Sidanius & Pratto, 2012). Consequently, we assume that members of high-status groups will perceive the procedures and the distribution of resources as fair.

In contrast, members of low-status groups have less access to resources and less decisive power (Sidanius & Pratto, 1999). Consequently, we assume that they will perceive procedures and distribution of resources as unfair and try to gain a higher status. Thereby, they sometimes take actions that harm their own ingroup members (Pratto et al., 2006), enhancing the perception of unfairness. Taken together, employees who are more likely to perceive resource-based subgroups and belong to low-status subgroups will perceive less procedural fairness regarding team decision-making and less distributive fairness regarding their status in the team. In contrast, employees who are more likely to perceive resource-based subgroups and belong to high-status subgroups will perceive greater procedural fairness regarding team decision-making and greater distributive fairness regarding their status in the team. Therefore, when employees perceive their team to be split into resource-based subgroups, the perception of their

own status determines whether they perceive fairness, in line with Carton and Cummings's (2012) proposition of asymmetrical perceptions of fairness between resource-based subgroups. Thus, we propose:

> *Hypothesis 2a: Perceived employee status positively moderates the relationships between employees' perceptions of resource-based subgroups and i) perceived procedural fairness and ii) perceived distributive fairness, such that the relationships are positive for high-status subgroup members and negative for low-status subgroup members.*

Perception of unfairness is likely to elicit negative team processes, such as competition and focus on individual instead of team outcomes (Mannix, 1993), that hinder effective elaboration of information and perspectives in the team (van Knippenberg et al., 2004). Moreover, previous research finds that procedural and distributive fairness foster organizational citizenship behavior and trust in coworkers and supervisors, and decrease conflicts (Cohen-Charash & Spector, 2001). These may be preconditions for an effective exchange of information and perspectives in work teams. If they are missing, elaboration of information and perspectives are less likely.

Diekmann, Sondak, and Barsness (2007) point out that "perceptions of status affect how individuals react to fair or unfair procedures and treatment" (p. 163). Thus, we argue that the relationship between perceived fairness and employees' elaboration of information and perspectives also depends on perceived employee status. As explained above, members of high-status subgroups perceive their status as justified and team decision processes as fair. They do not want to jeopardize their social ties with other high-status subgroup members by disagreeing with the common opinion or adding unique knowledge that contradicts it (Thomas-Hunt, Ogden, & Neale, 2003). Thus, employees who perceive procedural and distributive fairness and belong to high-status subgroups will engage less in elaboration of information and perspectives.

In contrast, members of low-status subgroups do not have much access to resources. Even if they perceive team decision processes as fair and their status as justified, they will aim to close the gap between high- and low-status subgroups and to gain more resources. Therefore, they might engage in competition for limited resources and try to outperform members of subgroups with higher status. Members of low-status subgroups try to impress members of high-status subgroups with unique knowledge (Thomas-Hunt et al., 2003). Consequently, we assume that employees who are more likely to perceive procedural and distributive fairness and belong to low-status subgroups engage more in elaboration of information and perspectives. Thus, we propose:

> *Hypothesis 2b: Perceived employee status negatively moderates the relationships between i) perceived procedural fairness and ii) perceived distributive fairness and employees' elaboration of information and perspectives, such that the relationships are negative for high-status subgroup members and positive for low-status subgroup members.*

Altogether, we expect negative indirect effects of employees' perceptions of resource-based subgroups on employees' elaboration of information and perspectives through perceived procedural and distributive fairness. Employees who are more likely to perceive resource-based subgroups and who belong to high-status subgroups will perceive more procedural and distributive fairness and, in turn, engage less in elaboration of information and perspectives. In contrast, we claim that employees who are more likely to perceive resource-based subgroups and who belong to low-status subgroups will perceive less procedural and distributive fairness and, in turn, will engage in more elaboration of information and perspectives. Thus, we propose:

> *Hypothesis 2c: There is a negative indirect effect of employees' perceptions of resource-based subgroups on employees' elaboration of information and perspectives through i) perceived procedural fairness and ii) perceived distributive fairness.*

5.3.3 Processes between knowledge-based subgroups and the elaboration of information and perspectives

The information/decision-making perspective in diversity research can explain processes between knowledge-based subgroups (e.g., van Knippenberg et al., 2004). Van Knippenberg et al. (2004) propose that positive effects of team diversity, such as the elaboration of information and perspectives, originate in the diversity of information and perspectives, such as when employees perceive knowledge-based subgroups. Members of knowledge-based subgroups possess unique skills, task-relevant knowledge, and experiences (Carton & Cummings, 2012). They bring along distinct abilities and can foster discussions by contributing distinct opinions and perspectives. Thus, the theory of subgroups in work teams (Carton & Cummings, 2012) holds that team members in teams with knowledge-based subgroups create a common understanding or mental model about each other's abilities, strengths, weaknesses, and expertise. Bringing these propositions together, we expect that employees who perceive knowledge-based subgroups also perceive a transactive memory system that, in turn, fosters their elaboration of information and perspectives. Therefore, we first explain why employees should perceive a transactive memory system when working in a team perceived to be split into knowledge-based subgroups. Thereafter, we build our arguments for why the perception of a transactive memory system is likely to be positively related to employees' elaboration of information and perspectives.

A transactive memory system is an example of a common understanding among team members. Defined as a shared system that individuals in relationships develop and use for encoding, storing, and retrieving several items of information about different domains (Ren & Argote, 2011, Ren et al., 2006; Wegner, 1987), it includes a structural and a procedural component (Ren & Argote, 2011). The structural component encloses the individual's memory and its links to the collective knowledge network of his or her work team (Ren & Argote, 2011). This means that individual knowledge is combined with knowledge about other team members'

expertise (i.e., “who knows what”). The procedural component consists of the three processes of updating knowledge, information allocation, and retrieval coordination, which occur during encoding, storing, and retrieving information from others (cf. Ren & Argote, 2011).

Splits into knowledge-based subgroups in a work team are associated with different sources of distinct knowledge in the team (Carton & Cummings, 2012). This implies that employees who perceive the team to be split into knowledge-based subgroups have built mental representations of the information distributed among team members, and can allocate these different sources of knowledge. In other words, employees who perceive their team to be split into knowledge-based subgroups know “which team members know what,” an aspect of a transactive memory system (Argote & Guo, 2016). Consequently, employees’ perceptions of knowledge-based subgroups will be positively related to the perception of a transactive memory system.

According to Argote and Guo (2016), a transactive memory system enables employees to contact other team members they perceive to be experts in specific areas with which the employee needs help. We assume that this demands several behaviors from the team member who searches the contact. First, the team member must reflect on who knows what; that is, he or she must occupy the position of other team members and take their perspective. Second, when contacting another member, the employee first must share his or her information about the task or the problem to get the necessary information. Third, to solve the problem, the employee must elaborate the newly gained information and combine it with his or her prior information. Thereby, both employees can also discuss different perspectives and find a solution together. To conclude, an employee who perceives a transactive memory system must elaborate information and perspectives to make use of the transactive memory system. Thus, we propose that perceiving a transactive memory system positively relates to employees’ elaboration of information and perspectives. Arguments from previous research emphasize this assumption. For example, Ren and Argote (2011) show that transactive memory systems

positively relate to team creativity and team performance. Since team elaboration of information also influences team performance (Maynard et al., 2019), and this team process is assumed to emerge from individual-level phenomena (Klein & Kozlowski, 2000), we infer that employees' elaboration of information and perspectives benefits from perceived transactive memory systems.

To sum up, we assume that employees who perceive stronger splits into knowledge-based subgroups in their work team will more likely perceive a transactive memory system in the team, associated with better elaboration of information and perspectives. Thus, we propose:

Hypothesis 3: There is a positive indirect effect of employees' perceptions of knowledge-based subgroups on employees' elaboration of information and perspectives through perceived transactive memory system.

5.3.4 Summary of hypotheses

Figure 13 shows our overall research model.

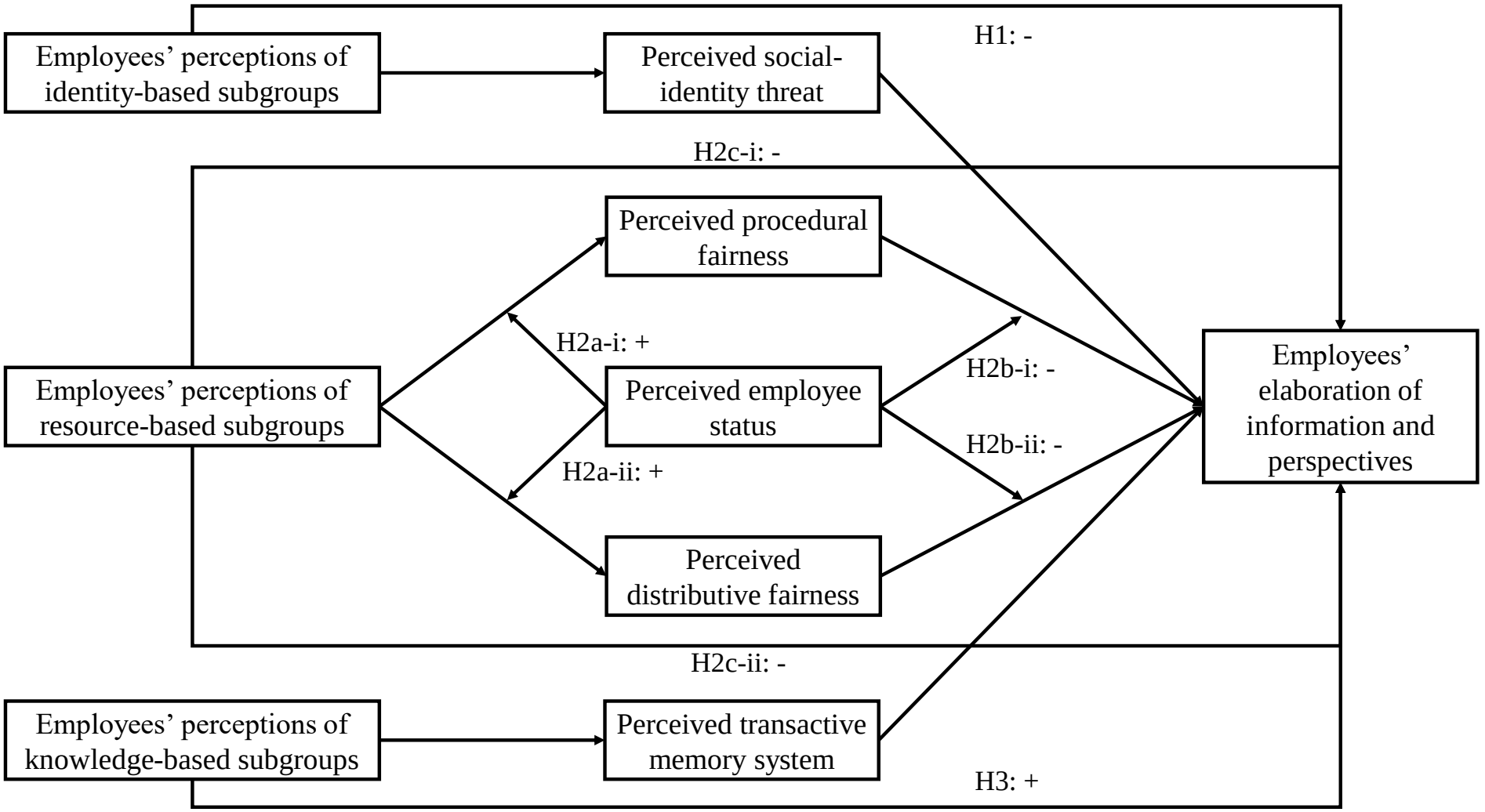


Figure 13. Research model of employees' elaboration of information and perspectives. + indicates "the stronger . . ., the stronger . . ."; - indicates "the weaker . . . , the stronger . . ."/ "the stronger . . ., the weaker . . ."

5.4 Method

5.4.1 Sample and procedures

We conducted an online-survey study in three phases. We assessed our independent, mediator, and dependent variables at three different points in time to reduce common method bias (Podsakoff et al., 2003). We asked German employees with a current employment contract to take part in our study. A total of 376 employees agreed to participate. They received an e-mail invitation containing the link to the Phase 1 survey. After two weeks, participants from Phase 1 received an invitation to the Phase 2 survey, and two weeks later, participants from Phase 2 received an invitation to the Phase 3 survey. Out of the 376 invited employees, 245 took part in the Phase 1 survey (65.16% response rate), 213 in the Phase 2 survey (86.94% response rate from phase 1, 56.65% overall response rate), and 206 participants completed the three surveys (84.08% response rate from Phase 1, 96.71% response rate from Phase 2, and 54.79% overall response rate). For each participant who finished the three phases, one Euro was contributed to charity. Moreover, the participants had the option to receive a short summary of the study's main results. From the 206 participants who completed the three phases, 6 individuals were excluded because they did not fulfill the sampling criteria (i.e., German, employed, working in a team).

Thus, our final sample consisted of 200 German employees from different sectors, with a mean age of 40.41 years (*SD* = 13.61, *MIN* = 18 years; *MAX* = 69 years) and an average work experience of 16.41 years (*SD* = 14.03, *MIN* < 6 months; *MAX* = 45 years). On average, participants had worked 11.49 years for their current organization (*SD* = 11.87, *MIN* < 6 months, *MAX* = 42 years). Among the participants, 52.50% were female, 24.50% had a leadership position, and 8.50% had a migration background. Team size varied from 2 to 60 members[10] (*M* = 10.28, *SD* = 8.39), and team members had worked together in the

[10] According to Kozlowski and Ilgen (2006), a team is composed of two or more individuals.

current configuration for 2.10 years on average (*SD* = 2.66, *MIN* < 6 months, *MAX* = 15 years). Average team tenure (measured as the time the participants had worked in their current team) was 5.00 years (*SD* = 5.93, *MIN* < 6 months, *MAX* = 34 years).

5.4.2 Phase 1 measures

Unless otherwise noted, participants indicated their level of agreement on a five-point scale ranging from 1 = "strongly disagree" to 5 = "strongly agree." If no German version of the respective measure was available, we applied a back-translation approach with the help of a bilingual committee (Brislin, 1970; Douglas & Craig, 2007).

Perception of subgroups. We applied a 15-item scale (see Appendix B) developed by Stabler and Rabl (2018a) to measure employees' perceptions of identity-based, resource-based, and knowledge-based subgroups. We used Carton and Cummings's (2012) and Harrison and Klein's (2007) conceptual clarifications to create items and collected subject matter experts' feedback to check for content validity of the scale. Sample items were: "My work group splits into subgroups due to similar values of subgroup members" (identity-based subgroups, α = .78); "Members of my work group form subgroups based on similar status" (resource-based subgroups, α = .83); and "In my work group, members form subgroups based on similar expertise" (knowledge-based subgroups, α = .84).

Perceived employee status. We used social dominance orientation as a proxy to measure perceived employee status. Social dominance orientation describes one's desire to be superior to other groups (Pratto et al., 1994). People who have professions that are *hierarchy-enhancing* have higher levels of social dominance orientation than people who have professions that are *hierarchy-attenuating* (Pratto et al., 1994). Thus, people with high social dominance orientation are associated with a higher hierarchical level, consistent with higher status. In line with these arguments, research shows that people in high-status groups tend to have a higher social dominance orientation than people in low-status groups (see Sidanius & Pratto, 1999). We

measured social dominance orientation on a scale of six items (α = .76) from the German version (Zick & Six, 1997, as cited in Geißler, 2008) of the social dominance scale (Sidanius et al., 1994). A sample item was: "Social equality should increase" (reverse coded).

Control variables. We controlled for age, sex, and migration background, demographic variables that can cause splits into different types of subgroups (Harrison & Klein, 2007; Tajfel & Turner, 1979). These demographic variables are also associated with other variables of interest (e.g., age and sex differences in empathy and perspective-taking) (Eisenberg & Lennon, 1983; Hoffman, 1977; O'Brien, Konrath, Grühn, & Hagen, 2013). Leadership position was another control, for its association with resource-based subgroups (Carton & Cummings, 2012), and leadership responsibility might be linked by duty to elaboration of information and perspectives. For example, managerial responsibilities include delegating tasks to the adequate employee; thus, supervisors must take a perspective on finding the best fit between person and task and instruct this person to perform the task, i.e., to share information. Moreover, we controlled for team size because teams with more members have more possibilities for subgroup splits (Carton & Cummings, 2012), and teams of different sizes benefit differently from transactive memory systems (Ren et al., 2006). Employees' time worked in their current team (*team tenure*) and the duration of the team's having worked together in their current composition (*team existence period*) may influence perceptions of team diversity (e.g., Zellmer-Bruhn et al., 2008), as well as the development of transactive memory systems (e.g., Ren & Argote, 2011). Moreover, we controlled for the frequency of team-development measures (e.g., team training) – that is, how often the team obtained development measures in its current configuration. Such training might help improve the understanding of team diversity by team members (e.g., diversity mindset) (van Knippenberg et al., 2013), thus altering the perception of team diversity. They might also improve transactive memory systems (e.g., Ren & Argote, 2011) or teamwork (e.g., Salas et al., 2008). In sum, we controlled for variables that might

influence independent, mediator, and dependent variables, a recommendation for use of controls (e.g., Becker et al., 2016; Bernerth & Aguinis, 2016).

Check for discriminant validity. We conducted a confirmatory factor analysis in AMOS 25 to demonstrate discriminant validity of our Phase 1 measures. A four-factor solution (employees' perceptions of identity-based subgroups, employees' perceptions of resource-based subgroups, employees' perceptions of knowledge-based subgroups, and perceived employee status) showed the best fit for the data (χ^2 = 299.34, *df* = 183, $p < .01$, CFI = .92, IFI = .92, RMSEA = .06). A four-factor solution was a better fit than a two-factor solution with employees' perceptions of identity-based subgroups, resource based-subgroups, and knowledge-based subgroups merged on one factor (χ^2 = 676.32, *df* = 188, $p < .01$, CFI = .66, IFI = .66, RMSEA = .11; $\Delta \chi^2$ = 376.98, Δ *df* = 5, $p < .01$). A four-factor solution was also a better fit than a one-factor solution (χ^2 = 913.84, *df* = 189, $p < .01$, CFI = .49, IFI = .50, RMSEA = .14; $\Delta \chi^2$ = 614.50, Δ *df* = 6, $p < .01$).

5.4.3 Phase 2 measures

Unless otherwise noted, we asked participants to indicate their level of agreement on a five-point scale ranging from 1 = "strongly disagree" to 5 = "strongly agree." We applied a back-translation approach with the help of a bilingual committee in cases of no available German versions of the respective measures (Brislin, 1970; Douglas & Craig, 2007).

Perceived social-identity threat. Branscombe et al. (1999) describe four types of identity threat: categorization threat, distinctiveness threat, threat of value of social identity, and acceptance threat. As distinctiveness threat is associated with not being distinct enough from others, this kind of threat does not reflect a threat by outgroup members' more valuable identity and, accordingly, was not considered in our measure. We developed a scale of three items (α = .85) to account for the three relevant causes of social-identity threat. Participants were asked to indicate the frequency with which they experience situations related to

categorization threat ("How often do you feel unreasonably categorized in your work group?"), threat of value of social identity ("How often do you feel your group's value to be undermined?"), and acceptance threat ("How often do you feel your position within the team to be undermined based on your social belonging?") in their work team, on a seven-point scale ranging from 1 = "never" to 7 = "always."

Perceived distributive and procedural fairness. We assessed perceived distributive fairness with a scale of four items ($\alpha = .90$) and procedural fairness with a scale of seven items ($\alpha = .81$) from the German version (Maier, Streicher, Jonas, & Woschée, 2007) of Colquitt's (2001) organizational justice scale. A sample item for distributive fairness was: "My status reflects the effort I put into my work"; a sample item for perceived procedural fairness was: "Team decisions are made free of bias."

Perceived transactive memory system. We used the 15-item scale by Lewis (2003) to measure perceived transactive memory system ($\alpha = .79$). Lewis (2003) describes transactive memory systems as a construct that consists of the facets of credibility, specialization, and coordination. A sample item for credibility was: "I was comfortable accepting procedural suggestions from other team members." A sample item for specialization was: "Each team member has specialized knowledge of some aspect of our project." A sample item for coordination was: "Our team worked together in a well-coordinated way." Following Lewis (2004), we computed a single score for the perceived transactive memory system for each participant.

Check for discriminant validity. To show the discriminant validity of our Phase 2 measures, we conducted a confirmatory factor analysis in AMOS 25. A four-factor solution with perceived social-identity threat, perceived procedural fairness, perceived distributive fairness, and perceived transactive memory system showed the best fit for our data ($\chi^2 = 571.11$, $df = 365$, $p < .01$, CFI = .91, IFI = .91, RMSEA = .05). It was a better solution than a three-factor model in which perceived procedural fairness and perceived distributive fairness were

merged on one factor (χ^2 = 819.68, *df* = 368, *p* < .01, CFI = .80, IFI = .80, RMSEA = .08; $\Delta\chi^2$ = 248.57, Δ *df* = 3, *p* < .01). The four-factor solution was also a better fit than a one-factor solution (χ^2 = 1185.62, *df* = 371, *p* < .01, CFI = .64, IFI = .65, RMSEA = .11; $\Delta\chi^2$ = 614.51, Δ *df* = 6, *p* < .01).

5.4.4 Phase 3 measures

To measure employees' elaboration of information and perspectives, we used three variables: employees' information-sharing, perspective-taking, and information elaboration. Elaboration of information and perspectives contains three important steps (van Knippenberg et al., 2004). First, employees must take the perspective of other team members to find the best team member to contact, for example, to solve a problem. Second, when contacting another team member, the employee must provide information about his or her problem. Third, the employee must discuss and integrate the information gained from the team member with his or her own knowledge to solve the problem. Thus, we decided to include employees' information-sharing, perspective-taking, and information elaboration to depict employees' elaboration of information and perspectives.

Unless otherwise noted, participants had to indicate their level of agreement on a five-point scale ranging from 1 = "strongly disagree" to 5 = "strongly agree." If there was no German version of the respective measure available, we applied a back-translation approach with the help of a bilingual committee (Brislin, 1970; Douglas & Craig, 2007).

Information-sharing. We used the three-item scale of Bunderson and Sutcliffe (2002) to measure employees' information-sharing (α = .67). A sample item was: "I freely share information used to make key decisions among the members of the team."

Perspective-taking. We assessed perspective-taking with a four-item scale (α = .86) by Grant and Berry (2011). A sample item was: "On the job, I frequently try to take other's team members perspectives."

Information elaboration. We transformed Hüttermann's (2013) German seven-item scale for information elaboration to the individual level to measure employees' information elaboration (α = .79). A sample item was: "I develop new ideas based on the contribution of other team members."

Check for discriminant validity. A confirmatory factor analysis in AMOS 25 showed that the proposed three-factor solution was the best fit with our Phase 3 survey data (χ^2 = 135.01, *df* = 72, *p* < .01, CFI = .94, IFI = .94, RMSEA = .07). A three-factor solution demonstrated better fit than a two-factor solution in which information-sharing and information elaboration were merged on one factor (χ^2 = 153.09, *df* = 74, *p* < .01, CFI = .92, IFI = .92, RMSEA = .07; Δ χ^2 = 18.09, Δ *df* = 2, *p* < .01). A one-factor solution also showed worse fit than the three-factor solution (χ^2 = 278.92, *df* = 75, *p* < .01, CFI = .79, IFI = .80, RMSEA = .12; Δ χ^2 = 143.92, Δ *df* = 3, *p* < .01).

5.4.5 Additional checks

Check for common method variance. As recommended by Lindell and Whitney (2001) and Richardson et al. (2009), we conducted a confirmatory factor analysis with a marker variable to detect common method variance. We used as a marker variable openness to aesthetics, a facet of openness to experience that describes how interested individuals are in artistic and cultural aspects (McCrae & Costa, 1985), which should only have a weak or no relationship with our variables of interest. We assessed openness to aesthetics (α = .80) with a German version (Schreiber & Iller, 2016) of the NEO-PI-R (Costa & McCrae, 1992). Results indicated that common method bias might threaten our data. For Phase 1, a model in which the common latent factor was unconstrained (χ^2 = 457.14, *df* = 338, *p* < .01, CFI = .94, IFI = .94, RMSEA = .04) had a significantly better fit than a model in which the common latent factor was constrained to zero (χ^2 = 521.52, *df* = 367, *p* < .01, CFI = .92, IFI = .92, RMSEA = .05; Δ χ^2 = 64.38, Δ *df* = 29, *p* < .01). For Phase 2, the unconstrained model (χ^2 = 814.66, *df* = 579,

$p < .01$, CFI = .92, IFI = .92, RMSEA = .05) also had a significantly better fit than the constrained model ($\chi^2 = 883.37$, $df = 616$, $p < .01$, CFI = .90, IFI = .91, RMSEA = .05; $\Delta \chi^2 = 68.71$, $\Delta df = 37$, $p < .01$). For Phase 3, the unconstrained model ($\chi^2 = 339.77$, $df = 181$, $p < .01$, CFI = .89, IFI = .90, RMSEA = .07) and the constrained model ($\chi^2 = 325.63$, $df = 201$, $p < .01$, CFI = .92, IFI = .92, RMSEA = .06; $\Delta \chi^2 = 14.15$, $\Delta df = 20$, $p = .82$) did not differ significantly; thus, common method bias might not affect Phase 3 variables. As recommended by Podsakoff et al. (2003), we included openness to aesthetics as a control variable in all our analyses to account for common method bias.

Check for endogeneity. We tested our mediation models against mediation models with instrument variables using the two-stage least squares regression approach to secure our results against potential problems of endogeneity (Antonakis et al., 2010). We could not find any differences in the significance of the path coefficients of interest between the unconstrained and the constrained model (see Appendix C); thus, we assume that endogeneity does not much affect our hypothesized relationships.

5.4.6 Analyses

We analyzed our mediation models with Hayes's (2018) process tool in IBM Statistics 25 to test the proposed hypotheses. We standardized all variables and used bootstrapping to estimate standard errors ($n = 5000$ bootstrap samples). We also report standardized coefficients.

5.5 Results

5.5.1 Test of hypotheses

Table 14 presents descriptive statistics and correlations for all study variables.

Table 14

Descriptive statistics and correlations for study 3 variables

Variables	Mean	*SD*	1	2	3	4	5	6	7	8	9	10
1. Age	40.41	13.61	-									
2. Sex[a]			-.06	-								
3. Migration background[b]			.12	.14*	-							
4. Leadership position[c]			.28**	-.18*	-.03	-						
5. Team size	10.28	8.39	.04	.16*	.05	.04	-					
6. Team tenure	5.01	5.93	.50**	-.07	.04	.14	.15*	-				
7. Team existence period	2.10	2.66	.32**	-.23**	-.03	.11	-.15*	.30**	-			
8. Team development measures	2.87	1.51	-.02	-.11	-.04	.05	.08	.01	.04	-		
9. Openness to aesthetics	3.53	0.77	.19**	.32**	.09	-.07	.07	.08	-.13	.01	-	
10. Employees' perceptions of identity-based subgroups	2.74	0.78	-.02	.08	.12	.03	.05	-.08	-.00	-.18*	-.05	-
11. Employees' perceptions of resource-based subgroups	2.30	0.87	-.00	-.04	.05	.08	-.05	-.01	.04	.01	-.03	.39**
12. Employees' perceptions of knowledge-based subgroups	2.83	0.88	-.07	.07	.03	.03	.03	-.13	-.00	-.01	.01	.33**
13. Perceived employee status	1.91	0.59	.09	-.19**	.00	.06	-.08	.07	.17*	-.04	-.25**	.17*
14. Perceived social-identity threat	2.04	0.95	.07	.10	.07	-.13	.02	-.04	.01	-.07	.00	.24**
15. Perceived procedural fairness	3.76	0.58	-.12	-.18*	-.04	.13	-.03	-.03	-.06	.09	.04	-.20**
16. Perceived distributive fairness	3.78	0.74	.02	-.08	-.09	.23**	.01	-.01	.05	.11	-.03	-.16*

Table 14 continued

Descriptive statistics and correlations for study 3 variables

Variables	Mean	*SD*	1	2	3	4	5	6	7	8	9	10
17. Perceived transactive memory system	3.76	0.44	-.14*	-.14	-.15*	.04	-.08	.00	-.03	.20**	.03	-.33**
18. Information-sharing	4.23	0.59	.10	.07	-.06	.18*	-.11	-.00	-.00	.12	.21**	-.18**
19. Perspective-taking	3.67	0.69	-.02	.08	-.06	.09	-.04	-.14	-.03	.11	.31**	-.03
20. Information elaboration	4.07	0.50	.04	-.13	-.08	.14	-.10	-.01	-.02	.15*	.08	-.22**

Variables	11	12	13	14	15	16	17	18	19
12. Employees' perceptions of knowledge-based subgroups	.43**	-							
13. Perceived employee status	.14	.08	-						
14. Perceived social-identity threat	.28**	.07	.07	-					
15. Perceived procedural fairness	-.20**	-.02	-.18**	-.55**	-				
16. Perceived distributive fairness	-.04	.09	-.02	-.44**	.50**	-			
17. Perceived transactive memory system	-.14	.01	.00	-.38**	.47**	.36**	-		
18. Information-sharing	-.06	.02	-.12	-.24**	.32**	.25**	.25**	-	
19. Perspective-taking	.00	.04	-.11	-.27**	.24**	.23**	.24**	.46**	-
20. Information elaboration	-.21**	-.02	-.14*	-.41**	.43**	.34**	.43**	.50**	.36**

Note. $N = 200$; means and standard deviations are only reported for interval-scaled variables. [a] 0 = "male," 1 = "female;" [b] 0 = "no migration background," 1 = "with migration background;" [c] 0 = "leadership position," 1 = "no leadership position."

* $p < .05$

** $p < .01$

In line with Hypothesis 1, employees' perceptions of identity-based subgroups had a statistically significant and negative indirect effect on employees' information-sharing (indirect effect = -.05, 95% confidence interval (CI) = [-.09, -.01]), perspective-taking (indirect effect = -.06, 95% CI = [-.11, -.02]), and information elaboration (indirect effect = -.08, 95% CI = [-.14, -.03]) through perceived social-identity threat. In the mediation models, employees' perceptions of identity-based subgroups were not statistically significantly related to information-sharing (β = -.12, p = .10), perspective-taking (β = .05, p = .42), or information elaboration (β = -.10, p = .16) (see Table 15). Thus, perceived social-identity threat fully mediated the relationships between employees' perceptions of identity-based subgroups and employees' elaboration of information and perspectives.

We could not find moderating effects of perceived employee status on the relationships between employees' perceptions of resource-based subgroups and i) perceived procedural fairness (β = -.01, p = .84) and ii) perceived distributive fairness (β = -.02, p = .64) (see Table 16). Thus, Hypothesis 2a is not supported. However, perceived employee status statistically significantly moderated the relationship between perceived procedural fairness and information-sharing (β = .17, p < .01) (see Table 17). To further investigate the statistically significant and positive interaction effect, we plotted the two-way interaction between perceived procedural fairness and perceived employee status on information-sharing at values of one standard deviation above and below the mean (Aiken & West, 1991) (see Figure 14).

Table 15

Results of the mediation analyses for employees' perceptions of identity-based subgroups

Variables	Perceived social-identity threat	Information-sharing	Perspective-taking	Information elaboration
Controls				
Age	.17	.09	-.00	.09
Sex	.06	.12	.04	-.08
Migration background	.01	-.06	-.07	-.04
Leadership position	-.17*	.17*	.09	.07
Team size	.02	-.14	-.03	-.09
Team tenure	-.08	-.07	-.20*	-.07
Team existence period	.02	-.00	.07	-.05
Team development measures	-.01	.09	.10	.11
Openness to aesthetics	-.04	.18*	.34**	.10
Independent				
Employees' perceptions of identity-based subgroups	.23*	-.12	.05	-.10
Mediator				
Perceived social-identity threat		-.19**	-.27**	-.37**

Note. $N = 200$; standardized coefficients are reported.

* $p < .05$

** $p < .01$

Table 16

Results of the hierarchical regression analyses for employees' perceptions of resource-based subgroups on perceived fairness

	Perceived procedural fairness			Perceived distributive fairness		
Variables	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Controls						
Age	-.12*	-.11*	-.11*	-.03	-.03	-.03
Sex	-.12**	-.13**	-.13**	-.01	-.01	-.02
Migration background	.01	.02	.02	-.05	-.05	-.05
Leadership position	.09*	.10*	.10*	.17**	.18**	.17**
Team size	-.02	-.03	-.03	.01	.01	.01
Team tenure	.03	.03	.03	-.03	-.03	-.03
Team existence period	-.03	-.02	-.02	.03	.04	.03
Team development measures	.04	.03	.03	.06	.06	.07
Openness to aesthetics	.08	.06	.06	.01	.00	.00
Independent and moderator						
Employees' perceptions of resource-based subgroups		-.12**	-.12**		-.05	-.05
Perceived employee status		-.09*	-.09*		-.02	-.01
2-way interactions						
Employees' perceptions of resource-based subgroups x perceived employee status			-.01			-.02
R^2	.09*	.17**	.17**	.07	.08	.08
ΔR^2		.07**	.00		.00	.00

Note. $N = 200$; standardized coefficients are reported.

* $p < .05$

** $p < .01$

Table 17

Results of the hierarchical regression analyses for perceived fairness on elaboration of information and perspectives

	Information-sharing			Perspective-taking			Information elaboration		
Variables	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Controls									
Age	.03	.07	.07	-.03	-.01	-.01	.01	.05	.05
Sex	.05	.09*	.09*	.02	.04	.04	-.06	-.03	-.03
Migration background	-.05	-.05	-.05	-.05	-.04	-.04	-.03	-.03	-.03
Leadership position	.12**	.08	.07	.09	.06	.06	.06	.02	.02
Team size	-.09*	-.09*	-.08*	-.03	-.03	-.03	-.06	-.06	-.05
Team tenure	-.02	-.03	-.04	-.12*	-.12*	-.12*	-.01	-.01	-.01
Team existence period	-.01	.00	.01	.05	.05	.05	-.03	-.03	-.03
Team development measures	.07	.06	.07	.07	.06	.06	.07*	.05	.05
Openness to aesthetics	.12**	.09*	.08*	.24**	.23**	.23**	.06	.03	.03
Independent and moderator									
Perceived procedural fairness		.16**	.12**		.10	.10		.15**	.16**
Perceived distributive fairness		.05	.04		.10	.10		.08*	.07
Perceived employee status		-.01	-.01		.01	.00		-.04	-.04
2-way interactions									
Perceived procedural fairness x perceived employee status			.17**			-.01			-.02
Perceived distributive fairness x perceived employee status			-.08			.02			-.04
R^2	.12**	.22**	.29**	.17**	.22**	.22**	.08	.25**	.26**
ΔR^2		.09**	.07**		.05**	.00		.17**	.01

Note. $N = 200$; standardized coefficients are reported.

* $p < .05$

** $p < .01$

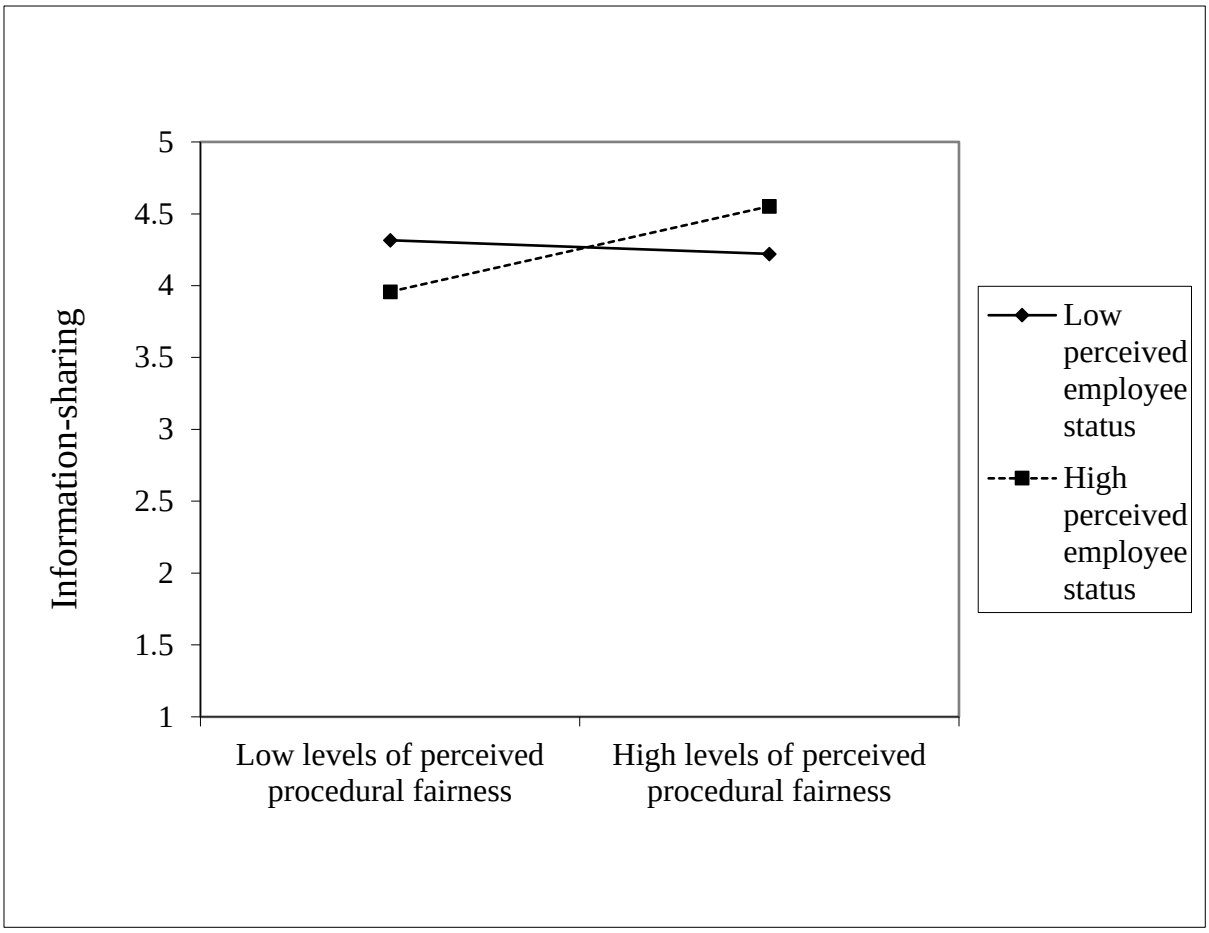


Figure 14. Moderating effect of perceived employee status on the relationship between perceived procedural fairness and employees' information-sharing.

Results of the simple slope analysis yielded no statistically significant relationship between perceived procedural fairness and information-sharing for low-status subgroup members (simple slope = -0.05, $t(199) = -0.71$, $p = .48$). For high-status subgroup members, there was a statistically significant and positive relationship with information-sharing (simple slope = 0.30, $t(199) = 5.21$, $p < .01$). This contradicts our assumption of a negative moderating effect of perceived employee status. We also find no statistically significant moderating effects for perceived employee status on the relationships between perceived procedural fairness, on the one hand, and perspective-taking ($\beta = -.01$, $p = .82$) and information elaboration ($\beta = -.02$, $p = .67$) on the other hand (see Table 17). Furthermore, perceived employee status did not moderate the relationships between perceived distributive fairness and information-sharing ($\beta = -.08$, $p = .12$), perspective-taking ($\beta = .02$, $p = .75$), and information elaboration ($\beta = -.04$, $p = .35$) (see Table 17). Thus, Hypothesis 2b is not supported.

In partial support of Hypothesis 2c-i, we found statistically significant and negative indirect effects of employees' perceptions of resource-based subgroups on employees' information-sharing (indirect effect = -.04, 95% CI = [-.10, -.00[11]]) and information elaboration (indirect effect = -.06, 95% CI = [-.13, -.01]), but not on perspective-taking (indirect effect = -.03, 95% CI = [-.09, .00[12]]), through perceived procedural fairness.

Since employees' perceptions of resource-based subgroups was no statistically significant predictor of information-sharing (β = -.01, p = .89) in the mediation model (see Table 18), perceived procedural fairness was found to fully mediate the relationship between employees' perceptions of resource-based subgroups and information-sharing. In contrast, perceived procedural fairness was a partial mediator of the relationship between employees' perceptions of resource-based subgroups and information elaboration because employees' perceptions of resource-based subgroups are statistically significantly related to information elaboration (β = -.15, p = .02) in the mediation model (see Table 18). We find no statistically significant indirect effects of employees' perceptions of resource-based subgroups on employees' elaboration of information and perspectives through perceived distributive fairness (for information-sharing: indirect effect = -.00, 95% CI = [-.03, .01]; for perspective-taking: indirect effect = -.01, 95% CI = [-.04, .02]; for information elaboration: indirect effect = -.01, 95% CI = [-.05, .02]). Thus, Hypothesis 2c-ii is not supported.

[11] -.00 due to rounding off to two decimal places. Value is below zero.
[12] .00 due to rounding off to two decimal places. Value is greater than zero.

Table 18

Results of the mediation analyses for employees' perceptions of resource-based subgroups

Variables	Perceived procedural fairness	Perceived distributive fairness	Information-sharing	Perspective-taking	Information elaboration
Controls					
Age	-.20*	-.03	.11	-.01	.09
Sex	-.22**	-.02	.15*	.06	-.07
Migration background	.03	-.07	-.08	-.06	-.05
Leadership position	.17*	.23**	.12	.08	.06
Team size	-.05	.01	-.13*	-.04	-.12
Team tenure	.05	-.04	-.06	-.18*	-.02
Team existence period	-.04	.05	.01	.07	-.05
Team development measures	.06	.09	.12	.08	.10
Openness to aesthetics	.10	.00	.14*	.33**	.07
Independent and moderator					
Employees' perceptions of resource-based subgroups	-.21**	-.06	-.01	.04	-.15*
Perceived employee status	-.16*	-.01	-.01	.00	-.06
Path 1-interaction					
Employees' perceptions of resource-based subgroups x perceived employee status	-.01	-.03			
Mediator					
Perceived procedural fairness			.21*	.15	.29**
Perceived distributive fairness			.07	.14	.16*
Path 2-interactions					
Perceived procedural fairness x perceived employee status			.29**	-.02	-.02
Perceived distributive fairness x perceived employee status			-.13	.03	-.09

Note. $N = 200$; standardized coefficients are reported. * $p < .05$; ** $p < .01$

Although perceived transactive memory system was statistically significantly and positively related to information-sharing (β = .23, $p < .01$), perspective-taking (β = .21, $p < .01$), and information elaboration (β = .41, $p < .01$) (see Table 19), results of the mediation analyses yielded no statistically significant indirect effects. The confidence intervals of the indirect effects of employees' perceptions of knowledge-based subgroups on information-sharing (indirect effect = .01, 95% CI = [-.03, .04]), perspective-taking (indirect effect = .00, 95% CI = [-.03, .04]), and information elaboration (indirect effect = .01, 95% CI = [-.05, .07]) through perceived transactive memory system each included zero. Thus, Hypothesis 3 receives no support.

5.5.2 Robustness checks

To check the robustness of our results, we analyzed our mediation models without sociodemographic controls (age, sex, migration background, and leadership position). These variables might only influence some of our relationships, whereas the team-related controls (team tenure, team existence period, team development measures, and team size) might influence all relationships. The mediation analyses without sociodemographic controls yielded the same pattern of results (see Table 20). Also, hierarchical regression analyses for employees' perceptions of resource-based subgroups on perceived fairness, as well as for perceived fairness on employees' elaboration of information and perspectives, yielded the same pattern of results for perceived employee status as a moderator. There was only a statistically significant moderating effect of perceived employee status on the relationship between perceived procedural fairness and information-sharing (β = .18, $p < .01$). All other moderations were not statistically significant (all $p > .05$).

Table 19

Results of the mediation analyses for employees' perceptions of knowledge-based subgroups

Variables	Perceived transactive memory system	Information-sharing	Perspective-taking	Information elaboration
Controls				
Age	-.21*	.10	-.00	.11
Sex	-.13	.12	.05	-.06
Migration background	-.11	-.05	-.05	-.02
Leadership position	.06	.18*	.12	.10
Team size	-.10	-.13	-.02	-.07
Team tenure	.11	-.07	-.20*	-.07
Team existence period	-.05	-.00	.08	-.05
Team development measures	.19**	.08	.07	.07
Openness to aesthetics	.12	.17*	.33**	.08
Independent				
Employees' perceptions of knowledge-based subgroups	.02	.01	.01	-.02
Mediator				
Perceived transactive memory system		.23**	.21**	.41**

Note. $N = 200$; standardized coefficients are reported.

* $p < .05$

** $p < .01$

Table 20

Results of the mediation analyses for employees' perceptions of different types of subgroups as robustness checks

Indirect effect	Information-sharing	Perspective-taking	Information elaboration
Employees' perceptions of identity-based subgroups → perceived social-identity threat	Indirect effect = -.05 95% CI = [-.09; -.01]	Indirect effect = -.07 95% CI = [-.12; -.02]	Indirect effect = -.09 95% CI = [-.15; -.03]
Employees' perceptions of resource-based subgroups → perceived procedural fairness	Indirect effect = -.03 95% CI = [-.08; -.00[a]]	Indirect effect = -.03 95% CI = [-.08; .00[b]]	Indirect effect = -.05 95% CI = [-.12; -.01]
Employees' perceptions of resource-based subgroups → perceived distributive fairness	Indirect effect = -.01 95% CI = [-.04; .02]	Indirect effect = -.01 95% CI = [-.05; .02]	Indirect effect = -.01 95% CI = [-.05; .02]
Employees' perceptions of knowledge-based subgroups → perceived transactive memory system	Indirect effect = .00 95% CI = [-.03; .04]	Indirect effect = .00 95% CI = [-.03; .04]	Indirect effect = .01 95% CI = [-.05; .07]

Note. N = 200; standardized coefficients are reported.

[a] -.00 due to rounding off to two decimal places; value is below zero.

[b] .00 due to rounding off to two decimal places; value is greater than zero.

5.6 Discussion

We aimed to examine why the perception of different types of subgroups in work teams results in decreased or enhanced individual information-sharing, perspective-taking, and information elaboration. We investigated perceived social-identity threat as a mediator when perceiving identity-based subgroups, perceived procedural and distributive fairness as mediators when perceiving resource-based subgroups, and perceived transactive memory system as a mediator when perceiving knowledge-based subgroups. We found statistically significant negative indirect effects of employees' perceptions of identity-based subgroups on the three outcome variables through perceived social-identity threat. This means that employees' who perceive their team split into identity-based subgroups also feel their social-identity threat (e.g., by a more valuable identity of members belonging to other identity-based subgroups). In turn, these employees reduce their efforts in elaborating information and perspectives.

We also find a statistically significant and negative indirect effect of employees' perceptions of resource-based subgroups on employees' elaboration of information but not perspectives through perceived procedural fairness, whereas no mediating effects through perceived distributive fairness were found. Employees who perceive stronger splits into resource-based subgroups perceive less procedural fairness. In turn, those employees also share less information, take the perspective of other team members less, and elaborate information more carelessly. For knowledge-based subgroups, we could not find the proposed positive indirect effects.

5.6.1 The role of perceived social-identity threat

The positive relationship between employees' perceptions of identity-based subgroups and perceived social-identity threat supports Carton and Cummings's (2012) assumption that identity threat is a key process between identity-based subgroups. Splits into these types of

subgroups are directly associated with ingroup favoritism and inter-subgroup competition (Tajfel & Turner, 1979). These processes threaten the identities of all subgroups and, thus, hinder employees' individual performance, which, in turn, also impairs team performance. This finding also highlights that identity threat must not necessarily be a moderator as proposed in the categorization-elaboration model (van Knippenberg et al., 2004). Instead, whether it is a consequence of the categorization (such as in teams with splits into identity-based subgroups) or a moderator that influences the effects of the categorization (as it could be in teams with splits into resource-based or knowledge-based subgroups) seems to depend on the type of categorization. Further research is necessary to explore in depth the moderating effects of social-identity threat on the relationship between perceived resource-based and knowledge-based subgroups, on the one hand, and employees' elaboration of information and perspectives, on the other hand. Future studies should explore other types of threat as well – for instance, status threat (i.e., the threat to one's group status; e.g., by diminishing the difference between one's own group status and the status of other groups) or stereotype threat, i.e., "the experience of being in a situation where one faces judgment based on societal stereotypes about one's group" (Spencer, Steele, & Quinn, 1999, p. 5) – to gain deeper insights into the effect of threat in teams with subgroups. For example, a status threat might be a more relevant threat in resource-based subgroups, and a stereotype threat might be more relevant in knowledge-based subgroups.

Our findings also complement research on how the perception of identity-based subgroups relates to negative work relations. Research on dirty tasks – that is, tasks society sees as disgusting or degrading (Ashforth & Kreiner, 1999) – shows that frequently performing dirty tasks can impair work outcomes (e.g., work-life conflict, strain, social isolation) (Baran et al., 2012). Baran et al. (2012) argue that these negative outcomes might result from employees splitting into identity-based subgroups due their performance of dirty tasks. As our results suggest that these types of subgroups are associated with perceived social-identity threat, this

cognitive process might explain the aforementioned negative outcomes (see chapter 4). Employees who frequently perform dirty tasks will build a social identity that differs from employees who perform such tasks less frequently (Baran et al., 2012). Then, social-comparison processes will highlight differences between these subgroups, based on their identities (Tajfel & Turner, 1979). As our results show, perceiving these differences more strongly goes along with strong perceptions of threats to one's identity. Feeling such threats may then lead to attempts to decrease the (positive) identity of outgroups by stereotyping or discriminating (Tajfel & Turner, 1979). Again, these harming actions will likely result in strain and conflict. Moreover, perceived social-identity threat is also associated with less information-sharing, less perspective-taking, and less information elaboration. This may be an employee strategy to enhance or maintain positive distinctiveness. Employees whose social comparison results in negative distinctiveness could try to enhance their self-esteem by not sharing information with others, to impress supervisors with their unique knowledge and information. The supervisor appreciating the employee's contribution enhances self-esteem. In contrast, employees whose social comparisons result in positive distinctiveness might not want to share their information with others, to prevent them from gaining higher self-esteem that would threaten the positive distinctiveness between identities.

5.6.2 The roles of perceived procedural and distributive fairness

In contrast to predictions of social dominance theory (Sidanius & Pratto, 1999) and the theory of subgroups in work teams (Carton & Cummings, 2012), our findings suggest that the perception of fairness is not distributed asymmetrically between members of high-status and low-status subgroups. We find no support for a moderating effect of perceived employee status on the relationships between employees' perceptions of resource-based subgroups and perceived procedural fairness or perceived distributive fairness. In contrast, all employees seem to perceive less procedural fairness in teams with resource-based subgroups. This means that

even if they have more decisive power, high-status subgroup members perceive procedures as not fair (enough). Perceptions of fairness regarding differences in status (i.e., distributive fairness) do not seem to be related to the perception of resource-based subgroups.

How we chose to operationalize distributive fairness may explain these different findings for the two types of perceived fairness. We asked participants to rate whether they perceive their contribution to team performance as justifying their status in their team. We did so because status is both a factor that may lead to splits into resource-based subgroups (Harrison & Klein, 2007) and a contingency that was thought to influence how perception of a resource-based subgroup relates to perceived fairness. Those who have much in resources should perceive fairness and those who have less should feel unfair treatment (Carton & Cummings, 2012). However, status is a rather stable outcome that team processes do not much influence compared, for example, with resource allocation. Thus, if employees perceive their status to depend more on other factors not influenced by the team (e.g., by supervisors), they will not infer that team configural properties, such as splits into resource-based subgroups, justify their status. Consequently, employees' perceptions of resource-based subgroups will not be related to perceived distributive fairness. Therefore, future research should focus the operationalizing of perceived distributive fairness on other outcomes. For example, examining perceived distributive fairness as a potential mediator of the relationship between employees' perceptions of resource-based subgroups and their elaboration of information and perspectives could explore outcomes that, on the one hand, can be altered more strongly, and, on the other hand, are more associated with team processes, such as resource allocation.

Perceived employee status was a statistically significant moderator only for the relationship between perceived procedural fairness and employees' information-sharing. In contrast to our expectations, high-status subgroup members shared more information when they perceived high procedural fairness, whereas there was no such statistically significant relationship for low-status subgroup members. This finding challenges that of Thomas-Hunt et

al. (2003), and high-status subgroup members' attempts to maintain stable status differences, or even enhance them, may explain it. Those members try to share their information with authorities, who, acting in line with rules of procedural fairness, may reward high-status members' efforts.

Perceived procedural fairness significantly mediates the relationships of employees' perceptions of resource-based subgroups only with information-sharing and information elaboration, but not with perspective-taking. Regardless of perception of procedural fairness, employees take team members' perspectives, and one reason may lie in the construct of fairness. To judge fair treatment of a team member, employees likely compare own treatment with the treatment other team members receive. Thus, judging fairness may demand perspective-taking per se, no matter whether the comparison results in advantage (perceived fairness) or disadvantage (perceived unfairness) to the judging member.

5.6.3 The role of perceived transactive memory system

Our results provide no support for a positive indirect effect of employees' perceptions of knowledge-based subgroups on employees' elaboration of information and perspectives through perceived transactive memory system. Moreover, there was no direct relationship between the perception of knowledge-based subgroups and employees' elaboration of information and perspectives (all $p > .10$). These findings contradict the categorization-elaboration model (van Knippenberg et al., 2004) and the assumptions of the theory of subgroups in work teams (Carton & Cummings, 2012). Although both theoretical explanations point out that knowledge-based subgroups have beneficial effects on teams, our findings reveal that the perception of knowledge-based subgroups generally does not follow with a strong perceived transactive memory system, nor does it increase employees' information-sharing, perspective-taking, or information elaboration. Carton and Cummings's (2013) findings provide a possible explanation, namely, that increasing balance among the size of knowledge-

based subgroups fosters team performance. In other words, the presence of many knowledge-based subgroups of different sizes hinders information processing. Consequently, employees who perceive strong variations among knowledge-based subgroups in their team will not perceive a strong transactive memory system between team members and will engage less in elaboration of information and perspectives. Therefore, future research should consider the configural properties (e.g., size of subgroups, variations in subgroups size) of knowledge-based subgroups to strengthen our understanding of the contingencies that affect wheter knowledge-based subgroups foster performance.

5.6.4 Practical implications

Our study has important implications for practitioners. Elaboration of information and perspectives is a key factor in driving decision quality and creativity in teams, particularly for nonroutine tasks (van Knippenberg et al., 2004; Meyer, Shemla, & Schermuly, 2011). Therefore, managers should have a great interest in preventing splits into identity-based or resource-based subgroups (see also Stabler & Rabl, 2018b) because they accompany impaired elaboration of information and perspectives, also associated with impaired performance (Maynard et al., 2019). To prevent splits into identity-based subgroups, managers could implement a diversity mindset (van Knippenberg et al., 2013) and pro-diversity beliefs (Homan et al., 2007) that help team members understand the positive aspects of diversity and ensure that every team member has the same idea of working in a diverse team. Furthermore, managers could use specific leadership styles (e.g., transformational leadership, considerate leadership) that value the individual contribution to team success (cf. Homan & Greer, 2013; Kunze & Leicht-Deobald, 2014). This helps employees create a positive sense of self and consequently might hinder splits into identity-based subgroups.

To prevent splits into resource-based subgroups, managers should follow the rules of fairness and treat every team member equally well. Thereby, they support employees feeling

valued and signal that the employees are important contributors to organizational performance. In this regard, an organizational context that appreciates a diverse workforce, such as a strong organizational value of diversity (Avery et al., 2007), can be supportive.

Our results imply that employees' perceptions of knowledge-based subgroups do not suffice to elicit elaboration of information and perspectives. Nevertheless, our results show that a perceived transactive memory system is an important team property because it relates to employees' elaboration of information and perspectives and, thus, might also foster team performance. However, the perception of knowledge-based subgroups indicating different sources of information and perspectives in a team does not automatically mean that team members coordinate that information and perspectives so that a transactive memory system develops. To benefit from team diversity characterized by knowledge-based subgroups, managers could provide team training that combines aspects of developing a diversity mindset (van Knippenberg et al., 2004) and a transactive memory system (Ren & Argote, 2011). Such training should ensure team members share the awareness of the benefits of different perspectives and information in a team and experience other members' skills and expertise. Since team training enhances team outcomes (Salas et al., 2008), using it to foster a diversity mindset and a transactive memory system might enhance not only perception of knowledge-based subgroups and the development of transactive memory systems but also team performance.

In contrast, managers should avert structures that enhance perception of subgroups associated with negative outcomes, such as perception of identity-based subgroups or perception of resource-based subgroups. Such structures may function if, for example, tasks and goals demand contact with members of other subgroups (Crawford & LePine, 2013). But otherwise, if these structures foster contact only among ingroup-members, they create subgroups split not only by identity, resources, or knowledge but also by task and goal structure, thus, widening the gaps between subgroups. In contrast, if managers structure tasks and goals

in a way that demands cooperation between subgroups, positive inter-subgroup contact will likely reduce prejudices between subgroups (Pettigrew & Tropp, 2006).

5.6.5 Limitations and implications for future research

Our study has some limitations. First, it focuses on individual perceptions of team characteristics and team processes and, therefore, relies on employee self-reports. The individual perspective is important because team members' reactions to diversity build the basis of team diversity from which team outcomes emerge (Guillaume et al., 2014). However, to increase our understanding of processes in teams with subgroups, future research may take a team perspective as well. For instance, perceptions of team characteristics and processes can differ between team members. Thus, assessing the perceptions of all team members may help to account for differences in the perceptions of members of the same team. Moreover, replicating the study with full teams offers the opportunity to compare the effects of objective team diversity (e.g., objective faultlines) with the effects of the perception of team diversity (e.g., perception of subgroups). Second, we also must acknowledge that information-sharing had relatively low reliability ($\alpha = .67$) – that is, the correlation between the items is lower than in the original scale ($\alpha = .89$). This requires future studies to replicate our findings regarding information-sharing, to show that the results are not due to measurement errors.

Third, we conducted a three-phase study that assessed independent, mediator, and dependent variables at three different points in time, to account for possible common method variance (Podsakoff et al., 2012). We also checked for same-source problems in a post-hoc confirmatory factor analysis with a marker technique (Lindell & Whitney, 2001; Richardson et al., 2009). We used openness to aesthetics as a control variable to account for possible common method and same-source bias. Moreover, our analyses indicate that our results are not severely affected by endogeneity. To further reduce the threat of same-source bias, future studies might not use only data from all team members but also take account of leader ratings, where possible.

Another avenue for future research lies in the contingencies that might strengthen or weaken the relationships between employees' perceptions of different types of subgroups and the associated cognitive processes. Guillaume et al. (2014) propose a multilevel model of team diversity that builds on the individual's reaction to diversity and accounts for influential factors from the individual, team, organizational, and societal levels. Individual-level factors, such as employees' openness to experience (Homan et al., 2008) or attitudes toward diversity (Nakui et al., 2011), might influence the relationship between perception of subgroups and cognitive processes. Team-level factors, such as goal and task interdependencies between subgroups (Campion, Medsker, & Higgs, 1993; Crawford & LePine, 2013), could also alter employee reactions to perceived subgroups. Also, organizational-level factors, such as organizational value of diversity (Avery et al., 2007) or diversity-management practices (Shen, Chanda, D'Netto, & Monga, 2009), or societal-level factors, such as anti-discrimination laws (e.g., Allgemeines Gleichbehandlungsgesetz, AGG), might influence employee reactions to team diversity.

5.7 Conclusion

Integrating the theory of subgroups in work teams (Carton & Cummings, 2012) and the categorization-elaboration model (van Knippenberg et al., 2004), this paper explores the relationship between employees' perceptions of different types of subgroups and elaboration of information and perspectives. Results suggest negative indirect effects of, first, employees' perceptions of identity-based subgroups on employees' elaboration of information and perspectives through perceived social-identity threat and, second, of employees' perceptions of resource-based subgroups on employees' elaboration of information but not perspectives through perceived procedural fairness. We found no mediating effects of perceived distributive fairness. However, in contrast to our hypotheses and to the assumptions of Carton and Cummings (2012), there was no asymmetrical perception of procedural fairness between high-

status subgroup members and low-status subgroup members. Contradicting assumptions of the theory of subgroups in work teams (Carton & Cummings, 2012) and the categorization-elaboration model (van Knippenberg et al., 2004), we could find no positive indirect effect of employees' perceptions of knowledge-based subgroups on employees' elaboration of information and perspectives through perceived transactive memory system. In sum, we provide support for Carton and Cummings's (2012) assumptions regarding identity-based subgroups, but not regarding resource-based and knowledge-based subgroups.

6. Overall discussion and implications for research and practice

This thesis aims to explain how objective team diversity and task-related characteristics trigger the perception of different types of team diversity. Moreover, it answers the question of how these perceptions relate to individual-level outcomes. Three independent empirical research studies on team diversity were conducted. The first study (outlined in chapter 3) examined how objective team diversity (as reflected in objective diversity and objective faultlines) relates to perceived team diversity (as reflected in perceived diversity and perceived faultlines) and how individual factors influence these relationships. The second study (outlined in chapter 4) investigated the perception of a specific type of subgroups – identity-based subgroups – and how task-related characteristics can trigger this perception. Besides addressing contextual factors that might moderate this relationship, that study examines the consequences of the perception of identity-based subgroup for employees' work relations. Finally, the third study (outlined in chapter 5) extends the examination of the perception of subgroups by investigating the effect of the perception of three different types of subgroups (identity-based subgroups, resource-based subgroups, knowledge-based subgroups) on the individual's elaboration of information and perspectives, through different cognitive mechanisms. The following section summarizes the results of these three studies.

6.1 Summary of the study results

Regarding the perception of team diversity, results of the first study show positive relationships between objective team diversity and employees' perceptions of this team diversity, at least for four different diversity dimensions (age, sex, nationality, functional background) and their alignment (faultlines). This means that individuals can create mental representations of an unknown team and apply these mental representations to judging the team (SEA model of people perception) (Phillips et al., 2014). Moreover, the relationship between objective age diversity and perceived age diversity was found to be negatively moderated by

individuals' prior experiences with age diversity in their own work team. Employees who perceive their own work team as highly age-diverse judged an unknown work team as less age-diverse, based on objective age diversity. In contrast, employees who perceived their own work team as less age-diverse judged an unknown work team as more age diverse, based on objective age diversity. This means that the relationship between objective age diversity and perceived age diversity was weakened by employees' perceptions of age diversity in their own work team. However, individuals' attitudes toward diversity did not moderate the relationships between objective team diversity and perceived team diversity.

The second study outlines a mediating effect of perception of identity-based subgroups. Employees' perceptions of identity-based subgroups mediate the relationships between dirty-task frequency and employees' work relations, reflected by perceived relationship conflict and surface acting. In other words, dirty-task frequency can appear as a task-related characteristic that triggers the perception of identity-based subgroups. In turn, the perception of identity-based subgroups impairs employees' work relations by demanding more surface acting and raising perceptions of relationship conflict in the work team. However, the fit of perceived supervisor support and organizational value of diversity (but not perceived supervisor support alone) can buffer the positive relationship between dirty-task frequency and employees' perceptions of identity-based subgroups as well as the negative indirect effects of dirty-task frequency on perceived relationship conflict and on surface acting.

Finally, the results of the third study provide insights into cognitive processes when employees perceive different types of subgroups in their work team. The negative relationship between employees' perceptions of identity-based subgroups and elaboration of information and perspectives is mediated through perceived social-identity threat. For the perception of resource-based subgroups, results show no asymmetrical status-based effect on perceived procedural fairness. In contrast, employees who perceived resource-based subgroups also perceived less procedural fairness in their teams, no matter how they perceived their own status

in the team. Also, there was a negative indirect effect of employees' perceptions of resource-based subgroups on their elaboration of information but not on the elaboration of perspectives through perceived procedural fairness. However, no mediating effects were found for perceived distributive fairness. For employees' perceptions of knowledge-based subgroups, there was no indirect effect on the elaboration of information and perspectives through perceived transactive memory systems.

6.2 Theoretical implications

Although examining the effects of team diversity has a long research tradition (see Pelled, 1996; Pfeffer, 1983), there is no full explanation of inconsistent results in diversity research (e.g., Meyer, 2017; Roberson, 2019). Therefore, this thesis addresses several open questions in diversity research to gain a broader understanding of how team diversity affects teams and their members.

First, research is lacking on individual-level outcomes of diversity research (Roberson, 2019). This thesis answers that call for research by investigating individual-level phenomena as a direct consequence of different conceptualizations of team diversity. As a first step, this thesis could show that the perception of team diversity is a direct cognitive outcome of objective team diversity. Since people react more to their perception of their environment than to the environment per se (Hobman et al., 2004), individuals' reactions to diversity might be a more accurate predictor of individuals' outcomes of diversity. Therefore, in a second step, this thesis examines individuals' outcomes of their perception of team diversity, thereby showing team members' perceptions of identity-based subgroups to positively relate to perceived relationship conflict, surface acting, and perceived social-identity threat. Team members' perceptions of resource-based subgroups negatively relates to perceived procedural fairness but not distributive fairness, whereas perception of knowledge-based subgroups does not relate to a perceived transactive memory system. These results not only complement our understanding of

how individuals react to different types of team diversity but also highlight some team-level theories and models of diversity that can apply on the individual level, at least to some part.

For example, Carton and Cummings's (2012) assumption of the theory of subgroups in work teams, namely, that identity-based subgroups go along with social-identity threat as a process between the subgroups, was supported on the individual level (i.e., for perception of identity-based subgroups and perceived social-identity threat). This is in line with the assumptions of Guillaume et al. (2014) in their multilevel model of team diversity, where individuals' reactions to team diversity build the basis for the outcomes of team diversity. For the other types of subgroups – resource-based and knowledge-based subgroups – assumptions by Carton and Cummings (2012) are not supported by this thesis. There was no asymmetrical perception of procedural fairness by employees with different status when perceiving their team split into resource-based subgroups. In contrast, there is a negative main effect for employees' perceptions of resource-based subgroups on perceived procedural fairness (but not for perceived distributive fairness), which means that no matter how employees perceive their own status, they perceive procedures in their team as unfair when they perceive it split into resource-based subgroups. Also, perceiving knowledge-based subgroups in their team does not trigger employees' perceptions of a transactive memory system per se.

This research field calls for future studies to investigate the contingencies under which expected positive effects of knowledge-based subgroups are triggered in team members, and the demonstrated negative effects of identity-based and resource-based subgroups are buffered. This goes along with the multilevel model by Guillaume et al. (2014), which assumes that individual-level outcomes of team diversity depend on influential individual-level, team-level, organizational-level, and societal-level factors. Thus, to gain a complete understanding of team members' reactions to team diversity, future research should use multilevel research designs to investigate the effects of different conceptualizations of team diversity.

This thesis also includes several contingencies that explain how individuals react to diversity, namely, individuals' attitudes toward diversity, perception of one's own work team's diversity, perceived employee status, perceived supervisor support, and perceived organizational value of diversity. Different aspect from other levels will likely influence these contingencies. Societal factors such as openness to diversity or diversity climate, may influence individuals' attitudes toward diversity. Objective diversity of one's own work team surely influences perception of one's own work team's diversity (see the results of the first study outlined in chapter 3). This may be also true for perceived employee status (e.g., based on resource allocation in the work team). Team-level characteristics (e.g., leadership style) or organizational characteristics (e.g., hierarchical organizational structure) might influence perceived supervisor support. Organizational diversity management and organizational diversity climate might be two organization-level characteristics that influence perceived organizational value of diversity.

The results of this thesis highlight that not all of these contingencies do alter the effect of team diversity on individuals' outcomes. Whereas individuals' attitudes toward diversity did not influence the relationships between objective team diversity and perceived team diversity, perception of one's own work team's age diversity did weaken the positive relationship between objective age diversity and perceived age diversity. Furthermore, perceived supervisor support alone did not buffer the positive relationship between dirty-task frequency and perceived identity-based subgroups, but it did in combination with perceived organizational value of diversity. Also, perceived employee status did not alter the relationships between employees' perceptions of resource-based subgroups and perceived procedural and distributive fairness. These findings somewhat contradict prior research. For example, attitudes toward diversity have been shown to buffer the relationship between team diversity and anticipated outcomes (e.g., van Oudenhoven-van der Zee et al., 2009) and to foster positive outcomes, such as the quality of ideas, in culturally diverse teams (Nakui et al., 2011). This highlights the importance

of considering where to expect the effects of specific influential factors on the individual in an IMOI model of team diversity – either in the process of basing perceptions of team diversity on objective team characteristics or in the process of reacting to the perception of team diversity.

This immediately relates to a second call in diversity research. Jackson et al. (2003) propose to integrate mediating mechanisms in the study of team diversity outcomes. As Roberson (2019) points out, team effectiveness models, such as the IPO model or the IMOI model, are often used to explain the effects of team diversity, but only a few studies examine the mediating mechanisms. To account for this open question, this thesis investigates perception of identity-based subgroups as a cognitive mechanism to explain the effects of dirty-task frequency on work relations (perceived relationship conflict and surface acting), on the one hand, and, on the other hand, cognitive mechanisms that explain the relationships between employees' perceptions of different types of subgroups and their elaboration of information and perspectives. In the first relationship, dirty-task frequency serves as a task-related input factor, a rather neglected attribute in diversity research, and perception of identity-based subgroups serves as the cognitive process that explains the effects of dirty-task frequency on work relations. Finding that the perception of identity-based subgroups positively relates to perceived identity-based subgroups complements research on triggers of social-identity faultlines (Chrobot-Mason et al., 2009). Moreover, by taking a diversity perspective on dirty tasks, this thesis integrates two different research streams operating with a similar theoretical background, namely, social identity theory (Tajfel & Turner, 1979), to explain the negative effects of dirty tasks and team diversity.

The results of the second set of mediating mechanisms that this thesis investigates raise attention to cognitive processes that arise when perceiving splits into identity-based and resource-based subgroups in work teams. Perception of subgroups serves as the input factor, cognitive mechanisms as mediating mechanisms, and the elaboration of information and perspectives as the individual-level outcome of interest. Results point to negative indirect

effects of employees' perceptions of identity-based subgroups on information-sharing, perspective-taking, and information elaboration, through perceived social-identity threat. For the relationships between employees' perceptions of resource-based subgroups and information-sharing and information elaboration, respectively, indirect negative effects were found through perceived procedural fairness but not perceived distributive fairness. For perspective-taking as an outcome variable, no indirect effects through either perceived procedural or distributive fairness were found. These findings lead to the proposition that different mechanisms may account for different outcome variables; thus, future research should investigate other mediators, such as stereotyped warmth and competence (see van Dijk et al., 2017, for an integration of the diversity literature with the stereotype literature).

Investigating the effects of employees' perceptions of different types of subgroups on the elaboration of information and perspectives also has some implications for the categorization-elaboration model of team diversity (van Knippenberg et al., 2004). Whereas the model predicts beneficial outcomes for diversity, regarding different information and perspectives (as depicted by different knowledge-based subgroups), this thesis could find no support for this assumption. There was no relationship between employees' perceptions of knowledge-based subgroups and the elaboration of information and perspectives. Thus, future research might investigate contingencies that could hinder (e.g., team conflicts) or foster (e.g., task interdependencies between different subgroups) this relationship.

In contrast, the CEM predicts negative effects on team performance when social categorization in teams occurs (van Knippenberg et al., 2004). This thesis finds support for this assumption; employees' perceptions of both identity-based subgroups and resource-based subgroups was shown to decrease information-sharing and information elaboration. Thereby, perceived social-identity threat and perceived procedural fairness play central roles. On the one hand, these findings answer calls for examination of additional explaining mechanisms, as

proposed in the IMOI model, in the context of diversity (e.g., Roberson, 2019). On the other hand, they show that models of team diversity can apply to the individual level.

This leads to the last implication of this study. Researchers recognize a differentiation between objective team diversity and perceived team diversity (e.g., Meyer, 2017; Shemla et al., 2016) leading to demands for integrating mediating mechanisms into the research on diversity (e.g., Jackson et al., 2003; Roberson, 2019) and on examining individual-level consequences of team diversity (e.g., Guillaume et al., 2014; Roberson, 2019). Combining these different aspects, I propose an input-mediator-output-input model of perceived team diversity, which Figure 15 depicts.

In the center of the model is the differentiation between different types of *perceived team diversity*: perceived dissimilarity, perceived diversity, and perceived faultlines/subgroups (see section 2.2.2.2 for an overview). Different *input* factors can trigger this perception of team diversity. Most likely, a work team has objective team diversity. Individual *team member characteristics* that interact with each other create this characteristic of the *team context*. For example, faultlines can only originate in a team where members' characteristics align (see section 2.2.2.1). Thus, *organizational context* also plays an important role; certain factors, such as, organizational value of diversity or criteria used in personnel selection, determine the degree of the workforce's diversity. However, objective team diversity is not the only factor associated with perceived team diversity. Other team context factors, such as task content (see chapter 4) or team interactions (e.g., humiliating actions, Chrobot-Mason et al., 2009) can trigger the perception of team diversity.

So far, I assume that the perception of team diversity is a first step in individuals' reactions to team diversity or other triggers. In line with the multilevel model of team diversity by Guillaume et al. (2014) and the IMOI model (e.g., Ilgen et al., 2005), I suppose that perception of team diversity results in different types of *individual and team emergent states and processes* (see section 2.1) that, in turn, influence *individual, team, and organizational*

outcomes. This thesis provides insights into the relationships between perceived team diversity and affective reactions, such as perceived relationship conflict and surface acting, and cognitive reactions, such as perceived social-identity threat and perceived procedural fairness. In turn, it shows the latter two decrease the elaboration of information and perspectives.[13] Thus, I propose that based on individuals' perceptions of team diversity, several individual emergent states and processes arise. Since team members may also differ in their perception of team diversity, I assume that perceived team diversity also influences team emergent states and processes. For example, different team members' perceptions of diversity may elicit conflicts in the team.

As mentioned, these emergent states and processes will likely affect several outcomes. At the individual level, this thesis could show impacts on employees' elaboration of information and perspectives. In line with the categorization-elaboration model (van Knippenberg et al., 2004), I also expect these effects on the team level, particularly because team phenomena emerge from individual phenomena (e.g., Klein & Kozlowski, 2000), and on the organizational level, as other research shows (Bezrukova, Spell, Caldwell, & Burger, 2016). As in other IMOI models (e.g., Grossman et al., 2017), I account for possible *feedback loops* – that is the possibility that outcomes may influence input factors (e.g., poor individual performance may cause a member to leave the team, changing the team composition). However, I also account for possible feedback loops on the perception of team diversity and the aforementioned emergent states and processes. For example, a bad evaluation of a team member's performance might cause him or her to perceive less fairness. Alternatively, solving a complex task in a team formerly perceived by a member as less diverse in terms of expertise might cause this member to take another perspective on his or her team and perceive the members as more diverse regarding their expertise. Feedback loops may also occur immediately from individual and team

[13] Only perceived social-identity threat was shown to be a significant mediating mechanism for the effect of employees' perceptions of identity-based subgroups on perspective-taking. Perceived procedural fairness was no significant mediator for the relationship between employees' perceptions of resource-based subgroups and perspective-taking.

emergent states and processes. For example, this thesis could show that the perception of identity-based subgroups was associated with perceived relationship conflict (see chapter 4). Also, humiliating actions likely to occur in relationship conflicts can cause perceptions of identity-based subgroups in a team (Chrobot-Mason et al., 2009). This example shows a kind of vicious cycle, where negative outcomes of perceived team diversity may even foster a perception of the same type of team diversity.

In line with Guillaume et al. (2014), the IMOI model of perceived team diversity also accounts for influential factors from different levels (see section 2.2.1.3). As highlighted earlier, I propose that *moderators* from different levels (i.e., individual, team, organization, society) may buffer or foster different paths of the model. Moreover, I assume that outcomes may influence not only inputs and mediators in the model but also moderators. Bad organizational performance in a highly homogeneous organization may lead to changes in organizational diversity management that, in turn, might raise skepticism toward diversity in the current workforce.

Taken together, the IMOI model of perceived team diversity integrates assumptions of common IMOI models (e.g., Grossman, et al., 2017; Ilgen et al., 2005) with different theoretical approaches in diversity research (e.g., Guillaume et al., 2014; van Knippenberg et al., 2004) to explain the reaction of individuals and teams to team diversity putting perception of team diversity at the center of interest, as individuals react on the basis of perceptions more than on objective criteria (Hobman et al., 2004).

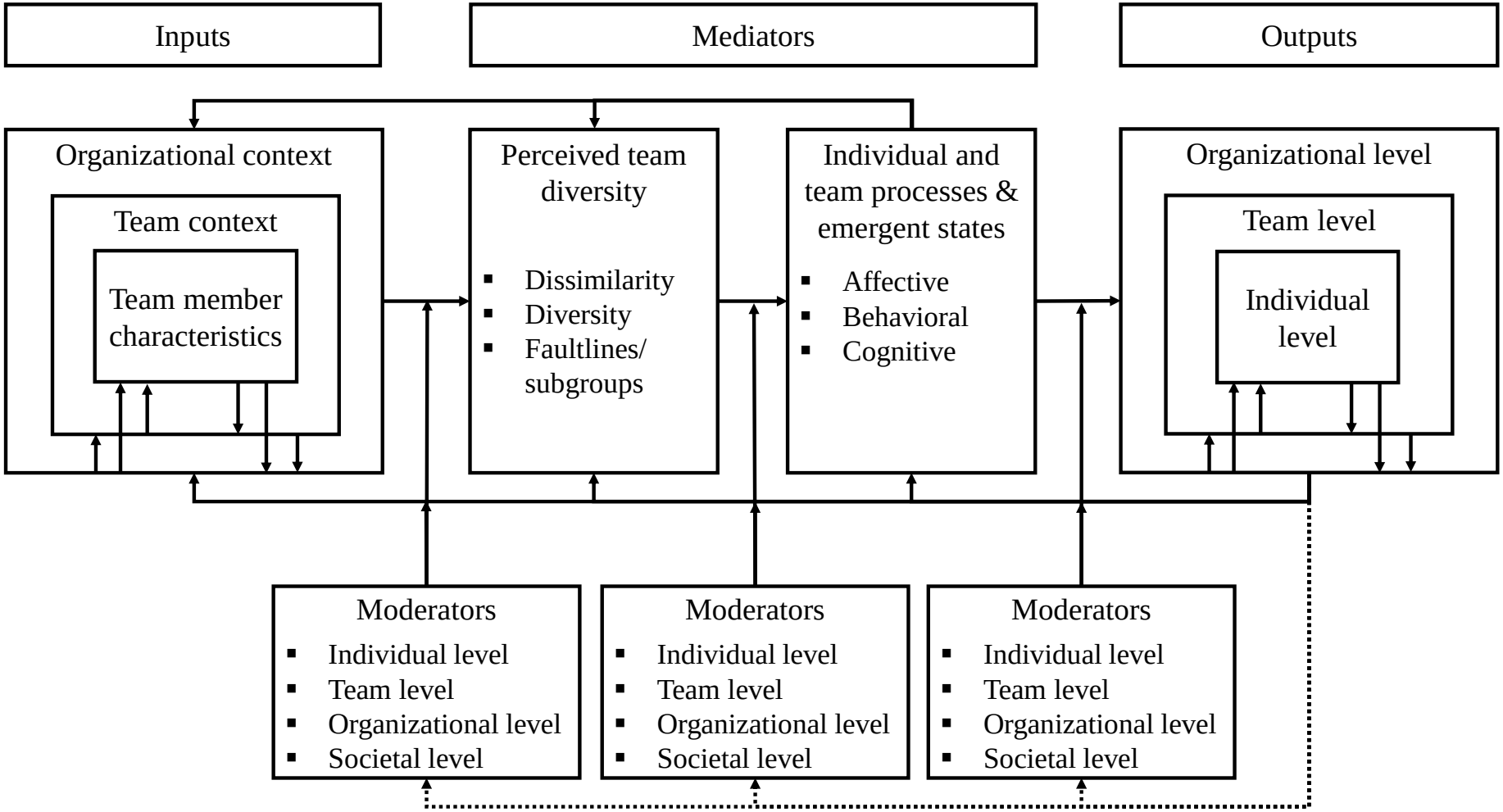


Figure 15. The input-mediator-output-input model of perceived team diversity.

6.3 Practical implications

In line with the IMOI model of perceived team diversity (see section 6.2), I assume that team diversity per se is not harmful to individual and team outcomes, but rather team members' different perceptions of team diversity may do such harm. This means that if different members perceive their team to be differently diverse, they might be unable to recognize the potential of the different perspectives in a team and might not work efficiently together. Counteracting this problem requires creating a common understanding of diversity in the team – that is, developing a diversity mindset (van Knippenberg et al., 2013) that ensures each team member knowing how to not only understand diversity, but also achieve goals in diverse teams. This should include knowledge of challenges in diverse teams and how to handle them, as well as the knowledge of the potential benefits of diverse teams and how to obtain them. Team members sharing a diversity mindset and being aware of this sharedness are vitally important (van Knippenberg et al., 2013), for example, as the content of team-based diversity training that increases team performance (e.g., Bezrukova, Spell, Perry, & Jehn, 2016; Kalinoski et al., 2013).

6.4 Limitations and implications for future research

In this section, I address some limitations of this thesis and outline some potential avenues for future research. One limitation of this thesis is that the participants in all three studies were German employees. To enhance the generalizability of the results, future research should replicate the findings with participants from other nations or cultural backgrounds. Second, since this thesis focusses on the individual level, I collected data from single team members. However, to account for potential differences in team members' perceptions of team diversity, future research should collect data from all team members. Third, in line with the theory of subgroups in work teams (Carton & Cummings, 2012) and previous research in the context of dirty tasks (e.g., Baran et al., 2012), I concentrated on cognitive and affective

mechanisms as consequences of perceived subgroups. However, behavioral mechanisms (e.g., team coordination on the team level) might guide future investigation. I also measured contextual factors through individuals' perceptions of these contingencies (e.g., perceived supervisor support, perceived organizational value of diversity). To reduce the threat of common method bias, future studies should investigate these context variables immediately (e.g., by asking supervisors to rate their behavior or comparing employees from organizations with different diversity-management practices or value of diversity).

Accounting for variables from different levels (e.g., team-level or organizational-level factors) is also a powerful potential research area for future studies. As Meyer (2017) points out, there is still a lack of diversity research integrating different levels of analysis, although theoretical approaches hint at these relationships (e.g., Guillaume et al., 2014). For example, diversity research could benefit from studies that investigate team members' reactions (individual level) to objective or perceived team diversity (individual or team level) in organizations with different organizational diversity-management practices (organizational level). This will not only add to our understanding of the different effects of diversity but also offer practitioners important insights into organizing their organizations, teams, and employees to achieve the best possible performance.

7. Conclusion

This thesis aims to answer the questions of how different determinants relate to the perception of team diversity and, in turn, how the perception of team diversity relates to individual-level outcomes. In response to these open research questions, it offers a conceptualization of different types of team diversity based on several theoretical approaches to team diversity and reports on three empirical studies: an experimental online study and two online-survey studies, each with a German-employee sample. Results showed that objective team diversity was positively related to perceived team diversity and that dirty-task frequency, a task-related characteristic, triggered the perception of identity-based subgroups. Whereas results show prior experience with age diversity weakening the positive relationship between objective age diversity and perceived age diversity in an unknown team, the combination of perceived supervisor support and perceived organizational value of diversity decreases the positive relationship between dirty-task frequency and the perception of identity-based subgroups.

This thesis also raises attention to perceived relationship conflict, surface acting, and perceived social-identity threat as individual-level consequences of the perception of identity-based subgroups. Perception of resource-based subgroups negatively related to perceived procedural fairness but not to perceived distributive fairness, and perception of knowledge-based subgroups was found not to relate to a perceived transactive memory system. Perceived social-identity threat was also shown to mediate the relationships between employees' perceptions of identity-based subgroups and information-sharing, perspective-taking, and information elaboration, whereas perceived procedural fairness explained only the effects of employees' perceptions of resource-based subgroups on information-sharing and information elaboration. Furthermore, this thesis could show negative indirect effects of dirty-task frequency on perceived relationship conflict and surface acting, respectively, through the perception of identity-based subgroups.

Integrating these results in current theoretical approaches to explain the effects of diversity research – e.g., the theory of subgroups in work teams (Carton & Cummings, 2012); the categorization-elaboration model (van Knippenberg et al., 2004); the multilevel model of team diversity (Guillaume et al., 2014) – this thesis develops an input-mediator-output-input model for perceived team diversity. Finally, practitioners are advised to foster the development of a diversity mindset in work teams – for example, by implementing diversity training – because team members' differences in the perception of team diversity might be more negative than team diversity per se.

Appendix A - Constructed teams used in study 1.

François Petit

- Male
- 55 years of age
- French
- HR Manager

Jennifer Miller

- Female
- 33 years of age
- US-American
- Secretary

Sarah Donovan

- Female
- 31 years of age
- US-American
- Secretary

Hugo Legrand

- Male
- 51 years of age
- French
- HR Manager

Mathieu Dumont

- Male
- 53 years of age
- French
- HR Manager

Amy Smith

- Female
- 35 years of age
- US-American
- Secretary

Panel A. Constructed team 1.

Marie Dubois

- Female
- 53 years of age
- French
- Secretary

Victoria Parker

- Female
- 51 years of age
- US-American
- Secretary

Jacques Bernadou

- Male
- 31 years of age
- French
- HR Manager

John Kingsley

- Male
- 33 years of age
- US-American
- HR Manager

Olivier Massenet

- Male
- 35 years of age
- French
- Secretary

Abigail Jackson

- Female
- 55 years of age
- US-American
- HR Manager

Panel B. Constructed team 2.

Claudine Deschamps

- Female
- 53 years of age
- French
- Secretary

Phil Coleman

- Male
- 55 years of age
- US-American
- Secretary

Mia Jenkins

- Female
- 31 years of age
- US-American
- HR Manager

Jean Aubour

- Male
- 33 years of age
- French
- HR Manager

Matthew Young

- Male
- 51 years of age
- US-American
- HR Manager

Elodie Thomis

- Female
- 35 years of age
- French
- Secretary

Panel C. Constructed team 3.

Johanna Korhonen

- Female
- 56 years of age
- Finn
- Market researcher

Jack Brown

- Male
- 29 years of age
- Australian
- Financial accountant

Giovanni Pandolfo

- Male
- 38 years of age
- Italian
- Graphic designer

Vera Bonaldi

- Female
- 23 years of age
- Italian
- Secretary

Sofia Giovinco

- Female
- 49 years of age
- Italian
- Financial accountant

Haruto Watanabe

- Male
- 67 years of age
- Japanese
- Financial accountant

Panel D. Constructed team 4.

Svetlana Filippow

- Female
- 56 years of age
- Russian
- Market researcher

Juan Garcia

- Male
- 73 years of age
- Mexican
- Director - Accounting

Maximilian Frei

- Male
- 26 years of age
- German
- Graphic designer

Suzan Dembale

- Female
- 49 years of age
- Nigerian
- Secretary

Mia Chang

- Female
- 17 years of age
- Chinese
- Commercial trainee

John Brown

- Male
- 38 years of age
- US-American
- Engineer

Panel E. Constructed team 5.

Lucy Coleman

- Female
- 53 years of age
- US-American
- Secretary

Monica Bishop

- Female
- 54 years of age
- US-American
- HR Manager

Heather Moore

- Female
- 58 years of age
- US-American
- HR Manager

Josette Lefevre

- Female
- 55 years of age
- French
- HR Manager

David Fletcher

- Male
- 56 years of age
- US-American
- HR Manager

Elizabeth Malone

- Female
- 57 years of age
- US-American
- HR Manager

Panel F. Constructed team 6.

Logan Brewster

- Male
- 33 years of age
- US-American
- HR Manager

Helmut Meier

- Male
- 53 years of age
- German
- Market researcher

Madelaine Perrin

- Female
- 55 years of age
- French
- Secretary

Lilou Fontaine

- Female
- 37 years of age
- French
- Secretary

Bernd Lehman

- Male
- 51 years of age
- German
- Market researcher

Jordan Davis

- Male
- 35 years of age
- US-American
- HR Manager

Panel G. Constructed team 7.

Alessandro Rossi

- Male
- 46 years of age
- Italian
- HR Manager

Sergej Iwanow

- Male
- 32 years of age
- Russian
- Financial accountant

Guillaume Leclerc

- Male
- 36 years of age
- French
- Market researcher

Sebastian Haas

- Male
- 40 years of age
- German
- HR Manager

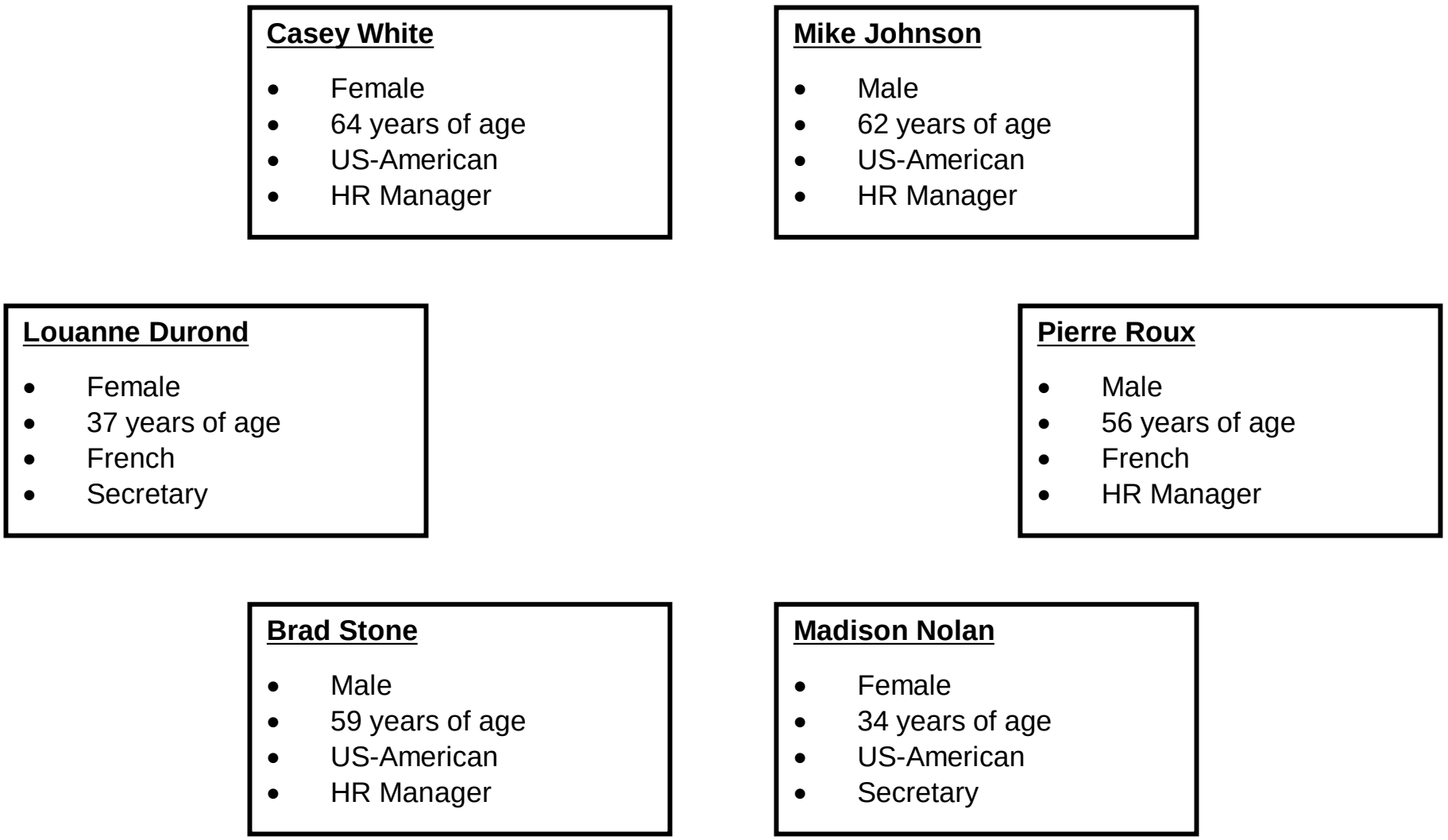
Federica Bianchi

- Female
- 38 years of age
- Italian
- Engineer

Brian Williams

- Male
- 42 years of age
- US-American
- Graphic designer

Panel H. Constructed team 8.



Panel I. Constructed team 9.

Figure 16. Constructed teams used in study 1 (chapter 3).

Appendix B – German Questionnaire for perception of different types of subgroups

In Arbeitsteams kann es zu verschiedenen Konstellationen kommen, in denen Untergruppen entstehen. Bitte geben Sie auf den folgenden Seiten Ihre Einschätzung bzgl. Ihres Arbeitsteams ab. Inwiefern nehmen Sie Untergruppen auf Basis personenbezogener Merkmale wahr?

Table 21

German items of the perception of subgroup scale

Untergruppenart	Code	Itemtext
Wahrnehmung identitätsbasierter Untergruppen	PIS1	In meinem Team gibt es Untergruppen aus Personen, die sich demographisch ähnlich sind.
	PIS2	In meinem Team tun sich Personen mit den Kolleginnen und Kollegen zusammen, die ihre Meinung teilen.
	PIS3	Aufgrund unterschiedlicher Überzeugungen gibt es in meinem Team Untergruppen.
	PIS4	Mitglieder meines Teams gruppieren sich entsprechend ihrer persönlichen Einstellungen.
	PIS5	In meinem Team finden sich Personen mit ähnlichen Werten in Untergruppen zusammen.
Wahrnehmung ressourcenbasierter Untergruppen	PRS1	In meinem Team gibt es Untergruppen aus Personen, die ähnliches Ansehen besitzen.
	PRS2	In meinem Team tun sich Personen mit den Kolleginnen und Kollegen zusammen, die einen ähnlichen Status haben.
	PRS3	Aufgrund unterschiedlicher Entlohnung gibt es in meinem Team Untergruppen.
	PRS4	Mitglieder meines Teams gruppieren sich entsprechend ihrer Entscheidungsbefugnisse.
	PRS5	In meinem Team finden sich Personen, die auf ähnlichen Hierarchieebenen angesiedelt sind, in Untergruppen zusammen.
Wahrnehmung wissensbasierter Untergruppen	PWS1	In meinem Team gibt es Untergruppen aus Personen, die ähnliche Aufgaben ausführen.
	PWS2	In meinem Team tun sich Personen mit Kolleginnen und Kollegen zusammen, die ähnliche Fähigkeiten besitzen.
	PWS3	Aufgrund unterschiedlicher Expertise gibt es in meinem Team Untergruppen.
	PWS4	Mitglieder meines Teams gruppieren sich entsprechend ihres Erfahrungsschatzes.
	PWS5	In meinem Team finden sich Personen mit ähnlichem Fachwissen in Untergruppen zusammen.

Anmerkung. Antwortskala: 1 = „trifft überhaupt nicht zu“, 2 = „trifft eher nicht zu“, 3 = „trifft teilweise zu“, 4 = „trifft eher zu“, 5 = „trifft vollkommen zu“.

Appendix C – Check for endogeneity in study 3

Table 22

Results of the endogeneity checks in study 3

Relationship between …	Instrument variables	Changes between the unconstrained and the constrained model
Employees' perceptions of identity-based subgroups and perceived social-identity threat	▪ Employees' perceptions of identity-based subgroups in the organization ▪ Size of the organization	None
Employees' perceptions of resource-based subgroups and perceived procedural fairness	▪ Perceived self-to-team dissimilarity regarding team members' status ▪ Perceived self-to-team dissimilarity regarding team members' decisive power	The relationship between the instrument variable perceived self-to-team dissimilarity regarding team members' decisive power and perceived resource-based subgroups changed from insignificant in the unconstrained model to significant in the constrained model.
Employees' perceptions of resource-based subgroups and perceived distributive fairness	▪ Perceived self-to-team dissimilarity regarding team members' status ▪ Perceived self-to-team dissimilarity regarding team members' decisive power	The relationship between the instrument variable perceived self-to-team dissimilarity regarding team members' status and perceived resource-based subgroups changed from insignificant in the unconstrained model to significant in the constrained model.
Employees' perceptions of knowledge-based subgroups and perceived transactive memory system	▪ Employees' perceptions of knowledge-based subgroups in the organization ▪ Size of the organization	None

Table 22 continued

Results of the endogeneity checks in study 3

Perceived social-identity threat and information-sharing	▪ Employees' educational level ▪ Perception of team members' warmth	The relationships between the control variables team size respectively leadership position and information-sharing turned insignificant in the constrained model.
Perceived social-identity threat and perspective-taking	▪ Employees' educational level ▪ Perception of team members' warmth	None
Perceived social-identity threat and information elaboration	▪ Employees' educational level ▪ Perception of team members' warmth	None
Perceived procedural fairness and information-sharing	▪ Size of the organization ▪ Perception of team members' warmth	The relationships between the control variable leadership position respectively openness for aesthetics and information-sharing changed from significant in the unconstrained to insignificant in the constrained model.
Perceived procedural fairness and perspective-taking	▪ Size of the organization ▪ Perception of team members' warmth	
Perceived procedural fairness and information elaboration	▪ Size of the organization ▪ Perception of team members' warmth	The relationship between the instrument variable size of the organization and perceived procedural fairness changed from significant in the unconstrained model to insignificant in the constrained model.

Table 22 continued

Results of the endogeneity checks in study 3

Perceived distributive fairness and information-sharing	▪ Core self-evaluations ▪ Perceived diversity with regard to work experience	The relationship between the control variable leadership position and information-sharing changed from significant to insignificant in the constrained model.
Perceived distributive fairness and perspective-taking	▪ Core self-evaluations ▪ Perceived diversity with regard to work experience	None
Perceived distributive fairness and information elaboration	▪ Core self-evaluations ▪ Perceived diversity with regard to work experience	None
Perceived transactive memory system and information-sharing	▪ Negative affect ▪ Perception of team members' warmth	The relationship between the control variable sex and information-sharing changed from insignificant to significant whereas the relationship between the marker variable openness for aesthetics and information-sharing changed from significant to insignificant in the constrained model.
Perceived transactive memory system and perspective-taking	▪ Negative affect ▪ Perception of team members' warmth	None
Perceived transactive memory system and information elaboration	▪ Perceived diversity with regard to team members' status ▪ Working hours (part time or full time)	None

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