# The pitfalls of diversity activation for tolerance within superordinate groups

Dissertation

zur Erlangung des akademischen Grades

doctor philosophiae (Dr. phil.)

---

vorgelegt dem Rat der Fakultät für Sozial- und Verhaltenswissenschaften

der Friedrich-Schiller-Universität Jena

von Dipl.-Psych. Janine Dieckmann

geboren am 18.02.1983 in Radebeul

Gutachterinnen

1. Prof. Melanie C. Steffens, Friedrich-Schiller-Universität Jena

2. Prof. Amelie Mummendey, Friedrich-Schiller-Universität Jena

Tag der mündlichen Prüfung: 14. August 2012

# Table of contents

# List of Figures

# List of Tables

# 1. Introduction and overview

Throughout human history, coping with others from different social groups was – and still is – one of the most important challenges that exist for humans. Living in an increasingly globalised world, humans often face the task to accept and tolerate members of other groups within a common superordinate group (SOG; e.g., migrants within a national group). Yet, one glance into the daily press reveals that intolerance, intergroup discrimination, and intergroup conflicts are far from being exceptional phenomena. Thus, research on the improvement of intergroup relations is one of the most important missions for social sciences. It is vital to investigate conditions that influence the outcomes of social diversity and the tolerance of people towards others. The present doctoral thesis aims to contribute to this research by studying intergroup relations as subgroup relations within larger groups that include different (sub-)groups (e.g., a multicultural society, an interdisciplinary team).

In order to increase tolerance and to reduce minority discrimination within SOGs, "embrace diversity" is the slogan of many campaigns (e.g., concerning different cultures, religions, sexual orientations, physical handicaps, mental illnesses). Previous research has shown that emphasizing diversity and existing differences within SOGs can actually be a beneficial way to improve the relations between subgroups (Mummendey & Wenzel, 1999; Richeson & Nussbaum, 2004; Vorauer, Gagnon, & Sasaki, 2009; Waldzus, Mummendey, Wenzel, & Weber, 2003). For instance, Richeson and Nussbaum (2004) demonstrated that White American college students displayed a smaller racial attitude bias when the multicultural perspective of embracing diversity was activated compared with a colorblind perspective (i.e., subgroup memberships are irrelevant and individualism is emphasized). In order to be more tolerant towards other subgroups, Mummendey and Wenzel (1999) suggested that group members need to have a complex cognitive representation of their SOG in mind rather than a simple one. For instance, a simple representation of the SOG of "Europeans" could be that of a White, tall, and Christian man (i.e., the prototype), whereas a more complex representation of "Europeans" would include men and women, Mediterranean people as well as the British, the Lithuanian, and so forth (cf. Waldzus, 2010). According to Mummendey and Wenzel (1999), compared with group members with a simple representation, those with a complex representation are more likely to perceive divergent subgroups as fitting into the SOG. In other words, the latter understand the existing diversity within their SOG as its defining characteristic and, therefore, tolerate differences. The equalizing effect of a complex SOG representation concerning the perception of the fit of different subgroups has been confirmed by several studies in different SOGs (Machunsky, 2005; Peker, Crisp, & Hogg, 2010; Waldzus et al., 2003; Waldzus, Mummendey, & Wenzel,

2005). There has also been some empirical evidence for the positive effect of a complex SOG representation on intergroup attitudes (Ehrke, Berthold, & Steffens, 2012; Waldzus et al., 2005).

However, sociological analyses of national contexts with a multicultural ideology have increasingly led to a criticism of multiculturalism (e.g., Banerjee & Linstead, 2001; Berry, 1991; Oliver & Wong, 2003). For instance, Banerjee and Linstead (2001) criticized that with multiculturalism a "celebration of cultural pluralism is predicated on an established hierarchy of cultures and [that] multiculturalism consolidated these hegemonic relations" (p. 707). In other words, although a multicultural society can be represented as more diverse compared with a monocultural society, some subgroups are still perceived as possessing a higher status than others. This can provide the breeding ground for prejudice and intergroup conflict (e.g., Oliver & Wang, 2003). Verkuyten (2004) has shown that members of the Dutch majority subgroup in the Netherlands reacted rather ambivalently when thinking about multiculturalism. He extracted favouring and opposing arguments concerning multiculturalism. Whereas multiculturalism was associated with an enrichment of life (e.g., food, music), an increase of tolerance and personal learning, and improved mutual understanding, Dutch people also mentioned a threat that multiculturalism can pose for the mainstream culture. They argued that it can negatively influence the unity of the nation, the functioning of the society, the social order and that a lack of clear norms and values can occur. Overall, multiculturalism seems to be a mixed blessing. The diverging findings from this applied diversity research on multiculturalism demonstrate that further and more basic research on the conditions which influence whether activating diversity within a SOG improves or impairs positive subgroup relations is necessary. An important step in this direction will be done in the current doctoral thesis. In the following, I introduce the main arguments of this thesis and give an overview of all chapters of this work.

Waldzus (2010) pointed out that the salience of different subgroups is unrelated to the complexity of the SOG representation. Somebody who knows that there are Germans with Turkish origins, Russian origins, or Chinese origins living in Germany can still have a simple cognitive representation of Germans. In a similar vein, somebody who knows about the diversity of cultures within a multicultural society can still have a simple cognitive representation of that society (cf. Banerjee & Linstead, 2001). However, I argue that, vice versa, it is very likely that a certain diversity of subgroups is implied when a SOG is represented as complex. Several research approaches concerning the representation of large

groups suggest that it is cognitively divided into distinct subgroups (e.g., Brewer & Lui, 1984; Maurer, Park, & Rothbart, 1995). I will deduce and corroborate this argument in Chapter 2. Although Waldzus (2010) started to discuss the relationship between the complexity of a group representation and the diversity within that group, previous research has invested little effort to distinguish both constructs and their distinct effects. In this thesis, I will emphasize the necessity of this distinction by means of demonstrating the distinct impact that diversity activation can have on the tolerance of majority subgroup members. I will focus on the perspective of majority subgroup members rather than minority subgroup members because they are more often, although not exclusively, the source of intolerance and discriminatory behaviour within a SOG. It is important to distinguish these subgroup perspectives because the motivations and goals of majorities and minorities within SOGs are different (e.g., Arends-Tóth & Van De Vijver, 2003; Dovidio, Gaertner, & Saguy, 2007; Van Oudenhoven, Prins, & Buunk, 1998; Verkuyten, 2005, 2006).

Research on diversity and tolerance in intergroup relations so far has mainly focussed on the effects of diversity activation compared with no diversity activation (Richeson & Nussbaum, 2004; Roccas & Amit, 2011; Vorauer et al., 2009; Waldzus et al., 2003; Wolsko, Park, Judd, & Wittenbrink, 2000) and on the examination of interindividual differences that can influence the outcomes of diversity activation within a group (Hutchison, Jetten, & Gutierrez, 2011; Roccas & Amit, 2011; Steffens, Reese, Ehrke, & Jonas, 2012; Wolf & Van Dick, 2008). I take it one step further and compare the impact of different forms of diversity activation. I assume that whether or not diversity activation leads to more tolerant subgroup relations depends on the type of subgroup exemplars which are activated. More specifically, I predict that activating diversity using subgroups exemplars that are perceived as central (e.g., Germans, Italians, or Swedes in the SOG of Europeans) has a more positive effect on tolerant attitudes than activating peripheral subgroup exemplars (e.g., Monegasques, Cypriots, Lithuanians). Peripheral subgroups are not inherently associated with the SOG, often smaller in size, and less known than central subgroups. Thus, I assume that their activation can diminish the perceived cognitive clarity and the definition of the SOG. I will examine whether this, in turn, has an impact on the cognitive and social open-mindedness of majority subgroup members. Furthermore, I propose a possible way to increase tolerance by activating an exemplar-based representation. This can lead to a more complex SOG representation without activating diversity of subgroups.

Following this introductory chapter, a description of the self-categorization theory (Turner, Hogg, Reicher, Oakes, & Wetherell, 1987) and the ingroup projection model (IPM; Mummendey & Wenzel, 1999) on which my assumptions are based will be given in Chapter 2. I will further elaborate on the complexity assumption of the IPM. Based on this theoretical background, I will deduce the arguments that (a) activating a complex SOG representation can be closely related to the activation of subgroup exemplars and that (b) the activation of different subgroup exemplars can have an important impact on the tolerance of majority subgroup members. I complete Chapter 2 with formulating the research questions for the empirical Chapters 3 and 4.

In Chapter 3, I will examine whether activating peripheral subgroups can diminish the perceived cognitive structure of the SOG compared with the activation of central subgroups. More specifically, the impact of activating central or peripheral subgroups on the clarity of the SOG boundary will be investigated. I will take a look at the impact on the tolerance towards diversity and peripheral subgroups of majority subgroup members, their general cognitive open-mindedness, and their level of self-categorization. In Chapter 4, I will draw on the effect of diversity activation with subgroup exemplars differing in their centrality on the perceived clarity of norms and values within a SOG (cf. Verkuyten, 2004). Although diversity and new input from outside may be valued within a group (e.g., within a multicultural nation, within a specific group of music fans), diversity activation with peripheral rather than central subgroup exemplars could be a condition that increases the endorsement of old core values and norms of the SOG. This kind of group-based conventionalism in turn could lead to less tolerance towards subgroups that defy these old norms.

Whereas I focus on the detrimental effect that activating diversity with peripheral subgroups can have on the tolerance of majority subgroup members in the two previous chapters, I propose a possible way to increase tolerance in Chapter 5. Referring to the complexity assumption of the IPM (Mummendey & Wenzel, 1999), I argue that activating an exemplar-based category representation compared with a prototype-based category representation with non-social stimuli can have a beneficial effect on tolerance (cf. Mullen, Pizzuto, & Foels, 2002). An exemplar-based category representation is supposed to be cognitively more complex than category representations that involve prototypes (Vanpaemels & Storms, 2008). The specific activation of representation mindsets with non-social stimuli (adapted from Mullen, Pizzuto, & Foels, 2002) could on the one hand hinder the activation of

knowledge about the SOG (e.g., subgroups) and one the other hand lead to a general context-unrelated tolerance.

In conclusion, the findings from all experiments will be summarized in Chapter 6. I will discuss their implication for the theoretical framework of research on activating diversity and establishing tolerance within SOGs. Furthermore, I discuss their limitations and provide suggestions for future research.

# 2. Theoretical and conceptual background

In order to investigate the consequences of activating subgroup diversity within superordinate groups (SOGs), it is primarily necessary to take the perspective of intergroup relations as subgroup relations within a SOG. This perspective is based on self-categorization theory (Turner et al., 1987) and elaborated in more detail by the ingroup projection model (IPM; Mummendey & Wenzel, 1999). Both approaches will be described in the beginning of this chapter. I will then introduce the complexity assumption of the IPM and discuss its relationship with the activation of subgroup diversity. I will further deduce the argument that activating subgroup diversity by different subgroup exemplars can have different effects on the tolerance of majority subgroup members. Finally, the research questions will be formulated which are investigated in the empirical Chapters 3 and 4.

## 2.1. Self-categorization theory

In order to make sense of information in their environment people form categories: A chair is a piece of furniture. A robin is a bird. A person giving birth to a child is a woman. A guy with long hair and a black leather jacket with reams of band patches on it is a metal music fan – at least with high probability. Humans form categories with physical objects or animals (Rosch & Lloyd, 1978) but also with humans – including themselves (Allport, 1979; Turner, 1987). The formation of categories is seen as one basic process of human thinking: "[…] categorization occurs to reduce the infinite differences between stimuli to behaviourally and cognitively useful proportions […]" (Rosch, Mervis, Gray, Johnson, & Boyes-Braem, 1976, p. 428; see also Hahn & Ramscar, 2001; Rosch & Lloyd, 1978)). According to Rosch and colleagues (1976), most categories are mentally represented by abstract prototypes. The prototype of a category is the ideal member that best represents the attributes of a category (cf. Rosch et al., 1976).

Turner (1987) generalized these basic assumptions to social categories: Firstly, they are formed by means of their similarity and by the principle of a meta-contrast, i.e., stimuli are grouped into one category to the extent that the differences between them are perceived as less than the differences between this category and other categories. Secondly, members are represented around a prototype according to their similarity to the prototype. For instance, in the category of "women", a mother is a prototypical member, while a female manager is probably perceived as less prototypical. Thirdly, social categories are hierarchically structured and can be included into more inclusive categories (e.g., "metal music fans" into "music fans" into "art lovers" and so forth). The unique feature for social categories is, apparently, the fact that an individual him- or herself is member of some of them. Every individual categorizes

others *and* him- or herself into various social categories and is categorized by others. Categories the individual categorizes him- or herself into are *self-categories*. In their self-categorization theory (SCT), Turner and colleagues (1987) described the relevance of self-categories and their impact on individuals' cognitions and social interactions. According to Turner (1987), the perception of the self as an individual or as a group member lies on two extremes of a continuum. When an individual categorizes him- or herself as member of a group, a process of depersonalization occurs. The individual identifies with other group members of this ingroup (i.e., perception of similarity and interchangeability; Turner, 1987). Which self-category becomes salient in a certain situation depends on its accessibility and its fit to the given situation (Oakes, 1987). The process of self-categorization is therefore highly flexible and allows the adequate adaptation of the cognitions of a person to the given context (Turner, Oakes, Haslam, & Mc Garty, 1994). The process of depersonalization is seen as one antecedent of several group phenomena (e.g., group cohesiveness, intergroup bias, social discrimination). In essence, regardless of any unique characteristics the attractiveness of ingroup members and the evaluation of other groups depend on their prototypicality to the prototype of the respective self-category. Ingroup members are compared with the ingroup prototype. Different groups are compared with regard to the prototype of the more inclusive SOG. In that sense, the prototype of a group on a higher categorization level poses the standard for every intergroup comparison within this SOG and "intergroup relations are almost by definition a matter of subgroup relations within a superordinate identity group" (Hornsey & Hogg, 2000, p. 143).

## 2.2. Ingroup projection model

The authors of the IPM (Mummendey & Wenzel, 1999) have specified an intragroup process that emerges with the existence of multiple subgroups within a SOG, namely ingroup projection. Ingroup projection is the generalization of characteristics of one's own subgroup to the prototype of the SOG. An oversimplified example of the ingroup projection process would be: Germans see themselves as industrious and attribute this characteristic to their image of a "real European". Given the fact that Germans have the stereotype about Italians to be less industrious, the comparison of Italians with this image (i.e., the projection-biased prototype of Europeans) leads to the perception of Italians as being less prototypical for Europeans than Germans. According to the IPM, as soon as the deviance of another subgroup from the SOG prototype is larger than the deviance of the own subgroup from the same SOG prototype (i.e., relative ingroup prototypicality), ingroup favouritism occurs that can

legitimize the less positive evaluation of the outgroup – given the SOG is positively valued (Kessler et al., 2010; Wenzel, Mummendey, Weber, & Waldzus, 2003). In the mentioned example, Germans would evaluate Italians less positively. Hence, within a SOG, ingroup projection can hinder positive subgroup relations because every subgroup applies its own constructed SOG prototype. From this vantage point, the inclusion into one SOG turns outgroups' differences into *deviance* from a superordinate prototype (Mummendey & Wenzel, 1999; Wenzel, Mummendey, & Waldzus, 2007).

Research across several SOGs on the occurrence of ingroup projection has provided evidence that group members perceive their own subgroup as more prototypical for the SOG compared with other subgroups, both on explicit measures (e.g., Lie & Verkuyten, 2012; Rosa & Waldzus, 2012; Waldzus, Mummendey, Wenzel, & Boettcher, 2004; Wenzel et al., 2003) as well as using implicit measures (Bianchi, Mummendey, Steffens, & Yzerbyt, 2010; Imhoff, Dotsch, Bianchi, Banse, & Wigboldus, 2011; Machunsky & Meiser, 2009). Concerning the antecedents of ingroup projection, group related motivations were identified (Mummendey & Wenzel, 1999; Rosa & Waldzus, 2012; Sindic & Reicher, 2008; Ullrich, Christ, & Schlüter, 2006; Waldzus et al., 2003; Wenzel et al., 2003; for a review see Wenzel et al., 2007) as well as a more cognitively driven process (Bianchi et al., 2010; Machunsky & Meiser, 2009, 2012; Rosa & Waldzus, 2012). Initially, Mummendey and Wenzel (1999) stated that group members project attributes from their subgroup to the SOG representation in order to claim superiority over other subgroups. In line with social identity theory (Tajfel & Turner, 1979), this superiority serves the establishment of a positive and distinct social identity that in turn can lead to a positive evaluation of the self. Wenzel and colleagues (2003) reported some evidence that in particular highly dually identified group members[1] perceive higher relative ingroup prototypicality than weak and non-dual identifiers. The perception that the position of the own subgroup is superior to those of other subgroups led in turn to a more positive evaluation of the ingroup relative to other subgroups (Waldzus et al., 2003).

Recent research on further antecedents of ingroup projection has shown that ingroup projection can also be a cognitive process that serves to define the weakly represented SOG in a heuristic way (Bianchi et al., 2010; Machunsky & Meiser, 2009, 2012). Based on Rosch's theory on object categories (Rosch et al., 1976), Machunsky and Meiser (2009) argued that SOGs are less well-defined than the cognitively more proximally represented own subgroups.

[1] With dual identification (e.g., Gonzales & Brown, 2006; Hornsey & Hogg, 2000; elsewhere referred to as dual identity, e.g., Dovidio, Gaertner, & Saguy, 2007) the simultaneous identification with the subgroup and the SOG is meant.

According to Machunsky and Meiser (2009), the representation of SOGs has to be generated on the spot when it becomes salient. This is done by using the well-defined and rather easily available ingroup representation. The authors showed that SOG ratings where more facilitated by preceding ingroup ratings than outgroup ratings. In a similar vein, Bianchi and colleagues (2010) demonstrated that priming the label of the SOG facilitated the processing of ingroup traits compared with outgroup traits.

Either way, the projection-biased SOG prototype poses the standards and norms for intergroup comparisons within the SOG. The higher the relative ingroup prototypicality, the more positive the own subgroup is evaluated. Thus, ingroup projection can be a precursor of intolerance and can hinder positive subgroup relations.

## 2.3. A complex representation of the superordinate group as a means to tolerance

Mummendey and Wenzel (1999) suggested a promising way that can decrease relative ingroup prototypicality and increase tolerance among subgroups. They argued that when group members have a complex representation instead of a simple representation of their SOG in mind, they perceive different subgroups as equally prototypical. A complex SOG representation is given when "[…] the distribution of representative members on the prototypical dimension is […] multimodal" (Mummendey & Wenzel, 1999, p. 167). The authors implied with the multimodal distribution of members that different distinct positions concerning essential attributes are perceived as prototypical (e.g., the notion of cultural pluralism in the multicultural ideology). According to Waldzus (2010), a complex representation of a SOG can consist of multiple prototypes in contrast to a simple SOG representation with one SOG prototype. The rationale behind the complexity assumption is that when different equally prototypical positions on attribute dimensions (Mummendey & Wenzel, 1999) or the existence of more than one prototype (Waldzus, 2010) are salient, differences between subgroups can be tolerated more easily. The SOG is perceived as being diverse and possibly group members project their attributes less on the SOG level. More subgroups can be seen as equally prototypical and thus evaluated more positively. The decreasing effect of a complex SOG representation on relative ingroup prototypicality has been confirmed by several studies (Machunsky, 2005; Peker et al., 2010; Waldzus et al., 2003; Waldzus et al., 2005). However, direct evidence of the effect on intergroup attitudes is scarce (Ehrke et al., 2012; Waldzus et al., 2005).

The idea that increasing the complexity of an intergroup context can lead to more tolerance was also supported by the crossed categorization approach (Crisp & Hewstone, 2007). It involves the idea that attitudes in an ingroup-outgroup context (e.g., East Germans and West Germans) can be improved by means of the salience of a second categorization dimension (e.g., men and women). With the categorization along both dimensions, four possible subgroups become salient (female East and West Germans, and male East and West Germans) The authors argue that the non-applicability of simple categorizations along one dimension changes the mode of information processing from a heuristic to a more systematic mode (cf. Fiske & Neuberg, 1990). Recently, Crisp and colleagues (Crisp, Turner, & Hewstone, 2010) demonstrated that when crossed categories are salient in an ingroup-outgroup context, the perception of social identity complexity[2] of group members (Roccas & Brewer, 2002) and intergroup bias correlate negatively, indicating that higher social identity complexity was related to less ingroup favouritism. However, decreasing the overlap of ingroups of a group member by crossed categories does only indirectly imply a higher complexity of the SOG (Wenzel et al., 2007). Multiple subgroups of the own SOG can be salient, such as female and male East-Germans instead of only East-Germans, but they are not fully included within the SOG because not all women and men are East-Germans. The inclusion of the subgroups is defined as one important criteria of the complexity assumption within the IPM (Mummendey & Wenzel, 1999). If subgroups are not fully included, they are not fully part of the overarching reference frame that a SOG signifies. However, although the findings of crossed categorization only indirectly provide evidence for the complexity assumption of the IPM, they do offer insights on another important moderator that can influence the impact of diversity activation on tolerance – namely social identity complexity. The more social identities overlap, for instance the subgroup and the SOG identity, the less positive could the acceptance of diversity be.

To sum up, ingroup projection can lead to more intolerant subgroup relations. As suggested by different approaches, one possible way to decrease the resulting ingroup bias can be the activation of a more complex representation of the SOG. However, I argue that previous research on the effects of increased complexity of a SOG representation on tolerance has been rather vague concerning the distinction from the effects of diversity activation.

[2] Social identity complexity is defined as the perception of overlap between different ingroups (Roccas & Brewer, 2002). For instance, “all women are mothers” is the perception of a high overlap and thus low complexity. People with high social identity complexity were shown to be more tolerant (Brewer & Pierce, 2005).

## 2.4. The relationship between the complexity of a superordinate group and the diversity of subgroups

To elaborate on the relationship between the activation of a complex SOG representation and the activation of diversity of subgroups, it is necessary to take a closer look on the cognitive underpinnings. Cognitive psychologists have defined that a category is complex when "local maxima in the probability of category membership […] occur far from the global maximum of the prototype" (Ellison, 2001, p. 45). For instance, the category of "birds" may be represented – at least for Central European town dwellers – by the prototype of a "robin" (global maximum). However, apart from that birds that do not meet, for instance, the essential criterion of "flying" can also be part of the representation (local maximum; e.g., "penguin", "ostrich"). Contrarily, in a simply represented category the "probability of category membership may decrease evenly with similarity distance from the prototype until the category boundary is reached" (Ellison, 2001, p. 45). In a similar vein, Mummendey and Wenzel (1999) argued that, whereas a simply represented SOG is represented by one prototype, in a complexly represented SOG, different values on essential attribute dimensions can be perceived as prototypical. According to Waldzus (2010), this multimodal distribution of members on the attributes can resemble the notion of a representation by multiple subgroups. Machunsky (2005) similarly argued that "[…] complexity refers to the formation of meaningful clusters among stimuli which have been recognized as highly differentiated on multiple dimensions." (p. 27). Hence, a SOG that is represented as complex possesses the prerequisite to be represented by a diversity of distinct subgroups.

Recently, Waldzus (2010) specified that the representation of a SOG can be independent of the existence of subgroups or of the explicit knowledge about them. He explained that someone who knows of the existence of, for example, Buddhist and Mormons within the group of Americans, can still think of Americans as a predominantly Christian society. Devos and Banaji (2005) showed that minority members (Asian Americans), who apparently know that there are more subgroups of Americans in terms of ethnicity, still seem to have a rather simple representation of this SOG. They associated "American" implicitly primarily with being "White" rather than "Asian" or "Black". In line with the IPM, a complex representation of Americans would be that of a group with a "great diversity of religious beliefs" (Waldzus, 2010; p. 233) or that of a multicultural nation (Mummendey & Wenzel, 1999). In other words, Waldzus (2010) emphasized that the activation of different subgroups does not necessarily imply the activation of a complex SOG representation. However, I argue that with a complex

representation of a SOG it is more likely, compared with a simple representation, that available subgroup exemplars[3] are activated. They may pose the comparison standards for new stimuli, in particular when it comes to the evaluation of subgroups (cf. Smith & Zárate, 1992). In the next section, I will further elaborate on the argument that the activation of subgroup exemplars can be a consequence of the activation of a complex SOG representation.

## 2.5. The representation of subgroups within large-scale groups

Starting with Brewer and colleagues (Brewer, Dull, & Lui, 1981; Brewer & Lui, 1984) who stated and empirically demonstrated that a "[…] cognitive representation of broad social groupings – such as females, blacks, or elderly – is that of a superordinate category differentiated into distinctive subcategories" (Brewer & Lui, 1984, p. 585), different researchers have argued that large-scale groups are cognitively represented in distinct subgroups (Hogg, 1987; Maurer et al., 1995; Park, Judd, & Ryan, 1992; Richards & Hewstone, 2001; Van Twuyver & van Knippenberg, 1998).

Fiske and colleagues (Fiske, Neuberg, Beattie, & Milberg, 1987) described the formation of subcategories or subgroups as one process that can occur when a new stimulus (e.g., a person) does not fit to an initially available category label. Then, as one possible cognitive process a new subcategory for the stimulus can be formed. Their continuum model of impression formation (Fiske, Lin, & Neuberg, 1999) assumes that all processes to form an impression of others lie on a continuum, ranging from more abstract, category-based to more complex, individuated, and attribute-based processes. The process of subcategorization (i.e., the formation of subgroups) lies in between both extremes. As Crisp and Hewstone (2007) have discussed within the crossed categorization approach, a group context, where more than a one-dimensional categorization (e.g., men and women) is applied and (multiple) subgroups are formed (e.g., old and young men, old and young women), is characterized by a higher cognitive complexity.

Another approach coming from stereotype research concerning the process of subgroup formation is that of Maurer and colleagues (Maurer et al., 1995). They claim that subgroups can be formed by two processes. First, subgroups are formed when a grouping of members "expresses" the stereotype of the group in a unique and distinct way – the *subgrouping* process. Many subgroups can be prototypical for the SOG and the diversity of subgroups mirrors the variability of the SOG (Maurer et al., 1995). Another process that leads to

[3] An exemplar is "a cognitive representation of an object of the same type as the current target of judgment" (Smith & Zárate, 1992, p. 4).

subgroups is *subtyping*. Members who do not fit the stereotype of the group (represented by a prototype) are pooled into a subgroup of subtypes that are perceived as rather atypical. Maurer and colleagues (1995) argued that this subgroup is psychologically excluded from the SOG in order to restore the overall group stereotype (see also Richards & Hewstone, 2001). Whereas the subgrouping process can increase the variability of the stereotype of the SOG, subtyping does not (Maurer et al., 1995). Moreover, whereas the subgrouping process can potentially increase the complexity of the representation of the SOG, the subtyping process would rather hinder it (Machunsky, 2005).

Both discussed approaches (Fiske et al., 1999; Maurer et al., 1995) concerning the formation of subgroups suggest that subgroup formation is related to a higher complexity of the SOG representation, unless the subgroups are formed to psychologically exclude subtypes from the SOG (subtyping; Maurer et al., 1995). Then, complexity should not vary. However, findings on the subgrouping process (Maurer et al., 1995) corroborate the argument that a complex category representation can be that of distinct subgroups. Thus, the activation of a complex representation can potentially activate subgroup exemplars as comparison standards for social judgements. This argument is further corroborated by a third approach that determines when a large-scale group is divided into meaningful subgroups (Lambert, Barton, Lickel, & Wells, 1998). The authors showed that also the processing goal has an influence on the formation and the perceived importance of subgroups for social judgements, particularly in heterogeneous groups. Participants who had the task to form an impression of a whole group of persons formed subgroups but did not perceive high importance of them for their subsequent judgements. In turn, participants who had the task to think about similarities and differences of all group members (an integration task, see Park et al., 1992) attributed high importance to the subgroups concerning their subsequent judgements. Thus, in the second task, where building a more complex representation of the group was demanded, participants used subgroups in order to reduce the cognitive effort to structure the whole group. Hence, this finding suggests that the activation of a complex SOG representation could activate different subgroups of the SOG in order to safe cognitive resources.

To sum up, different approaches suggest that a SOG which is represented as complex can very likely be represented by a diversity of subgroups. Thus, the activation of a complex SOG representation can very likely activate different subgroups. I argue that activating different subgroup exemplars can have a distinct impact on the tolerance of majority subgroup members – beyond the effect of activating a complex SOG representation. Previous research

did not pay attention to the distinction of both effects. In the present doctoral thesis, I will provide a first step into this direction by examining the effects that diversity activation with different subgroups can have.

## 2.6. The consequences of diversity activation with different subgroup exemplars

Previous research has suggested some moderators that can influence whether activating diversity within a group has a positive or a negative effect on tolerance. Recently, Roccas and Amit (2011) demonstrated the influence of conservative values of individuals (i.e., values on the maintenance of the status quo) on tolerance. The authors showed that individuals with high conservative values were less tolerant when diversity of their group was activated. Individuals with low conservative values were less sensitive to information about diversity. Hutchison and colleagues (2011) showed that activating diversity within a group only led to a more positive evaluation of atypical members when the norm of valuing diversity was activated compared with when it was not. In a similar vein, Wolf and Van Dick (2008) showed in a survey on the group-focused enmity syndrome[4] that individuals who have positive diversity beliefs reported less group-focused enmity than those reporting less positive diversity beliefs. Originally, positive diversity beliefs (i.e., beliefs about how valuable diversity is for the functioning of a work group; Van Knippenberg & Haslam, 2003) were shown to positively influence the work performance of an organization or a work group (e.g., Homan, Van Knippenberg, Van Kleef, & De Dreu, 2007). As described above (2.3.), there is some evidence that social identity complexity can function as a moderator (Brewer, 1997; Crisp et al., 2010). Low social identity complexity (high overlap of different self-categories) was shown to be related to less tolerance towards other groups than high social identity complexity (Brewer & Pierce, 2005; Crisp et al., 2010). For the activation of diversity, it can be assumed that the lower the social identity complexity of an individual is (e.g., subgroup and SOG identity), the less positive the acceptance of diversity within a SOG would be. Another moderator that has recently been proposed is the perceived prototypicality of the ingroup (Steffens et al., 2012). The authors showed that activating diversity of the category "men" led to more perceived threat and more discrimination of gay men but only among men who perceived high ingroup prototypicality of their heterosexual subgroup beforehand.

[4] The construct is defined as a "syndrome" of various forms of prejudice such as sexism, devaluation of gay men and lesbians, anti-Semitism, and xenophobia (Zick, Wolf, Küpper, Davidov, Schmidt, & Heitmeyer, 2008).

Taken together, research on possible moderators of the outcomes of diversity activation within groups focussed so far in particular on differences between individuals. However, I argue that it is also vital to investigate more on the contextual variables that influence the effects of diversity activation on subgroup relations. This aspect has received less attention in past research.

In line with research on the attitude representation theory (Lord & Lepper, 1999), I assume that by activating different parts of a diverse SOG representation (i.e., via different subgroup exemplars) group members will report different attitudes towards diversity within the SOG and other subgroups. Following Smith and Zárate (1992), social judgements can rely on exemplars that are activated (not necessarily consciously) prior to the judgement in a given situation. Research on attitudes has shown the substantial influence of the accessibility of different exemplars on attitudes concerning a category (Lord, Paulson, Sia, Thomas, & Lepper, 2004; Sia, Lord, Blessum, Ratcliff, & Lepper, 1997). Sia and colleagues (1997) showed that the activation – via self-generation or presentation – of either a positive valued exemplar or a negative exemplar of a category (e.g., politician) changed subsequent attitudes towards the category in the respective direction. Based on these findings on the malleability of attitudes by means of exemplar activation, I will elaborate in this doctoral thesis on the argument that the activation of diversity with different subgroup exemplars can play an important role on whether diversity activation has more or less positive effects. Another argument that highlighted the importance of subgroup exemplar activation for subsequent judgements came from Rothbart and Park (2004). They stated that in particular for large groups that are characterized by high diversity and low entitativity[5] such as "state workers, college students, and smokers" (Rothbart & Park, 2004, p. 98), where the stereotype is rather vague, "one's conception of the group at a given [*sic*] in time depends on which subgroups are retrieved and considered" (p. 99).

Based on findings from cognitive categorization research (Hahn, Bailey, & Elvin, 2005), I argue that the crucial characteristic of the activated subgroup exemplars is their centrality for the SOG (or the social category). Hahn and colleagues (2005) demonstrated with non-social categories that learning a diverse category by peripheral category members was more difficult and effortful than learning a more homogeneous category by central category members. Learning a diverse category representation led to a more error-prone categorization process of newly presented stimuli than learning a more homogeneous category representation. Thus, the

[5] „The degree to which a collection of persons are perceived as being bonded together in a coherent unit" (Lickel, Hamilton, Wieczorkowska, Lewis, Sherman, & Uhles, 2000, p. 224).

category boundary was less clear for the diverse than for the homogeneous category. For social categories, the clarity of group boundaries (i.e., the "good continuation" of a group) was discussed as one important component of the entitativity of a group (Campbell, 1958, cited in Rothbart & Park, 2004). "Group boundaries, either sharp or fuzzy, determine to a large degree who is, or is not, considered a category member" (Rothbart & Park, 2004, p. 90). According to SCT, group boundaries are defined by the meta-contrast principle (Turner, 1987). The clearer they are, the more they provide a clear structure within the social environment. A clear social structure (i.e., "available social categorizations"; Spears, Scheepers, Jetten, Doosje, Ellemers, & Postmes, 2004, p. 298) helps an individual to define him- or herself within the social environment and to shape his or her social identity (Spears et al., 2004).With the findings of Hahn and colleagues (2005) and the function of group boundaries in mind, I assume that activating diversity with peripheral subgroups compared with central subgroups can decrease the perceived clarity of the SOG boundary and, thus, the definition of the SOG. Central subgroups compared with peripheral subgroups are those that are more prototypical and more easily retrieved when thinking about the SOG (Rothbart, Sriram, & Davis-Stitt, 1996). In this thesis, they are defined as being more familiar within the SOG than peripheral subgroups. According to Barsalou (1985), the frequency of instantiation is one factor that can determine the prototypicality perception within a category. The frequency of instantiation is defined as "someone's subjective estimate of how often they have experienced an entity as a member of a particular category" (Barsalou, 1985, p. 631). Thus, central subgroups are very likely majority subgroups. Furthermore, central subgroups are more likely, but not necessarily, subgroups with higher status (Mummendey & Wenzel, 1999; Rubin, 2012). At the University of Jena, for instance, "psychology students" pose a more central subgroup of "students of the University of Jena" than the peripheral subgroup of "students of Eastern Europe studies".

To sum up, one research question that will be examined in this thesis is: Does activating diversity within a SOG with subgroup exemplars differing in their centrality have an effect on the perceived clarity of the SOG boundary and the definition of the SOG? A second research question concerning the effect of diversity activation on tolerance is: Does diversity activation by means of peripheral subgroups rather than central subgroups lead to less open-mindedness of majority subgroup members? These questions will be empirically tested with two sets of experiments in the following chapters.

# 3. When diversity blurs the group boundary – The negative impact on tolerance

In this chapter, it will be examined whether activating diversity with different types of subgroups can have an impact on the perceived clarity of the cognitive structure. It is assumed that the activation of different subgroup exemplars can influence the perceived clarity of the SOG boundary. This clarity is understood as one component that can provide cognitive structure within the social environment. Furthermore, the impact of the perceived clarity of the SOG boundary on majority subgroup members' tolerance within the SOG, on their general cognitive open-mindedness, and on their self-categorization will be investigated.

## 3.1. Introduction

*To a without understand a structure difficult is sentence.* However, with enough cognitive involvement and some rearrangements the reader will understand the phrase: *A sentence without a structure is difficult to understand.* Not only in the linguistic domain humans use certain rules and structures. In order to reduce and to make sense of the high amount of information in their environment, humans form – in general – cognitive structures (i.e., abstract mental representations such as prototypes, scripts and so forth; Rosch & Lloyd, 1978; Neuberg & Newsom, 1993). One basic structure-providing process, for instance, is cognitive categorization (Hahn & Ramscar, 2001). According to Rosch and colleagues (Rosch, Mervis, Gray, Johnson, & Boyes-Braem, 1976), "[…] categorization occurs to reduce the indefinite differences between stimuli to behaviourally and cognitively useful proportions" (p. 428). The notion of categorization was also discussed in relation to the social environment (e.g., Allport, 1979; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). Individuals categorize others and themselves into social categories in order to reduce the amount of information they are faced with, for instance, when meeting a new person. Furthermore, categorizing the self and others helps to define themselves within their social environment (Turner et al., 1987). Thus, social categories can function as structure-providing entities.

The extent to which individuals need simple cognitive structures can vary (Neuberg & Newsom, 1993). This variation has two sources. On the one hand, specific characteristics of situations can influence the extent to which individuals search for structure (Kruglanski & Freund, 1983; Proulx, Heine, & Vohs, 2010). For instance, reading a scientific paper that starts with a non-sentence could lead to a general increase in a search for cognitive structure. On the other hand, individuals differ in their need for cognitive structure (Neuberg & Newsom, 1993). Whereas some people are not at all bothered by things that interrupt their routine (e.g., a scientific paper that starts with a non-sentence), other people perceive unexpected situations as aversive. Thus, both sources – the situation and the individual –

determine how much cognitive structure is needed in a given situation. Previous research has shown that individuals with a high need for structure use more stereotypes (Neuberg & Newsom, 1993), are more prone to categorization (Moskowitz, 1993), and devalue deviant members of social categories more (Smith & Gordon, 1998) than individuals with a low need for structure. Thus, a high need for structure can be a precursor of intolerance.

In contrast, there are experiments in intergroup research showing more tolerance between groups as a result of challenging the simple cognitive structure by increasing perceived diversity within common superordinate groups (SOGs) including the own and other groups (e.g., in a multicultural society; Richeson & Nussbaum, 2004; Waldzus et al., 2005; Wolsko et al.., 2000). Mummendey and Wenzel (1999) suggested that individuals need to have a complex cognitive representation of their SOG in order to be more tolerant towards other subgroups. Thus, whereas the latter approaches deploy the challenge of a clear and simple structure within the social environment as a means of establishing tolerance, research on the need for structure suggests a decrease in tolerance in the same situation (Neuberg & Newsom, 1993).

In the present paper, we investigate conditions under which activating diversity within SOGs can imply a loss of cognitive structure and how this can affect group members' tolerance. We assume that when diversity is activated and the SOG is consequently perceived to provide little cognitive structure (as opposed to a SOG that is perceived to provide clear structure) this should have an effect on the tolerance within the SOG (Experiments 1 and 2). However, perceiving little cognitive structure should also have an effect beyond the salient group context. This will be tested in Experiment 2. Finally, the perception of little cognitive structure within a SOG should decrease the functionality of this social category (cf. Turner et al., 1987). Whether individuals switch to another self-category under this condition will be examined in Experiment 3.

**Characteristics of a situation as one source of a need for structure**

In initial research, need for structure was defined rather broadly as "the need to have some knowledge on a given topic, any knowledge as opposed to confusion and ambiguity" (Kruglanski & Freund, 1983, p. 450). Kruglanski and colleagues (e.g., Kruglanski & Freund, 1983) specified situational conditions that lead individuals to *epistemic freezing*: If the need for structure increases in a situation, for instance by having to take a decision under time pressure, individuals stop searching for further information in their cognitive process of

hypothesis testing earlier than they would have done without time pressure. As a consequence, individuals under time pressure show primacy effects (Freund, Kruglanski, & Shpitzajzen, 1985) and use more stereotypes (Kruglanski & Freund, 1983) in their impression formation than without time pressure (see also Kruglanski & Webster, 1996). In a similar vein, it has recently been shown that making the own mortality salient and the presentation of absurd art increase the need for structure because, as the authors argued, there is a lack of meaning in this given situation (Proulx et al., 2010).

Neuberg and Newsom (1993) have specified that the need for structure of an individual does not only evoke from the surrounding situation that challenges a given cognitive structure but can also be understood as a chronic information-processing motive (Neuberg & Newsom, 1993). They defined it as a need for "reducing informational quantity and complexity … [by means] … of the creation and use of abstract mental representations (e.g., schemata, prototypes, scripts, attitudes, and stereotypes)" (Neuberg & Newsom, 1993, p. 113). Some individuals are more motivated to represent their environment simply and unambiguously than others. The impact of this personal need for structure (PNS) has been demonstrated on diverse outcomes. For instance, individuals with a high PNS form more erroneous stereotypes (Schaller, Boyd, Yohannes, & O'Brien, 1995), use more stereotypes (Neuberg & Newsom, 1993), and are more prone to categorization (Moskowitz, 1993). Furthermore, individuals with a high PNS evaluate deviant members of non-social categories (e.g., the letter B in a category of As; Rubin, Paolini, & Crisp, 2011), deviant members of social categories (e.g., homosexuals in a predominantly heterosexual society, Smith & Gordon, 1998; Kemmelmeier, 2010; McGregor, Haji, & Kang, 2008), and modern art (when their mortality is salient; Landau, Greenberg, Solomon, Pyszczynski, & Martens, 2006) less positively than individuals with a low PNS.

In brief, need for structure can be understood as both a state that can be evoked by characteristics of a situation and a chronic individual information-processing motive. In our research, we aim to elaborate on the effects of activating diversity within a SOG as a situation that can diminish perceived cognitive structure. We will examine the effect on the tolerance of majority subgroup members, their general cognitive open-mindedness, and their self-categorization.

**The activation of diversity within a superordinate group**

Several approaches in intergroup research have shown that activating diversity within SOGs, for instance in multicultural societies, can lead to more positive evaluations of other subgroups (Richeson & Nussbaum, 2004; Waldzus et al., 2005; Wolsko et al., 2000). Mummendey and Wenzel (1999) suggested that individuals need to have a complex cognitive representation of their SOG in order to perceive other subgroups as prototypical for the SOG as their own group. In the ingroup projection model (IPM), Mummendey and Wenzel (1999) describe that subgroup members generalize attributes of their own subgroup to the prototype of the SOG (i.e., ingroup projection). This projection process leads to the perception of a higher prototypicality of the own subgroup relative to other subgroups (i.e., high relative ingroup prototypicality). As a consequence, the own subgroup is evaluated more positively than other subgroups. However, a more complex representation of the SOG that can consist of multiple (sub-)prototypes (Waldzus, 2010) does not provide the basis for generalizing the own subgroup's characteristics to a single overall prototype as in the case of a simple SOG representation (cf. Mummendey & Wenzel, 1999). Thus, subgroup members can perceive other subgroups as more prototypical and evaluate them better than with a simple SOG representation (Ehrke et al., 2012; Waldzus et al., 2003; Waldzus et al., 2005). Hence, whereas the described approaches deploy the challenge of a clear structure (e.g., the SOG prototype) as a means to establish more tolerance, research on the need for structure would suggest that the perception of missing cognitive structure can lead to less positive evaluations of targets that are perceived as deviating (e.g., Rubin et al., 2010).

Based on the complexity assumption of the IPM (Mummendey & Wenzel, 1999), Peker and colleagues (2010) recently showed that independently of the activation of subgroup diversity within a SOG, the coherence of a representation (i.e., the clear and organized structure) can reduce relative ingroup prototypicality. Their results revealed that participants perceive their own subgroup as less prototypical relatively to others when information about attributes of the subgroups was presented in a structured way compared with a random order. This result supports our argument that the perception of cognitive structure can influence subgroup relations. The authors argued that providing structure by coherence within a SOG is another beneficial way to improve subgroup relations because it does not affect the identification with the SOG. They showed that SOG identification decreases with more diversity. However, Peker and colleagues (2010) did not directly address the evaluation of other subgroups. Hence, knowledge about the impact of perceived cognitive structure within

SOGs on tolerance and subgroup relations is still missing. This is what the present paper aims to address.

**The impact of the clarity of a group boundary on the perceived cognitive structure**

Social categorization is based on the principle of cognitive economy, i.e., the most information should be gained with the least cognitive effort (Rosch et al., 1976). Thus, social categories are formed in accordance with this principle and provide a clear cognitive structure. According to Turner and colleagues (1987), social categories are formed by a meta-contrast principle. Stimuli are grouped into one category to the extent that the differences between them are perceived as less than the differences between their category and other categories. Furthermore, social categories are hierarchically structured, i.e., every social category can be included into another. The category of "humans" is the most inclusive one (Turner, 1987). Concerning the internal structure, social categories are represented by an abstract prototype, i.e., the ideal member that best represents the attributes of a category (cf. Rosch et al., 1976). Category members are represented with regard to their similarity to this prototype along a prototypicality gradient until the category boundary (cf. Ellison, 2001). The social categories individuals categorize themselves into are *self-categories* (i.e., ingroups).

In their self-categorization theory, Turner and colleagues (Turner et al., 1987) described the relevance of self-categories and their impact on individuals' cognitions and social interactions. When individuals categorize themselves as member of a self-categories (i.e., as group members), a process of depersonalization occurs. The individuals identify with other group members of their ingroups (i.e., perception of similarity and interchangeability; Turner, 1987). Which self-category becomes salient in a certain situation depends on its accessibility and its fit to a given situation (Oakes, 1987). The process of self-categorization is highly flexible and allows the adequate adaptation of cognitions of a person on the given context and situation (Turner et al., 1994). Whereas an individual can identify as a man in interaction with a woman, he can identify as a student in interaction with a professor. Turner (1987) stated that in every moment also "the appropriate level of abstraction (the one that maximizes cognitive simplicity, stability and consistency) will […] vary" (p. 50). Thus, when a self-category is perceived as not providing enough cognitive clarity, individuals may change the level of abstraction (i.e., categorizing as personal self or switching from a more inclusive to a less inclusive category). An important assumption of the present paper is that the clarity of category boundaries (or group boundaries) is one structural characteristic that can influence the perceived cognitive structure within a social context. "Group boundaries, either sharp or

fuzzy, determine to a large degree who is, or is not, considered a category member" (Rothbart & Park, 2004, p. 90). The clear distinction or "good continuation" of a group from other non-members is one of the principles that leads to the perception of the entitativity of a group (i.e., broadly defined as groupness; Rothbart & Park, 2004). Large-scale groups such as "students" or "music fans" possess in general very wide group boundaries, high diversity, and low entitativity (Rothbart & Park, 2004). Hence, cognitive structure could already be perceived as rather low in these group contexts. Concerning our research question on diversity activation within SOGs, there is evidence from non-social categories that the boundary of a category is less well-defined when participants had to learn the membership of category exemplars that differed more from the category prototype (i.e., peripheral exemplars) compared with category members that were closer to the prototype (i.e., central exemplars; Hahn, Bailey, & Elvin, 2005). Furthermore, Hahn and colleagues demonstrated that peripheral subgroups were more difficult to learn and to recognize than central ones. In line with this research, we argue that activating diversity within a SOG with central or peripheral subgroup exemplars can affect the perceived clarity of the SOG boundary and, thus, the perceived cognitive structure.

**Current research**

In the following three experiments, we investigate whether the perception of little cognitive structure (i.e., low clarity of the SOG boundary) leads to less tolerant attitudes within a SOG (Experiments 1 and 2). Furthermore, we aim to show that the perceived decrease of the boundary's clarity actually affects the general perception of and the need for cognitive structure in this specific situation. Therefore, we hypothesize that a perceived decrease of clarity of the SOG boundary should elicit less open-minded reactions not only within the SOG but also in a domain that is unrelated to the social context (i.e., personal taste in music, Experiment 2). Following the idea of the high flexibility of self-categorization (Turner, 1987), we investigate whether a less clear SOG boundary leads to implicit self-categorization into the subgroup (Experiment 3). We applied a category learning task (cf. Hahn et al., 2005) with undergraduate psychology students at a German university for whom the social category of being a student was expected to be new.

## 3.2. Pretest

Before addressing our research questions, we tested how the location of several subgroups within the SOG "students at participants' university" was perceived by our participants, i.e., members of the majority subgroup of psychology students. We decided to take psychology

students as participants because they are a numerical majority at the university where we conducted the experiments. According to Barsalou (1985), the *frequency of instantiation*[6] is one factor that can determine the prototypicality perception within a category. Thus, we assume that majority subgroup members perceive themselves as being a central subgroup within the SOG. Wenzel and colleagues (2003) showed that they perceive themselves as more prototypical for students at this university than business students (another majority subgroup). In order to derive the stimulus subgroups for the category learning task, 40 subgroups were pretested to detect whether they are perceived as more central or peripheral. Furthermore, we aimed at deriving target subgroups for a categorization task that was used to measure the actual cognitive clarity of the SOG boundary as a manipulation check.

Forty-six undergraduate psychology students (36 women; $M_{age}$ = 21.84, $SD$ = 3.18) were recruited. We offered sweets as a reward for participation. Participants filled out a questionnaire that firstly assessed their identification with their subgroup and the SOG in random order. Subgroup identification was measured with one item that consisted of seven pictures (ranged from 1 to 7) showing two increasingly converging circles. In picture 1, the small circle (subtitled "self") and the large circle (subtitled "psychology students at […] university") were at opposite ends of a line. In picture 7, the small circle was fully included in the large circle. Participants were asked to mark the picture that best described their own closeness to the subgroup (cf. Schubert & Otten, 2002). SOG identification was measured scale with six items[7] on a seven-point scale (e.g., "I identify with the group of students at the University of […]"; 1 = *not at all*, 7 = *very*; Cronbach's α = .83). Secondly, they rated the perceived entitativity of the group of students at their university with nine items from the entitativity scale of Rydell and McConnell (2005) on a seven-point scale (e.g., "How often do members of the group of students at the University of […] interact with each other?"; Cronbach's α = .81). Then, participants estimated their certainty about the inclusion of 18 potential subgroups on a seven-point scale (1 = *very uncertain*, 7 = *very certain*). By means of these certainty ratings, we derived stimulus subgroups for the categorization task. In order to define central and peripheral subgroups from the point of view of psychology students, they subsequently rated 14 subgroups[8] (e.g., sociology students, mineralogy students) on two dimensions locating the subgroups within the SOG relative to their own subgroup. Firstly,

[6] The frequency of instantiation is defined as "someone's subjective estimate of how often they have experienced an entity as a member of a particular category" (Barsalou, 1985, p. 631).
[7] A complete overview of all scales and items is displayed in the end of the Appendix.
[8] In order to cut the pool of around 40 subgroups into manageable pieces, we used several versions of the questionnaire. They differed in the mix of target subgroups and in the order of the ratings. With one exception, we had at least 15 ratings for each subgroup. The versions were randomly assigned.

they rated the perceived overall similarity[9] of the other subgroups with their own subgroup on a seven-point scale (1 = *very dissimilar*, 7 = *very similar*). Based on the finding that psychology students at this university engage in ingroup projection (Wenzel et al., 2003), we assume that they perceive similar subgroups as more prototypical for the SOG than subgroups that are not perceived as similar. Secondly, following the principle of frequency of instantiation (Barsalou, 1985), participants had to rate the relative size of the other subgroup to their own subgroup (1 = *much smaller*, 7 = *much bigger*). We implied that subgroups perceived as larger were perceived as more central than subgroups perceived as smaller. Both ratings were not correlated for the subgroups listed in Table A1 (see Appendix) with one exceptions (Slavic studies students: $r(15) = .53$, $p = .04$).

Participants identified with both their subgroup ($M = 5.36$, $SD = 1.00$; $t$-test against scale's midpoint (4): $t(45) = 7.38$, $p < .001$, $r = .74$) and with the SOG of students at their university ($M = 5.48$, $SD = .89$; $t(45) = 11.58$, $p < .001$, $r = .87$). The perception of the entitativity of the SOG was rather low ($M = 4.24$, $SD = .72$), $t$-test against scale's midpoint: $t(45) = 2.30$, $p = .03$, $r = .32$. This finding is in line with previous entitativity ratings of the social category of "students" (Lickel et al., 2000; Rothbart & Park, 2004). A closer examination of the item from the entitativity scale about "the extent of perceived similarities between all students" supported our argument that students at this university were perceived as rather diverse. Participants perceived a medium extent of similarities ($M = 3.76$, $SD = 1.21$), $t$-test against scale's midpoint: $t(44) = -1.36$, $p > .10$).

From the relative position ratings, five potentially central and five potentially peripheral stimulus subgroups were chosen (see Table A1). In order to check statistically whether these subgroups were located in the centrality or periphery of the SOG, we calculated means of all five potentially central and all five potentially peripheral subgroups for both rating dimensions. We tested whether they differed from the scales' midpoint (4) indicating medium similarity or same size respectively (for means and standard deviations see Table A1). Both, central and peripheral subgroups differed significantly in the respective directions on the similarity dimension (central: $t(30) = 7.35$, $p < .001$, $r = .80$; peripheral: $t(29) = -6.22$, $p < .001$, $r = .77$) and on the size dimension (central: $t(30) = 6.50$, $p < .001$, $r = .76$; peripheral: $t(29) = -9.94$, $p < .001$, $r = .88$). Thus, the chosen stimulus subgroups were either located in

[9] We did not define "similarity". In a subsequent open question, we asked them to list characteristics they used for the similarity ratings: About 49 % of all participants mentioned discipline-related aspects (e.g., content of discipline, scientific point of view) and about 28 % mentioned person-related aspects (e.g., behaviour, personality traits).

the centrality or the periphery of the SOG from the point of view of psychology students. For the selection of stimulus (sub-)groups for the categorization task, we analysed the ratings of the certainty of inclusion. Eight potential subgroups were chosen for which participants estimated a medium certainty about the inclusion into the SOG (see Table A2). To test this, we compared the mean for those eight (sub-)groups with the scale's midpoint (4), indicating a medium certainty about the inclusion. As expected, a *t*-test revealed no significant difference; $t<1$.

## 3.3. Experiment 1

The aim of Experiment 1 was to show that activating diversity within a SOG with peripheral subgroup exemplars leads to the perception of less clarity of the SOG boundary activating diversity with central subgroups. Furthermore, we hypothesized that the perception of a less clear SOG boundary leads to less tolerant attitudes towards potential subgroups and towards diversity within the SOG than the perception of a clear SOG boundary. The extent of the clarity of the SOG boundary was manipulated with a category learning task that either activated central or peripheral subgroups (amongst others) as SOG members (see Table A1).

**Method**

**Participants and design.** Participants were 29 first-year-psychology students (26 women; $M_{age}$ = 21.55, $SD_{age}$ = 2.50). They were randomly assigned to one of two experimental conditions differing in the activation of central ($n$ = 14) or peripheral subgroups ($n$ = 15). Overall, they identified highly with psychology students ($M$ = 5.39, $SD$ = 1.06). Participants received a small financial reward and research credit upon completion.

**Procedure and materials.** In the laboratory, participants were seated in front of a computer. They were told about participating in an experiment examining "the perception of student groups". In the computer-based part of the experiment, stimuli were presented and data collected using DirectRT v2006.

Participants firstly rated their subgroup identification, measured with three items (e.g., "I identify with psychology students.") on a seven-point scale (1 = *not at all*, 7 = *very*; Cronbach's $\alpha$ = .81). Subsequently, participants were informed that the names of many student groups would be presented on the screen. They were instructed to decide whether they think these groups belong to the SOG of students at their university or not. They had to press Y for "Yes, it does belong" or N for "No, it does not belong". Participants were encouraged to

respond as quickly and accurately as possible. Following each response, the feedback "wrong" or "correct" shortly appeared. Participants' key presses and latencies were recorded. In three learning trials, all participants had to learn 14 subgroups. The subgroups were presented individually in a random order. In both experimental conditions, the set of stimuli consisted of three subgroups of the SOG (e.g. pharmacy students), six non-subgroups (e.g. hydrology students), and five critical subgroups that differed between the conditions. These critical stimuli were either central or peripheral subgroups (see Table A1). SOG identification and the perceived entitativity of the SOG were measured with the same items as in the pretest (Cronbach's $\alpha_{identification}$ = .85, Cronbach's $\alpha_{entitativity}$ = .82).

In the next step, participants were instructed to complete a categorization task. They had to decide whether potential subgroups that would be shortly presented on the screen belong to the SOG or not. This categorization task measured the clarity of the SOG boundary. The stimulus subgroups were presented individually and in random order. Participants' key presses and latencies were recorded. We assumed that the latencies for the categorization decisions shed light on the confidence participants have about their decisions (Lambert et al., 1998). Longer latencies would indicate less confidence and less clarity of the boundary. In both experimental conditions, the set of 19 subgroups consisted of the three subgroups from the learning task, eight newly presented non-subgroups (e.g., ethnology students), and five newly presented peripheral subgroups (e.g., geophysics students). For a complete overview of all subgroups see Table A2.

After the categorization task, situation-based PNS was measured with seven items adapted from a PNS scale (Machunsky & Meiser, 2006; e.g., "At the moment, I would not be bothered by things that interrupt my daily routine."). The items were measured on a six-point scale (1 = *totally disagree*, 6 = *totally agree*; Cronbach's α = .79). Subsequently, participants filled out a paper questionnaire starting out with demographic questions and then asking participants to evaluate two potential peripheral subgroups (i.e., Italian studies students, agronomy students), each with three items on a six-point scale (1 = *totally disagree*, 6 = *totally agree*; e.g., "I would like to get to know more Italian studies/agronomy students."). Although both groups are no subgroups at this university, the pretest showed that psychology students were uncertain about their inclusion (see Table A2). An overall attitude score was calculated (Cronbach's α = .82). Attitudes towards SOG diversity were measured with four items (e.g., "It is beneficial to have many diverse student groups at the university."; Cronbach's α = .74).

**Results**

The means and standard deviations of the main variables within the experimental conditions are displayed in Table 3.1. The correlations of all variables within the single conditions are displayed in the Table A3.

Table 3.1

*Means and standard deviations for all variables (Experiment 1).*

| | Central subgroup condition $n = 14$ | Peripheral subgroup condition $n = 15$ |
|---|---|---|
| | *M (SD)* | *M (SD)* |
| Subgroup identification (pre-manipulation) | 5.19 (1.06) | 5.58 (1.07) |
| SOG identification | 5.06 (.74) | 5.31 (1.10) |
| SOG entitativity | 4.18 (.65) | 3.94 (1.02) |
| Inclusion of non-subgroups | 2.93 (1.49) | 2.87 (1.73) |
| Latencies of categorization decisions | 1195.96 (272.2) | 1521.39 (308.98) |
| Personal need for structure | 3.88 (.82) | 3.70 (.96) |
| Attitudes towards potential subgroups | 3.45 (.86) | 3.37 (.71) |
| Attitudes towards diversity | 4.90 (.86) | 4.18 (.85) |

*Note.* SOG - superordinate group.

**Preliminary analyses**

**Categorization task.** If our manipulation led to less clarity of the SOG boundary in the peripheral subgroup condition, participants should erroneously include more groups into the SOG and take longer for their categorization decisions than participants in the central subgroup condition. A *t*-test on the latencies of the categorization decisions revealed that participants in the peripheral subgroup condition took longer to decide whether a potential subgroup belongs to the SOG or not than participants in the central subgroup condition, $t(27) = -3.00$, $p = .01$, $r = .50$. This indicates that participants were less confident about their

decisions in the peripheral compared with the subgroup condition. However, with regard to the inclusion decisions of non-subgroups, a *t*-test revealed no statistically significant difference, $t<1$.

**Learning task.** We tested whether central subgroup exemplars were more easy to learn than peripheral subgroup exemplars. We added all correct inclusion decisions of the five critical subgroup exemplars (central vs. peripheral) during the learning trials 2 and 3. The first trial was excluded because we implied a high guessing rate. High values indicate a more correct learning process. A *t*-test revealed that participants in the central subgroup condition ($M = 9.93$, $SD = .27$) included their critical subgroups more correctly than participants in the peripheral subgroup condition ($M = 7.73$, $SD = 1.58$); $t(14.86) = 5.30$, $p < .001$, $r = .81$.

**SOG identification and SOG entitativity.** In order to rule out that our manipulation affected possible confounding variables, we tested whether participants differed in their SOG identification and their perceptions of entitativity after the category learning task. A MANOVA on both variables revealed no significant differences between the conditions, $F$s<1.

**Main analyses**

**Attitudes towards potential subgroups.** We tested whether less clarity of the SOG boundary had a negative effect on attitudes towards potential subgroups. A *t*-test between the conditions revealed no difference, $t<1$.

A post-hoc moderated regression analysis on the attitude score with PNS[10] as moderator revealed the following result: In the first step of the regression, the experimental conditions (dummy-coded: central subgroup = 0, peripheral subgroup = 1) and the z-standardized PNS score revealed no significant effects, $b_{condition} = -0.11$, $p > .10$; $b_{PNS} = -0.14$, $p > .10$; overall $F<1$. However, the inclusion of the interaction term of both variables into the regression in a second step changed $R^2$ significantly; $\Delta R^2 = .17$, $p = .03$. The interaction term predicted attitudes towards potential subgroups significantly; $b = 0.65$, $SE = .29$, $p = .03$[11]. In the second regression step, also PNS significantly predicted attitudes; $b = -0.52$, $SE = .22$, $p = .03$; whereas condition did not; $b = -0.13$, $p > .10$. Simple slopes analyses (Aiken & West, 1991; Meier, 2008; see Figure 3.1) revealed that individuals with a low PNS (-1 *SD*) showed the expected negative effect of condition, $b = -0.78$, $SE = .40$, $p = .03$ (one-tailed). In the

[10] PNS was measured after the manipulation. However, we could not detect any effect of the manipulation on this variable, $M_{central} = 3.9$, $SD = .82$, $M_{peripheral} = 3.5$, $SD = .96$, $t<1$.
[11] The overall regression model did not reach significance, $F(3,25) = 2.08$, $p > .10$, $R^2 = .20$.

peripheral subgroup condition, they held less positive attitudes towards peripheral subgroups than in the central subgroup condition. Individuals with a high PNS (+1 *SD*) showed no difference in their attitudes ($b$ = 0.52, $SE$ = .39, $p$ > .10). Within the central subgroup condition, individuals with a low PNS held significantly more positive attitudes than individuals with a high PNS ($b$ = -0.52, $SE$ = .22, $p$ = .03). This was not the case in the peripheral subgroup condition ($b$ = 0.14, $p$ > .10). The pattern shows that when the SOG boundary is clear participants with a high PNS have less positive attitudes towards potential subgroups than participants with a low PNS. When the SOG boundary is less clear also participants with a low PNS have less positive attitudes.

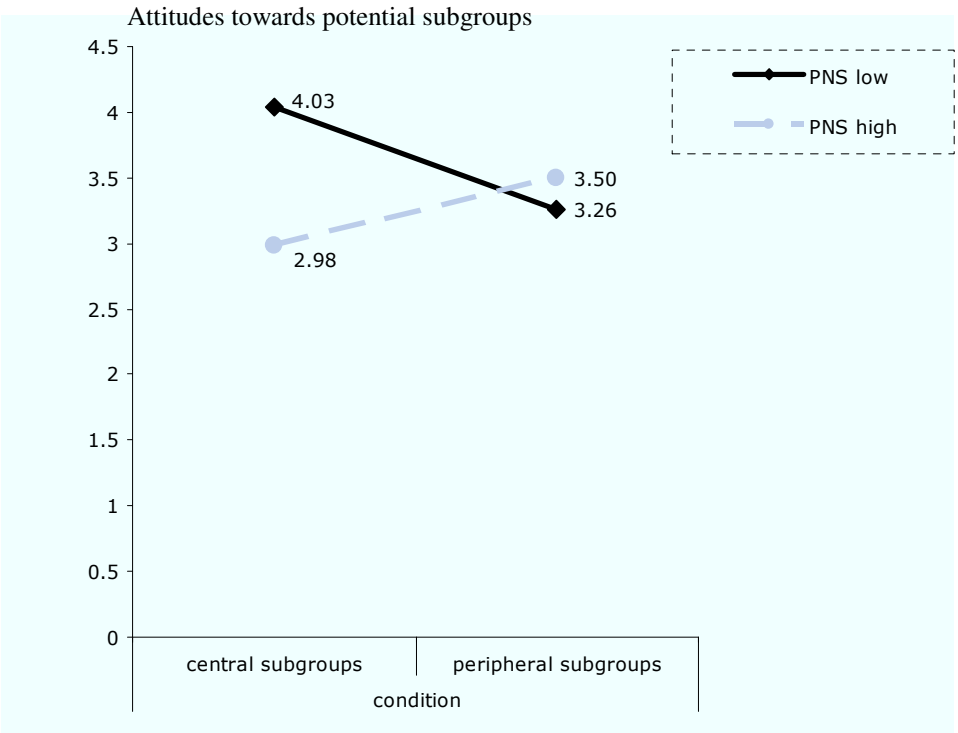


*Figure 3. 1.* Simple slopes for the two-way interaction of the experimental conditions and personal need for structure (PNS) on attitudes towards potential subgroups, Experiment 1.
*Note.* low = 1 *SD* below the mean, high = 1 *SD* above the mean.

**Attitudes towards diversity.** We predicted that less perceived clarity of the SOG boundary leads to less positive attitudes towards SOG diversity. A $t$-test between the conditions revealed a significant difference between the conditions, $t(26) = 2.22$, $p = .04$, $r = .40$. Participants reported less positive attitudes towards diversity when the SOG boundary was less clear opposed to a clear SOG boundary.

**Discussion**

The first experiment provided preliminary evidence for the idea that the activation of different subgroup exemplars can affect the clarity of the SOG boundary. Participants in the peripheral subgroup condition were less confident about their categorization decisions of newly presented potential subgroups than in the central subgroup condition, indicating that they were less sure about their inclusion or exclusion decisions. Furthermore, the experiment provided preliminary evidence that the clarity of the SOG boundary can play a role for the tolerance of majority subgroup members. As predicted, participants reported less positive attitudes towards diversity when the SOG boundary was less clear than when it was clear. Concerning attitudes towards potential subgroups, only individuals with a low PNS showed the expected effect. They reported less positive attitudes when the SOG boundary was less clear than when it was clear. Individuals with a high PNS did not change their attitudes depending on the clarity of the SOG boundary. They reported less positive attitudes than individuals with a low PNS when the SOG boundary was clear. There was no such difference when the SOG boundary was less clear. This pattern shows that individuals who need a high amount of cognitive structure react possibly in general less tolerant towards subgroups for which the inclusion into the SOG is unclear when diversity is activated – regardless of the clarity of the SOG boundary. Compared with them, individuals with a low PNS react more tolerant, but only as long as the SOG boundary is clear. When the SOG boundary is less clear, they also report less positive attitudes towards potential subgroups. The perception of a unclear boundary seems to be a "strong situation" that may override the influence of interindividual differences (Snyder & Ickes, 1985). However, PNS of individuals seems to have a moderating function for the relation of diversity activation within a SOG and tolerance.

To sum up, Experiment 1 did provide some preliminary evidence for the relationship of perceived cognitive structure and tolerance within the SOG context. However, the experiment could not provide evidence whether less clarity of the SOG boundary indeed affects the perception of less cognitive structure beyond the group context. A loss of cognitive structure should lead to a general perception of missing meaning in a situation and general close-mindedness (Proulx, Heine, & Vohs, 2010). Experiment 1 only covered the tolerance within the activated group context. It would be a more convincing finding when the activation of different subgroup exemplars would have an effect on tolerance in an unrelated domain. To this end, we examined the tolerance, or open-mindedness respectively, concerning the music preferences of participants in Experiment 2. If individuals perceive a loss of cognitive structure, they should display less open-mindedness also in a context that is independent of the activated group context.

Furthermore, Experiment 1 did not account for the alternative explanation that the more difficult learning and categorization tasks in the peripheral subgroup condition could have had a negative impact on the participants' mood in contrast to the tasks in the central subgroup condition. Mood has been shown to influence the information processing style and the categorization process (Bless & Fiedler, 2006; Park & Banaji, 2000). Happy individuals were shown to form broader categories (Muray, Sujan, Hirt, & Sujan, 1990) and to categorize atypical members more readily into a category (Isen & Daubman, 1984) than sad individuals. In Experiment 2, we therefore included a mood measure immediately after the categorization task. Moreover, there were some methodological shortcomings of the experiment. First of all, the sample was rather small. A bigger sample in Experiment 2 will provide clearer information on the impact of the clarity of the SOG boundary on tolerant attitudes. Secondly, learning all stimulus subgroups three times might have been too easy. Thus, in Experiment 2, we reduced the number of learning trials to two. Furthermore, in the measurement of attitudes towards potential subgroups, we included an actual subgroup that was rated ambiguously regarding its inclusion within the SOG in the pretest (i.e., art history students). By doing so, we wanted to address the fact that the actual membership of a potential subgroup is not relevant if it is unknown. Finally, we included an item concerning the perceived similarity between the subgroups directly after the learning task. With this item, we aimed to check whether our participants perceive diversity of subgroups within the SOG as intended.

## 3.4. Experiment 2

The aims of Experiment 2 were (a) to replicate the finding of the detrimental effect of an unclear SOG boundary on tolerant attitudes, (b) to show that missing cognitive structure in the SOG context (because of the unclear boundary) also leads to less open-mindedness in a totally different and non-social domain (i.e., taste in music), and (c) to rule out the alternative mood explanation. We hypothesized that less clarity of the SOG boundary leads to less tolerant attitudes within the SOG. Concerning the taste in music, we hypothesize less open-mindedness towards different music styles when the SOG boundary is unclear as opposed to clear. This would indicate that a rather unclear SOG boundary can lead to the perception that cognitive structure is missing. This may motivate individuals to avoid any kind of diversity. To test this hypothesis, we assessed participants' open-mindedness in their individual taste in music (mixed with other music-related statements) at the end of the questionnaire. We, furthermore, predicted that participants' mood does not differ between the experimental conditions.

**Participants and design**

The sample consisted of 66 undergraduate psychology students[12] (52 women, $M_{age}$ = 21.29, *SD* = 3.6). They were randomly assigned either to the central subgroup condition (*n* = 36) or the peripheral subgroup condition (*n* = 30). Their identification with the group of psychology students was high (*M* = 5.57, *SD* = .93). Participants received sweets and research credit upon completion.

**Procedure and materials**

The procedure was similar to that of Experiment 1. We slightly changed the materials and added two dependent variables (mood, open-mindedness concerning taste in music) as outlined in the following. In the beginning, participants rated their subgroup identification with four items on a seven-point scale (Cronbach's α = .81). In the category learning task which followed, we reduced the learning trials from three to two (14 subgroups). Then, perceived similarity between the subgroups was measured with one item ("I think the student subgroups at […] university are very similar", 1 = *totally disagree*, 6 = *totally agree*). Subsequently, SOG identification (Cronbach's α = .76) and entitativity (Cronbach's α = .80) were assessed with the same items as in Experiment 1. Participants again performed the categorization task and had to decide whether presented potential subgroups belong to the SOG or not. PNS was measured with the same items as in Experiment 1 (Cronbach's α = .73).

In the following, mood was assessed with two subscales (positive/negative mood, calmness/agitation) of the Multidimensional Mood State Questionnaire (Steyer, Schwenkmezger, Notz, & Eid, 1994). Participants had to indicate how well 16 adjectives described their actual mood and their state of agitation (e.g., "happy", "relaxed", "good"; Cronbach's α = .94) on a 5-point scale (1 = *not at all*; 5 = *very much)*. Based on the 16 items, an overall mood score was computed. Subsequently, participants reported their attitudes towards three potential peripheral subgroups with four items each (i.e., art history students, Italian studies students, agronomy students). We added one group that was objectively a subgroup of the SOG (art history students). Again, an overall attitude score was calculated (Cronbach's α = .82). Attitudes towards SOG diversity were measured with the same four items as in Experiment 1 (Cronbach's α = .74).

[12] A total of 85 undergraduate psychology students participated. We excluded 19 participants because they reported the suspicion that the experiment's purpose was to investigate tolerance in intergroup relations.

Then, we included 12 items about participants' taste in music to be rated on a 6-point likert scale (1 = *totally disagree*, 6 = *totally agree*). We mixed statements about the "open-mindedness of their taste in music" with more general statements about their music preferences. In order to check whether the data supported our implied dimension of open-mindedness, we conducted a principal components factor analysis with all items using orthogonal rotation. Table A4 depicts the factor loadings and communalities of all items. Following the Kaiser's criterion, four factors were extracted with eigenvalues higher than 1, explaining 63.85 % of variance. The first factor accounted for 18.87 % of the variance and had loadings of at least .50 for four items that tap the open-mindedness aspect (e.g., "I am open for every music genre"; see loadings in Table A4)[13]. Thus, we calculated a mean score about the items of the "open-mindedness" factor (Cronbach's $\alpha$ = .68). At the end of the questionnaire, we asked participants for their presumptions of the aim of the experiment.

**Results**

The means and standard deviations of the main variables within the experimental conditions are displayed in Table 3.2. The correlations of all variables within the single conditions are displayed in Table A5.

**Preliminary analyses**

**Manipulation check.** Again, we tested whether participants in the peripheral subgroup condition included more non-subgroups and whether they were less confident in their decisions than participants in the central subgroup condition. A *t*-test on the inclusion of non-subgroups revealed a difference between the conditions, $t(64) = -1.86$, $p = .04$ (one-tailed), $r = .23$. Participants in the peripheral subgroup condition erroneously included more non-subgroups ($M = 2.67$, $SD = 1.75$) than participants in the central subgroup condition ($M = 1.97$, $SD = 1.28$). No difference was found for the latencies of the categorization decisions, $t<1$. The first finding indicates a more error-prone categorization process supporting the argument that our manipulation affected the clarity of the SOG boundary.

**Learning task.** In order to test whether central subgroup exemplars were more easy to learn than peripheral subgroup exemplars, we computed the sum of all correct inclusion decisions of the five critical subgroup exemplars (central vs. peripheral) during learning trial

[13] The second factor accounted for 18.02 % of the variance and had loadings of at least .56 for four items that asked for behavioural aspects (e.g., "I love to visit live concerts", see all loadings in Table A4). The third factor explained further 15.41 % (two items measuring "interest in music"), and the fourth factor further 11.54 % of variance (including the statements about a "top-five-list of bands" and the "liking of German folk music").

2. A *t*-test revealed that participants in the central subgroup condition ($M$ = 4.89, $SD$ = .32) included their critical subgroups more correctly than participants in the peripheral subgroup condition ($M$ = 4.07, $SD$ = .94); $t(34.51) = 4.56$, $p < .001$, $r = .61$.

**SOG identification and SOG entitativity.** As in Experiment 1, we found no differences between the experimental conditions for SOG identification and perceptions of entitativity; *F*s <1.62. Thus, no effect of the manipulation was detected on these potentially confounding variables.

**Perceived subgroup diversity.** We expected that all participants perceived high subgroup diversity within the SOG. A *t*-test against the scale's midpoint (3.5) confirmed that the perceived diversity was high (low values mean high diversity, $M$ = 2.98, $SD$ = 1.51), $t(65) = -2.76$, $p = .01$, $r = .32$.

**Mood.** In order to exclude different mood states as an alternative explanation for the effects of the manipulation, we predicted that our manipulation did not affect participants' mood. As expected, a *t*-test on the mood score revealed no difference between the conditions, $t<1$. Thus, we could not detect an influence of the manipulation task and their difficulty on the mood of our participants.

**Main analyses**

**Attitudes towards potential subgroups.** We expected that less clarity of the SOG boundary leads to less positive attitudes towards potential subgroups than a clear SOG boundary. A *t*-test between the conditions confirmed our expectation, $t(64) = 2.63$, $p = .01$, $r = .31$. Participants in the peripheral subgroup condition reported less positive attitudes than participants in the central subgroup condition.

In order to compare the result with Experiment 1, we included the experimental conditions and PNS[14] in a multiple regression analysis. We found that the experimental conditions ( $b = -0.38$, $SE = .15$, $p = .01$) and PNS ($b = -0.18$, $SE = .08$, $p = .02$) predicted attitudes significantly, overall $F(2, 63) = 6.53$, $p = .003$, $R^2 = .17$. Including the interaction of both variables in a second step of the regression did not increase $R^2$ significantly ( $\Delta R^2<1$, $F<1$), indicating that PNS did not moderate these attitudes. In sum, all participants reported less positive attitudes towards potential subgroups when the SOG boundary was unclear compared

[14] Again, PNS was measured after the manipulation. However, we could not detect any effect of the manipulation on this variable, $M_{central} = 3.37$, $SD = .80$, $M_{peripheral} = 3.5$, $SD = .90$, $t<1$.

with clear. Individuals with a high PNS reported less positive attitudes than individuals with a low PNS.

**Attitudes towards diversity.** We expected less positive attitudes towards diversity when low clarity of the SOG boundary is perceived as opposed to high clarity. Our data did not confirm this expectation, $t<1$. A multiple regression analysis including PNS and the conditions as predictors revealed that PNS ($b$ = -0.27, $SE$ = .12, $p$ = .03) was a significant predictor for attitudes towards diversity, whereas the experimental conditions were not ($b$ = -0.09, $p$ > .10), overall $F(2,63) = 2.74$, $p$ = .07, $R^2$ = .08. Including the interaction of both variables in a second step of the regression did not increase $R^2$ significantly ($\Delta R^2<1$, $F<1$).

**Taste in music.** We predicted that participants show less open-mindedness in their taste in music when perceiving low clarity of the SOG boundary as opposed to high clarity. A $t$-test between the conditions confirmed our expectation, $t(64) = 2.56$, $p$ = .01, $r$ = .30. Participants in the peripheral subgroup condition reported a less open taste in music than participants in the central subgroup condition. The multiple regression analysis including PNS and the conditions as predictors revealed that the experimental conditions predicted open-mindedness ($b$ = -0.63, $SE$ = .26, $p$ = .02), whereas PNS did not ($b$ = -0.11, $p$ > .10), overall $F(2, 63) = 3.59$, $p$ = .03, $R^2$ = .10. Including the interaction of both variables in a second step of the regression did not increase $R^2$ significantly, $\Delta R^2<1$, $F<1$.

**Discussion**

In Experiment 2, we extended the findings of Experiment 1. Firstly, we again found an influence of the clarity of SOG boundary on tolerance. Participants held less positive attitudes towards potential subgroups when the SOG boundary was perceived as unclear compared with clear. Secondly, participants were less open-minded concerning their taste in music when the SOG boundary was perceived as unclear compared with clear. Participants seem to restore the feeling of missing cognitive structure by means of avoiding any diversity in any accessible domain, thereby reporting a less open-minded taste in music. Thirdly, we detected no influence of the manipulation and the categorization task on participants' mood. Therefore, differences between the experimental conditions in the later ratings cannot be explained by different mood-induced information processing styles (Park & Banaji, 2000) or because mood influenced the categorization process (Muray et al., 1990).

In this experiment, we detected a more error-prone categorization process following the manipulation, the decision latencies did not differ as in Experiment 1. In Experiment 2,

participants had one learning trial less. This could have resulted in the intended error-prone categorization process and not only in an uncertainty about the decisions. The patterns of both experiments concerning tolerance (towards diversity and potential subgroups) were not identical though. In Experiment 1, the clarity of the SOG boundary predicted attitudes towards diversity negatively, and attitudes towards potential subgroups were negatively predicted only for individuals with a low PNS. In Experiment 2, the clarity of the SOG boundary predicted attitudes towards potential subgroups, but not towards diversity within the SOG. Overall, the clarity of the SOG boundary did influence the tolerance of group members either assessed by attitudes towards potential subgroups or towards diversity. However, the choice of the target groups needs to be discussed critically. In both experiments, we assessed attitudes towards two non-subgroups (Italian studies students, agronomy students) and in Experiment 2 additionally one subgroup (art history students). The choice was based on the medium scores of the "certainty of inclusion into the SOG"-ratings from the pretest. However, we did not exactly know whether participants included or excluded the group while reporting their attitudes. According to the argument that less tolerance is shown towards *peripheral* subgroups, an inclusion of these groups would have been a necessary condition. Thus, we cannot argue that we demonstrated less tolerance towards peripheral subgroups within a SOG as consequence of the perception of a less clear SOG boundary. However, what we can argue concerning tolerance following the perception of a less clear SOG boundary has a more general and context-unrelated character. We detected a negative effect of an unclear SOG boundary on attitudes towards diversity within the SOG (Experiment 1), a negative effect on attitudes towards other groups (Experiment 2, only for individuals with a low PNS in Experiment 1), and less open-mindedness in a unrelated domain (music preferences, Experiment 2). Thus, low clarity of the SOG boundary affected the tolerance of people towards differences (e.g., diverse groups, diverse music styles) negatively.

In order to elaborate more on the consequences of missing clarity of the SOG boundary, we conducted Experiment 3 with a different dependent variable. If the boundary of the SOG is perceived as unclear, the functionality of the SOG as reference frame should be diminished. According to SCT, a category is well-defined and "fits" as a reference category when there are more differences to other categories than differences within the category (Turner, 1987). We argue that an unclear boundary can decrease this ratio. As a consequence, individuals who in general strive for cognitive structure should search for a clearer and better fitting reference point. Machunsky and Meiser (2009) argued that within the hierarchical system of self-categories the representation of the own subgroup is more easily accessible than the more

distal representation of the SOG. In line with this argument, in Experiment 3 we examined whether participants who perceive the SOG boundary as unclear categorize themselves implicitly more into their subgroup than those who perceive the SOG boundary as clear.

Table 3.2.
*Means and standard deviations for all variables (Experiment 2).*

| | Central subgroup condition $n = 36$ | Peripheral subgroup condition $n = 30$ |
|---|---|---|
| | *M (SD)* | *M (SD)* |
| Subgroup identification (before manipulation) | 5.58 (.68) | 5.57 (1.18) |
| SOG identification | 4.98 (.78) | 5.26 (1.10) |
| SOG entitativity | 4.39 (.86) | 4.35 (.72) |
| Inclusion of non-subgroups | 1.97 (1.28) | 2.67 (1.75) |
| Latencies of categorization decisions | 1315.18 (215.89) | 1338.93 (235.80) |
| Personal need for structure | 3.37 (.80) | 3.50 (.90) |
| Mood | 7.86 (1.19) | 7.71 (1.52) |
| Attitudes towards potential subgroups | 4.14 (.60) | 3.73 (.66) |
| Attitudes towards diversity | 4.66 (.91) | 4.53 (1.10) |
| Open-mindedness of taste in music | 3.99 (.63) | 3.74 (.69) |

*Note.* SOG - superordinate group.

## 3.5. Experiment 3

In Experiment 3, we addressed the impact of the perception of missing structure within a SOG on the process of self-categorization. We hypothesized that individuals categorize themselves more into the subgroup than into the SOG on an implicit level when the SOG boundary is unclear compared with clear. However, we predicted that this effect is moderated by subgroup identification. Previous research on subgroup relations in SOGs has shown a strong influence of subgroup identification on subgroup relations (Crisp, Stone, & Hall, 2006;

Hornsey & Hogg, 2000). High subgroup identifiers engage more in subgroup differentiation in order to restore their subgroup's distinctiveness. Thus, we expected them to categorize themselves more likely on the subgroup level regardless of the clarity of the SOG boundary. Social identity-related motivations may be less relevant, in turn, for low subgroup identifiers. Though, we acknowledged the different underlying motivations and hypothesized more specifically that we expect a stronger implicit self-categorization into the subgroup when the SOG boundary is unclear compared with clear, particularly for low subgroup identifiers. For high subgroup identifiers, we expected no difference. In order to actually rely on the cognitive automatic process, we assessed the association strength of the self and the respective group level with an implicit association test (IAT; Greenwald, McGhee, & Schwartz, 1998; Greenwald, Nosek, & Banaji, 2003). As an additional control variable, we assessed the perceived clarity of the subgroup.

**Participants and design**

Participants were 72 undergraduate psychology students. They were randomly assigned to the central subgroup condition ($n$ = 34) or the peripheral subgroup condition ($n$ = 38). As a reward, they could choose between research credit and a small financial reward, and had the chance to take part in a lottery for book vouchers.

**Procedure and materials**

Before the category learning task, identification with psychology students at their university (Cronbach's $\alpha$ = .69) and identification with students at their university (Cronbach's $\alpha$ = .78) were measured with the same items as in the previous experiments. Subsequently, PNS was measured with seven items from the German PNS scale (Machunsky & Meiser, 2006; Cronbach's $\alpha$ = .67).

Subsequently, participants were instructed to run the categorization learning task with either central or peripheral subgroup exemplars. We then assessed self-categorization using an IAT (Greenwald et al., 2003). We measured the relative ease with which the self, as opposed to others, was categorized as psychology student (subgroup level) and as student at the university (SOG level). Each category (level) was represented by two stimuli including the category names (e.g., I, they, psychology student, university student; Steffens, Kirschbaum, & Glados, 2008). After two practice tasks where participants learned to press the right button for I-related words and the left button for others-related words (task 1) and the right button for psychology students and the left button for the university students (task 2, 8 trials each), a combined task with I-related words and psychology students on the right button and others-

related words and university students on the left followed (40 trials). Then in a new practice task, participants had to learn to press the right button for university students and the left button for the psychology students (16 trials). Finally, the combined task with reversed categories was assessed, with I-related words and the university students on the right button and others-related words and psychology students on the left button (40 trials). During both combined tasks, the category labels (subgroup and SOG) were permanently displayed in the upper right and left corners of the screen. Stimuli were presented in the middle of the screen in a random order and with an intertrial interval of 150 ms. The IAT score was computed as the IAT D effect (Greenwald et al., 2003) without using an error penalty (cf. Steffens et al., 2008). The internal consistency based on the IAT effects of the individual stimuli was Cronbach's $\alpha = .67$. Subsequently, perceived subgroup clarity was measured with four items (e.g., "Psychology students are easily distinguishable from other student subgroups at the university.") on a six-point scale (Cronbach's $\alpha = .77$).

**Results**

The means and standard deviations of the main variables within the experimental conditions are displayed in Table 3.3. The correlations of all variables within the single conditions are displayed in Table A6.

**Preliminary analyses**

**Manipulation check.** In order to test whether participants in the peripheral subgroup condition perceived the SOG boundary to be less clear than participants in the central subgroup condition, a *t*-test on the categorization of non-subgroups revealed that participants in the peripheral subgroup condition included significantly more non-subgroups than participants in the central subgroup condition; $t(70) = -1.90$, $p = .03$ (one-tailed), $r = .22$. No difference was found for the latencies of the categorization decisions, $t<1$.

**Learning task.** In order to test whether central subgroup exemplars were easier to learn than peripheral subgroup exemplars, we computed the sum of all correct inclusion decisions of the five critical subgroup exemplars (central vs. peripheral) during learning trial 2. A *t*-test revealed that participants in the central subgroup condition ($M = 4.97$, $SD = .17$) included their critical subgroups more correctly than participants in the peripheral subgroup condition ($M = 3.82$, $SD = 1.11$), $t(38.96) = 6.32$, $p < .001$, $r = .71$.

**Main analysis**

**Self-categorization into the subgroup.** We expected that low subgroup identifiers would implicitly categorize themselves more into the subgroup in the peripheral than in the central subgroup condition. To test this moderation hypothesis, a stepwise multiple regression analysis on the IAT score was conducted. In step one, we controlled for PNS (z-standardized; $b = -0.03$, $p > .10$) and the perceived clarity of the subgroup[15] (z-standardized; $b = 0.06$, $SE = .04$, $p > .10$). The condition variable (dummy-coded with 0 and 1; $b = 0.03$, $p > .10$) and subgroup identification[16] (z-standardized; $b = 0.02$, $p > .10$) were added in step two. In step three, the added interaction term of condition and subgroup identification significantly predicted implicit self-categorization into the subgroup, $b = -0.17$, $SE = .09$, $p = .05$; overall $F(5, 66) = 1.3$, $p > .10$, $R^2 = .09$. The inclusion of the interaction term accounted for a non-negligible increment of variance of the IAT score, $\Delta R^2 = .05$, $p = .05$. Simple slopes analyses revealed that, as expected, low subgroup identifiers categorized themselves significantly more into the subgroup in the peripheral subgroup condition than in the central condition, $b = 0.21$, $SE = 0.13$, $p = .05$ (one-tailed). No such difference occurred for high subgroup identifiers, $b = -0.13$, $p > .10$. In the central subgroup condition ($b = 0.09$, $SE = .06$, $p > .10$) and in the peripheral subgroup condition ($b = -0.08$, $p > .10$), high and low subgroup identifiers did not differ significantly in their self-categorization. To sum up, when the SOG boundary is rather unclear, low subgroup identifiers categorize themselves more into the subgroup than when the SOG boundary is clear (see Figure 3.2).

[15] We could not detect any effect of the manipulation on the perceived subgroup clarity, $M_{central} = 2.75$, $SD = .92$; $M_{peripheral} = 2.58$, $SD = .78$; $t<1$.

[16] With the inclusion of subgroup identification as a moderator, we controlled simultaneously for a randomization error on this variable. Participants in the peripheral subgroup condition identified higher with psychology students (measured before manipulation) than participants in the central subgroup condition; $t(70) = -2.35$, $p = .03$, $r = .27$.

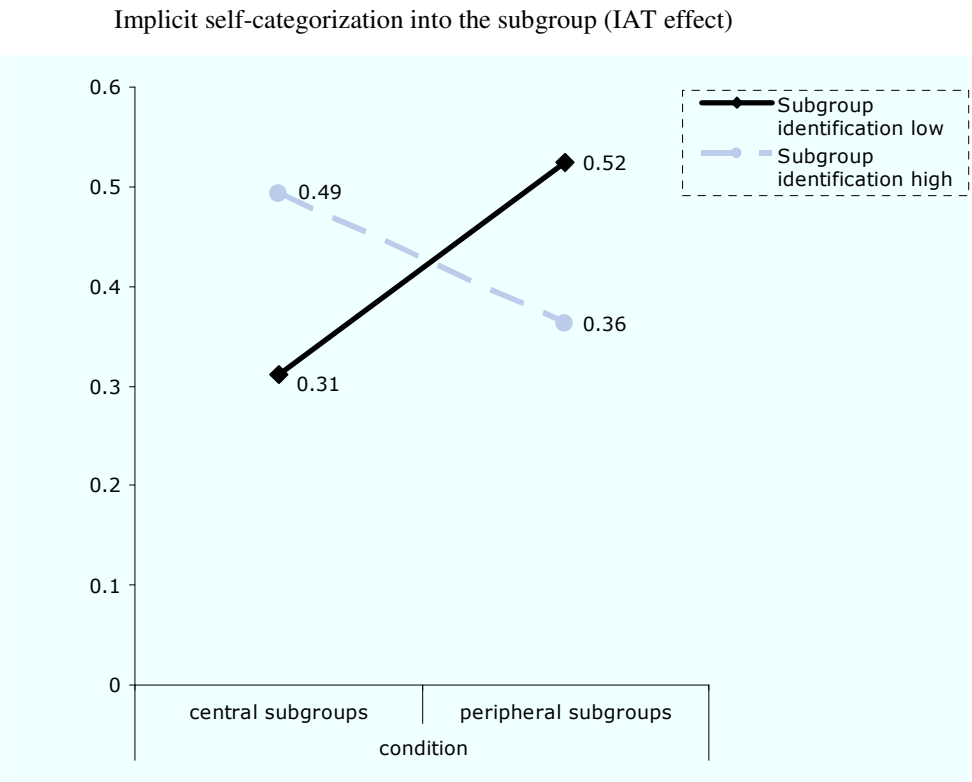


*Figure 3. 2.* Simple slopes for the two-way interaction of the experimental conditions and subgroup identification on the implicit self-categorization into the subgroup (IAT effect), Experiment 3.
*Note.* IAT- Implicit association test; low - 1 *SD* below the mean, high - 1 *SD* above the mean.

## Discussion

In Experiment 3, we shed light on another cognitive consequence of missing cognitive structure within an unclear bounded SOG. Individuals for whom identity related motivations are of low relevance (i.e., low subgroup identifiers) implicitly categorized themselves more into the subgroup when the SOG boundary was unclear compared with clear. This finding provides some evidence that a less clear SOG boundary is a situation when individuals may switch implicitly to a lower categorization level. Although we do not argue that mere implicit self-categorization legitimizes already the conclusion of actual identification with the group, we argue that it can pose a first cognitive precondition of it though. Subgroup identification, in turn, can be an antecedent for less tolerant subgroup relations (Mummendey & Wenzel, 1999; Waldzus et al., 2003). However, even though we think that this finding of an implicit switch between categorization levels is very intriguing, it needs to be replicated in further experiments.

Table 3.3.

*Means and standard deviations for all variables (Experiment 3).*

| | Central subgroup condition $n = 34$ | Peripheral subgroup condition $n = 38$ |
|---|---|---|
| | *M (SD)* | *M (SD)* |
| Subgroup identification (before manipulation) | 5.61 (.78) | 5.98 (.60) |
| SOG identification (before manipulation) | 5.25 (.81) | 5.38 (.83) |
| Personal need for structure (before manipulation) | 3.58 (.51) | 3.65 (.85) |
| Inclusion of non-subgroups | 1.76 (1.46) | 2.50 (1.78) |
| Latencies of categorization decisions | 1218.65 (204.43) | 1231.86 (199.76) |
| Implicit association with the subgroup | .39 (.38) | .42 (.33) |
| Subgroup distinctiveness | 2.75 (.92) | 2.58 (.78) |

*Note.* SOG - superordinate group.

## 3.6. General Discussion

The aims of the current three experiments were to examine the effect of different degrees of perceived cognitive structure within a SOG on tolerance and on the self-categorization process of majority subgroup members. Experiments 1 and 2 provided some evidence that a situation specific decrease of perceived structure (Heine, Proulx, & Vohs, 2006) in terms of an unclear SOG boundary can lead to less tolerance within the SOG. Individuals who perceived the SOG boundary as rather unclear expressed less positive attitudes towards diversity (only in Experiment 1) and towards other potential subgroups than individuals who perceived the SOG boundary as clear. However, in Experiment 1, the effect for attitudes towards potential subgroups was only detected for individuals with a low PNS. Further post-hoc analyses in Experiment 2 revealed that not only the SOG boundary's clarity but also PNS predicted the assessed attitudes. We will come back to this potential moderator later. In Experiments 2 and 3, we demonstrated that diminishing the structure within the SOG resulted in a general state of mind that motivated individuals to regain structure – either by avoiding

diversity in another salient domain (Experiment 2) or by switching the categorization level (Experiment 3). The last effect was only present for individuals who identified low with the subgroup. High subgroup identifiers did not change their level of self-categorization. In Experiment 2, we detected that those participants who perceived the SOG boundary as unclear reported a less open-minded taste in music than participants who perceived the SOG boundary as clear. This finding suggests that a decrease of cognitive structure can increase a need for structure. This can lead to the motivation to restore structure in any accessible way because this state is perceived as aversive (cf. Kruglanski & Webster, 1996). Furthermore, this result rules out the possible confounding argument that the effects appeared because we manipulated low clarity of the SOG boundary with peripheral stimulus subgroups and asked for attitudes towards peripheral subgroups. The effects on attitudes towards diversity within the SOG (Experiment 1) and on the context-unrelated taste in music (Experiment 2) would contradict this argument.

Experiment 2 also clarified that mood did not differ after being confronted with different stimulus subgroups and can be excluded as possible alternative explanation. However, the usage of different subgroup exemplars needs to be discussed. In the current work, central subgroups were rather broadly defined as being more similar to participants' subgroup (which was supposed to be represented as central; cf. Wenzel et al., 2003) and as being more familiar within the SOG because of a bigger size (cf. Barsalou, 1985) than peripheral subgroups. The pretest revealed that for 14 subgroups the perceived similarity to the participants' subgroup and the perceived did not correlate for 13 of them. Thus, both dimensions were not interwoven. However, whether one of both dimensions or both together drove the effect cannot be fully extracted with the results of the present experiments. In general, further research is necessary in order to identify determining characteristics of the centrality of subgroups within a SOG (for a similar argument see Reese, Dieckmann, Berthold, & Steffens, 2012). Another shortcoming of the present experiments concerning the stimuli is that we cannot refute the argument of a confoundation of centrality with valence. Research on perceptual fluency has shown that people prefer prototypical or central stimuli because they are processed more fluently (e.g., Winkielman, Schwarz, Fazendeiro, & Reber, 2003). This, in turn, leads to more positive evaluation of these stimuli compared with atypical ones. Recently, Rubin and colleagues (Rubin, Paolini, & Crisp, 2010) transferred these findings into a social context and provided some evidence that the processing fluency (i.e., the ease of thinking about a group) can partly explain the less positive evaluations of migrants compared with non-migrants. Whether this effects occurs also for the perceptual fluency of central and

peripheral subgroups within a SOG needs to be investigated. In line with the finding of Hahn and colleagues (2005), central subgroups were more difficult to learn than peripheral subgroups. However, whether this relates to their centrality within the SOG or simply to perceptual characteristics of the stimuli needs to be checked in a further experiment. Furthermore, it would be interesting to test for the effects of activating diversity when a non-social category learning task would be used (e.g., flower categories of Hahn et al., 2005). Such an experiment could further specify the effects of the centrality of activated (subgroup exemplars). Another possibility in order to specify the underlying processes is the inclusion of a control group in a proceeding experiment.

Further examination is also necessary for the role of the need for structure for the effects of diversity activation. We provided some evidence that a decrease of perceived cognitive structure can lead to less cognitive open-mindedness. However, due to missing availability of sensitive instruments, one missing element of the present experiments is the direct assessment of the situation-specific evoked need for structure. As the PNS scale of Neuberg and Newsom (1993; German version by Machunsky & Meiser, 2006) assesses the general need for structure in life, it was not sensible enough to measure a situational increase or decrease of this basic human need. We clearly encourage research for the development of such a need for structure instrument. However, post-hoc analyses revealed that PNS as a trait may play an important role for reactions to diversity activation within SOGs. Its moderating function needs to be tested in further experiments.

In Experiment 3, the perception of an unclear SOG boundary led participants who had low identity-based motivations involved (i.e., low subgroup identifiers) to a stronger implicit self-categorization into their subgroup than the perception of a clear SOG boundary. This switch between self-categorization levels can be interpreted as a cognitive tool to get a cognitively more useful group representation (cf. Turner, 1987). When the SOG representation does not provide enough structure, its function is diminished, for instance regarding the cognitive economy principle (Rosch, 1976). According to Machunsky and Meiser (2009), the subgroup representation is a more proximal group representation than the SOG representation. With the reliance on the subgroup, individuals regain a cognitively functional source of information and standards (e.g., for intergroup comparisons). This could lead to an increase of subgroup differentiation which in turn can result in more negative intergroup relations. However, we only provide some support for the first step in this process – which is the cognitive self-categorization into the subgroup when the SOG does provide

only little cognitive structure. Further research on the proceeding steps is needed. Furthermore, as IATs are relative measures, it is, strictly speaking, unclear whether the association with the SOG was decreased or the association with the subgroup was increased, or both. The former would indicate that the SOG does not function as well anymore as a reference group if it is perceived as unclear. However, the latter would indicate that the subgroup and not another self-category is used as a substitute. Highly reliable non-relative implicit measures would be needed to disentangle this.

The finding on the self-categorization process of Experiment 3 also highlights that a further examination of the interplay with the effects of identity-related processes is necessary. Previous research has demonstrated the impact of subgroup identification on subgroup relations (Crisp, Stone, & Hall, 2006; Hornsey & Hogg, 2000). For instance, Crisp and colleagues (2006) demonstrated that high subgroup identifiers engage in higher inter-subgroup bias than low identifiers following recategorization into one SOG. Furthermore, the impact of a (high) dual identity was examined (Dovidio et al., 2007; Crisp et al., 2006, Waldzus et al., 2003). Whereas Dovidio and colleagues (2007) considered dual identity as beneficial for harmonious subgroup relations, Waldzus and colleagues (2003) argued that high dual identity rather leads to higher relative ingroup prototypicality. Possibly, the examination of the effect of dual identification in combination with diversity activation could provide more clarity concerning the question when it is beneficial.

In summary, previous literature has demonstrated that activating diversity within SOGs is a good way to increase tolerance (e.g., Richeson & Nussbaum, 2004; Waldzus et al., 2003; Waldzus et al., 2005). However, we demonstrated that one pitfall of the activation of diversity within a SOG can be a perceived decrease of cognitive structure within the group context. We elaborated on the effect of a decrease of cognitive structure and how this can affect majority subgroup members' tolerance towards other groups and towards diversity. Furthermore, we provided preliminary evidence how this could affect the implicit self-categorization process. The finding that a decrease of cognitive structure leads people to report less open-minded music preferences strengthens our confidence in the argument that effects on tolerance beyond the activated SOG can be explained by the representation of the activated diversity within the SOG. For instance, the representation of diversity that is activated within a society could have an important influence in various SOG contexts as it is described with the group-focused enmity syndrome (i.e., a construct including various forms of prejudice such as sexism, devaluation of gay men and lesbians, anti-Semitism, xenophobia; Zick, Wolf, Küpper,

Davidov, Schmidt, & Heitmeyer, 2008). However, whether our findings apply in these contexts needs to be tested empirically. According to our findings, it is more beneficial to activate diversity within a SOG as a source of tolerance when the membership of central subgroups is accentuated than the membership of peripheral subgroups. Apparently, for being tolerant towards others and towards diversity, people need a certain degree of cognitive structure.

# 4. Back to old school heavy metal – Group-based conventionalism as reaction to diversity

Whereas Chapter 3 examined the impact of the activation of diversity with different types of subgroups on the perceived clarity of cognitive structure; the focus of this chapter will be the impact of diversity activation on the perceived clarity of the superordinate group's (SOG) definition and its norms. In a first experiment, the effects of the activation of a complex SOG representation on subgroup attitudes and on the perceived relative prototypicality will be compared with the activation of a simple SOG representation (Waldzus et al., 2003). In the following two experiments, it is examined whether the activation of diversity with different subgroup exemplars can have an impact on the perceived clarity of the SOG and endorsement of the SOG's norms and values (i.e., group-based conventionalism). Furthermore, the impact of this group-based conventionalism on attitudes towards a peripheral subgroup will be examined. In the third experiment, a potential moderator for this effect will be introduced – the perceived subgroup prototypicality.

## 4.1. Introduction

"Embrace diversity" is the headline of many campaigns supposed to make people endorse the variety of subgroups within large-scale groups (e.g., nations). The slogan is not only ubiquitous in multicultural societies in order to reduce minority discrimination, but also in other contexts (e.g., concerning acceptance of different sexual orientations, of people with handicaps or mental illnesses). Apparently, the activation of diversity within large-scale groups has been used as a tool to increase tolerance and to promote the acceptance of minorities. Previous social psychological research has shown that emphasizing diversity and differences within these groups can be a beneficial way to improve the tolerance between subgroups (Mummendey & Wenzel, 1999; Richeson & Nussbaum, 2004; Vorauer, Gagnon, & Sasaki, 2009). However, sociological analyses in multicultural nations have also drawn a different picture (e.g., Banerjee & Linstead, 2001; Berry, 1991; Oliver & Wong, 2003). For instance, Banerjee and Linstead (2001) criticized that with multiculturalism a "celebration of cultural pluralism is predicated on an established hierarchy of cultures and [that] multiculturalism consolidated these hegemonic relations" (p. 707). This can be a breeding ground for prejudice and intergroup conflict (e.g., Oliver & Wang, 2003). Verkuyten (2004) has shown that members of the Dutch majority subgroup in the Netherlands reacted rather ambivalently when thinking about multiculturalism. He extracted favouring and opposing arguments concerning multiculturalism. Whereas multiculturalism was associated with an enrichment of life, an increase of tolerance and personal learning, and improved mutual understanding, Dutch people also mentioned a threat that multiculturalism can pose for the

mainstream culture. They argued that it can negatively influence the unity of the nation, the functioning of the society, the social order and that a lack of clear norms and values can occur. Overall, multiculturalism seems to be a mixed blessing.

Yet, is it always beneficial to be reminded of diversity within a large-scale ingroup? Can activating diversity also result in less tolerance towards minorities? In this paper, we investigate conditions under which intolerance towards minorities within diversely represented large-scale groups may emerge. Previous research on diversity within large-scale groups has focussed on the effects of diversity activation compared with no diversity activation (Richeson & Nussbaum, 2004; Roccas & Amit, 2011; Vorauer et al., 2009; Waldzus, Mummendey, Wenzel, & Weber, 2003; Wolsko, Park, Judd, & Wittenbrink, 2000). We, however, argue that the way *how* diversity is activated or how it is represented in people's mind is important. We hypothesize that if diversity is activated in a way that results in the perception of an unclear group's definition, group members react with stronger conservatism concerning their group norms (i.e., group-based conventionalism). Furthermore, we predict that this form of conventionalism can result in less positive attitudes towards subgroups that deviate from the group's norms. To investigate these hypotheses, we used the group of heavy metal music fans (short: metal fans). Metal music is a highly diverse music style (Kahn-Harris, 2010) and this is reflected in the large-scale group of metal fans that is characterized by a high number of subgroups of fans who prefer specific musical subgenres.

**The evaluation of deviating subgroups within large-scale groups**

Brewer and colleagues (Brewer, Dull, & Lui, 1981; Brewer & Lui, 1984) showed that "the cognitive representation of broad social groupings […] is that of a superordinate category differentiated into distinctive subcategories" (Brewer & Lui, 1984, p. 585). The self-categorization theory (SCT; Turner et al., 1987) further elaborated on this hierarchical system of social categories (cf. Rosch & Lloyd, 1978). Turner and colleagues (1987) argued that individuals categorize themselves into social categories on different levels of inclusiveness. For example, an individual who perceives him- or herself as music fan can do so on a less inclusive level as metal fan or on a more inclusive level as art lover. The salience of a self-category is situation-specific and depends on the accessibility of the category and its fit to the situation. One situation that increases the salience of a more inclusive category is an intergroup comparison. According to SCT, every in- and outgroup comparison takes place within a SOG that includes both groups (Turner, 1987). The SOG provides the reference standards for these comparisons. For example, when a classical music fan compares his or her

group with metal fans, the SOG of music fans will be activated and comparisons with the prototype of this SOG take place.

The ingroup projection model (IPM; Mummendey & Wenzel, 1999; Wenzel et al., 2007) further elaborated on how the inclusion into one SOG turns outgroups' differences into deviance from a superordinate prototype. The authors described the process of ingroup projection. According to the IPM, a classical music fan generalizes attributes of the own subgroup to the SOG prototype (e.g., well-educated). Consequently, classical music fans perceive themselves as prototypical music fans. Every other subgroup at stake is now compared to this standard and the less well-educated a subgroup is perceived, the less prototypical it is perceived. Given the fact that classical music fans perceive metal fans as less well-educated, metal fans are perceived as lowly prototypical. This relative ingroup prototypicality (i.e. higher ingroup prototypicality than outgroup prototypicality) leads to a more positive evaluation of the ingroup. In a nutshell, research on ingroup projection suggests that one's own subgroup's relative ingroup prototypicality can be a possible precursor for intolerance towards outgroups that are perceived as deviating from the projection-biased SOG prototype (Mummendey & Wenzel, 1999; Wenzel et al., 2007).

Most important for the current research, the investigation of potential moderators of the ingroup projection process has shown that relative ingroup prototypicality can be diminished with a complex representation of a SOG compared with a simple representation (Machunsky, 2005; Peker et al., 2010; Waldzus et al., 2003; Waldzus et al., 2005). A complex representation of a group can be defined as consisting of multiple prototypes (Waldzus, 2010), whereas a simple representation does include one prototype. According to Mummendey and Wenzel (1999), with a complex SOG representation more subgroups (e.g., classical music fans, metal fans) can be perceived as equally prototypical and are evaluated equally positive. However, ingroup projection research has not yet investigated whether activating a complex SOG representation directly affects attitudes of central subgroup members towards subgroups that are represented in the periphery of the SOG (e.g., atypical minorities).

Recently, Hutchison and colleagues (Hutchison et al., 2011) showed on the intragroup level that atypical members are evaluated less positively when the group was perceived as homogeneous compared with heterogeneous. In line with research on subjective group dynamics (e.g., Marques, Abrams, Paez, & Martinez-Taboada, 1998; Marques, Abrams, & Serodio, 2001), the authors argued that members who deviate from the ingroup norm in homogeneous groups are evaluated less positively because this evaluation serves

psychologically as a reduction of the impact of deviant members on the group (Marques, Yzerbyt, & Leyens, 1988). In contrast, in a heterogeneous group a norm of tolerance for deviance may be prevailing and diversity is perceived as valuable (e.g., Hornsey, Jetten, McAuliffe, & Hogg, 2006). In a second experiment, Hutchison and colleagues (2011) investigated the interplay of perceived group heterogeneity and the prevailing norm of valuing this heterogeneity. Here, atypical members in heterogeneous groups were only evaluated positively when the norm of valuing heterogeneity was activated compared with when it was not. In a similar vein, Mummendey and Wenzel (1999) argued that a complex representation[17] of the SOG would lead to a norm of valuing diversity as a characteristic of the SOG. Therefore, we expect similar results for the evaluation of atypical (in the following referred to as peripheral) subgroups within SOGs. When the SOG is represented as complex, peripheral subgroups are evaluated more positively than when the SOG is represented as simple (Experiment 4).

However, research on the complexity assumption of the IPM has not yet examined how activating a complex representation and the activation of diversity relate to each other. Although both constructs are interwoven (Waldzus, 2010), we assume that they are not the same and can have different effects. We argue that whether peripheral subgroups are evaluated more or less positively can depend on how diversity is activated (Experiments 5 and 6). Research on attitudes has shown the substantial influence of the accessibility of different exemplars on attitudes concerning a category (Lord et al., 2004; Sia et al., 1997). Sia and colleagues (1997) showed that the activation – via self-generation or presentation – of either a positive valued exemplar or a negative exemplar of a category (e.g., politician) changed subsequent attitudes towards the category in the respective direction. Based on these findings on the malleability of attitudes by means of exemplar activation, we argue that in SOGs the activation of subgroup exemplars can also play an important role on whether diversity activation has more or less positive effects. More specifically, we assume that activating diversity with central subgroups (i.e., more normative, often majority subgroups) leads to a more positive evaluation of other subgroups than activating peripheral subgroups (i.e., less normative, often minority subgroups) – regardless of the valence of the activated exemplars. We assume that the activation of peripheral subgroups leads to the perception that diversity of the SOG diminishes the definition of the SOG (e.g., its basic norms and standards; cf. Verkuyten, 2004). We predict that group members react with higher endorsement of their

[17] As discussed in Chapter 2, complex categories can be characterized by a higher degree of subgroup diversity and heterogeneity (i.e., range on attribute dimensions) than simple categories (i.e., one prototype).

SOG's basic norms and standards (i.e., group-based conventionalism). As a consequence, they should evaluate subgroups that defy these norms less positively.

**Group-based conventionalism**

Existing literature about conventionalism (i.e., adherence to established group norms and values; Duckitt, Bizumic, Krauss, & Heled, 2010) has defined it as one component of right-wing authoritarianism (RWA). Together with authoritarian submission (i.e., conformity to authorities) and authoritarian aggression (i.e., general aggression towards individuals or groups that are perceived to be sanctioned by authorities; Altemeyer, 1981; cited in Stellmacher & Petzel, 2005), conventionalism constitutes the multidimensional construct of RWA (e.g., Funke, 2005; Duckitt et al., 2010). Later approaches on authoritarianism (Duckitt 1989; Stellmacher & Petzel, 2005) reconceptualized authoritarianism as a group-level phenomenon. In line with social identity theory (Tajfel & Turner, 1979) and SCT (Turner et al., 1987), highly identified group members develop authoritarian beliefs when the group is threatened (Duckitt, 1989; Stellmacher & Petzel, 2005). Stellmacher and Petzel (2005) showed in different groups (e.g., students, psychologists) that the induction of threat increased group-based authoritarianism for individuals with a high disposition for authoritarianism. Kessler and Cohrs (2008) advanced the reconceptualization of authoritarianism by assuming the adaptive nature and the functionality of this group phenomenon. They argue that the emergence of group-based authoritarianism within a group is beneficial for the group's efficacy and cooperation, especially in large-scale groups. The establishment of norms and conventions acquires shared knowledge and a common ground. Thus, conventionalism facilitates mutual cooperation and group members evaluate others with reference to them (Kessler & Cohrs, 2008). In other words, these conventions can be part of the SOG representation. With regard to our research question, we argue that peripheral subgroup exemplars can be perceived as less normative than central exemplars and, therefore, threatening for a clear definition of the SOG. We argue that activating diversity with peripheral subgroup exemplars can elicit stronger endorsement of the group's "core" conventions, norms, and traditions than activating diversity with central subgroups.

**The superordinate group context of metal music fans**

Being a metal fan can constitute an important part of the social identity of an individual (cf. Abrams, 2009). In her work on German metal fans, Chaker (2010) described that for many fans "metal is much more than 'just' music: A specific lifestyle, a community of like-

minded people, a special living environment" (p. 265). For metal fans, displaying their identity in public via clothing and hairstyle is very common. The prototypical metal fan can be recognized by his or her long hair, a band-shirt, and often a leather jacket with reams of band patches. A short poll by the authors of the present paper with 24 students of a social psychology course about their stereotypes about metal fans revealed attributes like: black clothes, long hair, scruffy, melancholic, high alcohol consume, and rebellious. However, as often with initial stereotypes, these are simplified impressions. More precisely, metal fans are a highly diverse group that is closely related to the highly diverse music style: "[…] metal is one of the most globally diverse forms of music, with well-populated metal scenes everywhere from Indonesia to Morocco to Peru" (Kahn-Harris, 2010, p. 98). Metal music as a music genre has developed over the last 40 years. Since its beginning, metal music has managed to combine the influences of younger and regional music styles (e.g., electronic, gothic, Latin music) with the retention of important basic characteristics of the music and the fan scene (e.g., concerning the rhetoric and the aesthetics). In an interview with the first author, an expert in the domain of metal music described that until today metal music got increasingly differentiated and a decent amount of subgenres evolved (e.g., gothic metal, speed metal, Celtic metal, Viking metal). The increasing differentiation of the music genre was accompanied by a differentiation and increasing diversity of metal fans (e.g., appearance, age, ethnicities). He further mentioned that whereas some subgenres and their fans are perceived as "true" and highly prototypical (e.g., black metal, death metal), other subgenres and their fans are perceived as less prototypical (e.g., gothic metal, industrial metal). Fans who prefer the subgenre called "nu metal" (influenced by hip hop music elements) are perceived as very atypical (i.e., a peripheral subgroup). Whether nu metal is a metal subgenre at all and whether nu metal fans are "true" metal fans has often been discussed in the metal community (e.g., Iaberis, 2006). This open question about the inclusion of nu metal fans is the background of the following experiments.

**The present research**

In order to investigate when activating diversity can have a detrimental effect on subgroup relations, we aimed to show within the context of metal fans (a) that having a complex representation of the SOG of metal fans leads to more tolerance towards nu metal fans than having a simple representation in mind (Experiment 4), and (b) that diversity activated with peripheral subgroups leads to more conventionalism regarding metal music than diversity activated with central subgroup exemplars (Experiments 5 and 6). We expected that the

activating peripheral subgroups leads to the perception of an unclear definition of metal fans and an increased endorsement of "old school"-conventions of metal music. This, in turn, should lead to less positive attitudes towards nu metal fans. All experiments were conducted online. Whereas in Experiment 4, participation was open to all metal fans but death metal fans (one of the target subgroups of this experiment), in Experiments 5 and 6, in contrast, participation was open only to death metal fans (target group: nu metal fans).

## 4.2. Pretest

From the interview with the expert in metal music, we derived eight subgroups of metal fans that we tested empirically regarding their prototypicality for metal fans. We asked 24 metal fans ($M_{age}$ = 22.79, *SD* = 4.49, 1 woman) via an online questionnaire to rate the prototypicality of these subgroups for the SOG of metal fans on a 11-point scale (1 = *very atypical*, 11 = *very prototypical*). Furthermore, we assessed how friendly they rate the subgroups on a 10-point scale (1 = *very unfriendly*, 10 = *very friendly*). Then, their SOG identification was assessed with six items[18] on a 7-point scale (e.g., "I identify with metal fans."; 1 = *I do not agree*, 7 = *I agree*, Cronbach's $\alpha$ = .88). A *t*-test against the scale's midpoint (4) revealed that participants identified highly with metal fans, $M = 4.64$, $SD = 1.55$, $t(22) = 1.97$, $p = .03$ (one-tailed), $r = .39$, indicating that being a metal fan is an important part of their identity.

As stimulus and target subgroups for the succeeding experiments, we identified by means of *t*-tests against the scale's midpoint (6) that black metal fans and death metal fans were perceived as rather prototypical subgroups (i.e., central subgroups) and that industrial, nu, and white metal fans were perceived as atypical (i.e., peripheral subgroups). In order to rule out that the centrality of subgroups was confounded with valence (i.e., assessed as perceived friendliness), we correlated all prototypicality ratings with the respective friendliness ratings and no correlation was significant (see Table A7). *T*-tests against the scale's midpoint (5.5) revealed no systematic differences between central and peripheral subgroups for perceived friendliness. The *t*-values, means, and standard deviations of the prototypicality ratings and the friendliness ratings are displayed in Table A7. The prototypicality ratings were in line with statements of our expert. He described that subgenres and associated subgroups of fans deviate to a different extent from the original "old school" metal music or – on the social level – from the prototype of a "true" metal fan. The results of the pretest corroborate that within

[18] All items and scales in this chapter are listed in the Appendix.

the SOG of metal fans different subgroups are represented along a prototypicality gradient. Apparently, although the SOG can be represented by different subgroups, a superordinate prototype of a "true" metal fan exists. Thus, the activation of different subgroups does not necessarily imply a complex representation (Waldzus, 2010).

## 4.3. Experiment 4

The aim of Experiment 4 was to test, as predicted by the IPM, whether activating a complex SOG representation of metal fans compared with a simple representation leads to more tolerant attitudes. More specifically, we predicted an increase of positive attitudes towards the central subgroup of death metal fans and the peripheral subgroup of nu metal fans, when participants think about diversity (complexity condition) of metal fans compared with unity (unity condition; Waldzus et al., 2004). Furthermore, we predicted that the prototypicality of both subgroups for metal fans was perceived as more equally in the complexity than in the unity condition. We also assessed attitudes towards diversity of metal fans and conventional attitudes regarding metal music. If valuing diversity is perceived as a norm for metal fans, attitudes towards diversity and conventional attitudes regarding metal music should not differ regardless of diversity activation or no diversity activation.

### Method

**Participants and Design.** Participants were acquired online via various social network and fanzines (i.e., online fan magazines). Of 142 metal fans, we excluded those who did not finish the questionnaire ($n$ = 47)[19], all who indicated to be non-native German speakers ($n$ = 2), and those who took longer than the mean duration plus two standard deviations ($n$ = 5; $M$ = 1053.53 sec, $SD$ = 655.49 sec). The remaining sample consisted of 88 metal fans ($M_{age}$ = 24.02, $SD$ = 6.07). 25 of them were women. Participants were randomly assigned to one of two experimental conditions (unity condition: $n$ = 43, diversity condition: $n$ = 45). As a reward, they had the chance to take part in a lottery to win one of six vouchers for an online metal storehad the chance to take part in a lottery to win one of six vouchers for an online metal store.

**Procedure.** Participants were asked to enter personal information (e.g., age, gender) at the beginning of the questionnaire in order to decrease the rate of later drop out (Frick, Bächtinger, & Reips, 2001). To emphasize the intergroup context, participants' identification

[19] 38 participants dropped out before the manipulation, 7 dropped out in the unity condition, and 2 in the complexity condition.

with metal fans was assessed with the six items of the pretest (Cronbach's α = .79). Following Waldzus and colleagues (2003), participants in the unity condition read the following instructions (differences of the complexity condition are added in brackets): "Please imagine that you have to explain to somebody else where the similarities (*versus* differences) between metal fans lie and what accounts for their unity (*versus* diversity) as metal fans. Which similar (*versus* differentiating) characteristics would you mention?". Participants were instructed to write down their thoughts in an open text field. As manipulation check, we asked them how much they agree that diversity is a characteristic of metal fans on a seven-point scale (1 = *I do agree*, 7 = *I do not agree*). Subsequently, we assessed conventional attitudes regarding metal music with four items on a seven-point scale (1 = *I do agree*, 7 = *I do not agree*). One item was adapted from the RWA scale of Funke (2005) and three were generated by the authors (e.g., "Well established things should be preferred to new influences."; Cronbach's α = .74). We assessed attitudes towards the two subgroups with three items each on a seven-point scale (e.g., "If I meet a death metal fan/nu metal fan at a music festival I enjoy talking to him/her."; 1 = *I do not agree*, 7 = *I do agree*; Cronbach's $\alpha_{\text{death metal}}$ = .64; Cronbach's $\alpha_{\text{nu metal}}$ = .82) and a "friendliness" thermometer ("How friendly are death metal fans/nu metal fans?"; 1 = *very unfriendly*, 10 = *very friendly*). Then, the prototypicality ratings of both subgroups were assessed on a same seven-point scale ("I define death metal/nu metal fans as metal fans."; 1 = *I do agree*, 7 = *I do not agree*). Finally, attitudes towards diversity of metal fans were assessed with four items (e.g., "It is beneficial for metal and its fans that metal consists of different subgenres"; Cronbach's α = .77) on the same seven-point scale.

**Results**

Table 4.1 provides means and standard deviations for the relevant variables. The correlations between the variables within each single experimental condition are depicted in Table A8.

**Superordinate group identification.** As expected, participants identified highly with the SOG of metal fans; $M$ = 4.74, $SD$ = 1.24; as a $t$-test against the scale's midpoint (4) suggested; $t(87) = 5.62$, $p < .001$, $r = .52$.

**Manipulation check.** As expected, participants in the complexity condition perceived to a higher degree that diversity is a characteristic of metal fans ($M$ = 4.13, $SD$ = 1.6) than participants in the unity condition ($M$ = 3.44, $SD$ = 1.82); $t(86) = -1.90$, $p = .03$ (one-tailed), $r = .20$.

**Attitudes towards nu metal fans and death metal fans.** We expected more positive attitudes towards nu metal fans and towards death metal fans in the complexity than in the unity condition. A MANOVA with attitudes towards and perceived friendliness of nu metal fans revealed no significant overall effect, $F(2, 85) = 1.98$, $p > .10$. However, the univariate tests showed the expected difference for the attitudes score, $F(1, 86) = 3.55$, $p = .03$ (one-tailed), $\eta_p^2 = .04$, and for the friendliness measure, $F(1, 86) = 3.74$, $p = .03$ (one-tailed), $\eta_p^2 = .04$. As can be seen in Table 4.1, attitudes were more positive in the complexity than in the unity condition. The MANOVA and the univariate tests with attitudes towards and the perceived friendliness of death metal fans detected no differences, $F$s<1. Whereas the complex representation had a positive effect on attitudes towards the peripheral subgroup, attitudes towards the central subgroup did not change.

**Prototypicality of nu metal fans and death metal fans.** We expected that the prototypicality ratings for both subgroups (both were outgroups) were more equally in the complexity than in the unity condition. We calculated a difference score ($\text{prototypicality}_{\text{death metal}} - \text{prototypicality}_{\text{nu metal}}$). In the complexity condition participants rated the typicality of both as being more equally ($M = 1.96$, $SD = 2.33$) than in the unity condition ($M = 2.88$, $SD = 2.26$). A $t$-test revealed that the difference was significant; $t(86) = 1.90$, $p = .03$ (one-tailed), $r = .20$. The individual ratings did not differ significantly between the conditions, $t_{death\ metal}(74.48) = 1.30$, $p > .10$; $t_{nu\ metal}(86) = -1.35$, $p > .10$. Descriptively, the means (see Table 4.1) show that death metal fans were perceived less prototypical and nu metal fans more prototypical in the complexity condition than in the unity condition.

**Attitudes towards diversity of metal fans and conventional attitudes regarding metal music.** None of the analyses did revealed significant effects between the conditions, $t$s<1. A $t$-test on attitudes towards diversity against the scale's midpoint (4) revealed, however, that participants had very positive attitudes towards diversity ($M = 5.73$, $SD = 1.11$), $t(87) = 14.62$, $p < .001$, $r = .84$. Taken together, these results indicate that valuing diversity is a norm within metal fans regardless whether diversity is activated or not.

Table 4.1

*Means and standard deviations for all variables (Experiment 4).*

| | Unity<br>*n* = 43 | Complexity<br>*n* = 45 |
|---|---|---|
| | *M (SD)* | *M (SD)* |
| SOG identification | 4.71 (1.28) | 4.77 (1.21) |
| Perceived diversity of metal fans | 3.44 (1.82) | 4.13 (1.6) |
| Attitudes towards nu metal fans | 3.18 (1.59) | 3.81 (1.54) |
| Friendliness of nu metal fans | 4.65 (2.31) | 5.62 (2.40) |
| Attitudes towards death metal fans | 4.64 (1.09) | 4.52 (1.24) |
| Friendliness of death metal fans | 6.81 (1.67) | 7.07 (1.83) |
| Prototypicality of nu metal fans | 3.67 (2.22) | 4.31 (2.19) |
| Prototypicality of death metal fans | 6.56 (.80) | 6.27 (1.27) |
| Diversity attitudes | 5.83 (1.24) | 5.63 (.97) |
| Conventional attitudes regarding metal music | 3.94 (1.35) | 3.92 (1.30) |

*Note*. SOG – superordinate group.

**Discussion**

In line with ingroup projection research (e.g., Waldzus et al., 2003), activating a complex representation of metal fans led to more positive attitudes towards nu metal fans than a simple representation. However, attitudes towards death metal fans were not affected by these SOG representations. Both subgroups were perceived as more equally prototypical in the complexity than in the unity condition. Whereas activating complexity seemed to have a positive effect on tolerance towards the peripheral subgroup, attitudes towards the central

subgroup was not affected. Hutchison and colleagues (2011) similarly found a more positive evaluation of atypical members in heterogeneous groups only, but no differences for the evaluation of prototypical members. This can be explained with the overall positive attitudes towards diversity of metal fans. Thus, also when the unity of metal fans is highlighted subgroups that are easily retrieved with the activation of the SOG (i.e., central subgroups; cf. Rothbart et al., 1996) are positively evaluated. The current data showed that valuing diversity is a norm among metal fans. This norm was not affected by different SOG representations. Furthermore, in line with the IPM, both subgroups were perceived as more equally prototypical in the complexity than the unity condition. In sum, diversity was valued and, therefore, complexity activation led to more positive attitudes towards the peripheral subgroup of nu metal fans. Attitudes towards death metal fans did not change. One shortcoming of the experiment was that participants were not only members of one subgroup. They had different metal music preferences. This could also explain that no difference of attitudes towards death metal fans was detected. In the next experiments, we will only use members of one central subgroup.

What the result of Experiment 4 cannot explain is the question whether the positive effect occurred due to an activated complex representation of the SOG or due to the activation of diversity within the SOG (e.g., different subgroups). One does not necessarily imply the other (Waldzus, 2010). We assume that they are not the same and that both activations can have different effects on the tolerance of subgroup members. We argue that whether peripheral subgroups are evaluated more or less positively can depend on how diversity is activated and how its perception affects the definition of the SOG (e.g., norms, values). In Experiment 5, we investigated whether the detected beneficial effect of “thinking of diversity” decreases with the additional activation of peripheral subgroup exemplars compared with central subgroup exemplars. In order to compare the effects of diversity activation with the representation that metal fans normally have, we added a control condition where no specific SOG representation was activated.

## 4.4. Experiment 5

We aimed to show that activating diversity with peripheral subgroups (compared with central subgroups) leads to less clarity of the definition of metal fans and, in turn, to more group-based conventionalism. Thus, we hypothesised that participants endorse existing norms and traditions of metal music more strongly (Hypothesis 1) and evaluate nu metal fans less positively (Hypothesis 2) when diversity is activated with peripheral subgroups as compared

with central subgroups. We hypothesized that the increase of conventionalism mediates the effects of subgroup activation on attitudes towards and the perceived friendliness of nu metal fans (Hypothesis 3). To test these hypotheses, we activated diversity in two experimental conditions in combination either with two pre-tested central subgroup exemplars (thrash and black metal) or peripheral subgroup exemplars (white and industrial metal). In the control condition, no specific SOG representation was activated.

In this examination of effects of different diversity representations on tolerance, we were particularly interested in effects and processes beyond identity-based motivations. The motivation to protect the ingroup's positive distinctiveness is known to have an impact on the evaluation of deviants (e.g., Hutchison & Abrams, 2003) and on subgroup differentiation (Crisp, Stone, & Hall, 2006; Hornsey & Hogg, 2000). To this end, we controlled for identification with the SOG and the subgroup in all main analyses. We restricted the participation to death metal fans to investigate in particular the reaction of central subgroup members.

## Method

**Participants and Design.** Participants were acquired online via various social network groups of death metal fans and via fanzines addressing death metal fans. Of 291 death metal fans, we excluded those who did not finish the questionnaire ($n$ = 115)[20], those who indicated to be non-native German speakers ($n$ = 2), and those who took longer than the mean duration plus two standard deviations ($n$ = 11; $M$ = 1053.25 sec, $SD$ = 528.92 sec). The remaining sample consisted of 163 death metal fans ($M_{age}$ = 25.07, $SD$ = 5.55). 26 of them were women. Participants were randomly assigned to one of the three experimental conditions (central subgroup condition: $n$ = 57, peripheral subgroup condition: $n$ = 48, control: $n$ = 58). As a reward, participants had the chance to take part in a lottery to win one of six vouchers of an online metal store.

**Procedure.** After participants had entered demographic information (e.g., age, gender), we assessed identification with metal fans with five items (Cronbach's α = .87). Identification with the subgroup of death metal fans was measured with the same five items (substituting the words "metal fan" with "death metal fan") plus a sixth item examining the own prototypicality as death metal fan ("I consider myself as a prototypical death metal fan."; Cronbach's α = .89). Subsequently, participants in the two experimental conditions read the

[20] 90 participants dropped out before the manipulation, 8 dropped out in each experimental condition, and 9 in the control condition.

following manipulation text: "Because there are so many different metal styles, metal fans are very diverse (e.g., black metal fans, thrash metal fans [two central exemplars] *versus* white metal fans, industrial metal fans [two peripheral subgroup exemplars]). Please consider these different metal styles in your following thoughts! Please think about the diversity of metal fans now and write down all differences and differentiating characteristics you can think of." In the control condition, participants were asked to think about their motivation to hear and to engage in music. Thus, no specific SOG representation was activated in the control condition. To check whether our manipulation changed the perceived clarity of the definition of metal fans as a group, we assessed perceived groupness of metal fans ("To which extent do metal fans build a group?", 7-point scale: 1 = *not at all*; 7 = *very*). Additionally, we checked whether the perceived extend of diversity changed between the conditions. We asked participants how much diversity was seen as a characteristic of metal fans ("One characteristic of metal fans is their huge diversity.", 7-point scale: 1 = *do not agree*; 7 = *agree at all*). Succeedingly, we assessed attitudes towards nu metal fans similarly as in Experiment 4 with three items (Cronbach's $\alpha = .79$) and a "friendliness" thermometer, as well as conventional attitudes regarding metal music (Cronbach's $\alpha = .72$). The prototypicality of nu metal fans was assessed with one item that ranged from 1 to 7 consisting of seven pictures showing two increasingly converging circles. In picture 1, the small circle (subtitled "nu metal fans") and the large circle (subtitled "metal fans") were at opposite ends of a line. In picture 7, the small circle was fully included in the large circle (cf. Schubert & Otten, 2002).

**Results**

Table 4.2 shows the means and standard deviations of the relevant variables. The correlations between the variables within each single experimental condition are depicted in Tables A9 and A10.

**Subgroup and superordinate group identification.** First, we tested whether both identification levels were perceived as distinct by means of a principal components factor analysis with the eleven items measuring subgroup and SOG identification[21]. As we expected two correlated identification factors, we used an oblique rotation and determined the extraction of two factors. Table A14 shows the factor loadings and communalities of all items. The first factor accounted for 55.38 % of the variance with factor loadings of at least .66 for all items that tap the cognitive component of identification – irrespective of the categorization level (e.g., "I feel connected to [death metal/metal] fans."; see factor loadings

[21] All items correlated significantly with correlation values ranging from $r(163) = .26$ to $r(163) = .78$.

of pattern matrix in Table A14). The second factor accounted for 11.55 % of the variance and had factor loadings of at least .63 for the four items that asked for the behavioural component of identification – irrespective of categorization level (e.g., "I spend a lot of money for [death metal/metal] (concerts, festivals, CDs, etc.)."). Both factors were correlated, $r$ = .57. Thus, although aiming to measure identification on two different categorization levels, our items seemed to assess an overall identification with metal fans. Our sample seemed to perceive no difference between being identified as metal fan and being identified as death metal fan. Participants' scores for that joint identification ($M$ = 4.84, $SD$ = 1.24, Cronbach's $\alpha$ = .92) was significantly higher than the scales' midpoint (4); $t(162) = 8.59$, $p < .001$, $r$ = .56. We controlled for the joint identification score in all following analyses.

**Manipulation check.** We tested the effect of subgroup activation on the perceived groupness and perceived diversity of metal fans. An ANCOVA[22] (joint identification as covariate) with perceived groupness revealed that participants' perceived groupness differed between the central and the peripheral subgroup condition, $F(1, 102) = 5.02$, $p = .03$, $\eta_p^2 = .05$[23] (for adjusted means see Table 4.2). The ANCOVA for perceived diversity revealed no differences between the conditions, $F<1$. A $t$-test against the scale's midpoint (4) showed that diversity of metal fans was perceived as high among all participants; $M = 4.59$, $SD = 1.8$, $t(162) = 4.18$, $p < .001$, $r = .31$.

Taken together, as expected the activation of different subgroup exemplars affected the perceived groupness of metal fans. We detected no influence of our manipulation on the perceived diversity. The results suggest that metal fans are perceived as a diverse group without explicitly activating a diversity representation.

**Conventional attitudes regarding metal music.** In Hypothesis 1, we expected more conventional attitudes regarding metal music in the peripheral subgroup condition than in the central subgroup condition. An ANCOVA (joint identification as covariate) revealed no significant overall effect, $F(2, 159) = 2.46$, $p = .09$. However, the following Helmert contrasts revealed the expected difference. The contrast 0 -1 1 (central against peripheral subgroup condition) was significant; $t(159) = -1.86$, $p = .03$ (one-tailed), $r = .15$; indicating that participants in the peripheral subgroup condition were more conventional than in the central

[22] Testing the assumption of homogeneity of the regressions slopes (of covariate and dependent variable) in all experimental conditions revealed that this assumption was violated when including the control condition. Therefore, this ANCOVA is conducted only with the central and the peripheral subgroup condition.

[23] The covariate, joint identification, was significantly related to perceived groupness, $F(1, 102) = 22.81$, $p < .001$, $\eta_p^2 = .18$.

subgroup condition. The contrast between the control condition and the subgroup conditions (-2 1 1) revealed no significant difference between the activation of a diverse representation and no activation, $t(159) = -1.29$, $p > .10$.

Table 4.2

*(Adjusted) means and standard errors (or deviations) for all variables (Experiment 5).*

| | Control<br>*n* = 58 | Central subgroups<br>*n* = 57 | Peripheral subgroups<br>*n* = 48 |
|---|---|---|---|
| | *M (SE)* | *M (SE)* | *M (SE)* |
| Identification (combined) | 4.84 (*SD* = 1.31) | 4.89 (*SD* = 1.20) | 4.77 (*SD* = 1.23) |
| Groupness of SOG[a] | 5.31 (.17) | 5.07 (.17) | 4.55 (.18) |
| Amount of diversity of SOG[a] | 4.62 (.24) | 4.65 (.24) | 4.48 (.26) |
| Conventional attitudes[a] | 4.01 (.17) | 4.05 (.17) | 4.51 (.18) |
| Attitudes towards nu metal fans[a] | 3.55 (.20) | 3.65 (.20) | 3.40 (.22) |
| Friendliness of nu metal fans[a] | 5.38 (.27) | 5.43 (.27) | 4.57 (.30) |
| Prototypicality of nu metal fans[a] | 2.92 (.20) | 3.02 (.20) | 2.64 (.22) |

*Note.* SOG – superordinate group; [a] – adjusted means are reported.

**Attitudes towards nu metal fans.** With a MANCOVA, we tested whether attitudes towards and the perceived friendliness of nu metal fans differed between all three conditions (Hypothesis 2). We detected no significant overall difference, $F(4, 316) = 1.42$, $p > .10$. Subsequent univariate tests for both dependent variables also revealed no significant

differences between all three conditions; $F_{attitudes}<1$; $F_{friendliness}(2, 158) = 2.31$, $p = .10$[24]. However, Helmert contrasts showed that there was a significant difference in the perceived friendliness of nu metal fans between the central subgroup (-1) and the peripheral subgroup condition (1). The contrast was significant; $t(158) = 1.95$, $p = .03$ (one-tailed), $r = .15$; indicating that participants in the peripheral subgroup condition perceived less friendliness of nu metal fans than in the central subgroup condition. The contrast comparing the control group (-2) with both subgroup activation conditions (1 1), did not reach significance, $t(158) = 1.01$, $p > .10$. Friendliness of nu metal fans did not differ between the control condition and the other conditions. Neither contrast was significant for the attitude score, $t$s<1. The ANCOVA on the prototypicality of nu metal fans revealed no differences between the conditions, $F<1$.

**Mediation analysis.** To test whether conventional attitudes regarding metal music mediated the effects of subgroup activation on attitudes towards and perceived friendliness of nu metal fans (Hypothesis 3), bootstrapping analyses were conducted by estimating the direct and the indirect effect (Preacher & Hayes, 2008). The friendliness of nu metal fans[25] was entered as dependent variable, the two experimental conditions (dummy coded: 0 = central subgroup condition, 1 = peripheral subgroup condition) were entered as independent variable, and conventional attitudes were entered as proposed mediator. Joint identification with metal fans was entered as covariate. The bootstrap results (5,000 resamples) indicated that the total effect of the subgroup activation on the friendliness measure (total effect: $b = -0.86$, $SE = .43$, $p = .05$) became non-significant once conventional attitudes were included in the model (direct effect of subgroup activation: $b = -0.57$, $SE = .41$, $p > .10$). Furthermore, the analyses revealed that the total indirect effect of subgroup activation on perceived friendliness via conventional attitudes was significant, with a point estimate of -.29 ($SE = .17$) and a 95% BC (bias-corrected; see MacKinnon, Lockwood, & Williams, 2004) bootstrap CI [-.71, -.02]. As preconditioned, the CI did not include zero. Thus, conventional attitudes regarding metal music mediated the effect of subgroup activation on perceived friendliness of nu metal fans (see Figure 4.1).

[24] The covariate, joint identification, was significantly related to perceived friendliness of nu metal fans, $F(1, 158) = 4.12$, $p = .04$, $\eta_p^2 = .03$. The assumption of homogeneity of the regression slopes (of covariate and dependent variable) was violated in this ANCOVA. Thus, this result has to be treated with caution.

[25] The same analysis with the attitude score as dependent variable did not reveal a significant mediation.

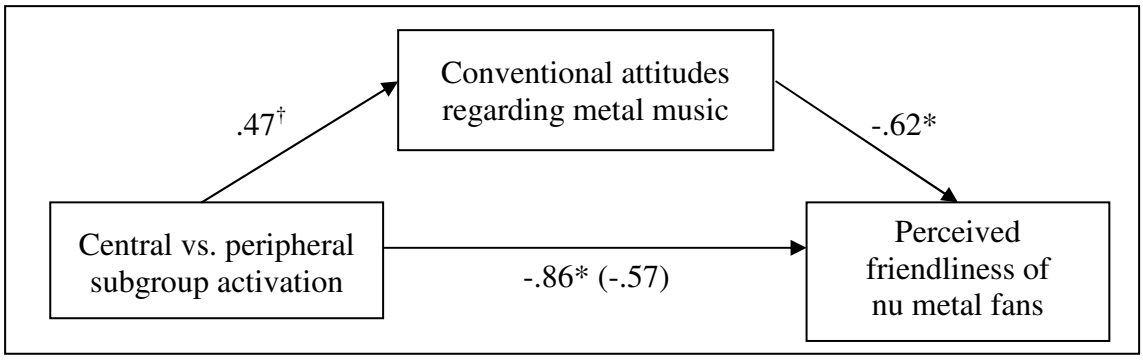


*Figure 4.1.* Mediation of the effect of subgroup activation on perceived friendliness of nu metal fans through conventional attitudes towards metal music. Path values represent unstandardized regression coefficients. † $p < .10$; * $p < .05$.

**Discussion**

The aim of Experiment 6 was to show the effect of activating diversity with peripheral subgroup on tolerant attitudes compared with activating diversity with central subgroups. The activation of peripheral subgroups led people to perceive less groupness of the SOG than the activation of central subgroups. Furthermore, when peripheral subgroups were activated, participants more strongly endorsed "old school" traditions, norms, and values of metal music compared with the activation of central subgroups. Concerning the direct effect on attitudes towards nu metal fans, we found only vague evidence. The results suggest that death metal fans (central subgroup members) perceived less friendliness of nu metal fans when diversity was activated with peripheral subgroups than with central subgroups. However, the test of the assumption for the ANCOVA (homogeneity of the regressions slopes of covariates and dependent variable) revealed that joint identification played a different role within the experimental conditions for the perceived friendliness. What we could show was that the effect of subgroup activation on the perceived friendliness of nu metal fans was mediated by group-based conventionalism. Given the possibility that the direct effect from subgroup activation on friendliness of nu metal fans does not exist, the indirect effect can occur independently (Hayes, 2009; MacKinnon, Fairchild, & Fritz, 2007). When no specific SOG representation was activated and participants only thought about their reasons for being a music fan, participants perceived the same high amount of diversity and descriptively a higher groupness of metal fans than when diversity was activated (see Table 4.2.).

An interesting finding was that the identification items regarding metal fans and regarding death metal fans apparently measured the same construct. We expected that they measured identification on two different categorization levels. However, this was not the case. In other

words, participants made no difference between the identification as a metal fan or as a death metal fan, at least before diversity was activated. The overlap of the two categorization levels led us to the assumption that participants perceived their subgroup of death metal fans as a "pars pro toto" and, thus, highly prototypical for the SOG (for a similar argument see Noor, Brown, Taggart, Fernandez, & Coen, 2010). The process we assume, therefore, could thus be restricted to death metal fans who perceive their subgroup as highly prototypical for metal fans. Steffens and colleagues (2012) similarly proposed that relative ingroup prototypicality may be an important moderator for the outcome of diversity activation. They showed that activating diversity of the category "men" led to more perceived threat and more discrimination of gay men but only among heterosexual men who perceived high relative ingroup prototypicality of their subgroup. Consequently, we assume that participants in Experiment 5 reacted more conventionally when peripheral (compared with central) subgroups were activated because they perceived their subgroup of death metal fans as highly prototypical. Thus, in Experiment 6, we included perceived ingroup prototypicality as a moderator.

## 4.5. Experiment 6

The aim of Experiment 6 was to show that diversity activation with additional peripheral subgroup exemplars, compared with central subgroup exemplars, leads in particular for death metal fans who perceive their subgroup as highly prototypical for metal fans to more conventionalism regarding metal music (Hypothesis 1) and less positive attitudes towards nu metal fans (Hypothesis 2). Given the results of Experiment 5, we reformulate Hypothesis 3 and expect an indirect effect[26] from subgroup activation on attitudes towards and perceived friendliness of nu metal fans via group-based conventionalism. To test these hypotheses, it was necessary to acquire a sample that did not perceive the identities as being completely overlapping. To this end, we approached the readers of a large online fanzine that aims to inform all metal fans and not only death metal fans.

### Method

**Participants and Design.** Participants were acquired via a large German metal online fanzine. Of 165 death metal fans, we excluded those who dropped out during answering the

[26]A discussion about the distinction between indirect effect and mediation can be found in Mathieu and Taylor (2006).

questionnaire ($n$ = 61)[27], those who indicated to be non-native German speakers ($n$ = 5), those who affirmed to have participated already in Experiment 6 ($n$ = 7), and those who took longer than the mean duration plus two standard deviations ($n$ = 3; $M$ = 1072.25 sec, $SD$ = 671.23 sec). The remaining sample consisted of 89 death metal fans ($M_{age}$ = 24.30, $SD$ = 6.15) and 3 of them were women. Participants were randomly assigned to one of the two experimental conditions (central subgroup condition: $n$ = 44, peripheral subgroup condition: $n$ = 45). As a reward, participants had the chance to take part in a lottery to win one of five vouchers of an online music store.

**Procedure.** Participants were asked to give their demographic information first. Then, we assessed identification with metal fans again with the same five items (Cronbach's α = .91) and identification with death metal fans with the same six items as in Experiment 5 (Cronbach's α = .91). Perceived prototypicality of the own subgroup was assessed with one item that ranged from 1 to 7 consisting of seven pictures showing two increasingly converging circles (cf. Schubert & Otten, 2002). Participants were asked to mark the picture that best described the prototypicality of their subgroup.

The diversity manipulation was the same as in Experiment 5. To check the effectiveness of the manipulation, we asked participants to indicate the groupness of metal fans using three items (e.g., "To which extent do metal fans constitute a group?"; Cronbach's α = .69) on a 7-point scale (1 = *not at all*, 7 = *very*). Perceived diversity of metal fans was asked with one item (e.g., "Metal fans are very diverse.") on a 10-point scale (1 = *do not agree*; 10 = *agree at all*). Subsequently, we assessed attitudes towards nu metal fans (Cronbach's α = .73), conventional attitudes regarding metal music (Cronbach's α = .75), and the prototypicality of nu metal fans were assessed as in Experiment 5.

## Results

Table 4.3 lists the means and standard deviations of all relevant variables. The correlations between the variables within each single experimental condition are depicted in Table A12.

### Preliminary analyses

**Subgroup and superordinate group identification.** In order to check whether both identification levels equated to different categorization levels, we conducted a principal

[27] 47 participants dropped out before the manipulation and 7 after the manipulation in each experimental condition.

components factor analysis with the eleven items measuring subgroup and SOG identification[28]. Using an oblique rotation (consistent with the assumption that both identifications are intercorrelated), two factors with eigenvalues greater than 1.0 were extracted. Table A13 shows the factor loadings and communalities of all items. The first factor accounted for 57.58 % of the variance and had factor loadings of at least .70 for all subgroup identification items (see factor loadings from pattern matrix in Table A13). The second factor accounted for 14.18 % of the variance and had factor loadings of at least .71 for all SOG identification items. Both factors were correlated, $r$ = .55. To sum up, both identification scales measured identification on different categorization levels. Participants' score for identification with the SOG ($M$ = 5.36, $SD$ = 1.49) was significantly above the scale's midpoint (4); $t(88) = 8.62$, $p < .001$, $r = .68$; whereas the score for identification with the subgroup ($M$ = 4.13, $SD$ = 1.32) was not, $t<1$. Both identifications were included as covariates in the following main analyses.

**Manipulation check.** With an ANCOVA, we tested whether the definition of metal fans as a group was perceived as lower in the peripheral than in the central subgroup condition. The ANCOVA[29] revealed that participants in the peripheral subgroup condition reported less clarity of the definition of metal fans than participants in the central subgroup condition, $F(1, 85) = 2.94$, $p = .05$ (one-tailed), $\eta_p^2 = .03$[30]. Furthermore, it was tested whether the amount of perceived diversity of the SOG changed. The ANCOVA on perceived diversity revealed no difference between the conditions, $F<1$. However, the amount of perceived diversity of the SOG was very high ($M$ = 6.53, $SD$ = 2.68) as a $t$-test against the scale's midpoint (4) confirmed, $t(88) = 8.91$, $p < .001$, $r = .69$. Taken together, the manipulation did not change the amount of perceived diversity that was high in both conditions but it did affect the perceived clarity of the definition of metal fans.

## Main analyses

**Conventional attitudes regarding metal music.** For individuals who perceived high ingroup prototypicality we expected stronger conventional attitudes regarding metal music in the peripheral than in the central subgroup condition. A multiple regression analysis on the

[28] All items correlated significantly with correlation values ranging from $r(89) = .21$ to $r(89) = .85$. The determinant of the R-matrix was 0.00009 which is larger than the necessary value of .00001 indicating that multicollinearity was not a problem in this data (Field, 2005).

[29] The assumption for the ANCOVA of homogeneity of the regression slopes (covariates and dependent variable) was violated. Thus, the result has to be treated with caution.

[30] One covariate, subgroup identification, was significantly related to the perceived groupness, $F(1, 85) = 6.04$, $p = .02$, $\eta_p^2 = .07$.

conventional attitude score with the experimental conditions (dummy-coded: central subgroup condition = 0, peripheral subgroup condition = 1) and the z-standardized ingroup prototypicality score as predictors (and both z-standardized identification scores as covariates) revealed no significant effects for subgroup activation ($b$ = 0.18, $p$ > .10) and ingroup prototypicality ($b$ = 0.05, $p$ > .10), overall $F(4, 84) = 1.04$, $p$ > .10. However, the inclusion of the interaction term of both variables in a second regression step (Aiken & West, 1991) changed $R^2$ significantly; $\Delta R^2 = .06$, $p = .02$; and the interaction term significantly predicted conventional attitudes ($b = 0.61$, $SE = .26$, $p = .02$)[31].

Simple slopes analyses (Aiken & West, 1991; Meier, 2008) revealed that individuals who perceived high ingroup prototypicality (+ 1 *SD*) showed the expected effect, $b = 0.80$, $SE = .36$, $p = .03$. In the peripheral subgroup condition, they held more conventional attitudes than in the central subgroup condition. Individuals who perceived low ingroup prototypicality (- 1 *SD*) showed no difference in their attitudes ($b$ = -0.43, $p$ > .10). Within the peripheral subgroup condition, individuals who perceived high ingroup prototypicality held significantly more conventional attitudes than individuals who perceived low ingroup prototypicality ($b$ = 0.35, $SE = .18$, $p = .05$). In the central subgroup condition, there was no such effect ($b$ = -0.27, $SE$ = .18, $p$ > .10). The pattern suggests that only among individuals who perceive high prototypicality of their own subgroup, conventional attitudes regarding metal music increased when diversity was activated with peripheral compared with central subgroups. The conventionalism of individuals who perceived low prototypicality did not differ between peripheral and central subgroup activation.

**Attitudes towards nu metal fans.** Multiple regression analyses on the attitude score and the friendliness measure revealed neither significant effects of the experiment conditions and the ingroup prototypicality nor a significant effect of the interaction of both variables, $F$s<1.37.

[31]The overall regression model did not reach significance, $F(5, 83) = 2.79$, $p = .08$, $R^2 = .11$. Neither subgroup activation ($b$ = 0.19, $p$ > .10) nor ingroup prototypicality ($b$ = -0.27, $p$ > .10) predicted conventional attitudes when the interaction was included. The covariates did not predict conventional attitudes in any step of the regression, $p$s>.10.

Table 4.3.

*Means and standard deviations for all variables (Experiment 6).*

| | Central subgroups<br>*n* = 44 | Peripheral subgroups<br>*n* = 45 |
|---|---|---|
| | *M (SD)* | *M (SD)* |
| SOG identification | 5.46 (1.37) | 5.26 (1.61) |
| Subgroup identification | 4.31 (1.36) | 3.95 (1.27) |
| Subgroup prototypicality (pre) | 4.93 (1.13) | 4.73 (1.16) |
| Groupness of SOG | 4.54 (1.21) | 4.04 (1.07) |
| Diversity of SOG | 6.45 (2.77) | 6.60 (2.62) |
| Conventional attitudes | 3.65 (1.21) | 3.76 (1.22) |
| Attitudes towards NM fans | 4.44 (1.34) | 4.33 (1.34) |
| Friendliness of NM fans | 5.61 (1.51) | 5.42 (1.55) |
| Prototypicality of NM fans | 2.84 (1.48) | 2.58 (1.10) |

*Note.* SOG – superordinate group, NM – nu metal.

**Moderated indirect effect.** We predicted that for individuals who perceived high ingroup prototypicality an indirect effect occurs from subgroup activation via conventional attitudes regarding metal music on attitudes towards nu metal fans as in Experiment 5. We conducted bootstrapping analyses (Preacher, Rucker, & Hayes, 2007) for estimating the moderated indirect effect. The attitude score towards nu metal fans[32] was entered as dependent variable, the two experimental conditions (dummy coded: 0 = central subgroup condition, 1 = peripheral subgroup condition) were entered as the independent variable in the analyses. Furthermore, conventional attitudes were entered as mediator and ingroup prototypicality as moderator of the path between subgroup activation and the proposed mediator (see Figure

[32] The same analysis with perceived friendliness of nu metal fans as dependent variable did not reveal a significant indirect effect.

3.2). Subgroup and SOG identification were entered as covariates. First we modelled the relationship of subgroup activation and conventional attitudes (mediator) with ingroup prototypicality as moderator. Results showed a significant interaction of subgroup activation and ingroup prototypicality ($b$ = 0.54, $SE$ = .23, $p$ = .02). Next, we tested the indirect effect relationship of subgroup activation with attitudes towards nu metal fans through conventional attitudes. The relationship from conventional attitudes to attitudes towards nu metal fans was negative and significant ($b$ = -0.32, $SE$ = .12, $p$ = .01) indicating that higher conventional attitudes lead to less positive attitudes towards nu metal fans. Taken together, the indirect effect is moderated by perceived ingroup prototypicality. Next, we probed the indirect effect by estimating conditional indirect effects at two values of the moderator. For individuals with high perceived ingroup prototypicality (+ 1 *SD*) we expected a significant indirect effect and for individuals with low perceived ingroup prototypicality (-1 *SD*) we expected no significant indirect effect. The bootstrap results (with 5,000 resamples) revealed that for individuals who perceived high prototypicality (+ 1 *SD*) the conditional indirect effect of subgroup activation on attitudes towards nu metal fans through conventional attitudes was significant, with a point estimate of -.25 ($SE$ = .16) and a 95% BC bootstrap CI [-.72, -.01]. The CI did not include zero. For individuals who perceived low ingroup prototypicality (- 1 *SD*) the conditional indirect effect was not significant, with a point estimate of .14 ($SE$ = .13) and a 95% BC bootstrap CI [-.08, .38] that included zero. As predicted, for individuals who perceived high ingroup prototypicality, there is an indirect effect from subgroup activation via conventional attitudes regarding metal music on attitudes towards nu metal fans.

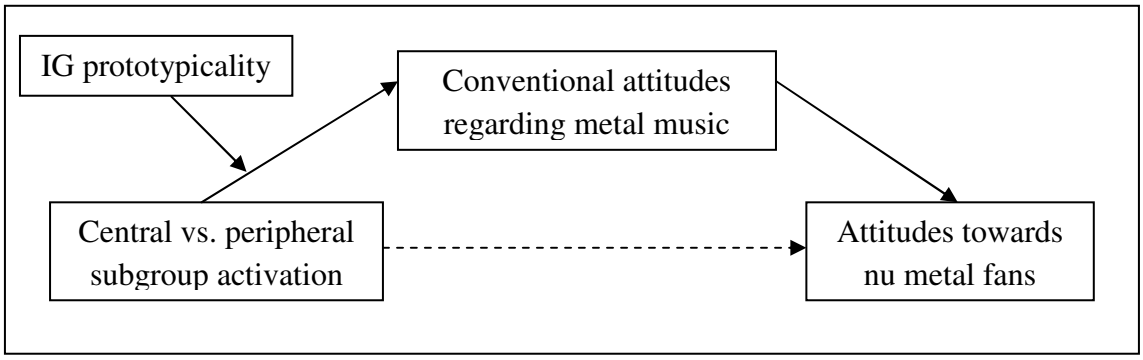


*Figure 4.2.* Moderated indirect effect of the relationship of subgroup activation with attitudes towards nu metal fans through conventional attitudes regarding metal music. IG - ingroup.

**Discussion**

The results of Experiments 6 provided further evidence that the proposed "back to the roots"-process occurs when diversity is activated with peripheral subgroups. However, the indirect effect via group-based conventionalism of the effect of subgroup activation on attitudes towards nu metal fans was only significant among individuals who perceived their subgroup as highly prototypical for metal fans. Still, it has to be noted that the dependent variables of the indirect effects were not the same in Experiments 5 and 6. In Experiment 5 the increase of group-based conventionalism affected perceived friendliness of nu metal fans and in Experiment 6 another attitude score. However, both variables correlated significantly in both experiments ($r_{Experiment\ 5}(162) = .69$, $p < .001$; $r_{Experiment\ 6}(89) = .58$, $p < .001$). Thus, perceived friendliness of nu metal fans is closely related to positive attitudes towards them.

The significant decrease we detected in Experiment 6 for the perceived groupness of metal fans when peripheral subgroups were activated compared with central subgroups can only be treated with caution. A test of the assumption for the ANCOVA (homogeneity of regressions slopes of covariates and dependent variable) indicated that one or both identifications have different impacts in each experimental condition. In other words, low and high subgroup identification differed in their perception of groupness in one condition but not in another. However, the influence was not detected for the indirect effect.

Overall, in line with findings of Steffens and colleagues (2012), perceived prototypicality of the own subgroup seems to be an important moderator for whether diversity activation elicits tolerant reactions or not. Death metal fans who perceived their subgroup as highly prototypical reacted with higher group-based conventionalism and with less positive attitudes towards nu metal fans. They seem to endorse and to conserve "old school" metal music more than death metal fans who perceive their subgroup as less prototypical.

## 4.6. General discussion

The aim of the three experiments was to reveal that activating peripheral subgroups within a SOG can have a detrimental effect for the tolerance towards peripheral subgroups (e.g., minorities). Our results suggest that for central subgroup members who perceive their subgroup as highly prototypical a "back to the roots"-process is elicited when peripheral subgroups compared with central subgroups are activated. This process involves an endorsement of old values and norms of metal music and leads to less positive attitudes towards nu metal fans.

In line with predictions of the IPM (Mummendey & Wenzel, 1999), we showed in Experiment 4 that activating complexity of metal fans (that very likely activated also a certain degree of diversity, see Chapter 2) can have a positive effect on tolerance towards the peripheral subgroup of nu metal fans compared with the activation of unity of metal fans. Attitudes towards death metal fans (i.e., a central subgroup) did not change. Furthermore, the typicalities of both subgroups (nu metal fans, death metal fans) were rated as more equally when complexity rather than unity was activated. That the evaluation of the central subgroup did not change can be explained with the high positive value of diversity that metal fans perceive. Regardless of whether diversity is activated or not, death metal fans are positively evaluated because they belong to the SOG of metal fans. In contrast, nu metal fans are more positively valued when complexity is activated. Hutchison and colleagues (2011) reported a similar effect. On the intragroup level, their studies revealed a more positive evaluation of an atypical member in a heterogeneous group than in a homogeneous group, and no difference concerning a prototypical member.

In Experiments 5 and 6, we examined the activation of diversity with central versus peripheral subgroup exemplars. We aimed to identify a “back to the roots”-process of increasing group-based conventionalism that leads to a decrease of tolerance when peripheral compared with central subgroups were activated. In Experiment 5, we showed that death metal fans were more conventional regarding metal music when diversity and peripheral subgroups (compared with central subgroups) were activated. The clarity of metal fans was perceived as lower than when central subgroups were activated. We argue that as a reaction a process of normative differentiation between subgroups occurred in this large-scale group (Marques et al., 1998). Individuals were more conventional, endorsed old values of the SOG more, and evaluated peripheral subgroups less positive. In other words, although diversity of metal fans is generally valued, when diversity is at the expense of the clarity of the SOG, a counter-reaction is provoked.

A factor analysis of the identification items in Experiment 5 revealed that the sample of this experiment did not distinguish between being a metal fan and being a death metal fan. This fact can be explained by our acquisition strategy. We asked for participants in social network groups and fanzines that addressed death metal fans in particular. So, the probability that our participants were individuals who perceive a strong overlap of being a death metal fan and of being a metal fan was very high. In the framework of the IPM, it can be argued that participants of Experiment 5 perceived their subgroup of death metal fans as highly prototypical and as a “pars pro toto” for metal fans (Mummendey & Wenzel, 1999; Noor et

al., 2010; Wenzel, Mummendey; Weber, & Waldzus, 2003). Thus, in Experiment 6, we tested the assumption that the process of increased group-based conventionalism does particularly occur when individuals perceive their subgroup as highly prototypical (cf. Steffens et al., 2012). As expected, death metal fans who perceived high subgroup prototypicality showed a similar reaction as in Experiment 5. They reported more conventional attitudes regarding metal music and as a consequence less positive attitudes towards nu metal fans when diversity was activated with peripheral subgroups compared with central subgroups. Individuals who perceived low subgroup prototypicality did not show this reaction. One shortcoming of our findings is that the indirect effect was shown on two different dependent variables in both experiments. However, both variables (perceived friendliness of and attitudes towards nu metal fans) were highly correlated (see Discussion Experiment 6).

In the analyses of the assumptions for the MANCOVA and ANCOVA, it turned out that in some statistical analyses identification with the subgroup and the SOG had a varying impact within different experimental conditions. However, in particular the tests concerning the indirect effects were not affected. The impact of identification with the subgroup and the SOG, or both as joint identification needs to be affected.

**High subgroup prototypicality and the "back to the roots"-process**

On the intragroup level, Wellen and Neale (2006) demonstrated that individuals who perceive high self-typicality for a work group derogated a deviant colleague within the group more than individuals who perceive low self-typicality for the work group. High self-typicality was shown to relate to the defense of the group's identity (Jetten, Spears, & Manstead, 1997). The argument that the perception of subgroup prototypicality of the own subgroup is an important moderator for the outcomes of diversity activation was also discussed by Steffens and colleagues (2012). The authors showed that heterosexual men who perceive their subgroup as highly prototypical for the category "men" reacted with higher feelings of threat concerning the definition of men and showed more discrimination towards gay men (i.e., peripheral subgroup) when diversity of the category men was activated than heterosexual men who perceived their subgroup as lowly prototypical. Steffens and colleagues (2012) argued that this finding is related to an increase of distinctiveness threat (Jetten, Spears, & Postmes, 2004; see also Crisp et al., 2006; Hornsey & Hogg, 1999). Thus, identity-related motivations may underlie negative reactions of individuals who perceive their subgroup as highly prototypical. Yet, we demonstrated that group-based conventionalism increased as a reaction of activating diversity with peripheral subgroups when we statistically

controlled for SOG and subgroup identification (or joint identification in Experiment 5). These findings suggest that other factors can also account for negative outcomes of diversity activation. For instance, the notion of the strong overlap of subgroup and SOG identity resembles the idea of social identity complexity (Roccas & Brewer, 2002). Thus, individuals who perceived a high prototypicality of their subgroup may perceive a low social identity complexity and react less tolerant to diversity.

Another factor influencing the outcome of diversity activation is, as outlined in Chapter 3, the situation-based search for cognitive structure could be another motivation. It could lead to an endorsement of old values and less positive attitudes towards peripheral subgroups. In the present chapter, we showed that the activation of diversity of metal fans with peripheral subgroups led to the perception of less groupness of metal fans compared with the activation of additional peripheral subgroups. We may speculate that the perception of less groupness possibly increased the need for structure which then triggered group-based conventionalism. Anyway, these potentially influencing factors needs to be an issue of future research. In sum, we demonstrated that the perception of decreased groupness of metal fans can elicit a "back to the roots"-process with a stronger endorsement of "old school" metal music and less tolerant attitudes towards the peripheral subgroup of nu metal fans. This process was particularly pronounced for individuals who perceived their own subgroup of death metal fans as highly prototypical for the SOG.

Previous research about attitudes towards deviant members within social categories has primarily manipulated deviance with non-normative behavior or non-normative opinions of members (Hutchison & Abrams, 2003; Marques et al., 1988; Marques, Páez, & Abrams, 1998). In the present work, we illustrated on the SOG level that subjective group dynamics (Abrams, Marques, Bown, & Henson, 2000; Marques et al., 1998) can also take place with the cognitive activation of central or peripheral subgroup exemplars only. In line with research by Sia and colleagues (1997), the activation of specific exemplars of the social category had a detrimental effect on succeeding attitudes.

**Intergroup research with Music fans**

Previous researchers have also focused on music fans and intergroup relations (e.g., Giles, Denes, Hamilton, & Hajda, 2009; Rentfrow, McDonald, Oldmeadow, 2009; Tarrant, Hargreaves, & North; 2001). For instance, Bakagiannis and Tarrant (2006) showed that groups who believed they would have similar musical preferences reported more positive

intergroup attitudes towards each other than in a control group. However, to our knowledge, employing the context of specific music fans because of their composition of various subgroups is novel and allows investigating subgroup processes in large-scale groups. We argue that concerning the purpose of intergroup research to investigate general group processes, the examination of music fans in general provides a useful extension for intergroup research.

Regarding the investigation of music fans and metal fans in particular, it is important to note that only a few individuals categorized themselves into only one subgroup. Metal fans are rarely exclusively fan of only one subgenre. To account for this issue, we asked whether participants categorized themselves into the subgroup of death metal fans at the beginning of Experiments 5 and 6. Succeedingly, we made this identity even more salient by assessing their subgroup identification. We argue that during the experiments the preference for death metal and the identity as death metal fans was more salient than possible preferences of other subgenres. Nevertheless, whether it makes a difference if SOGs consist of exclusive or non-exclusive subgroups needs to be taken into account in future research. Furthermore, it is necessary to show the consequences of diversity activation we presented here in other SOG contexts. For instance, the findings of Steffens and colleagues (2012) suggest that among men the activation of diversity combined with salient peripheral subgroup exemplars could lead to a definition threat and less tolerance towards gay men.

**Conclusion**

With regard to change and evolution of large-scale groups in modern times (e.g., societies, gender roles), it seems worthwhile to investigate the relationship of the evolvement of large-scale groups by influences from the outside and possible “back to the roots”-reactions from the inside by taking a long-term perspective. We assume that, in general, it is beneficial for the tolerance towards and acceptance of new influences to activate diversity of the group – as long as diversity does not decrease the perceived groupness of the SOG. Once diversity is perceived to question core standards and norms, “old school” conventions and norms will be reaffirmed (at least – as our research suggests – by group members who perceive their subgroups as highly prototypical for the SOG). Then, activating diversity within a large-scale group can result in less tolerance towards minorities. In a way, metal fans with their positive attitudes towards diversity, their global evolvement, and their continuity are a good analogy for a well-adapted large-scale group in our times.

# 5. Changing the category representation mode as a means to tolerance

## 5.1. Introduction

In the preceding chapters we demonstrated that group members report less tolerant attitudes when diversity of a superordinate group (SOG) is activated with peripheral subgroup exemplars compared with central subgroup exemplars. Peripheral subgroups are defined as being less prototypical for a SOG and as being represented more close to the SOG's boundary than central subgroups (cf. Hahn et al., 2005). The positive effect on tolerance of activating diversity within a SOG that was shown in previous research (Machunsky, 2005; Richeson & Nussbaum, 2004; Vorauer et al., 2009; Waldzus et al., 2005) seems to be diminished with the additional activation of peripheral subgroup exemplars. More specifically, the findings of the preceding chapters suggest that the activation of peripheral subgroup exemplars led to the perception of less clarity of the SOG's boundary compared with central subgroup exemplars. As one consequence, people reported less tolerant attitudes towards peripheral subgroups or diversity (Chapter 3). As another consequence, people endorsed their SOG's norms more and their attitudes towards peripheral subgroups were less positive than with the activation of central subgroup exemplars (Chapter 4).

These effects of subgroup exemplar activation are in line with research on social judgements and attitudes (Bodenhausen, Schwarz, Bless, & Wänke, 1995; Lord & Lepper, 1999; Sia et al., 1997; Smith & Zárate, 1992). Smith and Zárate (1992) stated that social judgements only rely on the comparisons with exemplars stored in memory that were activated (not necessarily consciously) prior to the judgement. The authors defined an exemplar as "a cognitive representation of an object of the same type as the current target of judgment" (Smith & Zárate, 1992, p. 4). We could show that within diversely represented SOGs the activation of central subgroups leads to more positive reactions towards peripheral subgroups than the prior activation of peripheral subgroup exemplars.

Yet, concerning the establishment of tolerance within SOGs one question remains in the end of this doctoral thesis: How to integrate the approach of the activation of complexity within a SOG and to bypass the detrimental effect of the activation of peripheral subgroup exemplars? In the present chapter, we aim to test a possible way to activate a complex representation of the SOG without activating, firstly, a common prototype that can serve as a reference for comparisons (Mummendey & Wenzel, 1999; Turner, 1987) and, secondly, accessible knowledge about the social category (e.g., subgroup exemplars, norms, beliefs, perceived clarity of the boundary) that might influence succeeding judgements. We argue that

the activation of a cognitive mode to form an exemplar-based category representation independently of the social context at stake should have a positive effect on attitudes towards peripheral subgroups compared with a prototype-based representation mode.

**Prototype-based and exemplar-based models in social categorization research**

There has been a long tradition of discussing the appropriateness of prototype-based and exemplar-based categorization models for social categories (e.g., Linville & Fischer, 1993). The prototype-based models (e.g., Rosch et al., 1976; Hampton, 2001) assume that a category is formed around an abstract prototype that is the "central tendency that summarizes a person's exemplar experience" (Minda & Smith, 2001, p. 775). The categorization process, whether a new stimulus belongs to the category or not, takes place "by assessing the similarity of an instance or subclass to the concept prototype, and then testing whether it passes some threshold criterion for category membership" (Hampton, 2001, p. 21). Hence, prototypicality ratings are deduced from the similarity to the prototype. Prototype-based models have been very influential in social cognition due to their appealing notion of cognitive economy (Smith, 1998). For instance, self-categorization theory built on the assumption that all category members are represented around an abstract prototype (Turner, 1987). The theory stated that the attractiveness of group members derives from similarity comparisons to a group prototype (Turner, 1987; Hogg, 1987; Hogg, 2005; Mummendey & Wenzel, 1999).

However, research on group variability has increasingly entered exemplar-based models to the discussion of category representation (Linville, 1998; Linville & Fischer, 1993). In contrast to prototype-based models, exemplar-based models assume that a category is represented by available category members without any form of abstraction (e.g., Nosofsky, 1988; Vanpaemels & Storms, 2008). The categorization of a stimulus proceeds by assessing the similarity to these exemplars. Prototypicality ratings and judgements are also deduced from this similarity (Smith & Zárate, 1992). Linville and Fischer (1993) specified that exemplars are not necessarily persons but can also be different aspects about one person (e.g., attributes, information of the self) and, more importantly for the current research, subgroups of people.

The debate which kind of model better explains human categorization has been intense (e.g., Smith & Minda, 2002; Minda & Smith, 2001; Nosofsky & Zaki, 2002). Whereas one of the critiques of prototype-based models is that they cannot explain how individuals store information about the variability of a category, exemplar-based models are mainly criticized

because of their inconsistency with the principle of cognitive economy that was described by Rosch and colleagues (1976; Vanpaemels & Storms, 2008). As an attempt to combine both models, Vanpaemels and Storms (2008) suggested the varying abstraction model (VAM). They understand both kinds of representations as extremes of a continuum of abstraction: The prototype-based representation as the extreme of most possible abstraction and the exemplar-based representation as the extreme without any abstraction. Between both extremes other representations with intermediate levels of abstraction can be located. For instance, a category that can be represented by multiple prototypes (e.g., mammals) would be located between both extremes of abstraction (Vanpaemels & Storms, 2008).

In social categorization research, similar to the cognitive VAM (Vanpaemels & Storms, 2008), there are also *exemplar-plus-abstraction* approaches (Smith, 1998; elsewhere referred to as *prototype-plus-exemplars* models, Linville & Fischer, 1993). One prominent model is the dual-process continuum model on impression formation (Fiske et al., 1999; Fiske & Neuberg, 1990). It states that people use both representation models depending on the fit of a new stimulus to an available category label. One main assumption of the continuum model is that category-based comparisons (e.g., comparison with an available prototype) are the default (as one extreme of the continuum) and that "exemplars are used only as a last resort" (Smith, 1998, p. 413) on the other extreme of the continuum when the new stimulus did not fit the prototype. Motivational factors also influence how thoroughly the impression formation of a person is done, starting from the heuristic category-based processes to the more systematic processing of individual attributes (Fiske et al., 1999; see also Crisp et al., 2010).

**Increasing complexity as a means to more positive intergroup attitudes**

One phenomenon that was investigated with the use of both cognitive representation models was the outgroup homogeneity effect (e.g., Linville & Fischer, 1993). The phenomenon that often outgroups are perceived as less heterogeneous and, thus, more stereotyped than the ingroup can be attributed to some extent to the more prototype-based representation of outgroups and a more exemplar-based representation of the ingroup (Linville & Fischer, 1993; Mullen & Hu, 1989). Based on the outgroup homogeneity effect research, Mullen and colleagues (Mullen et al., 2002) suggested that a general change of the cognitive representation mode from a prototype-based to a more complex exemplar-based representation mode should change the homogeneous perception of outgroups. They argued and showed that when individuals adopt an exemplar-based representation mode (by means of a training with non-social stimuli) they perceived outgroup members less as a group and more

as individuals. Mullen and colleagues (2002) argued that this more individuated (and more complex) representation related to a more positive evaluation of outgroup members.

At this point, a parallel can be drawn to the complexity assumption of the ingroup projection model (IPM; Mummendey & Wenzel, 1999; Waldzus et al., 2003). According to the IPM, a more complex representation of a SOG (i.e., by multiple prototypes; Waldzus, 2010) rather than a simple representation (i.e., by one prototype) can lead to more positive evaluations of other subgroups (Waldzus et al., 2005). However, whereas Mullen and colleagues (2002) suggested that a change from a prototype-based to an exemplar-based representation is necessary, Mummendey and Wenzel (1999) argued that a change from one superordinate prototype representation to a more complex one (i.e., with multiple equally prototypical positions on attribute dimensions) leads to more positive outgroup evaluation. According to the above-mentioned VAM (Vanpaemels & Storms, 2008), both category representation forms lay on the same continuum of abstraction. The exemplar representation includes no abstraction at all and the multiple prototype representation (Waldzus, 2010) an intermediate level of abstraction. However, both representation modes have in common that they include a lower level of abstraction compared with a prototype representation. Thus, the activation of one of these representations could inhibit the generation of one prototype.

The idea that increasing the complexity of an intergroup context can lead to more tolerance was also supported by the crossed categorization approach (Crisp & Hewstone, 2007). Recently, Crisp and colleagues (Crisp et al., 2010) demonstrated that when crossed categories are salient in an intergroup context (e.g., teams of different hospitals and the gender categories), the perception of the social identity complexity of group members and intergroup bias correlate negatively (Brewer & Pierce, 2005), indicating that higher complexity is accompanied by less ingroup favouritism. Social identity complexity (Roccas & Brewer, 2002) is defined as the perception of overlap between different ingroups. In turn, the relation between social identity complexity and intergroup bias did not exist when no crossed categories were activated (Crisp et al., 2010).

To sum up, all three approaches make a similar prediction: a more complexly represented group context can lead to more positive attitudes towards other groups than a simply represented context. Still, the question is how to integrate the approach of the activation of a more complex representation of the SOG and to bypass the detrimental effect of the activation of peripheral subgroup exemplars? We propose that the training procedure with non-social stimuli Mullen and colleagues (2002) used could be a possible way. We argue that if it

increased the complexity of an outgroup representation; it should also increase the complexity of a SOG representation. Mullen and colleagues (2002) used context-independently stimuli (i.e., drinking glasses) to cognitively adapt participants to different representation modes.

## 5.2. Experiment 7

The aim of Experiment 7 was to investigate whether an exemplar-based category representation mode leads to more positive attitudes towards peripheral subgroups than a prototype-based representation mode. The procedure to manipulate different representation modes (Mullen et al., 2002) was independent of the social context at stake, which decreased the probability of activation knowledge about the group context. We argue that an exemplar-based representation mode leads in general to more tolerance than a prototype-based representation mode. More specifically, we predicted that students hold more positive attitudes towards Arabic studies students (peripheral subgroup within the SOG of students at participants' university, see pretest Chapter 3, Table A1) with an exemplar-based rather than with a prototype-based representation mode. Furthermore, also attitudes towards peripheral subgroups of not explicitly activated group contexts should be affected. For attitudes towards gay men and lesbians (peripheral subgroups of the gender categories), we predicted that participants show more positive attitudes towards each subgroup with an exemplar-based than with a prototype-based representation. To test these hypotheses, we conducted an experiment with two experimental conditions applying the training procedure with non-social stimuli (i.e., drinking glasses) by Mullen and colleagues (2002).

### Method

**Participants and Design.** Participants were 54 students of a German university[33]. They were in average 22.08 years old (*SD* = 2.03) and 33 of them were women (one person did not indicate the gender). They were randomly assigned to either the prototype condition or the exemplar condition (both *n* = 27). At the end of the experiment, participants were debriefed and rewarded with a chocolate bar.

**Procedure and Materials.** Participants were asked to participate in an experiment ostensibly about the relationship between memory performance and daily life experiences of students. In the beginning, participants were seated in separate cubicles in the lab. In order to activate the context of students, we assessed their subgroup identification with five items on a

[33] From the original sample of 59 students, we excluded five participants because their suspicion about the aim of the experiment fitted our intentions very well.

six-point scale (e.g., "I identify with other students of my subject.", 1 = *do not agree*, 6 = *totally agree*, Cronbach's α = .75).

With only slight changes that will be mentioned in the following, the training phase was adopted from Mullen and colleagues (2002). Participants had to engage in the examination of eight drinking glasses (Mullen and colleagues: 11 glasses) that were similar in shape but varied in height and width. The experimenter placed a box with the glasses on the table. Participants got the task to take every glass individually out of the box and to place it in front of them. The following procedure differed among the two experimental conditions. In the prototype condition, participants got the following instructions: "In performing this task, pay attention to what all of the glasses have in common. We want you to imagine the typical glass in this set of glasses. Try to keep in mind what the average glass looks like. Think about what the typical glass is like." (Mullen et al., 2002, p.1335) After two minutes, participants were asked to compare the glasses with a comparison object that was presented by the experimenter. Participants received again the above-mentioned instructions (the sentences in reversed order). In the prototype condition, they were asked to compare the glasses with a plain-coloured coffee mug. Finally, after the experimenter removed the comparison object, participants were asked to put every glass individually back into the box. Once again they received the above-mentioned instructions (in original order).

In the exemplar condition, participants got the following instructions: "In performing this task, pay attention to the differences between each glass. We want you to inspect each glass in this set of glasses. Try to keep in mind what each of these glasses looks like. Think about what each glass is like." (Mullen et al., 2000, p. 1335). The comparison of every glass with an object followed. In this condition, they were asked to compare all glasses with another glass that had around average scores on width and height of all stimulus glasses (Mullen and colleagues used the perfect average glass.). Mullen and colleagues (2002) argued that these additional comparison tasks strengthen the manipulation of the different representation modes. According to Mullen and colleagues (2002), the comparison with the mug in the prototype condition should have accentuated the similarity between the glasses, whereas the comparison with the average glass in the exemplar condition should have accentuated the differences between the glasses.

Succeedingly, all participants completed a sorting task in order to test whether the manipulation changed their representation mode and, thus, the complexity of the representation of the glasses. Scott's H was used as a complexity score (for further details see

Brewer & Lui, 1984). The experimenter handed out a sheet of paper with a point in the middle and eight photos (one of each glass) with a number from 1 to 8 on it (Mullen and colleagues used stickers that represented each glass.). The instructions were: “Every glass has a number on its photo. The numbers do not indicate an order. They are independent of width and height of the glasses. Please arrange the numbers on the sheet vicariously for every glass. The aim of this task is to mirror the representation of all glasses from your memory. The point on the sheet represents the “midpoint” of your representation.” The rules for the arrangement were: 1) Glasses that were perceived as more central should be located more close to the point. 2) Glasses that were perceived as similar to each other should be located more close together. 3) Participants were asked to draw circles around glasses that belong together in their representation. They were allowed to use as many circles as needed and it was allowed to draw circles around individual glasses. Subsequently, participants filled out a questionnaire. In order to test whether the training with non-social stimuli changed the representation of students at their university, we assessed four items adapted from work of Dovidio and colleagues (2007). Participants were asked to imagine a cooperation of students from different studies and to rate whether they think these students would feel as “one group”, as “two subgroups of a large group”, as “two individual groups”, or as “individuals”. Attitudes towards a peripheral subgroup of the activated student group context (i.e., Arabic studies students) were assessed with four items as in Experiment 2 (Cronbach’s $\alpha$ = .68). Subsequently, we assessed the prototypicality ratings of the own subgroup and mineralogy students (another peripheral subgroup; see pretest Chapter 3, Table A1). Participants had to choose one picture out of seven, depicting two circles that increasingly converge from picture to picture (cf. Schubert & Otten, 2002) that best represents the relationship of the subgroup (small circle) and students of their university (large circle). In order to test whether the change of the representation modes generalizes to other social contexts, attitudes towards subgroups of the not explicitly activated contexts of the gender categories were assessed. Participants were instructed to rate their feelings towards gay men and lesbians on two feeling thermometers (1 = *very cold*, 10 = *very warm*). In the end, their certainty of the inclusion of Arabic studies students into the SOG of students on a six-point scale (1 = *not certain*, 6 = *very certain*) was measured and they were asked about their suspicion about the aim of the experiment.

**Results**

For an overview of all means and standard deviations for all relevant variables, see Table 5.1. Additionally, the correlations between the variables within each experimental condition are displayed in Table A14.

**Manipulation check.** As an indicator of the representation modes, Scott's H was computed from the clustering task with the glass photos (Mullen et al., 2002). Scott's H results from the number of subcategories that were built and the number of glasses within each subcategory (see Brewer & Lui, 1984). We expected a higher Scott's H in the exemplar condition compared with the prototype condition which would indicate higher complexity and, according to Mullen and colleagues (2002), an exemplar-based representation. A *t*-test revealed no difference between the conditions, $t<1$. Descriptively, the means pointed in the predicted direction (see Table 5.1).

Analyses of the representation items about the activated SOG of students at participants' university pointed in the direction – although not for all participants – that the SOG representation was affected from the training with non-social stimuli. A moderated regression with the experimental conditions (dummy coded: 0 = *prototype*, 1 = *exemplar*), subgroup identification as potential moderator, and their interaction as predictors for the perception of cooperating students from different subjects as "two subgroups of one larger group"[34] revealed by trend an interaction of the experimental conditions and subgroup identification, $b = -0.63$, $SE = .38$, $p = .10$[35]. Whereas subgroup identification predicted the perception of distinct subgroups within a larger group significantly, $b = 0.52$, $SE = .23$, $p = .03$, the experimental conditions did not, $b = 0.48$, $SE = .36$, $p > .10$. Simple slope analyses (Aiken & West, 1991; Meier, 2008) revealed that low subgroup identifiers perceived cooperating students from different subjects more as "two subgroups of one larger group" in the exemplar condition than in the prototype condition, $b = 1.11$, $SE = .51$, $p = .04$. High subgroup identifiers showed no difference, $b = -0.15$, $p > .10$. This result can be interpreted as a cue that low subgroup identifiers perceived their SOG more divided into subgroups and, thus, more complex than in the exemplar condition than in the prototype condition. In the prototype condition, low subgroup identifiers perceived students less as "two different subgroups within

[34] The multiple regression analyses for the other three representation items revealed no significant effects.
[35] The inclusion of the interaction term in the regression model; overall $F(3, 48) = 2.35$, $p = .09$, $R^2 = .13$; accounted by trend for an increase of the explained variance of the dependent variable; $\Delta R^2 = .05$, $\Delta F(1, 48) = 2.8$, $p = .10$.

a large group" than high subgroup identifiers, $b = 0.52$, $SE = .23$, $p = .03$ (no difference within the exemplar condition, $b = -0.11$, $p > .10$).

To sum up, for the representation of the non-social stimulus category, we could not show a difference in the perceived complexity of the category after the training phase. However, for the representation of the SOG of students we detected small evidence which points in the direction of a more complex SOG representation in the exemplar condition than in the prototype condition. However, this was only the case for low subgroup identifiers.

**Attitudes towards Arabic studies students.** We predicted that an exemplar-based representation compared with a prototype-based representation leads to more positive attitudes towards the peripheral subgroup of Arabic studies students. A *t*-test revealed no difference between the conditions, $t<1$. However, a post-hoc moderated regression analysis with the conditions (0 = *prototype*, 1 = *exemplar*), subgroup identification as potential moderator, and their interaction revealed that there was by trend an interaction between the experimental conditions and subgroup identification, $b = -0.50$, $SE = .27$, $p = .07$[36]. Subgroup identification positively predicted attitudes towards Arabic studies students, $b = 0.55$, $SE = .17$, $p = .002$, whereas the experimental conditions did not, $b = 0.18$, $p > .10$. Simple slope analyses (Aiken & West, 1991; Meier, 2008) revealed that low subgroup identifiers showed less positive attitudes towards Arabic studies students in the prototype condition than in the exemplar condition, $b = 0.68$, $SE = .38$, $p = .04$ (one-tailed). The difference for high subgroup identifiers between the conditions was not significant, $b = -0.33$, $p > .10$. Thus, our hypothesis was partly confirmed. Low subgroup identifiers reported more positive attitudes towards Arabic studies students in the exemplar than in the prototype condition.

**Attitudes towards gay men and lesbians.** If the glass training established different cognitive mindsets, also peripheral subgroups of other SOGs should be evaluated more positively with an exemplar-based than with a prototype-based representation. Concerning attitudes towards gay men and lesbians (peripheral subgroups of the not explicitly activated gender categories), we predicted that participants should have more positive attitudes in the exemplar condition than in the prototype condition. A multivariate ANOVA revealed that, as predicted, participants showed more positive attitudes towards gay men in the exemplar condition than in the prototype condition, $F(1, 52) = 2.79$, $p = .05$ (one-tailed), $\eta_p^2 = .05$. No significant difference between the experimental conditions was detected for attitudes towards

[36] The inclusion of the interaction term in the regression model, overall $F(3, 48) = 3.75$, $p = .02$, $R^2 = .19$, accounted by trend for an increase of the explained variance of the dependent variable, $\Delta R^2 = .06$, $\Delta F(1, 48) = 3.36$, $p = .07$.

lesbians, $F(1, 52) = 1.09$, $p > .10$. Including gender as second factor into the ANOVA revealed that the positive effect on attitudes towards gay men was driven by men; $F(1, 49) = 6.93$, $p = .01$, $\eta_p^2 = .12$; not by women, $F<1$. In the prototype condition, women hold more positive attitudes towards gay men ($M_{gay} = 7.12$, $SD = 1.22$); $F(1, 49) = 15.02$, $p < .001$, $\eta_p^2 = .24$; and lesbians ($M_{lesbian} = 6.76$, $SD = 1.48$); $F(1, 49) = 2.81$, $p = .05$ (one-tailed), $\eta_p^2 = .05$; than men ($M_{gay} = 4.10$, $SD = 2.81$; $M_{lesbian} = 5.50$, $SD = 1.96$).

Table 5.1.

*Means and standard deviations for primary dependent variables (Experiment 7).*

| | Prototype condition | Exemplar condition |
|---|---|---|
| | *M (SD)* | *M (SD)* |
| Scott's H | 1.66 (.50) | 1.76 (.43) |
| Representation as "two subgroups in one larger group" | 3.74 (1.43) | 4.30 (1.24) |
| Attitudes towards Arabic studies students | 4.17 (1.25) | 4.37 (.68) |
| Feeling towards gay men | 6.00 (2.42) | 7.00 (1.96) |
| Feeling towards lesbians | 6.3 (1.75) | 6.85 (2.14) |
| Subgroup identification (independent variable) | 4.25 (.96) | 4.18 (.73) |

## 5.3. Discussion

The aim of Experiment 7 was to test whether activating an exemplar-based representation with non-social stimuli leads to more tolerance towards peripheral subgroups than the activation of a prototype-based representation. We were interested whether changing the representation mode with non-social stimuli could result in similar positive effects for tolerant subgroup relations as the complexity activation of a SOG (e.g., Waldzus et al., 2003) but with a lower probability of the additional activation of knowledge about the SOG. As Mullen and colleagues (2002) suggested, an exemplar-based compared with a prototype-based representation mode increases the complexity of category representations and the perception

of outgroup members as individuals not as homogeneous group members. This was related to improved attitudes towards outgroup members (Mullen et al., 2002).

However, our results could only partly confirm our hypotheses. We could not detect an effect of the training procedure with the drinking glasses on the complexity measure we used. However, the descriptive difference between the conditions was in the predicted direction. The procedure (Mullen et al., 2002) of the sorting task was rather complicated for participants, which could have lead to various sources of error in sorting the photos. Furthermore, this task with a point in the middle of a sheet of paper and the arrangement of glasses around it could have lead to a prototype-based representation in both conditions. Scott's H has also been criticised for its inaccurateness of accounting for the overlap of subcategories (Locke, 2003). Nevertheless, the manipulation did effect the representation of the SOG of low subgroup identifiers. They perceived a team of cooperating students from different subjects more as different subgroups of a larger group after the exemplar-based than the prototype-based training. We did not detect any effects on the perception of the cooperating students as "individuals", "two distinct groups", or as "one group". Thus, against the initial assumption that an exemplar-based representation could diminish subgroup activation, low subgroup identifiers perceived a subgroup differentiation compared with a prototype-based representation.

Low subgroup identifiers also showed more positive attitudes towards Arabic studies students after the exemplar-based than the prototype-based training. In sum, for low subgroup identifiers the exemplar-based representation training seemed to increase the complexity of their SOG representation and their tolerance compared with the prototype-based training. As in Experiment 3, we detected no effects for high subgroup identifiers which again suggests that for them social identity related motivations (e.g., distinctiveness restoration) might have overlay the cognitive mechanisms we tried to activate. The impact of the subgroup but also of the SOG identification on the implementation of different cognitive representation modi needs to be looked at in future experiments.

However, concerning attitudes towards the peripheral subgroups of gay men and lesbians, we detected an increase of positive attitudes for gay men after the exemplar-based than the prototype-based training. A further analysis revealed that this difference was driven by men. Attitudes towards lesbians and attitudes of women did not change between the trainings. These findings are in line with previous research on attitudes towards homosexuals. Recent literature has shown that men hold more negative attitudes towards lesbians and gay men than

women in general (e.g., Gabriel & Banse, 2006; Steffens & Wagner, 2004; Whitley & Kite, 1995). The own sexual preference could have been an important moderator for these attitudes. It was not assessed in the current experiment. This will be necessary in a proceeding experiment. Furthermore, it will be necessary to include identification with gender in order to specify whether the effect we found was driven by low, high identifiers, or by both. However, we argue that identification with the gender did not play a primary role in this experiment because this social identity was not salient. Contrarily, the identification as a student was highly salient because of the assessment of their subgroup identification and the whole experimental setting at university-related places. To avoid the problem of salience for gender identification, in the next experiment, it should be measured after the assessment of attitudes. The findings of the current experiment leave open whether the different trainings had an impact on the inclusion or exclusion of peripheral subgroups. It might have been the case that the peripheral subgroups were evaluated more positively because they fell out of the common reference frame (Mummendey & Wenzel, 1999).

One shortcoming of the experiment is its rather difficult procedure. Although Mullen and colleagues (2002) stated that the training was explicitly designed to reflect the assumptions of prototype-based models and exemplar-based models, clear evidence that these representation modes were activated is missing. Particularly focussing on similarities of stimuli must not necessarily lead to the formation of a prototype. It is also possible that participants still had an exemplar-based representation of the glass category in mind. Also, the comparison task with an additional object (mug for prototype-based and average glass for exemplar-based training) could have activated different representations than stated by Mullen and colleagues (2002). It is possible that comparison with an average glass actually activated a prototype-based representation and not an exemplar-based. Thus, further refinements of the training tasks would be necessary for future experiments.

However, what the training probably did change was the focus of attention concerning similarities and differences (Mussweiler, 2001). Interestingly, the focus on diversity and differences and on unity and similarities respectively is a common feature with the manipulation of different SOG representations used in the ingroup projection literature (Machunsky, 2005; Waldzus et al., 2003, Waldzus et al., 2005). Therefore, it would be an interesting aspect for future research to investigate effects of this cognitive shift of attention. Mussweiler (2001) described that the focus on differences to or similarities with a comparison standard results in the accessibility of different knowledge of the compared stimulus (e.g., self, ingroup). This leads either to a contrast or an assimilation effect. Yet, these effects

received only little attention in intergroup research. Recently, Todd and colleagues (Todd, Hanko, Galinsky, & Mussweiler, 2011) provided initial evidence that a difference focus enhances perspective taking in interpersonal but also intergroup situations. In contrast to the intuitive prediction that a sense of similarity between people lead to more perspective taking, the authors demonstrated that a difference focus decreased egocentrism. We argue that it would be a fruitful issue of research to transfer these ideas to the subgroup level within a SOG. It would be an intriguing project to investigate whether a mindset of focussing on differences could also decrease ethnocentrism (i.e., ingroup favouritism) compared with a mindset of focussing on similarities. The different foci could be operationalized with the comparison of two pictures concerning their differences or similarities (Damisch, Mussweiler, & Plessner, 2006). Research on the IPM (Mummendey & Wenzel, 1999; Waldzus et al, 2003) has already pointed in that direction and also the current experiment contributes initial evidence for this prediction. In conclusion, particularly for individuals, for whom the activated group context had low relevance for their identity, we could show preliminary evidence that an exemplar-based rather than a prototype-based representation mode can lead to more positive attitudes concerning peripheral subgroups. However, the current experiment definitely needs further improvement and more specification of the manipulation procedure. Still, it revealed the importance of a more detailed examination of the impact of a difference focus or a similarities focus on tolerant subgroup relations within a SOG.

# 6. Final Discussion

## 6.1. The effects of diversity activation

In this dissertation, I primarily examined the effects of diversity activation within superordinate groups (SOGs). One driving question of this work was: When does the activation of diversity increase tolerance within the SOG and when does it not? This dissertation provides a first approach to compare the effects of different ways of activating diversity. Existing research on tolerance in intergroup relations has mainly focussed on the effects of diversity activation compared with no diversity activation (Richeson & Nussbaum, 2004; Roccas & Amit, 2011; Vorauer et al., 2009; Waldzus et al., 2003; Wolsko et al., 2000). Overall, activating diversity has been considered as beneficial for positive subgroup relations (e.g., Mummendey & Wenzel, 1999; Richeson & Nussbaum, 2004; Waldzus et al., 2003). Some research uncovered possible moderators for the effects of diversity activation (Hutchison et al., 2011; Roccas & Amit, 2011; Steffens et al., 2012; Wolf & Van Dick, 2008; for a more detailed overview see 2.6.). However, research on *how* diversity should be activated was not yet addressed in the literature. The current dissertation focused on the impact of diversity activation by means of different subgroup exemplars.

In a first set of experiments (Chapter 3), I examined the impact of diversity activation on the perceived clarity of the cognitive structure within the actual situation. In a category learning task, participants (psychology students) had to learn about the membership of different subgroups of their SOG (all students at their university). The set of learning stimuli either included some central or peripheral subgroup exemplars. Overall, Experiments 1 and 2 supported the argument that the activation of diversity with peripheral subgroups, compared with central subgroups, can lead to the perception of a less clear SOG boundary. Furthermore, activating peripheral subgroups rather than central subgroups can have a detrimental effect on tolerance. In both experiments, personal need for structure (PNS) had an influence on tolerance attitudes. In Experiment 1, interindividual differences in PNS moderated the effect of diversity activation on attitudes towards other groups. Inasmuch as individuals with a high PNS were less tolerant than individuals with a low PNS when the SOG boundary was clear. However, when it was unclear this difference disappeared. Thus, concerning the perceived cognitive structure, the situation of an unclear SOG boundary seems to be a “strong situation” that overrides interindividual differences in PNS (Snyder & Ickes, 1985). However, in Experiment 2, PNS did not moderate the effect of diversity activation on tolerance. Yet, it was an important predictor for tolerant attitudes. Individuals with a high PNS reported less positive attitudes towards diversity and potential subgroups than individuals with a low PNS

(Kemmelmeier, 2010; Smith & Gordon, 1998). Thus, it seems that both perceived clarity of cognitive structure within a situation and individuals' PNS are important moderators for the link of diversity activation and tolerance. This needs clarification in future research. Experiments 2 and 3 revealed additional consequences of activating diversity with peripheral subgroups. In Experiment 2, individuals who were confronted with peripheral subgroups of their SOG reported a less open-minded taste in music than individuals who were confronted with central subgroups. This decreased open-mindedness in an unrelated domain corroborates my argument that the activation of peripheral subgroups, compared with central subgroups, is indeed a contextual factor that can increase individuals' need for structure (cf. Kruglanski & Freund, 1983; Prouxl et al., 2010). Perceiving a high need for structure is an aversive state (Prouxl et al., 2010). Thus, individuals automatically try to regain cognitive structure by any given means, for instance by reporting less open-mindedness concerning different music styles. Due to the lack of sensitive instruments for measuring a situation-based need for structure, I could not detect an actual difference of the perceived need for structure with the activation of different subgroup exemplars. However, the result from Experiment 3 strengthens the argument that activating peripheral subgroups, compared with central subgroups, leads to a decrease of the perceived cognitive structure. In line with research on the flexibility of self-categorization (Turner et al., 1994), I hypothesized that low subgroup identifiers implicitly categorized themselves more on the subgroup than on the SOG level when peripheral subgroups, compared with central subgroups, were activated. Indeed, the effect occurred for low subgroup identifiers. High subgroup identifiers, in contrast, did not change their self-categorization. This can be explained with their stronger motivation to rely on the subgroup level when diversity within the SOG is activated (cf. Crisp et al., 2006; Hornsey & Hogg, 2000). I argue that the perception of a unclear SOG boundary resulted in self-categorization on the subgroup level because the SOG was not perceived as useful category and did not fulfil its structure-providing function (cf. Turner, 1987).

Taken together, this set of experiments provides evidence that activating diversity with peripheral subgroups rather than with central subgroups can lead to a decrease of perceived cognitive structure. Furthermore, it can have a negative impact on tolerance towards other groups and towards diversity within the SOG as well as towards diversity within other domains. When the SOG boundary was not useful to clearly categorize groups in- or outside the SOG, individuals who had little social identity-related motivations within the group context categorized themselves more into the subgroup than in the SOG.

In Chapter 4, I investigated whether diversity activation with different subgroup exemplars also affects another aspect of the definition of the SOG (i.e., its norms and values). Precisely, I examined the effect of activating different diversity representations on group-based conservative attitudes (i.e., attitudes concerning "old" and traditional SOG norms and values) within the context of music metal fans. Furthermore, I investigated its function for the tolerance towards a peripheral subgroup. First of all, in Experiment 4, I demonstrated that the activation of a complex, compared with a simple, SOG representation had a positive effect on attitudes towards the peripheral subgroup of nu metal fans (Ehrke et al., 2012; Waldzus et al., 2005). No difference was found for attitudes towards a central subgroup (death metal fans). This can be explained with the overall positive attitudes towards diversity of metal fans. It seemed that also when the unity of metal fans was highlighted subgroups which are easily associated with the SOG (i.e., central subgroups; cf. Rothbart et al., 1996) are positively evaluated. Both subgroups were perceived as more similarly prototypical in the complexity, but not in the unity condition (e.g., Waldzus et al., 2003). However, the results of Experiment 4 cannot explain whether the positive effect occurred due to a complex representation of the SOG or due to the activation of different subgroups within the SOG. This was examined in Experiments 5 and 6. In both experiments, the activation of peripheral subgroups rather than central subgroups led indirectly to less tolerant attitudes towards nu metal fans. The activation of peripheral, compared with central, subgroups triggered an increase of group-based conservatism. This, in turn, led to less positive attitudes towards nu metal fans. However, Experiment 6, in particular revealed that this "back to the roots"-process only occurred for those who perceived their majority subgroup as prototypical. For those who perceived their subgroup as less prototypical for the SOG no such process was found.

The different findings concerning the direct effect on subgroup attitudes (Chapter 3) and the indirect effect on subgroup attitudes (Chapter 4) can be explained with different characteristics of the SOGs. Whereas in Chapter 3 the SOG was the group of "all students at the FSU Jena", the SOG in Chapter 4 was the group of metal fans. Very likely, the a priori representation of the student group is a complex one. It is the "nature" of a full university that it consists of various faculties and departments, thus having an inherent diversity of student subgroups (cf. Waldzus, 2010). In turn, the representation of the group of metal fans presumably consists of one superordinate prototype (see pretest Chapter 4). Therefore, I argue that in the group of metal fans the process that occurs primarily when diversity is represented by peripheral subgroups is a return to "old school" norms and conventions of metal music.

Similar norms and conventions are less important in a group of students at a university. I will come back to this point later.

At a first glance, the chapters about perceived cognitive structure and group-based conventionalism seem to elaborate on rather unrelated constructs. Yet, a closer look reveals that both constructs are strongly related. Conservatism has mainly been investigated as political conservatism or as component of right-wing-authoritarianism (RWA; Altemeyer, 1981; cited in Stellmacher & Petzel, 2005). In a meta-analysis, Jost and colleagues (Jost, Glaser, Kruglanski, & Sulloway, 2003) argued that need for cognitive structure is one underlying epistemic motive of political conservatism. In a similar vein, Jugert and colleagues (Jugert, Cohrs, & Duckitt, 2009) demonstrated that the need for cognitive structure (together with social conformity) mediates the relationship between openness for experiences and RWA. In line with this research, the current dissertation suggests that a situation (i.e., diversity represented by peripheral subgroups) can increase the need for cognitive structure and does also evoke higher (group-based) conventionalism. The need to rely on simple structures on a cognitive level seems to be reflected in the need to rely on norms and conventions on the social level (Jugert et al., 2009). Both can have a detrimental effect on tolerance towards deviant subgroups within a SOG. A further indication that low cognitive and low social open-mindedness can be related was recently provided by Gelfand and colleagues (Gelfand et al., 2011). Comparing 33 nations, these authors demonstrated that in nations with a high strength of social norms and low tolerance of deviant behaviour ("tight nations") the situational constraints for their members in daily situations are higher than in so-called "loose nations". Higher situational constraints were positively related to higher need for cognitive structure. "This suggests that societal members' psychological characteristics are attuned to and supportive of the degree of constraint versus latitude in the larger cultural context." (Gelfand et al., 2011, p. 1103). In summary, the findings of Jugert and colleagues (2009) and Gelfand and colleagues (2011) suggest that there is a relation between the cognitive open-mindedness of individuals (need for cognitive structure) and their social open-mindedness (e.g., conservatism, tightness of a nation). However, the direction of this relation and the mutual impact in different contexts need to be issues of future research.

To sum up, the present experiments introduce an important moderator that influences whether diversity activation is more or less beneficial for tolerance among subgroup. I argue that the activated representation of diversity itself has a strong influence on the outcomes. The results of these chapters provide empirical evidence that activating diversity with peripheral

subgroup exemplars compared with central ones can decrease the perceived clarity of the SOG boundary and blur the definition of the SOG. Furthermore, the results demonstrate a negative impact on the tolerance of majority subgroup members when diversity is activated with peripheral subgroup exemplars compared with central ones – tolerance within and beyond an activated SOG context.

## 6.2. On the relationship between subgroup diversity and the complexity of the group representation

In Chapter 5, referring to the complexity assumption of the IPM (Mummendey & Wenzel, 1999), I tested whether the activation of an exemplar-based representation mindset has a positive effect on attitudes towards peripheral subgroups compared with a prototype-based representation mindset (Mullen et al., 2002). An exemplar-based category representation is supposed to be cognitively more complex than category representations that involve prototypes (Vanpaemels & Storms, 2008). However, I found no effect on the cognitive complexity measure I used. For the representation of the activated SOG of "all students at the FSU Jena", I detected an effect concerning the perception of cooperating students from different sciences. Low subgroup identifiers perceived them more as coming from different subgroups after the exemplar-based representation training than after the prototype-based representation training.

For low subgroup identifiers, the hypothesis concerning attitudes towards a peripheral subgroup (Arabic studies students) within the salient SOG of students was confirmed. They reported more positive attitudes towards Arabic studies students after the exemplar-based representation training than after the prototype-based representation training. As expected, high subgroup identifiers were insensitive to the training of different cognitive representation mindsets. This can be explained by social identity related motivations that play a more important role for them than for low identifiers (e.g., distinctiveness restoration; Crisp et al., 2006). Concerning attitudes towards peripheral subgroups of the non-salient gender groups (i.e., gay men and lesbians) there was a positive effect of the exemplar-based representation training: Compared with the prototype-based representation training, attitudes towards gay men were more positive in the exemplar-based training. This effect was driven by more positive attitudes of heterosexual men. Attitudes towards lesbians did not change, neither of heterosexual men or women. Women's attitudes did not change between the trainings. These findings are in line with recent literature showing that lesbians are evaluated in a similar way by heterosexual men and women, and that heterosexual men evaluate gay men less positively

than heterosexual women do (e.g., Kite & Whitley, 1995). Overall, the results of Chapter 5 provide initial evidence that an exemplar-based representation can have a positive effect on attitudes towards peripheral subgroups (i.e., attitudes of low subgroup identifiers towards the peripheral subgroup of Arabic studies students and of men towards gay men). However, due to its rather complicated procedure, the experiment can only be understood as preliminary. The manipulation procedure needs further improvement and further investigation of underlying mechanisms of the resulting attitudes (e.g., differentiating between the processes of subgrouping or subtyping, Maurer et al., 2005).

Initially, I assumed that the activation of an exemplar-based category representation by training with non-social stimuli would increase the cognitive complexity of the SOG representation (Mullen et al., 2002) while inhibiting the activation of subgroups. In contrast, it seems that (at least for low subgroups identifiers) the differentiation of subgroups was even more pronounced after exemplar-based than after prototype-based representation training. This result relates to the initial argument of this doctoral dissertation. As discussed in Chapter 2, I argue that activating a complex SOG representation as proposed by Mummendey and Wenzel (1999) can very likely activate a diversity of certain subgroups. Therefore, it needs to be explained whether the complex representation or the activation of subgroups accounts for any variation in attitudes towards other subgroups. One aim of the current thesis was to emphasize the necessity of differentiating both cognitive representation forms: This was approached by demonstrating distinct effects that diversity activation can have on majority subgroup members' tolerance towards outgroups. The substantial influence that activating different subgroups can have on the tolerance is demonstrated throughout Chapters 3 and 4. It is an important issue for future research to elaborate on the direct relationship between a complex representation and its diversity. The results of the present dissertation allow the speculation that activating diversity within a SOG with central subgroups could have evoked a (more) complex representation of the SOG. In contrast, activating diversity with peripheral subgroups could rather have activated mechanisms that hinder a more complex representation such as a higher need for cognitive structure and higher group-based conservatism. However, how the activation of subgroups can influence the complexity of a SOG representation and to which degree is a question for future research.

## 6.3. Limitations of the present work

One of the strengths of the current dissertation project is the examination of different diversity representations within multiple group contexts that are non-ethnic in nature (i.e.,

group of all students at FSU Jena, social scientists, metal fans, gender categories). Research on the impact of diversity activation has mainly been conducted in ethnic group contexts (e.g., in multicultural societies; e.g., Richeson & Nussbaum, 2004; Wolsko et al., 2000). This research provides only limited credibility for the argument that general group processes are investigated (for a similar argument see Hornsey & Hogg, 2000). However, research on subgroup relations within SOGs has demonstrated that there are general group processes, motivations, and phenomena occurring in a variety of SOGs (e.g., Waldzus et al., 2004; Crisp et al., 2010). This dissertation adds evidence that activating diversity in non-ethnic large-scale groups (e.g., metal fans) can have positive effects on the tolerance between its members under certain conditions. However, the current work simultaneously identifies possible pitfalls.

The usage of different SOG contexts also needs to be discussed as a possible limitation of this work because in different SOG contexts different group processes may occur. I investigated the student group of the FSU Jena (Chapters 3 and 5) and the SOG of metal fans (Chapter 4, and more indirectly the gender categories in Chapter 5). As mentioned above, both types of SOGs probably differed in the kind of representation that individuals had in mind a priori. Presumably, the student group of a (full) university is a group that will be represented as complex by default (Waldzus, 2010) because different subgroups belong to it (e.g., math students, language students, social studies students). Yet, there is some evidence that ingroup projection also occurs among university student groups (Wenzel et al., 2003). This implies that this SOG can also be represented by a superordinate prototype. Metal fans are a SOG that seems primarily represented by a prototype. The pretest in Chapter 4 revealed that some subgroups are perceived as more prototypical than others. However, the data also revealed positive attitudes towards diversity (Experiment 5) and some subgroups were perceived as equally prototypical (see pretest Chapter 4). This can be interpreted as indicators – at least to some extent – for a complex group representation. To sum up, every SOG can be represented as more simply or complexly structured, depending on the attribute dimensions or dimensions of subgroup differentiation one takes into account. General intra- or inter-subgroup processes should occur in all SOGs. Nevertheless, SOGs are a special type of groups because their characteristics can vary in many aspects: The interdependence of the subgroups, the underlying process of development (e.g., by recategorization or by subgrouping), the composition (i.e., number of majority and minority subgroups), the permeability and exclusiveness of subgroups, the extent of a hierarchical structure and so forth. In order to ensure the examination of a clear and full picture of the impact of SOG

representations on an intergroup context, it would be beneficial to develop a typology of SOGs in future research.

Similarly, in order to obtain a full picture of the pitfalls that may go along with the activation of diversity within a SOG, it will be necessary to examine the perspective of members of peripheral subgroups (e.g., minorities) within a SOG. For instance, Dovidio and colleagues (2007) have shown that low and high status groups within a SOG prefer different representation forms. Also, in multicultural societies, minority subgroups endorse multiculturalism more than majorities (e.g., Arends-Tóth & Van De Vijver, 2003; Van Oudenhoven et al., 1998; Verkuyten, 2005, 2006). Thus, different or additional motivations might be involved for peripheral subgroups (e.g., motivation for social change) when diversity within the SOG is activated.

Another issue that needs further investigation is the interplay of diversity activation and identification processes. Most research concerned with subgroup relations within SOGs addressed the impact of subgroup identification (Crisp et al., 2006, Hornsey & Hogg, 1999) and the impact of dual identification (e.g., Dovidio et al., 2007; Gonzales & Brown, 2006; Hornsey & Hogg, 2000). Initially, Mummendey and Wenzel (1999) stated that group members project attributes from their subgroup to the SOG representation in order to establish a positive and distinct social identity, resulting in a positive evaluation of the self. Wenzel and colleagues (2003) showed that highly, dually identified group members in particular perceive higher relative ingroup prototypicality than weak and non-dual identifiers. Thus, it is very likely that the outcomes of activating diversity within a SOG are influenced by identification with the subgroup, with the SOG, and by the interaction of both. In particular the impact of SOG identification needs clarification. High SOG identification may trigger, for instance, different reactions in terms of the exclusion of deviant subgroups from the SOG (similar to high identifiers on the intragroup level; see Castano, Paladino, Coull, & Yzerbyt, 2002). Kessler and Mummendey (2001) suggested that the differentiation from other groups can also play a role at the SOG level, which could have an influence on subgroup relations.

However, the aim of the present thesis was to show effects and processes that go beyond identity-related processes. Throughout the experiments, identification was controlled for, either by demonstrating that subgroup and SOG identification was high and constant (Chapter 3) or by controlling both as covariates (Chapter 4). However, the results in Chapter 4 suggest that subgroup identification in particular could have an impact on the reactions of diversity activation. This suggestion is supported by findings of Experiments 3 and 7. Here, for low

subgroup identifiers, different motivations and processes seemed at stake than for high subgroup identifiers. For now, I can only speculate that identification with the subgroup could influence the reactions towards the activation of diversity with central subgroups. Previous research suggests that high subgroup identifiers would react less tolerant than low identifiers (e.g., Crisp et al., 2006). Diversity activation with peripheral subgroups, in turn, could be a "strong situation" (Snyder & Ickes, 1985) that could cancel out the influence of identification. Overall, it is vital to focus on both social-identity related processes and identity-unrelated motivations, and their interplay in future research on diversity activation within SOG (for a similar argument, see Peker et al., 2010).

Furthermore, there are some methodological issues that need to be discussed, for instance, the procedure how I activated diversity throughout the experiments. In Chapter 3, different subgroup exemplars were activated with a category learning task. The learning stimuli of this task were (amongst others) either central or peripheral subgroup exemplars. In Chapter 4, central or peripheral subgroup exemplars were activated via presentation in a text. One may criticize that these manipulation procedures and the dependent variable concerning attitudes towards other peripheral subgroups may be confounded. Yet, I measured attitudes concerning tolerance not only with attitudes towards peripheral subgroups but also with attitudes towards diversity (Chapter 3) and conservative attitudes (Chapter 4). The effects on these dependent variables strengthen my confidence that the activation of peripheral subgroups can be detrimental for tolerance. Furthermore in Chapter 3, I could provide initial evidence that the activation of peripheral, compared with central, subgroups even had an effect on the open-mindedness in an unrelated non-social domain (i.e., musical preferences).

In the current work, central subgroups were defined as being more easily retrieved (Rothbart et al., 1996), more familiar because of a bigger size (cf. Barsalou, 1985), and as possessing higher status (cf. Mummendey & Wenzel, 1999; Rubin, 2012) than peripheral subgroups. This definition was intended to be rather broadly in order to reflect the characteristics within real SOG contexts. However, what exactly drove the effect (e.g., size, status) cannot be extracted with the results of the current work. Firstly, further research is necessary to elaborate on possible confoundation effects. In the current work, I could show that at least for the metal fan context centrality and valence were unrelated. In Chapter 4 (pretest), for none of the metal fan subgroups the prototypicality and the perceived friendliness were correlated, indicating that centrality was not related to the valence of the subgroup. Secondly, further research is necessary in order to identify determining

characteristics of the centrality of subgroups within a SOG (for a similar argument, see Reese et al., 2012). Related to that, it would be interesting to examine how the processing of central and peripheral subgroup exemplars may differ. For instance, research on perceptual fluency has shown that people prefer prototypical stimuli because they are processed more fluently, which, in turn, led to more positive evaluation of these stimuli compared with atypical ones (e.g., Winkielman et al., 2003). Recently, Rubin and colleagues (2010) transferred these findings into a social context and provided some evidence that the processing fluency (i.e., the ease of thinking about migrants) can partially explain less positive attitudes towards migrants compared with non-migrants. Whether this effect occurs also for central and peripheral subgroups within a SOG needs to be investigated.

## 6.4. Prospects for future research

The finding that people reported less open-minded music preferences when peripheral, compared with central, subgroup exemplars were activated strengthens my confidence in the argument that also effects on tolerance beyond one activated SOG can be explained by *how* diversity is activated. Therefore, the activation of diversity within a society could have an important impact on multiple domains, for instance, as examined with the *group-focused enmity* (i.e., a construct including various forms of prejudices such as sexism, devaluation of gay men and lesbians, anti-Semitism, xenophobia; Zick et al., 2008). However, this argument needs to be tested empirically. In general, it would be intriguing to test the effects of activating different subgroup exemplars in other group contexts and in particular in more applied settings, where prejudices and intergroup discrimination can have an impact on the common life in a society. An additional issue with regard to these societal relevant contexts is also the influence of media coverage. Previous research in communication and media science has often discussed that the media coverage of ethnic minorities is primarily negatively (e.g., Ruhrmann, 2002). However, as the current thesis suggests, also the mere presentation of other subgroups can already have an effect on the tolerance towards other groups. Thus, the combination of both research approaches would be fruitful in order to understand underlying processes of intolerance within a society and to examine the function of media coverage.

Although the explanatory power of Experiment 7 was limited due to its rather complicated procedure, it provided an interesting starting point for future research on the impact of Mussweiler's selective accessibility model of comparison consequences (Mussweiler, 2001). The model states that with a focus on similarities during a comparison with another stimulus an assimilation process occurs and with a focus on differences a process of contrast will be

elicited. Recently, Todd and colleagues (Todd et al., 2011) provided some evidence that a difference focus enhances perspective taking in interpersonal but also intergroup situations. Thus, more positive attitudes towards other groups could result by a mere difference focus in an intergroup comparison. Results from Experiment 7 point in a similar direction. It is an intriguing similarity of several approaches in social psychological literature to compare experimental conditions that either focus on differences or similarities between specific instances (e.g., Crisp, Hewstone, & Rubin, 2001; Mullen et al., 2002; Waldzus et al., 2003; Wolsko et al., 2000). Thus, the extraction of the unique impact of the focus on similarities or differences could be essential, in particular to understand underlying cognitive processes of tolerance.

Recently, Crisp and Turner (2010) proposed the Categorization-Processing-Adaptation-Generalization model (CPAG model). This model aims to integrate different research streams on diversity and to provide an explanation how and when people can adapt to diversity. As a precondition of their model, the authors argue that the activated diversity must be perceived as counter-stereotypical. In other words, diversity-related information should challenge existing stereotypes, norms, or group boundaries. According to the CPAG model, only then an individual engage in inconsistency resolution processes that can result in more tolerance and higher cognitive flexibility. At a first glance the main findings of the current work (e.g., that activating peripheral subgroups compared with central subgroups leads to less tolerance) seem to contradict the proposed adaptation process of the CPAG model. However, important for the current work, the model stated that the inconsistency resolution only occurs when individuals are motivated and able to engage in more systematic processing (Crisp & Turner, 2010). The present dissertation clearly identified conditions under which individuals are “not able” or not motivated to engage in further inconsistency resolution, either because of an increased need for cognitive structure (Chapter 3) or because of increased group-based conventionalism (Chapter 4). Whereas Crisp and Turner (2010) stated that with missing motivation and ability no adaptation on diversity can take place, I argue that even detrimental effects can occur on the tolerance towards diversity within and beyond an activated social context. However, it would be intriguing to test in a longitudinal design whether the reaction I examined was a kind of “first moment reaction”. Can individuals adapt to the activation of peripheral subgroups? Can individuals adapt better to diversity when diversity is activated with central subgroups compared with peripheral subgroups? The second research question relates to the relationship between diversity activation and complexity activation I discussed above. Perhaps one precursor for the adaptation to diversity is a complex SOG representation.

However, in order to examine this question, it is primarily necessary to clarify the relationship between diversity activation and the complexity of the SOG representation.

## 6.5. Conclusion

This doctoral dissertation contributes an important examination of possible pitfalls of activating diversity within large-scale groups. When does activating diversity increase tolerance within the SOG and when does it not? In previous research, diversity activation within SOGs was primarily discussed as a beneficial way to enhance tolerance within SOGs. However, the findings of this dissertation suggest that activating specific subgroups exemplars can have a substantial impact on the reactions of majority subgroup members. When they are confronted with diversity within their SOG in combination with peripheral subgroups, they react less tolerant than when the activated diversity was combined with central subgroups. The current dissertation identifies (a) the perception of a decreased cognitive structure and (b) an increased endorsement of traditional norms and conventions of the SOG as important, underlying precursors of this reaction.

On a theoretical level, the current dissertation emphasises the necessity of differentiating the effects of the activation of a complex SOG group representation (Mummendey & Wenzel, Waldzus et al., 2003) and the activation of diversity of subgroups (cf. Waldzus, 2010).

To conclude, the current dissertation reveals that tolerance within large-scale groups can very likely be increased by the activation of diversity within the SOG. However, this diversity should be associated with subgroups that are prototypical for the SOG rather than atypical. To be tolerant, individuals apparently need a certain degree of structure – in a cognitive and a social sense.

# References

Abrams, D. (2009). Social identity on a national scale: Optimal distinctiveness and young people's self-expression through musical preference. *Group Processes & Intergroup Relations, 12*(3), 303-317.

Abrams, D., Marques, J. M., Bown, N., & Henson, M. (2000). Pro-norm and anti-norm deviance within and between groups. *Journal of Personality and Social Psychology, 78*(5), 906-912.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA US: Sage Publications, Inc.

Allport, G. W. (1979). *The nature of prejudice – unabridged*. Cambridge, MA US: Perseus Books.

Arends-Tóth, J., & Van De Vijver, F. J. R. (2003). Multiculturalism and acculturation: Views of Dutch and Turkish-Dutch. *European Journal of Social Psychology, 33*(2), 249-266.

Bakagiannis, S., & Tarrant, M. (2006). Can music bring people together? Effects of shared musical preference on intergroup bias in adolescence. *Scandinavian Journal of Psychology, 47*(2), 129-136.

Barsalou, L. W. (1985). Ideals, central tendency, and frequency of instantiation as determinants of graded structure in categories. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 11*(4), 629-654.

Banerjee, S. B., & Linstead, S. (2001). Globalization, multiculturalism and other fictions: Colonialism for the new millennium? *Organization, 8*, 683-722.

Berry, J. W. (1991). Understanding and managing multiculturalism: Some possible implications of research in Canada. *Psychology and Developing Societies*, *3*, 17-49.

Bianchi, M., Mummendey, A., Steffens, M. C., & Yzerbyt, V. Y. (2010). What do you mean by "European"? Evidence of spontaneous ingroup projection. *Personality and Social Psychology Bulletin, 36*(7), 960-974.

Bless, H., Fiedler, K., & Forgas, J. P. (2006). Mood and the regulation of information processing and behavior. In *Affect in social thinking and behavior.* (pp. 65-84). New York, NY US: Psychology Press.

Bodenhausen, G. V., Schwarz, N., Bless, H., & Wänke, M. (1995). Effects of atypical exemplars on racial beliefs: Enlightened racism or generalized appraisals? *Journal of Experimental Social Psychology, 31*(1), 48-63.

Brewer, M. B. (1997). The social psychology of intergroup relations: Can research inform practice? *Journal of Social Issues, 53*(1), 197-211.

Brewer, M. B., Dull, V., & Lui, L. (1981). Perceptions of the elderly: Stereotypes as prototypes. *Journal of Personality and Social Psychology, 41*(4), 656-670.

Brewer, M. B., & Lui, L. (1984). Categorization of the elderly by the elderly: Effects of perceiver's category membership. *Personality and Social Psychology Bulletin, 10*(4), 585-595.

Brewer, M. B., & Pierce, K. P. (2005). Social identity complexity and outgroup tolerance. *Personality and Social Psychology Bulletin, 31*(3), 428-437.

Castano, E., Paladino, M.-P., Coull, A., & Yzerbyt, V. Y. (2002). Protecting the ingroup stereotype: Ingroup identification and the management of deviant ingroup members. *British Journal of Social Psychology, 41*(3), 365-385.

Chaker, S. (2010). Extreme music for extreme people: Black and death metal put to the test in a comparative empirical study. In N. W. R. Scott & I. v. Helden (Eds.), *The metal-void* (pp. 265-278). Oxford, UK: Inter-Disciplinary Press.

Crisp, R. J., Hewstone, M., & Rubin, M. (2001). Does multiple categorization reduce intergroup bias? *Personality and Social Psychology Bulletin, 27*, 76-89.

Crisp, R. J., & Hewstone, M. (2007). Multiple social categorization. In M. P. Zanna (Ed.), *Advances in experimental social psychology, Vol 39* (pp. 163-254). San Diego, CA US: Elsevier Academic Press.

Crisp, R. J., Stone, C. H., & Hall, N. R. (2006). Recategorization and subgroup identification: Predicting and preventing threats from common ingroups. *Personality and Social Psychology Bulletin, 32*(2), 230-243.

Crisp, R. J., & Turner, R. N. (2011). Cognitive adaptation to the experience of social and cultural diversity. *Psychological Bulletin, 137*, 232-249.

Crisp, R. J., Turner, R. N., & Hewstone, M. (2010). Common ingroups and complex identities: Routes to reducing bias in multiple category contexts. *Group Dynamics: Theory, Research, and Practice, 14*(1), 32-46.

Damisch, L., Mussweiler, T., & Plessner, H. (2006). Olympic medals as fruits of comparison? Assimilation and contrast in sequential performance judgments. *Journal of Experimental Psychology: Applied, 12*(3), 166-178.

Devos, T., & Banaji, M. R. (2005). American = White? *Journal of Personality and Social Psychology, 88*(3), 447-466.

Dovidio, J. F., Gaertner, S. L., & Saguy, T. (2007). Another view of 'we': Majority and minority group perspectives on a common ingroup identity. *European Review of Social Psychology, 18*, 296-330.

Duckitt, J. (1989). Authoritarianism and group identification: A new view of an old construct. *Political Psychology, 10*(1), 63-84.

Duckitt, J., Bizumic, B., Krauss, S. W., & Heled, E. (2010). A tripartite approach to Right-Wing Authoritarianism: The Authoritarianism-Conservatism-Traditionalism model. *Political Psychology, 31*(5), 685-715.

Ehrke, F., Berthold, A., & Steffens, M. C. (2012). *How diversity training can change attitudes: Increasing perceived complexity of superordinate groups to improve intergroup relations*. Manuscript submitted for publication.

Ellison, T. M. (2001). Induction and inherent similarity. In U. Hahn & M. Ramscar (Eds.), *Similarity and categorization* (pp. 29-49). New York, NY US: Oxford University Press.

Field, A. (2005). *Discovering statistics using SPSS (2nd ed.)*. Thousand Oaks, CA US: Sage Publications, Inc.

Fiske, S. T., Lin, M., & Neuberg, S. L. (1999). The continuum model: Ten years later. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 231-254). New York, NY US: Guilford Press.

Fiske, S. T., & Neuberg, S. L. (1990). A continuum of impression formation, from category-based to individuating processes: Influences of information and motivation on attention and interpretation. In M. P. Zanna (Ed.), *Advances in experimental social psychology, Vol. 23,* (pp. 1-74). New York: Academic Press.

Fiske, S. T., Neuberg, S. L., Beattie, A. E., & Milberg, S. J. (1987). Category-based and attribute-based reactions to others: Some informational conditions of stereotyping and individuating processes. *Journal of Experimental Social Psychology, 23*(5), 399-427.

Freund, T., Kruglanski, A. W., & Shpitzajzen, A. (1985). The freezing and unfreezing of impressional primacy: Effects of the need for structure and the fear of invalidity. *Personality and Social Psychology Bulletin, 11*(4), 479-487.

Funke, F. (2005). The dimensionality of Right-Wing Authoritarianism: Lessons from the dilemma between theory and measurement. *Political Psychology, 26*(2), 195-218.

Gabriel, U., & Banse, R. (2006). Helping behavior as a subtle measure of discrimination against lesbians and gay men: German data and a comparison across countries. *Journal of Applied Social Psychology, 36*(3), 690-707.

Gelfand, M. J., Raver, J. L., Nishii, L., Leslie, L. A., Lun, J., Lim, B. C., et al. (2011). Differences between tight and loose cultures: A 33-nation study. *Science, 332*(6033), 1100-1104.

Giles, H., Denes, A., Hamilton, D. L., & Hajda, J. M. (2009). Striking a chord: A prelude to music and intergroup relations research. *Group Processes & Intergroup Relations, 12*(3), 291-301.

González, R., & Brown, R. (2006). Dual identities in intergroup contact: Group status and size moderate the generalization of positive attitude change. *Journal of Experimental Social Psychology, 42*(6), 753-767.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology, 74*(6), 1464-1480.

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the Implicit Association Test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology, 85*(2), 197-216.

Hahn, U., Bailey, T. M., & Elvin, L. B. C. (2005). Effects of category diversity on learning, memory, and generalization. *Memory & Cognition, 33*(2), 289-302.

Hahn, U., & Ramscar, M. (2001). *Similarity and categorization*. New York, NY US: Oxford University Press.

Hampton, J. A. (2001). The role of similarity in natural categorization. In U. Hahn & M. Ramscar (Eds.), *Similarity and categorization* (pp. 13-28). New York, NY US: Oxford University Press.

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs, 76*(4), 408-420.

Heine, S. J., Proulx, T., & Vohs, K. D. (2006). The Meaning maintenance model: On the coherence of social motivations. *Personality and Social Psychology Review, 10*(2), 88-110.

Hogg, M. A. (1987). Social identity and group cohesiveness. In J. C. Turner, M. A. Hogg, P. J. Oakes, S. D. Reicher, & M. S. Wetherell (Eds.), *Rediscovering the social group: A self-categorization theory* (pp. 89-116). Cambridge, MA US: Basil Blackwell.

Hogg, M. A. (2005). All animals are equal but some animals are more equal than others: Social identity and marginal membership. In K. D. Williams, J. P. Forgas, & W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusion, rejection, and bullying* (pp. 243-261). New York, NY US: Psychology Press.

Homan, A. C., van Knippenberg, D., Van Kleef, G. A., & De Dreu, C. K. W. (2007). Bridging faultlines by valuing diversity: Diversity beliefs, information elaboration, and performance in diverse work groups. *Journal of Applied Psychology, 92*(5), 1189-1199.

Hornsey, M. J., & Hogg, M. A. (1999). Subgroup differentiation as a response to an overly-inclusive group: a test of optimal distinctiveness theory. *European Journal of Social Psychology, 29*(4), 543-550.

Hornsey, M. J., & Hogg, M. A. (2000). Assimilation and diversity: An integrative model of subgroup relations. *Personality & Social Psychology Review, 4*(2), 143-156.

Hornsey, M. J., Jetten, J., McAuliffe, B. J., & Hogg, M. A. (2006). The impact of individualist and collectivist group norms on evaluations of dissenting group members. *Journal of Experimental Social Psychology, 42*(1), 57-68.

Hutchison, P., & Abrams, D. (2003). Ingroup identification moderates stereotype change in reaction to ingroup deviance. *European Journal of Social Psychology, 33*(4), 497-506.

Hutchison, P., Jetten, J., & Gutierrez, R. (2011). Deviant but desirable: Group variability and evaluation of atypical group members. *Journal of Experimental Social Psychology, 47*(6), 1155-1161.

Iaberis (2006). Nu metal – A controversial subject [Article in online magazine]. Retrieved 12/02/2012 from http://www.metalstorm.net/pub/article.php?article_id=140.

Imhoff, R., Dotsch, R., Bianchi, M., Banse, R., & Wigboldus, D. I. H. J. (2011). Facing Europe: Visualizing spontaneous in-group projection. *Psychological Science, 22*(12), 1583-1590.

Isen, A. M., & Daubman, K. A. (1984). The influence of affect on categorization. *Journal of Personality and Social Psychology, 47*(6), 1206-1217.

Jetten, J., Spears, R., & Manstead, A. S. R. (1997). Distinctiveness threat and prototypicality: Combined effects on intergroup discrimination and collective self-esteem. *European Journal of Social Psychology, 27*(6), 635-657.

Jetten, J., Spears, R., & Postmes, T. (2004). Intergroup distinctiveness and differentiation: A meta-analytic integration. *Journal of Personality and Social Psychology, 86*(6), 862-879.

Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin, 129*(3), 339-375.

Jugert, P., Cohrs, J. C., & Duckitt, J. (2009). Inter- and intrapersonal processes underlying authoritarianism: The role of social conformity and personal need for structure. *European Journal of Personality, 23*(7), 607-621.

Kahn-Harris, K. (2010). How diverse should metal be? The case of Jewish metal, overt and covert Jewishness. In N. W. R. Scott & I. v. Helden (Eds.), *The metal-void* (pp. 95-104). Oxford, UK: Inter-Disciplinary Press.

Kemmelmeier, M. (2010). Gender moderates the impact of need for structure on social beliefs: Implications for ethnocentrism and authoritarianism. *International Journal of Psychology, 45*(3), 202-211.

Kessler, T., & Mummendey, A. (2001). Is there any scapegoat around? Determinants of intergroup conflicts at different categorization levels. *Journal of Personality and Social Psychology, 81*(6), 1090-1102.

Kessler, T., Mummendey, A., Funke, F., Brown, R., Binder, J., Zagefka, H., et al. (2010). We all live in Germany but . . . Ingroup projection, group-based emotions and prejudice against immigrants. *European Journal of Social Psychology, 40*(6), 985-997.

Kruglanski, A. W., & Freund, T. (1983). The freezing and unfreezing of lay-inferences: Effects on impressional primacy, ethnic stereotyping, and numerical anchoring. *Journal of Experimental Social Psychology, 19*(5), 448-468.

Lambert, A. J., Barton, L. R., Lickel, B., & Wells, J. (1998). The influence of group variability and processing goals on the ease of making judgments about social categories. *Personality and Social Psychology Bulletin, 24*(8), 807-820.

Landau, M. J., Greenberg, J., Solomon, S., Pyszczynski, T., & Martens, A. (2006). Windows into nothingness: Terror management, meaninglessness, and negative reactions to modern art. *Journal of Personality and Social Psychology, 90*(6), 879-892.

Lickel, B., Hamilton, D. L., Wieczorkowska, G., Lewis, A., Sherman, S. J., & Uhles, A. N. (2000). Varieties of groups and the perception of group entitativity. *Journal of Personality and Social Psychology, 78*(2), 223-246.

Lie, J., & Verkuyten, M. (in press). Identity practices, ingroup projection, and the evaluation of subgroups: A study among Turkish-Dutch Sunnis. *Journal of Social Psychology*.

Linville, P. W. (1998). The heterogeneity of homogeneity. In J. M. Darley & J. Cooper, *Attribution and social interaction: The legacy of Edward E. Jones.* (pp. 423-487). Washington, DC US: American Psychological Association.

Linville, P. W., & Fischer, G. W. (1993). Exemplar and abstraction models of perceived group variability and stereotypicality. *Social Cognition, 11*(1), 92-125.

Locke, K. D. (2003). H as a measure of complexity of social information processing. *Personality and Social Psychology Review, 7*(3), 268-280.

Lord, C. G. & Lepper, M. R. (1999). Attitude representation theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology, Vol. 31.* (pp. 265-343). San Diego, CA US: Academic Press.

Lord, C. G., Paulson, R. M., Sia, T. L., Thomas, J. C., & Lepper, M. R. (2004). Houses built on sand: Effects of exemplar stability on susceptibility to attitude change. *Journal of Personality and Social Psychology, 87*(6), 733-749.

Machunsky, M. (2005). *How we perceive us determines how we like you: Mental representation of the ingroup as predictor of intergroup evaluation.* Unpublished doctoral dissertation, Friedrich-Schiller-University, Jena, Germany.

Machunsky, M., & Meiser, T. (2006). Personal Need for Structure als differenzial-psychologisches Konstrukt in der Sozialpsychologie: Psychometrische Analyse und Validierung einer deutschsprachigen PNS-Skala. *Zeitschrift für Sozialpsychologie, 37*(2), 87-97.

Machunsky, M., & Meiser, T. (2009). Ingroup projection as a means to define the superordinate category efficiently: Response time evidence. *Social Cognition, 27*(1), 57-75.

Machunsky, M., & Meiser, T. (2012). *Ingroup projection or prototype projection? Cognitive and motivational components of biased prototypicality judgments in group perception*. Manuscript submitted for publication.

MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. *Annual Review of Psychology, 58*, 593-614.

MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research, 39*(1), 99-128.

Marques, J., Abrams, D., Paez, D., & Martinez-Taboada, C. (1998). The role of categorization and in-group norms in judgments of groups and their members. *Journal of Personality and Social Psychology, 75*(4), 976-988.

Marques, J., Abrams, D., & Serodio, R. G. (2001). Being better by being right: Subjective group dynamics and derogation of in-group deviants when generic norms are undermined. *Journal of Personality and Social Psychology, 81*(3), 436-447.

Marques, J. M., Páez, D., & Abrams, D. (1998). Social identity and intragroup differentiation as subjective social control. In S. Worchel, J. F. Morales, & J.-C. Deschamps (Eds.), *Social identity: International perspectives.* (pp. 124-141). Thousand Oaks, CA US: Sage Publications, Inc.

Marques, J. M., Yzerbyt, V. Y., & Leyens, J.-P. (1988). The 'Black Sheep Effect': Extremity of judgments towards ingroup members as a function of group identification. *European Journal of Social Psychology, 18*(1), 1-16.

Maurer, K. L., Park, B., & Rothbart, M. (1995). Subtyping versus subgrouping processes in stereotype representation. *Journal of Personality and Social Psychology, 69*(5), 812-824.

McGregor, I., Haji, R., & Kang, S.-J. (2008). Can ingroup affirmation relieve outgroup derogation? *Journal of Experimental Social Psychology, 44*(5), 1395-1401.

Meier, L. L. (2008). IRSE. Interactions in multiple linear regression with SPSS and Excel (Version 1.6) [Computer software and manual]. Retrieved 23/02/2011, from http://www.urenz.ch/irse.

Minda, J. P., & Smith, J. D. (2001). Prototypes in category learning: The effects of category size, category structure, and stimulus complexity. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 27*(3), 775-799.

Moskowitz, G. B. (1993). Individual differences in social categorization: The influence of personal need for structure on spontaneous trait inferences. *Journal of Personality and Social Psychology, 65*(1), 132-142.

Mullen, B., & Hu, L. (1989). Perceptions of ingroup and outgroup variability: A meta-analytic integration. *Basic and Applied Social Psychology, 10*(3), 233-252.

Mullen, B., & Hu, L. (1989). Perceptions of ingroup and outgroup variability: A meta-analytic integration. *Basic and Applied Social Psychology, 10*(3), 233-252.

Mullen, B., Pizzuto, C., & Foels, R. (2002). Altering intergroup perceptions by altering prevailing mode of cognitive representation: 'They look like people.'. *Journal of Personality and Social Psychology, 83*(6), 1333-1343.

Mummendey, A., & Wenzel, M. (1999). Social discrimination and tolerance in intergroup relations: Reactions to intergroup difference. *Personality and Social Psychology Review, 3*(2), 158-174.

Murray, N., Sujan, H., Hirt, E. R., & Sujan, M. (1990). The influence of mood on categorization: A cognitive flexibility interpretation. *Journal of Personality and Social Psychology, 59*(3), 411-425.

Mussweiler, T. (2001). 'Seek and ye shall find': Antecedents of assimilation and contrast in social comparison. *European Journal of Social Psychology, 31*(5), 499-509.

Noor, M., Brown, R., Taggart, L., Fernandez, A., & Coen, S. (2010). Intergroup identity perceptions and their implications for intergroup forgiveness: The Common Ingroup Identity Model and its efficacy in the field. *The Irish Journal of Psychology, 31*(1-4), 151-170.

Nosofsky, R. M. (1988). Similarity, frequency, and category representations. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 14*(1), 54-65.

Nosofsky, R. M., & Zaki, S. R. (2002). Exemplar and prototype models revisited: Response strategies, selective attention, and stimulus generalization. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 28*(5), 924-940.

Oakes, P. J. (1987). The salience of social categories. In J. C. Turner, M. A. Hogg, P. J. Oakes, S. D. Reicher & M. S. Wetherell (Eds.), *Rediscovering the social group: A self-categorization theory* (pp. 117-141). Cambridge, MA US: Basil Blackwell.

Oliver, J. E., & Wong, J. (2003). Intergroup prejudice in multiethnic settings. *American Journal of Political Science, 47*, 567-582.

Park, B., Ryan, C. S., & Judd, C. M. (1992). Role of meaningful subgroups in explaining differences in perceived variability for in-groups and out-groups. *Journal of Personality and Social Psychology, 63*(4), 553-567.

Park, J., & Banaji, M. R. (2000). Mood and heuristics: The influence of happy and sad states on sensitivity and bias in stereotyping. *Journal of Personality and Social Psychology, 78*(6), 1005-1023.

Peker, M., Crisp, R. J., & Hogg, M. A. (2010). Predictors of ingroup projection: The roles of superordinate category coherence and complexity. *Group Processes & Intergroup Relations, 13*(4), 525-542.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879-891.

Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research, 42*(1), 185-227.

Proulx, T., Heine, S. J., & Vohs, K. D. (2010). When is the unfamiliar the uncanny? Meaning affirmation after exposure to absurdist literature, humor, and art. *Personality and Social Psychology Bulletin, 36*(6), 817-829.

Reese, G., Dieckmann, J., Berthold, A., & Steffens, M. C. (2012). *Of Mac and men: Group size, not status, determines group members' perceptions of prototypicality for the superordinate group*. Manuscript in preparation.

Rentfrow, P. J., McDonald, J. A., & Oldmeadow, J. A. (2009). You are what you listen to: Young people's stereotypes about music fans. *Group Processes & Intergroup Relations, 12*(3), 329-344.

Richards, Z., & Hewstone, M. (2001). Subtyping and subgrouping: Processes for the prevention and promotion of stereotype change. *Personality & Social Psychology Review (Lawrence Erlbaum Associates), 5*(1), 52-73.

Richeson, J. A., & Nussbaum, R. J. (2004). The impact of multiculturalism versus color-blindness on racial bias. *Journal of Experimental Social Psychology, 40*(3), 417-423.

Roccas, S., & Amit, A. (2011). Group heterogeneity and tolerance: The moderating role of conservation values. *Journal of Experimental Social Psychology, 47*(5), 898-907.

Roccas, S., & Brewer, M. B. (2002). Social identity complexity. *Personality & Social Psychology Review, 6*(2), 88-106.

Rosa, M., & Waldzus, S. (2012). Efficiency and defense motivated ingroup projection: Sources of protoypicality in intergroup relations. *Journal of Experimental Social Psychology, 48*, 669-681.

Rosch, E., & Lloyd, B. B. (1978). *Cognition and categorization*. Oxford England: Lawrence Erlbaum.

Rosch, E., Mervis, C. B., Gray, W. D., Johnson, D. M., & Boyes-Braem, P. (1976). Basic objects in natural categories. *Cognitive Psychology, 8*(3), 382-439.

Rothbart, M., & Park, B. (2004). The mental representation of social categories: Category boundaries, entitativity, and stereotype change. In V. Yzerbyt, C. M. Judd, & O. Corneille (Eds.), *The psychology of group perception: Perceived variability, entitativity, and essentialism.* (pp. 79-100). New York, NY US: Psychology Press.

Rothbart, M., Sriram, N., & Davis-Stitt, C. (1996). The retrieval of typical and atypical category members. *Journal of Experimental Social Psychology, 32*(4), 309-336.

Rubin, M. (2012). Group status is related to group prototypicality in the absence of social identity concerns. *The Journal of Social Psychology, 152*, 386-389.

Rubin, M., Paolini, S., & Crisp, R. J. (2010). A processing fluency explanation of bias against migrants. *Journal of Experimental Social Psychology, 46*(1), 21-28.

Rubin, M., Paolini, S., & Crisp, R. J. (2011). The relationship between the need for closure and deviant bias: An investigation of generality and process. *International Journal of Psychology, 46*(3), 206-213.

Ruhrmann, G. (2002). Wie regionale Tageszeitungen über Migranten berichten. Das Beispiel Thüringen. [How regional daily newspaper report about migrants. The example of Thuringia.]. In K.-H. Meier-Braun & M. A. Kilgus (Eds.), *Integration durch Politik und Medien? 7. Medienforum bei uns [Integration via politics and media? 7th media forum]* (pp. 103-121). Baden-Baden: Nomos Verlagsgesellschaft.

Rydell, R. J., & McConnell, A. R. (2005). Perceptions of entitativity and attitude change. *Personality and Social Psychology Bulletin, 31*(1), 99-110.

Schubert, T. W., & Otten, S. (2002). Overlap of self, ingroup, and outgroup: Pictorial measures of self-categorization. *Self and Identity, 1*(4), 353-376.

Sia, T. L., Lord, C. G., Blessum, K. A., Ratcliff, C. D., & Lepper, M. R. (1997). Is a rose always a rose? The role of social category exemplar change in attitude stability and attitude-behavior consistency. *Journal of Personality and Social Psychology, 72*(3), 501-514.

Sindic, D., & Reicher, S. D. (2008). The instrumental use of group prototypicality judgments. *Journal of Experimental Social Psychology, 44*(6), 1425-1435.

Smith, E. R. (1998). Mental representation and memory. In D. T. Gilbert, S. T. Fiske & G. Lindzey (Eds.), *The handbook of social psychology*, (4th ed., Vol. 1, pp. 391-445). New York, NY US: McGraw-Hill.

Smith, E. R., & Zárate, M. A. (1992). Exemplar-based model of social judgment. *Psychological Review, 99*(1), 3-21.

Smith, J. D., & Minda, J. P. (2002). Distinguishing prototype-based and exemplar-based processes in dot-pattern category learning. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 28*(4), 800-811.

Snyder, M., & Ickes, W. J. (1985). Personality and social behaviour. In G. Lindzey & E. Aronson (Eds.), *The handbook of social psychology* (3rd ed., pp. 883-948). New York: Random House.

Spears, R., Scheepers, D., Jetten, J., Doosje, B., Ellemers, N., & Postmes, T. (2004). Entitativity, group distinctiveness, and social identity: Getting and using social structure. In V. Yzerbyt, C. M. Judd, & O. Corneille (Eds.), *The psychology of group perception: Perceived variability, entitativity, and essentialism.* (pp. 293-316). New York, NY US: Psychology Press.

Steffens, M. C., Kirschbaum, M., & Glados, P. (2008). Avoiding stimulus confounds in Implicit Association Tests by using the concepts as stimuli. *British Journal of Social Psychology, 47*(2), 217-243.

Steffens, M. C., Reese, G., Ehrke, F., & Jonas, K. J. (2012). *When does activating diversity improve, when impair attitudes? Ingroup projection, superordinate group complexity, and outgroup attitudes.* Manuscript in preparation.

Steffens, M. C., & Wagner, C. (2004). Attitudes toward lesbians, gay men, bisexual women, and bisexual men in Germany. *Journal of Sex Research, 41*(2), 137-149.

Stellmacher, J., & Petzel, T. (2005). Authoritarianism as a group phenomenon. *Political Psychology, 26*(2), 245-274.

Steyer, R., Schwenkmezger, P., Notz, P., & Eid, M. (1994). Testtheoretische Analysen des Mehrdimensionalen Befindlichkeitsfragebogen (MDBF). *Diagnostica, 40*(4), 320-328.

Tajfel, H., & Turner, J. C. (1979). The social identity theory of intergroup behavior. In S. Worchel & W. G. Austin (Eds.), *The psychology of intergroup relations* (pp. 33-47). Monterey: Brooks/Cole.

Tarrant, M., North, A. C., & Hargreaves, D. J. (2001). Social categorization, self-esteem, and the estimated musical preferences of male adolescents. *The Journal of Social Psychology, 141*(5), 565-581.

Todd, A. R., Hanko, K., Galinsky, A. D., & Mussweiler, T. (2011). When focusing on differences leads to similar perspectives. *Psychological Science, 22*(1), 134-141.

Turner, J. C. (1987). A self-categorization theory. In J. C. Turner, M. A. Hogg, P. J. Oakes, S. D. Reicher & M. S. Wetherell (Eds.), *Rediscovering the social group: A self-categorization theory*. (pp. 42-67). Cambridge, MA US: Basil Blackwell.

Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Wetherell, M. S. (1987). *Rediscovering the social group: A self-categorization theory*. Cambridge, MA US: Basil Blackwell.

Turner, J. C., Oakes, P. J., Haslam, S. A., & McGarty, C. (1994). Self and collective: Cognition and social context. *Personality and Social Psychology Bulletin, 20*(5), 454-463.

Ullrich, J., Christ, O., & Schlüter, E. (2006). Merging on mayday: Subgroup and superordinate identification as joint moderators of threat effects in the context of European Union's expansion. *European Journal of Social Psychology, 36*(6), 857-876.

van Knippenberg, D., & Haslam, S. A. (2003). Realizing the diversity dividend: Exploring the subtle interplay between identity, ideology, and reality. In M. J. Platow & N. Ellemers (Eds.), *Social identity at work: Developing theory for organizational practice.* (pp. 61-77). New York, NY US: Psychology Press.

van Oudenhoven, J. P., Prins, K. S., & Buunk, B. P. (1998). Attitudes of minority and majority members towards adaptation of immigrants. *European Journal of Social Psychology, 28*(6), 995-1013.

Van Twuyver, M., & Van Knippenberg, A. (1998). Effects of group membership and identification on categorization and subtyping in memory. *European Journal of Social Psychology, 28*(4), 531-553.

Vanpaemel, W., & Storms, G. (2008). In search of abstraction: The varying-abstraction model of categorization. *Psychonomic Bulletin & Review, 15*(4), 732-749.

Verkuyten, M. (2004). Everyday ways of thinking about multiculturalism. *Ethnicities, 4*, 53-74.

Verkuyten, M. (2005). Immigration discourses and their impact on multiculturalism: A discursive and experimental study. *British Journal of Social Psychology, 44*(2), 223-240.

Verkuyten, M. (2006). Multicultural recognition and ethnic minority rights: A social identity perspective. *European Review of Social Psychology, 17*, 148-184.

Vorauer, J. D., Gagnon, A., & Sasaki, S. J. (2009). Salient intergroup ideology and intergroup interaction. *Psychological Science, 20*(7), 838-845.

Waldzus, S. (2010). Complexity of superordinate self-categories and ingroup projection. In R. J. Crisp (Ed.), *The psychology of social and cultural diversity.* (pp. 224-254), Oxford: Wiley-Blackwell.

Waldzus, S., Mummendey, A., & Wenzel, M. (2005). When 'different' means 'worse': In-group prototypicality in changing intergroup contexts. *Journal of Experimental Social Psychology, 41*(1), 76-83.

Waldzus, S., Mummendey, A., Wenzel, M., & Boettcher, F. (2004). Of bikers, teachers and Germans: Groups' diverging views about their prototypicality. *British Journal of Social Psychology, 43*(3), 385-400.

Waldzus, S., Mummendey, A., Wenzel, M., & Weber, U. (2003). Towards tolerance: Representations of superordinate categories and perceived ingroup prototypicality. *Journal of Experimental Social Psychology, 39*(1), 31-47.

Wellen, J. M., & Neale, M. (2006). Deviance, self-typicality, and group cohesion: The corrosive effects of the bad apples on the barrel. *Small Group Research, 37*(2), 165-186.

Wenzel, M., Mummendey, A., & Waldzus, S. (2007). Superordinate identities and intergroup conflict: The ingroup projection model. *European Review of Social Psychology, 18*, 331-372.

Wenzel, M., Mummendey, A., Weber, U., & Waldzus, S. (2003). The ingroup as pars pro toto: Projection from the ingroup onto the inclusive category as a precursor to social discrimination. *Personality and Social Psychology Bulletin, 29*(4), 461-473.

Whitley, B. E., & Kite, M. E. (1995). Sex differences in attitudes toward homosexuality: A comment on Oliver and Hyde (1993). *Psychological Bulletin, 117*(1), 146-154.

Winkielman, P., Schwarz, N., Fazendeiro, T. A., & Reber, R. (2003). The hedonic marking of processing fluency: Implications for evaluative judgment. In J. Musch & K. C. Klauer (Eds.), *The psychology of evaluation: Affective processes in cognition and emotion.* (pp. 189-217). Mahwah, NJ US: Lawrence Erlbaum Associates Publishers.

Wolf, C., & Van Dick, R. (2008). Wenn anders nicht schlechter bedeutet – Wertschätzung von Vielfalt fördert Gleichwertigkeit der Gruppen [When different doesn't mean worse – Appreciation of diversity increases the equality of groups]. In W. Heitmeyer (Ed.), *Deutsche Zustände* (pp. 137-153). Frankfurt: suhrkamp.

Wolsko, C., Park, B., Judd, C. M., & Wittenbrink, B. (2000). Framing interethnic ideology: Effects of multicultural and color-blind perspectives on judgments of groups and individuals. *Journal of Personality and Social Psychology, 78*(4), 635-654.

# Appendix

Table A1

*Stimulus material for the category learning task (Pretest, Chapter 3).*

| Stimuli for category learning task | | Relative size *M* (*SD*) | Perceived similarity *M* (*SD*) |
|---|---|---|---|
| Central subgroups | Communication science students | 4.69 (1.14) | 5.38 (.96) |
| | Education science students | 5.94 (.93) | 5.75 (1.24) |
| | Medicine students | 5.33 (1.05) | 5.27 (1.22) |
| | Philosophy students | 3.40 (1.14) | 4.40 (1.52) |
| | Sociology students | 4.81 (1.52) | 5.88 (.96) |
| | OVERALL | 5.19 (1.02) | 5.44 (1.09) |
| Peripheral subgroups | Arabic studies students | 1.80 (.77) | 2.40 (1.30) |
| | Classical studies students | 3.00 (1.25) | 2.73 (1.22) |
| | Mineralogy students | 2.20 (1.08) | 2.80 (1.66) |
| | Theology students | 2.67 (1.11) | 3.47 (1.36) |
| | Slavic studies students | 2.67 (.98) | 2.60 (1.24) |
| | OVERALL | 2.39 (.89) | 2.77 (1.09) |
| Filler subgroups | Geography students | 3.93 (1.22) | 3.60 (1.45) |
| | Pharmacy students | 4.8 (1.32) | 4.20 (1.27) |
| | Romance philology students | 4.40 (1.68) | 3.73 (1.39) |
| Non-subgroups | Architecture students, theatre science students, veterinary medicine students, hydrology students, logopedics students, marine biology students | | |

*Note. N*s ranged from 15 to 16 per subgroup; except for “philosophy students” due to oversight ($n = 5$).

Table A2

*Stimulus material for the categorization task (Pretest, Chapter 3).*

| Stimuli for categorization task | | Certainty of inclusion (1-7) *M* (*SD*) |
|---|---|---|
| Non-subgroups – newly presented | Agronomy students | 3.40 (1.81) |
| | Ethnology students | 4.67 (1.49) |
| | Health science students | 4.56 (1.90) |
| | Italian studies students | 3.63 (1.96) |
| | Japanese studies students | 2.69 (1.74) |
| | Journalism students | 3.97 (1.77) |
| | Nursing science students | 3.77 (1.76) |
| (known - presented in learning task) | Veterinary medicine students | 4.17 (1.88) |
| | OVERALL | 3.87 (1.20) |
| Subgroups – newly presented | Art history students, geophysics students, Indo-European studies students, primeval and ancient history students, South Eastern Europe studies students | |
| Subgroups – known - presented in learning task (central/peripheral) | Communication science students/classical studies students, medicine students/theology students, sociology students/Slavic studies students, geography students, pharmacy students, Romance philology students | |

*Note*. *N*s were either 16 or 30 per subgroup.

Table A3

*Correlations of variables within the single experimental conditions (Experiment 1, Chapter 3).*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. |
|---|---|---|---|---|---|---|---|---|
| 1. SG identification (before manipulation) | | .14 | .46† | .22 | -.21 | .22 | -.33 | -.46 |
| 2. SOG identification | -.13 | | .59* | .48† | .41 | .30 | .21 | .37 |
| 3. SOG entitativity | .01 | .74* | | .09 | -.06 | .26 | -.04 | -.14 |
| 4. Inclusion of non-subgroups | -.39 | -.29 | -.20 | | .14 | .03 | .11 | .24 |
| 5. Latencies of categorization decisions | -.34 | .19 | .04 | .43 | | .13 | -.22 | -.45 |
| 6. Personal need for structure | -.07 | .07 | .45† | .34 | -.01 | | -.56* | -.44 |
| 7. Attitudes towards potential subgroups | -.14 | .25 | .24 | -.43 | -.29 | .19 | | .52† |
| 8. Attitudes towards diversity | -.06 | .22 | .06 | -.12 | .38 | -.53* | -.02 | |

*Note*. SG – subgroup, SOG - superordinate group. Correlations within the central subgroup condition ($n$ = 14) are presented above the diagonal and correlations within the peripheral subgroup condition ($n$ = 15) are presented below the diagonal. * $p < .05$; † $p < .10$.

Table A4

*Factor loadings and communalities for the four extracted factors of the questions about the taste in music (Experiment 2, Chapter 3).*

| | Factor loadings[a] | | | | Communalities[b] |
|---|---|---|---|---|---|
| | Factor 1 | Factor 2 | Factor 3 | Factor 4 | |
| I like it when somebody expresses its taste in music through his/her outfit. | | .77 | | | .65 |
| I am interested in music. | | | .83 | | .72 |
| I have an idea of real good music. | | | .75 | | .63 |
| My taste in music is at random. | .78 | | | | .69 |
| I am open for every music genre. | .76 | | | | .66 |
| I am one of those who hear basically one music genre. | -.74 | | | | .75 |
| I have a top-five-list of favourite bands. | -.41 | .44 | | .59 | .71 |
| I do not hear German folk music. | | | | .81 | .71 |
| People who are fan of only one music genre are often intolerant against fans of other music genres. | .50 | | | | .42 |
| I often hear music. | | .62 | .61 | | .76 |
| I love it to experience live concerts. | | .56 | | | .41 |
| I do not like metal music at all. | | -.75 | | | .57 |

*Note.* a - Only factor loadings higher than .40 are indicated. b - Communalities after extraction.

Table A5

*Correlations of variables within the single experimental conditions (Experiment 2, Chapter 3).*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. |
|---|---|---|---|---|---|---|---|---|---|
| 1. Subgroup identification (pre-manipulation) | | .42* | .28† | .05 | -.01 | .25 | .11 | -.03 | -.18 |
| 2. SOG identification | .61* | | .63* | -.01 | -.25 | .25 | .15 | .04 | -.12 |
| 3. SOG entitativity | .10 | .17 | | -.19 | .06 | .13 | -.09 | -.15 | .12 |
| 4. Inclusion of non-subgroups | .20 | .21 | -.21 | | -.23 | -.28† | .12 | .10 | -.12 |
| 5. Personal need for structure | .46* | .47* | .15 | -.01 | | -.43* | -.34* | -.09 | -.09 |
| 6. Mood | .35† | .41* | .01 | .04 | -.21 | | .31† | .11 | .06 |
| 7. Attitudes towards potential subgroups | -.03 | -.11 | .26 | .30 | -.23 | -.06 | | .36* | -.28† |
| 8. Attitudes towards diversity | -.13 | -.28 | -.12 | .12 | -.44* | .09 | <.001 | | -.19 |
| 9. Open-mindedness of taste in music | -.35† | -.49* | -.16 | .09 | -.12 | -.51* | .19 | -.01 | |

*Note*. SOG - superordinate group. Correlations within the central subgroup condition ($n$ = 36) are presented above the diagonal and correlations within the peripheral subgroup condition ($n$ = 30) are presented below the diagonal. * $p < .05$; † $p < .10$.

Table A6

*Correlations of variables within the single experimental conditions (Experiment 3, Chapter 3).*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. |
|---|---|---|---|---|---|---|---|
| 1. SG identification (before manipulation) | | .82* | .19 | .30† | .21 | .30† | .31† |
| 2. SOG identification (before manipulation) | .72* | | .21 | .34* | .13 | .23 | .19 |
| 3. PNS (before manipulation) | -.03 | .04 | | .11 | .23 | -.09 | .40* |
| 4. Inclusion of non-subgroups | .08 | .02 | .03 | | .36* | .004 | -.14 |
| 5. Latencies of categorization decisions | .08 | .08 | -.18 | .12 | | -.27 | .26 |
| 6. Implicit association with the subgroup | -.15 | -.11 | -.06 | -.07 | -.17 | | .16 |
| 7. Clarity of subgroup | .34* | .32* | -.02 | .28† | -.19 | .14 | |

*Note*. SG – subgroup, SOG - superordinate group, PNS – Personal need for structure, IAT – Implicit association test. Correlations within the central subgroup condition ($n$ = 34) are presented above the diagonal and correlations within the peripheral subgroup condition ($n$ = 38) are presented below the diagonal. * $p < .05$; † $p < .10$.

Table A7

*Means, standard deviations, and t-values for prototypicality (for metal fans) and for perceived friendliness of different subgroups, and correlations of both ratings (pretest).*

| | Prototypicality | | Friendliness | | Correlation |
|---|---|---|---|---|---|
| | *M* (*SD*) | $t^a$ | *M* (*SD*) | $t^b$ | *r* |
| | *n* = 23 | *df* = 22 | *n* = 23 | *df* = 22 | |
| Black metal fans | 7.39 (2.64) | 2.53* | 6.43 (3.22) | 1.39 | -.07 |
| Death metal fans | 8.26 (2.86) | 3.79* | 6.35 (3.93) | 1.04 | .17 |
| Doom metal fans | 5.13 (2.58) | -1.62 | 7.04 (3.42) | 2.17* | -.05 |
| Gothic metal fans | 5.57 (2.94) | -.71 | 6.61 (2.78) | 1.92† | -.11 |
| Industrial metal fans | 4.09 (2.50) | -3.67* | 6.35 (2.62) | 1.55 | .09 |
| Metal core fans | 5.74 (2.72) | -.46 | 4.96 (3.05) | -.85 | -.14 |
| Nu metal fans | 4.17 (2.98) | -2.94* | 6.57 (3.00) | 1.70† | .28 |
| White metal fans | 3.39 (2.41) | -5.20* | 6.91 (2.64) | 2.56* | .15 |

*Note*: [a] *t*-tests against scale's midpoint (6); [b] *t*-tests against scale's midpoint (5.5); * $p < .05$

Table A8

*Correlations of variables within the single experimental conditions (Experiment 4).*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. |
|---|---|---|---|---|---|---|---|
| 1. Attitudes towards death metal fans | | .78* | .39* | .32* | -.07 | -.04 | .25 |
| 2. Friendliness of death metal fans | .74* | | .25 | .24 | .19 | -.13 | .06 |
| 3. Attitudes towards nu metal fans | .08 | .17 | | .88* | -.43* | .32* | -.02 |
| 4. Friendliness of nu metal fans | .03 | -.03 | .76* | | -.38* | .29† | -.09 |
| 5. Conventional attitudes regarding metal music | -.09 | .02 | -.21 | -.28† | | -.63* | .06 |
| 6. Diversity of metal fans | .14 | -.01 | .13 | .17 | -.36* | | -.31* |
| 7. SOG identification (before manipulation) | .18 | .39* | -.37* | -.55* | .45* | -.14 | |

*Note.* Correlations within the unity condition (n = 43) are presented above the diagonal and correlations within the diversity condition (n = 45) are presented below the diagonal. SOG – superordinate group. * $p < .05$; † $p < .10$.

Table A9. *Correlations of variables within the two experimental conditions (Experiment 5)*

| | 1. | 2. | 3. | 4. | 5. | 6. |
|---|---|---|---|---|---|---|
| 1. Identification (combined) | | .49* | -.01 | -.11 | -.30* | .22† |
| 2. Groupness of SOG | .38* | | -.10 | -.22† | -.24† | .35* |
| 3. Amount of diversity of SOG | -.21 | -.22 | | .29* | .12 | -.25† |
| 4. Attitudes towards nu metal fans | .09 | -.13 | -.18 | | .70* | -.21 |
| 5. Friendliness of nu metal fans | .18 | -.23 | -.16 | .67* | | -.39* |
| 6. Conventional attitudes | -.08 | .04 | .10 | -.19 | -.36* | |

*Note*. Correlations within the central subgroup condition ($n$ = 57) are presented above the diagonal and correlations within the peripheral subgroup condition ($n$ = 48) are presented below the diagonal. SOG – superordinate group.* $p < .05$, † $p < .10$.

Table A10. *Correlations of variables within the control condition (n = 58; Experiment 5)*

| | 1. | 2. | 3. | 4. | 5. | 6. |
|---|---|---|---|---|---|---|
| 1. Identification (combined) | | .16 | .24† | -.06 | -.19 | .12 |
| 2. Groupness of SOG | | | .10 | .08 | .01 | .03 |
| 3. Amount of diversity of SOG | | | | -.18 | -.16 | .09 |
| 4. Attitudes towards nu metal fans | | | | | .71* | -.24† |
| 5. Friendliness of nu metal fans | | | | | | -.43* |
| 6. Conventional attitudes | | | | | | |

*Note*. SOG – superordinate group. * p < .05; † p < .10.

Table A11. *Factor loadings and communalities for the subgroup and superordinate group identification items (Experiment 5).*

| Identification level and items | Factor loadings[a] | | | | Communalities[b] |
|---|---|---|---|---|---|
| | Pattern matrix | | Structure matrix | | |
| | Factor 1 | Factor 2 | Factor 1 | Factor 2 | |
| Subgroup | | | | | |
| I see myself belonging to DM fans. | .81 | | .80 | .44 | .64 |
| During my leisure time, I often occupy myself with DM. | | .72 | .51 | .78 | .61 |
| I identify with DM fans. | .92 | | .91 | .51 | .83 |
| I spend a lot of money for DM (concerts, festivals, CDs, etc.). | | .63 | .59 | .76 | .61 |
| I feel connected to DM fans. | .90 | | .88 | .48 | .77 |
| I see myself as prototypical DM fan. | .83 | | .78 | | .61 |
| Superordinate group | | | | | |
| I see myself belonging to metal fans. | .71 | | .75 | .47 | .56 |
| During my leisure time, I often occupy myself with metal. | | .91 | .42 | .86 | .74 |
| I identify with metal fans. | .75 | | .82 | .56 | .69 |
| I spend a lot of money for metal (concerts, festivals, CDs, etc.). | | .84 | .46 | .83 | .69 |
| I feel connected to metal fans. | .66 | | .78 | .58 | .63 |

*Note*. DM = death metal fan; a - Only factor loadings greater than .40 are indicated; b - Communalities after extraction.

Table A12

*Correlations of variables within the two experimental conditions (Experiment 6).*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. |
|---|---|---|---|---|---|---|---|---|
| 1. SOG identification | | .73* | .25† | .66* | .29† | -.09 | -.04 | .29* |
| 2. SG identification | .52* | | .26† | .62* | .23 | .07 | -.11 | .12 |
| 3. SG prototypicality (pre) | -.16 | .04 | | .22 | .16 | .06 | -.13 | -.15 |
| 4. Groupness of SOG | .07 | .16 | .03 | | .10 | .20 | .11 | .31* |
| 5. Diversity of SOG | .18 | -.04 | -.29* | -.18 | | -.10 | -.01 | .12 |
| 6. Attitudes towards nu metal fans | .08 | .23 | .05 | .37* | .02 | | -.01 | .14 |
| 7. Friendliness of nu metal fans | -.27† | .09 | -.10 | -.07 | -.13 | -.30* | | -.30* |
| 8. Conventional attitudes regarding metal music | .01 | .29* | .28† | .21 | -.55* | .25† | -.04 | |

*Note*. Correlations within the central subgroup condition ($n$ = 44) are presented above the diagonal and correlations within the peripheral subgroup condition ($n$ = 45) are presented below the diagonal. SG – subgroup; SOG – superordinate group. * $p < .05$; † $p < .10$

Table A13. *Factor loadings and communalities for the subgroup and superordinate group identification items (Experiment 6).*

| Identification level and items | Factor loadings[a] | | | | Communalities[b] |
|---|---|---|---|---|---|
| | Pattern matrix | | Structure matrix | | |
| | Factor 1 | Factor 2 | Factor 1 | Factor 2 | |
| Subgroup | | | | | |
| I see myself belonging to DM fans. | .85 | | .81 | .41 | .67 |
| During my leisure time, I often occupy myself with DM. | .79 | | .81 | .47 | .65 |
| I identify with DM fans. | .86 | | .88 | .51 | .77 |
| I spend a lot of money for DM (concerts, festivals, CDs, etc.). | .70 | | .76 | .50 | .59 |
| I feel connected to DM fans. | .82 | | .88 | .57 | .80 |
| I see myself as prototypical DM fan. | .87 | | .81 | | .66 |
| Superordinate group | | | | | |
| I see myself belonging to metal fans. | | .83 | .48 | .84 | .71 |
| During my leisure time, I often occupy myself with metal. | | .92 | .41 | .86 | .75 |
| I identify with metal fans. | | .71 | .65 | .85 | .76 |
| I spend a lot of money for metal (concerts, festivals, CDs, etc.). | | .89 | .43 | .86 | .74 |
| I feel connected to metal fans. | | .79 | .60 | .88 | .80 |

*Note.* DM = death metal fan; a - Only factor loadings greater than .40 are indicated; b - Communalities after extraction.

Table A14

*Correlations for independent and dependent variables (Experiment 7).*

| | 1. | 2. | 3. | 4. | 5. | 6. |
|---|---|---|---|---|---|---|
| 1. Scott's H | | .01 | .35† | .01 | .42* | .19 |
| 2. SOG representation | -.12 | | .33† | .18 | -.15 | .41* |
| 3. Attitudes towards Arabic studies students | -.18 | -.41* | | .25 | -.04 | .49* |
| 4. Feeling towards gay men | -.06 | .11 | -.02 | | .16 | .10 |
| 5. Feeling towards lesbians | -.17 | -.11 | .18 | .36† | | -.09 |
| 6. SG identification (before manipulation) | .01 | -.08 | .06 | -.09 | -.01 | |

*Note*. Correlations within the prototype condition ($n$ = 27) are presented above the diagonal and correlations within the exemplar condition ($n$ = 27) are presented below the diagonal. * $p < .05$; † $p < .10$

## List of all items

| Original items | Translation |
|---|---|
| **Pretest (Chapter 3)** | |
| Identification with the group of students at the university | |
| Ich identifiziere mich mit der Gruppe der Studierenden der FSU Jena. | I identify with the group of students at the University of Jena. |
| Mich verbindet nichts mit der Gruppe der Studierenden der FSU Jena. | I have nothing in common with the group of students at the University of Jena. |
| Ich bin froh Student/-in an der FSU Jena zu sein. | I am happy to be a student at the University of Jena. |
| Ich fühle mich mit der Gruppe der Studierenden der FSU sehr verbunden. | I feel very connected to the group of students at the University of Jena. |
| Ich glaube, dass ich so wie andere Studierende der FSU Jena bin. | I think I am like other students at the University of Jena. |
| In der Gruppe der Studierenden der FSU Jena erkenne ich mich wieder. | I recognize myself in the group of students at the university of Jena. |
| Entitativity of the group of students at the university (adapted from Rydell & McConnell, 2005) | |
| Jede "Gruppe" besteht aus einer bestimmten Ansammlung von Personen. Doch nicht alle Personenansammlungen bilden gleichermaßen eine "Gruppe". Zu welchem Ausmaß bilden die Studierenden der FSU Jena eine Gruppe? | Each “group” is a collection of people. However, not all collections of people constitute a “group” to the same degree. To what extent do you think that students at the University of Jena form a group? |
| Wie oft interagieren Mitglieder der Gruppe der Studierenden der FSU Jena miteinander? | How often do members of the group of students at the University of Jena interact with each other? |
| Wie sehr wirkt sich im Allgemeinen das Verhalten von einzelnen Mitgliedern der Gruppe der Studierenden der FSU Jena auf andere Mitglieder der Gruppe der Studierenden der FSU Jena aus? | To what extent do you believe that members of the group of students at the University of Jena are affected by the behaviour of other students at FSU Jena? |
| Wie ähnlich sind sich die Mitglieder der Gruppe der Studierenden der FSU Jena untereinander? | How similar are members of the group of students at University of Jena? |
| Wie organisiert ist die Gruppe der Studierenden der FSU Jena? | How well organized do you think the group of students at the University of Jena is? |
| Wie motiviert sind die Studierenden der FSU Jena um ihre gemeinsamen Gruppenziele zu erreichen? | How motivated to achieve their group’s goals are the students at the University of Jena? |
| Wie strukturiert ist die Gruppe der Studierenden der FSU Jena? | How structured is the group of students at the University of Jena is? |
| Wie verpflichtet fühlen sich die einzelnen Mitglieder der Gruppe der Studierenden der FSU Jena? | How committed are the individual members of the group of students at the University of Jena to their group? |

| | |
|---|---|
| Zu welchem Ausmaß verfolgen alle Mitglieder der Studierenden der FSU Jena gemeinsame Ziele? | To what extent do members of the group of students at the University of Jena pursue common goals? |

**Experiment 1 (Chapter 3)**

Identification with psychology students

| | |
|---|---|
| Ich identifiziere mich mit den Psychologie-Studierenden. | I identify with psychology students. |
| Ich fühle mich den Psychologie-Studierenden stark verbunden. | I feel a strong connection with the group of psychology students. |
| Ich bin gern Psychologie-Studierende/-r. | I like being a psychology student. |

Need for structure (adapted from Machunsky & Meiser, 2006)

| | |
|---|---|
| Im Moment würde es mich aus der Fassung bringen, wenn ich in eine Situation käme, in der ich nicht wüsste, was mich erwartet. | At the moment it would disconcert me to enter a situation in which I do not know what to expect. |
| Gerade würde es mich nicht stören, wenn mich Dinge aus meiner täglichen Routine bringen. | At the moment, I would not be bothered by things that interrupt my daily routine. |
| Im Moment mag ich es, wenn alles seinen Platz hat und alles an seinem Platz ist. | At the moment, I like to have place for everything and everything in its place. |
| Momentan mag ich unklare Situationen nicht. | Now, I don't like situations that are unclear. |
| Im Moment wäre ich ungern mit Personen zusammen, deren Verhalten nicht vorhersehbar ist. | At the moment, I would not like to be with people whose behaviour is unpredictable. |
| Gegenwärtig würde ich die Herausforderung genießen, mich in einer unvorhersehbaren Situation zu befinden. | At present, I would enjoy the challenge of being in an unpredictable situation. |
| Ich fühle mich gerade unwohl, da ich Situationen bevorzuge, in denen Regeln klar sind. | I feel uncomfortable at present, because I prefer situations in which the rules are clear. |

Attitudes towards peripheral subgroups

| | |
|---|---|
| Ich würde gern mehr Italianistik-Studierende [Agrarwissenschaftsstudierende] kennen lernen. | I would like to get to know more Italian studies students [agronomy students]. |
| Ich finde Italianistik-Studierende [Agrarwissenschaftsstudierende] sehr sympathisch. | I like Italian studies students [agronomy students]. |
| Wenn ich auf einer Party jemanden treffe, der Italianistik [Agrarwissenschaft] studiert, bemühe ich mich, mit ihm/ihr ins Gespräch zu kommen. | If I meet somebody studying Italian studies [agronomy] at a party, I try to start a conversation with him or her. |

Attitudes towards diversity

| | |
|---|---|
| Ich finde es besser, wenn es an einer Universität nur wenige Studierendengruppen gibt, damit diese besser unterstützt werden können. | I prefer it when a university consists of only few students groups so that they can be supported better. |
| Es ist eine Bereicherung, viele verschiedene | It is beneficial to have many diverse student |

| | |
|---|---|
| Studierendengruppen an der Universität zu haben. | groups at the university. |
| Wenn es zu viele unterschiedliche Studierendengruppen an einer Universität gibt, dann gibt es zu viele unvereinbare Ziele und Vorstellungen. | If there are too many different students group at a university, there are too many incompatible goals and beliefs. |
| Es kann für den Ruf einer Universität nur von Vorteil sein, wenn sie aus vielen Studierendengruppen besteht. | It can only be an advantage for the prestige of a university to consist of several students groups. |

**Experiment 2 (Chapter 3)**

Identification with psychology students at the University of Jena

| | |
|---|---|
| Ich sehe mich selbst als Psychologie-Studierende/-n der FSU Jena. | I see myself as a psychology student at the University of Jena. |
| Ich bin froh, Psychologie-Studierende/-r der FSU Jena zu sein. | I am happy to be a psychology student at the University of Jena. |
| Ich fühle mich den Psychologie-Studierenden der FSU Jena stark verbunden. | I feel a strong connection with psychology students at the University of Jena. |
| Ich identifiziere mich mit anderen Psychologie-Studierenden der FSU Jena. | I identify with other psychology students at the University of Jena. |

Mood (Steyer, Schwenkmezger, Notz, & Eid, 1994)

| | |
|---|---|
| Im Moment fühle ich mich … | At the moment, I feel … |
| zufrieden | satisfied |
| ruhelos | restless |
| schlecht | bad |
| gelassen | calm |
| gut | good |
| unruhig | agitated |
| unwohl | unwell |
| entspannt | relaxed |
| wohl | well |
| ausgeglichen | balanced |
| unglücklich | unhappy |
| unzufrieden | dissatisfied |
| angespannt | tense |
| glücklich | happy |
| nervös | nervous |

| | |
|---|---|
| ruhig | calm |

Attitudes towards potential students

| | |
|---|---|
| Ich würde gern mehr Italianistik-Studierende [Agrarwissenschaftsstudierende/Kunstgeschichte-Studierende] kennen lernen. | I would like to get to know more Italian studies [agronomy/art history] students. |
| Ich finde Italianistik-Studierende [Agrarwissenschaftsstudierende/Kunstgeschichte-Studierende] sehr sympathisch. | I like Italian studies [agronomy/art history] students. |
| Wenn ich auf einer Party jemanden treffe, der Italianistik [Agronomie/Kunstgeschichte] studiert, bemühe ich mich, mit ihm/ihr ins Gespräch zu kommen. | If I meet somebody who studies Italian studies [agronomy/art history] at a party, I try to get chatting with him or her. |
| Mit Italianistik-Studierenden [Agrarwissenschaftsstudierenden/Kunstgeschichte-Studierenden] möchte ich lieber nichts zu tun haben. | I prefer not to have anything to do with Italian studies [agronomy/art history] students. |

Music preferences

| | |
|---|---|
| Ich finde es gut, wenn jemand seinen Musikgeschmack auch durch sein Outfit ausdrückt. | I like it when somebody expresses their taste in music through their outfit. |
| Ich interessiere mich für Musik. | I am interested in music. |
| Ich habe Ahnung von richtig guter Musik. | I have an idea of real good music. |
| Meinen Musikgeschmack könnte man als „Querbeet“ bezeichnen. | You could call my taste in music random. |
| Ich bin jeder Musikrichtung gegenüber offen. | I am open for every music genre. |
| Ich gehöre zu den Menschen, die hauptsächlich eine ganz bestimmte Musikrichtung hören. | I am one of those people who mainly listen to one particular music genre. |
| Ich habe eine Top-Five-Liste meiner Lieblingsbands. | I have a top-five-list of my favourite bands. |
| Ich höre keine deutsche Volksmusik. | I do not listen to German folk music. |
| Menschen, die nur Fan einer bestimmten Musikrichtung sind, sind meist intolerant gegenüber Fans anderer Musikrichtungen. | People who are fans of only one music genre are often intolerant towards fans of other music genres. |
| Ich höre viel Musik. | I listen to music a lot. |
| Ich liebe es Konzerte live zu erleben. | I love experiencing live concerts. |
| Ich mag Metal-Musik überhaupt nicht. | I do not like metal music at all. |

**Experiment 3 (Chapter 3)**

Need for structure (Machunsky & Meiser, 2006)

| | |
|---|---|
| Es bringt mich aus der Fassung, wenn ich in eine Situation komme, in der ich nicht weiß, was mich zu erwarten hat. | It would disconcert me to enter a situation in which I do not know what to expect. |

| | |
|---|---|
| Es stört mich nicht, wenn mich Dinge aus meiner täglichen Routine bringen. | I would not be bothered by things that interrupt my daily routine. |
| Ich mag unklare Situationen nicht. | I like to have place for everything and everything in its place. |
| Ich hasse es, meine Pläne in der letzten Minute zu ändern. | I don't like situations that are unclear. |
| Ich bin ungern mit Leuten zusammen, deren Verhalten nicht vorhersehbar ist. | I would not like to be with people whose behaviour is unpredictable. |
| Ich genieße die Herausforderung, mich in unvorhersehbaren Situationen zu befinden. | I would enjoy the challenge of being in an unpredictable situation. |
| Ich fühle mich unwohl, wenn die Regeln in einer Situation unklar sind. | I feel uncomfortable because I prefer situations in which the rules are clear. |

Distinctiveness of psychology students

| | |
|---|---|
| Verglichen mit anderen Studierendengruppen der FSU teilen Psychologie-Studierende viele Eigenschaften miteinander. | Compared to other student groups, psychology students share many characteristics. |
| Psychologie-Studierende unterscheiden sich eindeutig von anderen Studierendengruppen der FSU. | Psychology students differ distinctly from other student groups at the University of Jena |
| Psychologie-Studierende sind von den anderen Studierendengruppen der FSU leicht abgrenzbar. | Psychology students are easily distinguishable from other student groups at the University of Jena. |
| Wie sehr stellen Psychologie-Studierende eine gut definierte Gruppe dar? | To which extent do psychology students constitute a well-defined group? |

**Pretest of Experiments 4-6 (Chapter 4)**

Identification with metal fans

| | |
|---|---|
| Ich sehe mich selbst Metal-Fans zugehörig. | I see myself as belonging to metal fans. |
| Es hat für mich keine große Bedeutung ein Metal-Fan zu sein. | Being a metal fan has no great importance to me. |
| In meiner Freizeit beschäftige ich mich oft mit Metal. | During my leisure time, I often occupy myself with metal. |
| Ich identifiziere mich mit Metal-Fans. | I identify with metal fans. |
| Für Metal gebe ich viel Geld aus (Konzerte, Festivals, CDs etc.) | I spend a lot of money on metal (for concerts, festivals, CDs, etc.). |
| Ich fühle mich mit Metal-Fans verbunden. | I feel connected to metal fans. |

**Experiment 4 (Chapter 4)**

Conventional attitudes regarding metal music (* adapted from Funke, 2005)

| | |
|---|---|
| Alt Bewährtes sollte neuen Einflüssen vorgezogen werden. | Well established things should be preferred to new influences. |

| | |
|---|---|
| Die Abkehr von Traditionen wird sich immer mehr als Fehler herausstellen.* | Renouncing tradition will increasingly turn out to be a mistake. |
| Man sollte alten, traditionellen Grundsätzen weniger Beachtung schenken. | Less attention should be paid to old, traditional principles. |
| Vieles von früher ist dem Heutigen überlegen. | Many things from previous times are superior to the things of today. |

Attitudes towards death metal fans/nu metal fans

| | |
|---|---|
| Ich würde gern mehr Death Metal- [Nu Metal-] Fans kennen lernen. | I would like to get to know more death metal [nu metal] fans. |
| Wenn ich auf einem Festival einen Death Metal- [Nu Metal-] Fan treffe, finde ich es interessant, mit ihm ins Gespräch zu kommen. | If I meet a death metal [nu metal] fan at a festival, I think it is interesting to chat with him or her. |
| Mit Death Metal- [Nu Metal-] Fans möchte ich privat lieber nichts zu tun haben. | I prefer not to have anything to do with death metal [nu metal] fans in my private life. |

Diversity attitudes

| | |
|---|---|
| Es würde den Metal mehr vorantreiben, wenn die Musik und ihre Fans nicht in so viele verschiedene Richtungen gehen würden. | Metal music would be promoted, if the music and its fans were not divided into so many different subgenres. |
| Es ist eine Bereicherung für den Metal und seine Fans, dass er aus so vielen verschiedenen Richtungen besteht. | It is beneficial for metal music to consist of so many subgroups. |
| Wenn es viele Richtungen von Metal-Musik und ihren Fans gibt, gibt es zu viele unvereinbare Ziele und Ideen. | If there are too many subgenres of metal music and their fans, there are too many incompatible goals and ideas. |
| Für das Bild von Metal „nach außen“ ist es gut, wenn die Musik und ihre Fans aus vielen Richtungen bestehen. | For the image of metal, it is an advantage that the music and its fans consist of many subgenres. |

**Experiment 5 (Chapter 4)**

Identification as death metal fan

| | |
|---|---|
| Ich sehe mich selbst Death Metal-Fans zugehörig. | I see myself as belonging to DM fans. |
| In meiner Freizeit beschäftige ich mich oft mit Death Metal. | During my leisure time, I often occupy myself with DM. |
| Ich identifiziere mich mit Death Metal-Fans. | I identify with DM fans. |
| Für Death Metal gebe ich viel Geld aus (Konzerte, Festivals, CDs etc.). | I spend a lot of money for DM (concerts, festivals, CDs, etc.). |
| Ich fühle mich mit Death Metal-Fans verbunden. | I feel connected to DM fans. |
| Ich sehe mich selbst als einen typischen Death Metal-Fan. | I see myself as typical DM fan. |

**Experiment 6 (Chapter 4)**

Attitudes towards nu metal fans

| | |
|---|---|
| Ich würde gern mehr Nu Metal-Fans kennen lernen. | I would like to get to know more nu metal fans. |
| Wenn ich auf einem Festival einen Nu Metal-Fan treffe, finde ich es interessant, mit ihm ins Gespräch zu kommen. | If I meet a nu metal fan at a festival, I think it is interesting to chat with him or her. |
| Mit Nu Metal-Fans möchte ich privat lieber nichts zu tun haben. | I prefer not to have anything to do with nu metal fans in my private life. |
| Ich finde es besser, eher keine Nu Metal-Fans im Freundeskreis zu haben. | I think it is better not to have nu metal fans among my friends. |

**Experiment 7 (Chapter 5)**

Identification with students of same subject

| | |
|---|---|
| Ich bin gerne ein Student/-in meines Studienfachs. | I like to be student of my subject. |
| Ich fühle mich gegenüber anderen Studierenden meines Studienfachs verpflichtet. | I feel committed to students of my subject. |
| Ich fühle mich den Studierenden meines Studienfachs zugehörig. | I belong to students of my subject. |
| Ich habe mit Studierenden meines Studienfachs mehr gemeinsam als mit Studierenden anderer Fachrichtungen. | I have more in common with students of my subject than with students of other subjects. |

# Summary

"Embrace diversity" is the headline of many campaigns supposed to make people endorse the variety of subgroups within large-scale groups (e.g., concerning different cultures, religions, sexual orientations, physical handicaps, mental illnesses). Apparently, activating diversity within large-scale groups has been used as a means to increase tolerance and to promote the acceptance of minorities. Previous research has shown that emphasizing diversity within large-scale groups can be a beneficial way to improve the relations between subgroups (Richeson & Nussbaum, 2004; Vorauer, Gagnon, & Sasaki, 2009; Waldzus, Mummendey, Wenzel, & Weber, 2003). In order to be more tolerant towards other subgroups, Mummendey and Wenzel (1999) suggested that group members need to have a complex cognitive representation of the common superordinate group (SOG) in mind rather than a simple one.

In turn, sociological analyses in multicultural nations have drawn a different picture (e.g., Banerjee & Linstead, 2001; Berry, 1991; Oliver & Wong, 2003). For instance, Verkuyten (2004) has shown that members of the Dutch majority subgroup in the Netherlands reacted rather ambivalently when thinking about the cultural diversity within their multicultural society. He extracted favouring (e.g., enrichment of life, increase of tolerance and personal learning, improved mutual understanding) and opposing (e.g., less unity of the nation, less functioning of the society, less social order, a lack of clear norms and values) arguments concerning multiculturalism. Overall, activating multiculturalism seems to be a mixed blessing.

In the current dissertation, I aimed at identifying conditions that influence whether activating diversity increases or decreases tolerance within the SOG. Research on diversity and tolerance in intergroup relations so far has primarily focussed on the effects of diversity activation compared with no diversity activation (Richeson & Nussbaum, 2004; Roccas & Amit, 2011; Vorauer et al., 2009; Wolsko, Park, Judd, & Wittenbrink, 2000). Furthermore, interindividual differences that can influence the outcomes of diversity activation were examined (Hutchison, Jetten, & Gutierrez, 2011; Roccas & Amit, 2011; Steffens, Reese, Ehrke, & Jonas, 2012; Wolf & Van Dick, 2008). In this thesis I went one step further and compared the impact of different forms of diversity activation. Based on findings on effects of category exemplar activation (e.g., Sia, Lord, Blessum, Ratcliff, & Lepper, 1997; Smith & Zárate, 1990), I argued that activating diversity using subgroups exemplars that are perceived as central for the SOG (e.g., Germans, Italians, or Swedes in the SOG of Europeans) has a more positive effect on tolerant

attitudes than activating peripheral subgroup exemplars (e.g., Monegasques, Cypriots, Lithuanians). As a first research question, I examined whether the outcomes of diversity activation depend on these types of activated subgroup exemplars in two sets of experiments (Chapters 3 and 4).

In Chapter 3, three experiments were described using a category learning task that either activated central or peripheral subgroup exemplars of the SOG of "students at the FSU Jena". Results indicated that the SOG boundary was less clear when participants (psychology students) learned the SOG representation with peripheral (versus central) subgroup exemplars (cf. Hahn, Elvin, & Bailey, 2005). Furthermore, Experiments 1 and 2 revealed that activating peripheral (versus central) subgroups led to less positive attitudes towards other (sub-)groups and towards diversity. Individuals' need for structure (Neuberg & Newsom, 1993) also predicted these attitudes. Beyond that, I could show in Experiment 2 that activating peripheral (versus central) subgroups evoked less open-mindedness concerning their music preferences. Finally, Experiment 3 demonstrated that activating peripheral (versus central) subgroups had also an effect on the self-categorization process of low subgroup identifiers. They categorized themselves more on the subgroup than on the SOG level when the SOG boundary was perceived as unclear, compared with clear. Taken together, the results of Chapter 3 illustrated that activating peripheral (versus central) subgroups can decrease the perceived clarity of the SOG boundary and the tolerance. Furthermore, the findings suggest that activating peripheral (versus central) subgroups decreased the perceived cognitive structure of the social environment that needs to be regained. This was possible by either being less open towards deviance or by switching the self-category.

In Chapter 4, three experiments were presented within the SOG of metal music fans. They examined the effect of diversity activation with central versus peripheral subgroup exemplars on the perceived clarity of norms and values within a SOG (cf. Verkuyten, 2004). I argued that activating peripheral (versus central) subgroups increased group-based conservative attitudes within the context of metal fans (i.e., attitudes towards "old school" and traditional norms and values of metal music). Furthermore, I investigated its function for the tolerance towards a peripheral subgroup of nu metal fans. Prior to this, I demonstrated in Experiment 4 that activating a complex, compared with a simple, SOG representation has a positive effect on attitudes towards nu metal fans (Ehrke et al., 2012; Waldzus et al., 2005). In Experiments 5 and 6, results showed that activating peripheral, compared with central, subgroups triggered an increase of group-based conservatism. This, in turn, led to less positive attitudes towards nu metal fans. However, Experiment 6, revealed that this process only occurred for those

majority subgroup members who perceived their subgroup as prototypical. For those who perceived their subgroup as less prototypical for the SOG no such process was found.

To sum up, both chapters introduced an important moderator that influences whether diversity activation is more or less beneficial for tolerance among subgroup. They provide empirical evidence that activating diversity with peripheral subgroup exemplars compared with central ones can blur the definition of the SOG (i.e., perceived clarity of the SOG boundary). Furthermore, the results demonstrate a decrease tolerance of majority subgroup members when diversity is activated with peripheral subgroup exemplars compared with central ones – tolerance within and beyond a salient SOG context.

I proposed a possible way to increase tolerance in Chapter 5. Referring to the complexity assumption of the ingroup projection model (Mummendey & Wenzel, 1999), I argued that activating an exemplar-based category representation compared with a prototype-based category representation with non-social stimuli could be beneficial for tolerance (cf. Mullen, Pizzuto, & Foels, 2002). An exemplar-based category representation is supposed to be cognitively more complex than category representations that involve prototypes (Vanpaemels & Storms, 2008). For low subgroup identifiers, the hypothesis concerning attitudes towards a peripheral subgroup within the salient SOG of students was confirmed. They reported more positive attitudes towards a peripheral subgroup after the exemplar-based representation training than after the prototype-based representation training. Moreover, attitudes of heterosexual men towards gay men were more positive after the exemplar-based reprentation training than after the prototype-based representation training.

On a theoretical level, the current dissertation emphasised the necessity of differentiating the effects of activating a complex SOG group representation (Mummendey & Wenzel, 1999; Waldzus et al., 2003) and of activating diversity of subgroups (cf. Waldzus, 2010). This was not done in previous research. In the current dissertation, I contributed to this necessary step by elaborating on the effects of diversity activation.

When does activating diversity increase or decrease tolerance within the SOG? This doctoral dissertation revealed a pitfall of activating diversity within large-scale groups. This dissertation suggests that activating specific subgroups can have a substantial impact on the reactions of majority subgroup members. When they are confronted with diversity of their SOG in combination with peripheral (compared with central) subgroups, they react less tolerant towards other groups. The dissertation identified (a) the perception of a decreased

cognitive structure and (b) an increased endorsement of traditional norms and conventions of the SOG as underlying precursors of this reaction.

# Zusammenfassung

„Vielfalt“ ist das Stichwort zahlreicher Kampagnen, welche darauf abzielen, Menschen dazu zu bewegen die Vielzahl anderer Gruppen in ihrer eigenen Gruppe wertzuschätzen (z.B. hinsichtlich verschiedener Kulturen, Religionen, sexueller Orientierungen, psychischer Krankheiten). Die Aktivierung, das Bewusstmachen, von Vielfalt innerhalb von großen Gruppen scheint eine häufig verwendete Methode der Praxis zu sein um Toleranz zu fördern und um Akzeptanz gegenüber Minderheiten zu schaffen. Bisherige Forschung belegte, dass die Betonung der Vielfalt innerhalb von großen Gruppen vorteilhaft für Subgruppenbeziehungen sein kann (Richeson & Nussbaum, 2004; Vorauer, Gagnon, & Sasaki, 2009; Waldzus, Mummendey, Wenzel, & Weber, 2003). Mummendey und Wenzel (1999) schlugen vor, dass Gruppenmitglieder um toleranter gegenüber anderen Subgruppen zu sein eine komplexe kognitive Repräsentation der gemeinsamen übergeordneten Gruppe (ÜG) bräuchten anstelle einer einfachen Repräsentation.

Soziologische Analysen in multikulturellen Nationen hingegen zeichnen ein unterschiedliches Bild (z.B. Banerjee & Linstead, 2001; Berry, 1991; Oliver & Wong, 2003). Verkuyten (2004) zeigte beispielsweise, dass die niederländische Majorität in den Niederlanden eher zwiespältig über die kulturelle Vielfalt in ihrer multikulturellen Gesellschaft denkt. Er arbeitete befürwortende (z.B. Bereicherung des Lebens, Förderung der Toleranz und persönlicher Entwicklung, besseres gegenseitiges Verständnis) und ablehnende (z.B. weniger Einheit der Nation, weniger Funktionstüchtigkeit der Gesellschaft, weniger soziale Ordnung, Mangel an klaren Normen) Argumente bzgl. Multikulturalismus heraus. Multikulturalismus scheint demnach eher ein „zweischneidiges Schwert“ zu sein.

In der vorliegenden Dissertation soll es um die Identifikation von Bedingungen gehen, welche dazu führen können, dass sich die Aktivierung von Vielfalt einmal positiv und einmal negativ auf die Toleranz innerhalb einer ÜG auswirken kann. Die Forschung zum Thema Vielfalt und Toleranz in Intergruppenbeziehungen fokussierte bisher vor allem auf den Vergleich der Effekte von Vielfaltsaktivierung mit denen fehlender Vielfaltsaktivierung (Richeson & Nussbaum, 2004; Roccas & Amit, 2011; Vorauer et al., 2009; Wolsko, Park, Judd, & Wittenbrink, 2000) und auf die Untersuchung von interindividuellen Unterschieden, welche die Auswirkungen von Vielfaltsaktivierung beeinflussen könnten (Hutchison, Jetten, & Gutierrez, 2011; Roccas & Amit, 2011; Steffens, Reese, Ehrke, & Jonas, 2012; Wolf & Van Dick, 2008). In dieser Dissertation gehe ich einen Schritt weiter und vergleiche den Einfluss

von verschieden Formen von Vielfaltsaktivierung. Ich argumentiere basierend auf Befunden zu Auswirkungen der Aktivierung einzelner Exemplare einer Kategorie (Sia, Lord, Blessum, Ratcliff, & Lepper, 1997; Smith & Zárate, 1990), dass die Aktivierung von Vielfalt mit Subgruppenexemplaren, welche als zentral wahrgenommen werden (z.B. Deutsche, Italiener oder Schweden für „Europäer“), einen positiveren Einfluss auf tolerante Einstellungen hat als die Aktivierung von peripheren Subgruppenexemplaren (z.B. Monegassen, Zyprioten, Litauer). Als erste Forschungsfrage untersuche ich mit zwei Reihen von Experimenten, ob die Auswirkungen von Vielfaltsaktivierung von der Art der aktivierten Subgruppenexemplare abhängig sind (Kapitel 3 und 4).

In Kapitel 3 werden drei Experimente vorgestellt, welche eine Kategorie-Lernaufgabe verwendeten um zentrale oder periphere Subgruppen der ÜG „Studenten der FSU Jena“ zu aktivieren. Die Ergebnisse weisen darauf hin, dass die Grenze der ÜG weniger klar war, wenn die Teilnehmer (Psychologiestudierende) die Repräsentation der ÜG mit peripheren (verglichen mit zentralen) Subgruppenexemplaren lernten (vgl. Hahn, Bailey & Elvin, 2005). Des Weiteren zeigten die Experimente 1 und 2, dass die Aktivierung von peripheren (verglichen mit zentralen) Subgruppenexemplaren zu weniger positiven Einstellungen gegenüber anderen (Sub-)Gruppen und gegenüber Vielfalt führte. Das individuelle Bedürfnis nach Struktur der Teilnehmer (Neuberg & Newsom, 1993) sagte die Einstellungen ebenfalls vorher. Darüber hinaus konnte ich in Experiment 2 zeigen, dass die Aktivierung von peripheren (verglichen mit zentralen) Subgruppenexemplaren einen weniger offenen Musikgeschmack hervorrief. Experiment 3 wies auf, dass die Aktivierung von peripheren (verglichen mit zentralen) Subgruppenexemplaren ebenfalls einen Effekt auf den Selbstkategorisierungsprozess von niedrig identifizierten Individuen hat. Diese kategorisierten sich eher auf Subgruppenebene als auf Ebene der ÜG, wenn die Grenzen der ÜG unklar waren (verglichen mit klar). Zusammengenommen zeigen die Ergebnisse aus Kapitel 3, dass die Aktivierung von peripheren (verglichen mit zentralen) Subgruppenexemplaren die wahrgenommene Klarheit der ÜG-Grenzen und Toleranz gegenüber anderen Gruppen verringern kann. Die Ergebnisse weisen darauf hin, dass die Aktivierung von peripheren (verglichen mit zentralen) Subgruppenexemplaren möglicherweise die wahrgenommene kognitive Struktur der sozialen Umwelt verringerte, welche wieder hergestellt werden sollte. Dies wurde vermutlich einerseits durch weniger Offenheit gegenüber Abweichung oder durch einen Wechsel der Selbstkategorie erreicht.

In Kapitel 4 werden drei Experimente vorgestellt, welche in der ÜG „Metal-Fans“ durchgeführt wurden. Sie untersuchten den Einfluss von Vielfaltsaktivierung mithilfe peripherer (verglichen mit zentraler) Subgruppenexemplare auf die wahrgenommene Definiertheit der Normen und Werte der ÜG (vgl. Verkuyten, 2004). Meine Annahme war, dass die Aktivierung von peripheren (verglichen mit zentralen) Subgruppenexemplaren gruppenbezogene konservative Einstellungen verstärkt (d.h. Einstellungen gegenüber alten und traditionellen Normen und Werten der ÜG). Des Weiteren untersuchte ich deren Funktion für die Toleranz gegenüber der peripheren Subgruppe der Nu-Metal-Fans. Zuerst konnte ich mit Experiment 4 belegen, dass die Aktivierung einer komplexen Repräsentation der ÜG, verglichen mit einer einfachen, einen positiven Effekt auf die Einstellungen gegenüber Nu-Metal-Fans hat (vgl. Ehrke et al., 2012; Waldzus et al., 2005). In den Experimenten 5 und 6 zeigten die Ergebnisse, dass die Aktivierung von peripheren (verglichen mit zentralen) Subgruppenexemplaren verstärkte gruppenbezogene konservative Einstellungen hervorrief. Dies wiederum führte zu weniger positiven Einstellungen gegenüber Nu-Metal-Fans. Experiment 6 spezifizierte, dass dieser Prozess nur für Majoritätsmitglieder auftritt, welche ihre Subgruppe als prototypisch wahrnehmen. Für diejenige, welche ihre Subgruppe als weniger prototypisch für die ÜG wahrnahmen, trat dieser Prozess nicht auf.

Zusammengefasst zeigte sich in beiden Kapiteln ein wichtiger Moderator, welcher einen Einfluss darauf haben kann, ob die Aktivierung von Vielfalt mehr oder weniger förderlich für Toleranz zwischen Subgruppen ist. Die Kapitel lieferten empirische Evidenz, dass Vielfaltsaktivierung mit peripheren (verglichen mit zentralen) Subgruppenexemplaren die Definition der ÜG aufweichen kann (d.h. die wahrgenommene Klarheit der ÜG-Grenze). Weiterhin zeigten die Ergebnisse eine Abnahme der Toleranz von Majoritätsmitgliedern, wenn Vielfalt mit peripheren (verglichen mit zentralen) Subgruppenexemplaren aktiviert wurde – Toleranz innerhalb eines salienten ÜG-Kontextes und darüber hinaus.

In Kapitel 5 stelle ich eine mögliche Strategie vor um Toleranz zu fördern. Mit Bezug auf die Komplexitätsannahme des Eigengruppenprojektionsmodells (Mummendey & Wenzel, 1999) argumentiere ich, dass die Aktivierung einer exemplarbasierten Repräsentation einer Kategorie (verglichen mit einer prototypbasierten Repräsentation) mit nichtsozialen Stimuli förderlich für Toleranz sein könnte (vgl. Mullen, Pizzuto, & Foels, 2002). Eine exemplarbasierte Repräsentation einer Kategorie ist kognitiv komplexer als Repräsentationen, welche Prototypen beinhalten (Vanpaemels & Storms, 2008). Für niedrig identifizierte Subgruppenmitglieder wurde die Hypothese bzgl. der Einstellungen bestätigt. Diese

berichteten positivere Einstellungen gegenüber einer peripheren Subgruppe nach Training einer exemplarbasierten (verglichen mit einer prototypbasierten) Repräsentation. Darüber hinaus waren die Einstellungen von heterosexuellen Männern gegenüber Schwulen positiver nach Training einer exemplarbasierten (verglichen mit einer prototypbasierten) Repräsentation.

Auf theoretischer Ebene verdeutlicht die vorliegende Dissertation die Notwendigkeit, die Effekte der Aktivierung einer komplexen ÜG-Repräsentation (Mummendey & Wenzel, 1999; Waldzus et al., 2003) von denen der Aktivierung von Subgruppenvielfalt (vgl. Waldzus, 2010) voneinander abzugrenzen. Dies wurde in bisheriger Forschung vernachlässigt. In der vorliegenden Arbeit trug ich zu diesem notwendigen Schritt bei, indem ich die Effekte von Vielfaltsaktivierung auf Subgruppenbeziehungen verdeutlichte.

Wann fördert und wann verhindert nun Vielfaltsaktivierung Toleranz innerhalb einer ÜG? Diese Dissertation identifiziert eine mögliche Hürde für die Vielfaltsaktivierung innerhalb großer Gruppen. Die Ergebnisse deuten darauf hin, dass die Aktivierung von bestimmten Subgruppen einen substanziellen Einfluss auf die Reaktionen von Majoritätsmitgliedern haben kann. Werden sie mit Vielfalt ihrer ÜG in Kombination mit peripheren (verglichen mit zentralen) Subgruppen konfrontiert, reagieren sie weniger tolerant gegenüber anderen Gruppen. Die vorliegende Dissertation identifizierte (a) die Wahrnehmung einer verringerten kognitiven Struktur und (b) eine erhöhte Betonung traditioneller Normen und Konventionen der ÜG als zugrunde liegende Ursachen.

# Ehrenwörtliche Erklärung

Ich erkläre hiermit, dass mir die Promotionsordnung der Fakultät für Sozial- und Verhaltenswissenschaften der Friedrich-Schiller-Universität Jena bekannt ist.

Ferner erkläre ich, dass ich die vorliegende Arbeit selbst und ohne unzulässige Hilfe Dritter angefertigt habe. Alle von mir benutzten Hilfsmittel, persönliche Mitteilungen und Quellen sind in der Arbeit angegeben. In ihrer Funktion als Forschungsstudentin hat mich Nicole Methner bei der Konzeption und Durchführung der Experimente in Kapitel 4 unterstützt. Bei der Durchführung der empirischen Studien und der Dateneingabe in Kapitel 3 haben mich Maria Jung, Lisa Bockwoldt und Sandra Stange in ihrer Funktion als studentische Hilfskräfte unterstützt. Ferner haben mich bei der Rekrutierung der Teilnehmer und der Datenerhebung von Experiment 7 die Studierenden Maxi Böhm, Nadja Grass, Susanne Schuh, Tina Tschirner und Lisa Dietl unterstützt. Weitere Personen waren an der inhaltlich-materiellen Erstellung der Arbeit nicht beteiligt. Insbesondere habe ich hierfür nicht die Hilfe eines Promotionsberaters in Anspruch genommen und Dritte haben weder unmittelbar noch mittelbar geldwerte Leistungen von mir für Arbeiten erhalten, die im Zusammenhang mit dem Inhalt der vorgelegten Dissertation stehen.

Die Arbeit wurde weder im In- noch Ausland in gleicher oder ähnlicher Form einer anderen Prüfungsbehörde vorgelegt. Weder früher noch gegenwärtig habe ich an einer anderen Hochschule eine Dissertation eingereicht.

Ich versichere, dass ich nach bestem Wissen die reine Wahrheit gesagt und nichts verschwiegen habe.

_____ _____

Ort, Datum Unterschrift