Social projection vs. self-stereotyping

The role of socio-cognitive mindsets in the activation of cognitive inferential processes

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Dipl.-Psych. Florian Thurner

geboren am 01.12.1984 in Stuttgart

Dekan zum Zeitpunkt der Veröffentlichung:

Prof. Dr. Michael Diehl

Gutachter:

Prof. Dr. Thorsten Meiser

Prof. Dr. Jochen E. Gebauer

Prof. Dr. Dagmar Stahlberg

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„Wir zwei, lieber Freund, sind Sonne und Mond, sind Meer und Land. Unser Ziel ist nicht, ineinander überzugehen, sondern einander zu erkennen und einer im andern das sehen und ehren zu lernen, was er ist: des andern Gegenstück und Ergänzung.“

[“We are sun and moon, dear friend; we are sea and land. It is not our purpose to become each other; it is to recognize each other, to learn to see the other and honor him for what he is: each the other's opposite and complement.”]

— Hermann Hesse: Narziss und Goldmund

Introduction

For humans as social beings, it is important to belong to groups to satisfy basic needs as the need for safety, reproduction, and finally survival (Baumeister & Leary, 1995; Brewer, 1991). A quarter of a century ago, Social Identity Theory (SIT, Tajfel & Turner, 1986) and especially Self-Categorization Theory (SCT, Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) introduced the idea that the group and the individual are intrinsically connected, implying that the group can become part of the self to a certain degree. This way, one cannot study people's self-concepts without also taking into account their social group. One of SCT's hypotheses is that salience of a comparative dimension on the ingroup-outgroup level will increase the perception of similarity with ingroup members. This process is called *self-stereotyping* and is defined as a depersonalization of the individual's self-perception. This means that the individual will fall back on stereotypes which describe the character of the ingroup membership, and will attribute ingroup stereotypic traits to the self.

In the field of social cognition, also the opposite mechanism has drawn much attention: the attribution of characteristics of the self (preferences, attitudes, traits, or experiences) to another person or the ingroup. It is called *social projection* (Allport, 1924; e.g., Krueger & Clement, 1996), *self-anchoring* (e.g., Cadinu & Rothbart, 1996), or *false consensus* (e.g., Ross, Greene, & House, 1977), respectively. This process has, for the most part, been considered to be a cognitive phenomenon (e.g., Ames, 2004a, 2004b; Krueger & Clement, 1996). In contrast to cognition-based models of social projection, motivational accounts of social projection have received far less attention. Nevertheless, there is some empirical evidence for a motivational approach to social projection (Machunsky, Toma, Yzerbyt, & Corneille, 2014). It has been found that social projection serves a need for connectedness to others, a need for communion (Arndt, Greenberg, Solomon, Pyszczynski, & Schimel, 1999; Locke, Craig, Baik, & Gohil, 2012; Pyszczynski et al., 1996) implying that social projection may also serve as a means to regulate social distance. Recent research focuses on the idea that all factors causing a person to approach another person on a spatial dimension can also lead to an increase of social projection (Machunsky et al., 2014).

The determinants and antecedents of social projection and self-stereotyping have been topic of discussion, including the question under which conditions which process is

more likely to arise (Otten & Epstude, 2006). This discussion resulted in a chasm among researchers regarding the direction of overlapping mental representations of the self and the ingroup. Some researchers advocate social projection to be the predominant process and self-stereotyping to be only the exception from the rule (Krueger, 2007; Otten & Epstude, 2006). Others instead argument that self-stereotyping will commonly arise under certain circumstances (Latrofa, Vaes, Cadinu, & Carnaghi, 2010; Latrofa, 2008).

I propose that the predominance of the respective process depends on the context, more precisely on the currently active socio-cognitive mindset. This involves a corresponding type of self-construal and is triggered by certain situational cues. The goal of this dissertation is to examine possible conditions causing either social projection or self-stereotyping to occur, with a special focus on experimentally induced effects of primed independent or interdependent socio-cognitive mindsets (Singelis, 1994).

In the first chapter, models of social projection and implications from SCT (Turner et al., 1987) are reviewed and possible factors influencing the predominance of social projection or self-stereotyping are introduced. Chapter 2 proposes a model of socio-cognitive mindsets' effects on the occurrence and strength of social projection and self-stereotyping, incorporating the suggested factors. The main hypotheses of this dissertation are presented and an overview of the conducted experiments is given.

The empirical section of this thesis is divided into two parts. In the first part (Chapter 3), I report Experiments 1 through 3 in which the expected effects of different types of self-construal on social projection and self-stereotyping was to be established. It was predicted that a shift in a person's focus toward the own person should lead to more social projection. Vice versa, self-stereotyping should be the stronger process if a person's current focus is directed outwards and toward his or her ingroup. The second part of the empirical section (Chapter 4) focuses on alternative explanations for the first three experiments results', incorporating implications derived from Optimal Distinctiveness Theory (Brewer, 1991). Chapter 5 summarizes and discusses the results. Limitations of the presented experiments and implications for future research are considered.

1 Theoretical Background

An overview of the two phenomena of social projection and self-stereotyping is given. Moderating variables of both social projection and self-stereotyping will be presented and discussed.

1.1 Social and Personal Identity: The Self and the Ingroup

1.1.1 Social projection

The term "social projection" was originally coined by Allport (1924), one of the founders of experimental social psychology. He described it as the attitude and imagining involved in the reference of self-reactions to other people. Since then, research on social projection has placed emphasis on the false consensus effect (Mullen, Driskell, & Smith, 1989), showing that individuals who possess a certain characteristic (e.g., optimism), typically assess its prevalence in the population to be higher than individuals who do not possess the respective characteristic do (Ross et al., 1977). These effects have been reported in the domains of behaviors, traits, preferences, beliefs, and personal problems (Marks & Miller, 1987). The social-psychological construct of social projection[1] is nowadays referred to as the tendency to estimate characteristics, thoughts and behaviors of *others* to be similar to one's own (e.g., Ames, 2004a, 2004b; Krueger, 1998; Krueger & Stanke, 2001). This way, the projection of information about the self onto others can be used as a guideline to make judgments about another person or a group (e.g., Cadinu & Rothbart, 1996; Cho & Knowles, 2013). This process has been shown to be a robust phenomenon with a medium effect size in an early meta-analytic review (Mullen et al., 1985).

The more similar a person perceives him or herself to be to another person or group, the stronger the social projection which can be observed (Ames, 2004a; Ames, Weber, & Zou, 2012). Following Ames' (2004a) similarity contingency model, social projection is based on a process of inductive reasoning. Depending on the degree of perceived similarity to a target person or group either social projection occurs or existing

[1] As mentioned before, also the designations *self-anchoring* (e.g., Cadinu and Rothbart, 1996) and *false consensus* (e.g., Ross et al., 1977) are customary. Throughout this dissertation, the term *social projection* will be used.

stereotypes are activated to identify missing information on the social context. Social projection, in turn, may cause the degree of perceived similarity to increase.

In Clement and Krueger's view (2002), the effect of social projection is moderated by social categorization. Social categorization is the subdivision of the social context in two groups along certain characteristics—one is the ingroup, to which a person feels a sense of belonging, and an outgroup, which the person does not belong to (Kessler & Mummendey, 2007). Accordingly, social projection takes place particularly with respect to the ingroup, and can be observed only to a smaller degree or even not at all with respect to the outgroup if the social division into these two groups is salient (Bramel, 1963; Robbins & Krueger, 2005; Ward, 1967). This effect has been shown to be present also when employing minimal groups (e.g., Cadinu & Rothbart, 1996; Clement & Krueger, 2002; Krueger & Clement, 1996; Robbins & Krueger, 2005). For example, Otten and Wentura (2001) were able to show that a larger degree of perceived similarity may be observed with respect to a number of personality traits between the self and the ingroup compared to an outgroup. Some researchers interpret the effect of social categorization on social projection as social projection being a heuristic inductive inference process (Krueger & Clement, 1996; Krueger, Acevedo, & Robbins, 2005). According to this view, the self forms a small $N = 1$ sample, only if one is asked to make a judgment concerning the ingroup, not the outgroup. This course of action is not unreasonable, taking into account prior research according to which a reference to information about the self leads to normatively correct judgments (Dawes, 1989; Hoch, 1987). This notion also defies earlier interpretations of social projection to be a mere bias or an error (e.g., Ross et al., 1977).

It has been found that social projection serves a need for connectedness, a need for communion (Arndt et al., 1999; Locke et al., 2012; Pyszczynski et al., 1996), implying that social projection may also serve as a means to regulate social distance. In the recent past, research interests have expanded to include motivational aspects. Machunsky and colleagues (Machunsky et al., 2014) suggest that social projection can be conceptualized as an approach motion on the social dimension of psychological distance. Although approach and avoidance behavior is usually connected with the spatial dimension of psychological distance (Lewin, 1951), some authors have discussed the option that psychological distance may also be regulated on the social as well as on the temporal dimension (Seibt, Neumann, Nussinson, & Strack, 2008). Some authors have claimed

that similarity between the self and a social target may be considered as a form of "social" closeness (e.g., Heider, 2013; Tesser & Campbell, 1980), an assumption which has been implicated also in Construal Level Theory (see Trope, 2004; Liviatan, Trope, & Liberman, 2008). Following Machunsky and colleagues (2014), engaging in social projection leads to an increase in perceived similarity of self and target, which in turn results in a decrease of social distance. Accordingly, it may be possible that factors which cause a person to approach another person on a spatial dimension could lead to an increase of social projection by triggering an approach on the social dimension. In one of their studies, Machunsky and colleagues (2014) observed that targets with friendly facial expressions trigger more social projection than targets with a rather unfriendly expression. Also, targets which have been paired with a positive word in an evaluative conditioning paradigm are ascribed properties of the self to a larger extent than targets which have been paired with a negative word.

1.1.2 Self Categorization Theory and its implications

In contrast to the projection of one's own characteristics, thoughts, or feelings to other people or groups, via self-stereotyping, information on the ingroup is attributed to the self. Social Identity Theory (Tajfel & Turner, 1979) formalized the idea that the group and the individual are intrinsically connected and that group membership is an important source of a positive (social) identity. Self Categorization Theory (SCT; Turner et al., 1987) extended this notion. Here, the process of self-stereotyping is described as an approximation of the self-concept to an ingroup prototype. SCT distinguishes between a personal and a social self and provides a framework on how people create a connection between the self and the ingroup. Unlike the personal self that reflects the individual characteristics of the person, the social self is defined by group characteristics. Hence, without also taking into account a person's social group, one cannot study his or her self-concept adequately. An activation of the social self, accordingly, via a process of depersonalization, causes a person to increasingly define him or herself in accordance with the ingroup and their prototypical characteristics and behaviors (Turner et al., 1987): the individual will fall back on stereotypes, which describe the character of its ingroup membership, and will attribute ingroup stereotypic traits to the self.

According to SCT, an increase in the salience of social categories will increase the perception of similarity with ingroup members and hence the tendency for self-stereotyping (van Hogg & Turner, 1987). Similarly, other studies have shown self-stereotyping to be more pronounced when a social identity is salient as compared with instances when a personal identity is salient (Lorenzi-Cioldi, 1991; Onorato & Turner, 2004). This way, social identification affects social perceptions, feelings, and behaviors. Persons who identify strongly with their ingroup reflect on themselves in terms of their membership in a certain group, and may even act on behalf of the respective group (e.g., Spears, Doosje, & Ellemers, 1997; van Zomeren, Leach, & Spears, 2012). Degrees of identification with a certain group correspond in large parts with its valence. As such, it has been shown that university students are more eager to wear t-shirts with their university's emblem after their school's football team had won a game rather than after they lost (Cialdini et al., 1976). Similarly, people who displayed election posters in front of their houses were more willing to keep them visible after the elections if their party had won the elections (Boen & Vanbeselaere, 2002).

Based on a literature review, Krueger (2007) emphasizes additional factors to the salience of social categories and social identity influencing the tendency to self-stereotype. First, self-stereotyping tendencies are to be enhanced if the individual self is threatened. Pickett, Bonner, and Coleman (2002) showed that self-stereotyping is a response exhibited by individuals whose standing within the ingroup has been undermined. To test these ideas, they asked honors students to fill out a self-concept inventory. While some participants were given the bogus feedback that their personal score differed from the average score obtained by honors students, other students were told that their scores were average. Participants whose score placed them on the periphery of the ingroup were more likely to afterwards rate stereotypical traits as being more descriptive of the self than were participants whose ingroup status was secure.

Furthermore, according to Krueger's literature review (2007), the attributes in question have to be of relevance, meaning, and they have to be evaluatively charged. Biernat, Vescio, and Green (1996) referred to this observation as "selective self-stereotyping". They speculated that self-stereotyping might be limited to positive attributes and suggested negative self-stereotyping to be paradoxical because the "acceptance of negative stereotypes work[s] against the general goal of self-

enhancement" (p. 1194). Nonetheless, the rejection of negative stereotypes equates to a denial of an important part of the social identity (Lorenzi-Cioldi, 1991). Later research demonstrated that low-status group members attribute both positive and negative group stereotypes to the self (Latrofa, Vaes, Pastore, & Cadinu, 2009). In this study, following the rejection-identification model (Branscombe, Schmitt, & Harvey, 1999), Latrofa and colleagues (2009) show that self-stereotyping serves to maintain psychological well-being among participants belonging to a stigmatized group. By identifying with and self-stereotyping from the devalued ingroup, they restore their need to feel accepted (see section 1.2.1.2). Further research also demonstrated negative self-stereotyping to be present when implicit measures are employed (Lun, Sinclair, & Cogburn, 2009).

Though SCT lists social identification as one of the antecedents or conditions of self-stereotyping, also the inversed process has been proposed. Van Veelen, Otten, Cadinu, and Hansen (2015) propose that instances of self-stereotyping or social projection may enhance identification with the respective group. According to their Integrative Model of Social Identification, the cognitive basis for social identification lies within both the social and the personal self. Following this reasoning, they integrated self-anchoring and self-stereotyping in one theoretical model and demonstrated that both processes form two distinct and complementary pathways to explain identification with groups. This way, they assume social projection along with self-stereotyping to form a reciprocal link of mutual enhancement with social identification.

1.1.3 The issue of directionality

Among researchers from the field of social projection as well as of self-stereotyping, the question under which conditions which process is more likely to arise has been topic of discussion (e.g., Krueger, 2007; Otten & Epstude, 2006; van Veelen et al., 2015). Some researchers advocate social projection to be the predominant process and self-stereotyping to be only the exception from the rule (Krueger, 2007; Otten & Epstude, 2006). According to this viewpoint, the personal self serves as the default to make judgments and predictions about others in domains relevant to the self. This tendency is said to be stable and is not easily overridden by any inference based on stereotypes (DiDonato, Ullrich, & Krueger, 2011; Krueger, 2007). One's personal identity is seen as the most immediate—and also most economical—source of information, as it is the

locus of experience. This way, for social projection, there is said to always exist a direct link between a person's personal perception and a social cue. Since self-stereotyping always requires further information about basic representations in the social context, inferences based on knowledge about the self therefore are likely to overrule generic knowledge. In studies supporting this view of social projection being the predominant process, it has been shown that self-ratings are not only made faster (Cadinu & Amicis, 1999; Clement & Krueger, 2000), but also more accurately and consistingly over time (Krueger & Stanke, 2001). Furthermore, Cadinu and Rothbart (1996) demonstrated inferences from self to ingroup being stronger compared with inferences from ingroup to self (for an overview, see Krueger, 2007).

Other researchers instead argument that self-stereotyping indeed will commonly arise under certain circumstances (Latrofa, 2008; Latrofa et al., 2010). According to Karniol (2003), a process of inference from the self to others is hard to reconcile with the notion that the self is a unique entity, since an entity that is categorized as being distinct cannot serve to infer similarity (e.g., Brewer, 1993). As stated above, SCT emphasizes that a person's relation to his or her ingroup is built on the perception of the self as being but one interchangeable exemplar of a group's prototype. Following this notion and the principle of depersonalization, self-ingroup overlap cannot exclusively be based on the personal self via social projection (e.g., Onorato & Turner, 2004; Simon, Hastedt, & Aufderheide, 1997; Turner et al., 1987). Studies supporting the view of self-stereotyping being the predominant process have shown that the associative strength between the self and the ingroup is larger when judgments about the self are based on prototypical information about the ingroup than when judgments about the ingroup are based on self-information (e.g., Biernat, Manis, & Kobrynowicz, 1997; Deschamps & Devos, 1998).

Concluding, theoretical and empirical support for either self-stereotyping or social projection as the default process is mixed. As described above, empirical evidence exists for the higher cognitive accessibility of the personal self relative to the social self in terms of faster response times. A fallback on information about the self, this way, may be seen as economical (Krueger & Stanke, 2001). However, the higher cognitive accessibility of the personal self at an implicit level does not per se provide sufficient evidence for the predominance of self-anchoring. In contrast, prior research employing explicit measures showed levels of social projection to be just as high as levels of self-

stereotyping, lower than self-stereotyping, or also higher (e.g., Latrofa et al., 2010; Otten & Epstude, 2006; van Veelen, Otten, & Hansen, 2011). In addition, empirical evidence showing a higher prevalence of self-anchoring compared to self-stereotyping in large parts stems from research employing minimal group contexts. These findings are not surprising considering the basic purpose of the minimal group paradigm being developed and employed to exclude "objective" influences from the situation (Tajfel, 1970). In this paradigm, people cannot rely on a social context to make social inferences.

To this point, advocates of neither side have been able to demonstrate convincingly that one process is more relevant than the other, nor have they been able to explain why at some times self-stereotyping and at other times social projection is more prevalent. Van Veelen and colleagues (2015) argument the reason for this is because there simply is not one most fundamental or default process (see also Ames, 2004a, 2004b; Cho & Knowles, 2013). Instead, they propose that self-stereotyping and social projection complement each other and, hence, exist in parallel inferring self-ingroup overlap. Their proposition is very much in line with this author's hypotheses.

1.2 Proposed Contexts and Constructs of Relevance for Social Projection or Self-Stereotyping

Following a review of existing literature on the connections of several factors with and their influence on the occurrence of either social projection or self-stereotyping, I compared commonalities underlying these factors. I started with a review article of Kraus and colleagues (Kraus, Piff, Mendoza-Denton, Rheinschmidt, & Keltner, 2012) where they discussed how one's membership in a social class may shape psychological processes and indirectly influence behavior. Over time, I found more and more evidence supporting my assumption which constitutes this dissertation's foundation: that *self-construal* as a fundamental factor influencing the construction of personal experience and behavior determines the direction of inferential socio-cognitive processes. In the following section, I will present support derived from literature on social status and research from the perspective of intercultural psychology.

1.2.1 Social status

1.2.1.1 Social class

Already in the fourth century BC, the Greek philosopher Aristotle mentioned social classes as a means of categorizing society along certain characteristics (Bendix, 1970). In mid-nineteenth century, Karl Marx raised the concept of social classes to one of sociology's basic categories (Geißler & Meyer, 2006). According to Geißler and Meyer (2006), the terms social stratum and social class encompass people in similar socio-economic positions. These are derived from similar life experiences, opportunities, and risks, and show similar personality traits, such as attitudes, values, needs, mentalities, and life style. Although social class and socio-economic status (SES) are often conflated with one another, they can be distinguished as separate constructs with regard to their stability and malleability. SES refers to a person's current social and economic situation, and consequently, is relatively mutable, providing the person in respect is in a position for economic advancement. In contrast, social class refers to one's socio-cultural background and is more stable, typically remaining static across generations (Ostrove & Cole, 2003; Rubin et al., 2014). The influence of social class has been topic of numerous research projects, showing that it has an impact on multiple domains, such as language (e.g., Bernstein, 1971), health (e.g., Gallo & Matthews, 2003), subjective well-being (e.g., Diener, Ng, Harter, & Arora, 2010), but also cognitive performance (e.g., Choi, Nisbett, & Norenzayan, 1999; Ji, Zhang, & Nisbett, 2004).

Kraus and colleagues (2012) offer a theory of how social class may shape basic psychological processes: Basically, an individual's social class is a context which is anchored in the material foundation of social life (wealth, education, and work) as well as in a person's distinct construal of his or her class rank. This way, social class is a core aspect of how someone thinks of the self and how someone relates to the social world (see also Piff, Kraus, Côté, Cheng, & Keltner, 2010; Stellar, Manzo, Kraus, & Keltner, 2012). Kraus and colleagues (2012) argue that, through shared experiences, individuals in specific social classes develop a system of knowledge, action tendencies, and affects that determine thoughts, feelings, and relationships with others. Diminished resources and lower rank enhance lower-class individuals' contextualist tendencies. As a result, they focus on external social forces and other persons who influence their life. These contextual influences can either be real, structural influences (e.g., social inequality;

inadequate social services, such as health care) but also mere expectations of external influences on action (e.g., expectations for class-based discrimination). For example, according to Kraus and colleagues (2012), lower-class individuals will be more vigilant to threat, will experience a reduced sense of control, and will develop more communal self-concepts relative to upper-class individuals. This way, the perception of such contextualist influential factors will create "a system of knowledge that favors explanations of behavior that involve forces outside of individual control, increased attention to others' thoughts and actions, and increased situational influences on action" (p. 549).

The opposite is claimed to be the case for upper-class individuals. Here, upper-class contexts are stated to prioritize the individualized self. In comparison to lower-class individuals, upper-class individuals pursue these goals and interests *relatively* free of concerns about their material costs. By being salient in everyday life's thoughts and actions, the availability of resources and an elevated rank create a context which emphasizes economic and personal freedom and gives rise to an individualistic mindset that leads to an individualistic orientation towards the environment. The person will focus more strongly on his or her own goals, emotions, and motivations. In dependence on the philosophical idea of solipsism, Kraus and colleagues (2012) called the accompanying social cognitive tendencies *solipsistic*, as solipsism "centers on the notion that one's own mind is a fundamental source of knowledge about the social world and is the primary influence on people's everyday thoughts and actions" (p. 550; see also Russell, 1914).

It was hypothesized that lower-class individuals—given their contextualist focus—will show heightened empathic accuracy relative to upper-class individuals and that they should develop a self-concept defined in terms of interconnectedness and interdependence with other people. Vice versa, they expected upper-class individuals—given their solipsistic tendencies—"to make judgments about other individuals' emotions based on their own current feelings, rather than on the behavior of other individuals" (Kraus et al., 2012, p. 555). These propositions first gave rise to this author's hypotheses (see below).

1.2.1.2 Minority-majority group contexts

Another major line of research focuses on the concept of gender roles in connection with minority-majority group contexts. In a series of studies, Latrofa and colleagues (Latrofa et al., 2010) examined the process of self-stereotyping focusing on relative ingroup status and using gender groups. They found relative ingroup status of one's social group to be a key variable and inferred that low-status group members—consistent with a heightened salience of their group membership (see also Hogg & Turner, 1987) and their tendency to identify more strongly with their own group (see also Krueger, 2007)—more easily engage in a process of self-stereotyping than high-status group members. In addition, they found evidence that members of a low-status group self-stereotyped not only by ascribing positive stereotypical features of the ingroup to themselves, but they also internalized negative stereotypical characteristics to the same extent. They explained this by referring to previous research (Latrofa et al., 2009) according to which disadvantaged group members who were aware of their discrimination and who engaged in self-stereotyping on both positive and negative traits also reported feeling better. According to Latrofa and colleagues (2010), this finding suggests that self-stereotyping could affirm one's threatened social identity in all of its facets, that is, the fact of belonging to and finding shelter in a certain social group becomes more important than maintaining a purely positive image of the self. For high-status group members, results in their study (Latrofa et al., 2010) showed that the observed self-ingroup overlap was due to an induction-to-the-ingroup process of personal characteristics (i.e., social projection) which they considered to be the result of an "egocentric cognitive strategy" (p. 919; see also Cadinu & Rothbart, 1996; Krueger, 2003). Similarly, already Lorenzi-Cioldi (1991, 2006) argued that the consideration of gender differences in terms of status differences offers a prediction that men will be motivated to augment their personal identity to emphasize their personal tribute to the high status of their group. Vice versa, he proposed that women might enhance their social identity to defend themselves from perceived threat against their low-status group or their individual selves.

In their Identity-threat Model of Stigma, Major and O'Brien (2005) outline factors affecting people's appraisals of potentially threatening situations. The model postulates that three parameters shape appraisals of the significance of stigma-relevant situations

for well-being: (1) collective representations of one's stigma status which refers to the awareness—possessed by stigmatized as well as non-stigmatized group members—of the existence of a cultural stereotype which is related to a specific stigmatized social group. These collective stereotypes should be perceived by stigmatized group members as a threat to their social identity, but should be of no relevance to the identities of non-stigmatized group members. As a result, the same (2) situational cues should affect or should be perceived by stigmatized and non-stigmatized individuals differently: as threatening by stigmatized and non-threatening by non-stigmatized individuals. Furthermore, Major and O'Brien (2005) take into account (3) personal beliefs and motives.

Focusing on the first two of this model's initial parameters, Latrofa and colleagues (Latrofa, Vaes, & Cadinu, 2012) conducted a series of studies. The collective representation they concentrated on, again, was a societal consensus about gender stereotypes, as Western cultures are profoundly influenced by the existence of strong gender stereotypes that historically treat women as a low-status group and put men in the position of the high-status group (e.g., Fiske & Stevens, 1993). As a situational threatening cue, they presented participants with a scientific article in which the content was experimentally manipulated. To one half of the participants, this article stated that certain personality characteristics relating to their gender ingroup are more likely to lead to failure in life; in contrast, the other half of participants was informed that the same characteristics bring forth success. The general idea behind this series of research is that the link between the representation of the self and the ingroup may be different for members of low and high-status groups as a function of a threatened versus a favorable group identity. Being part of a minority or stigmatized rather than a majority group may bring threatened group members to protect their self-perception by increasing their similarity with the ingroup. Accordingly, they expected low-status group members to use an assimilative strategy, while high-status group members should tend to individuate when their group identity is under threat. Again, results supported their hypotheses: They concluded that the threatening situational cue exacerbated the females' culturally induced tendency to self-stereotype, suggesting that it is the perception of threat associated to their gender ingroup that caused them to self-stereotype. In contrast, they found male participants never to show a self-stereotyping

process, in neither the condition threatening to their group identity nor the one not threatening it. This finding is consistent with men's supposed tendency to perceive their gender ingroup as unthreatening.

Similar results have been obtained by multiple other researchers who were able to demonstrate that self-stereotyping occurs across several minority contexts, either numerical minorities, minorities based on social status (e.g., homosexuals vs. heterosexuals, or Southern Italians vs. Nothern Italians), or both (e.g., Cadinu, Latrofa, & Carnaghi, 2012; Chiu et al., 1998; Fasoli et al., 2018; Pickett et al., 2002; Simon & Hamilton, 1994; Spears et al., 1997). By increasing the salience of participants' membership in a low-status group, self-stereotyping of stereotypical attributes could be triggered. In all of these cases, minority or low-status ingroup members were found to self-stereotype more strongly than majority or high-status members. Accordingly, self-stereotyping may serve to maintain psychological comfort among stigmatized group members. Since the membership in a stigmatized group often entails personal experiences of discrimination, in this context also Krueger's (2007) prerequisite for self-stereotyping of an experience of personal threat is met.

1.2.2 Cross-cultural differences

Parallel effects concerning the focus of social-cognitive processing on either the social environment or on the individual self have been found in the field of cultural psychology. Some cultures focus preferably on the social environment and others focusing preferably on the individual self (e.g., Choi et al., 1999; Cross, Hardin, & Gercek-Swing, 2011). Within empirical psychology, research on the self as a cultural product and process is now almost three decades old (e.g., Fiske, Kitayama, Markus, & Nisbett, 1998; Kitayama, Markus, Tummala, Kurokawa, & Kato, 1990; Markus & Kitayama, 1991). According to Markus and Kitayama (2010), by now, research on cross-cultural psychology has gathered a broad understanding "why the nail that sticks out is likely to be hammered down in Japan whereas the squeaky wheel attracts grease and attention in the United States" (p. 420). In Western cultures like in Northern America, an individualistic focus has been shown to be predominant while in East Asian cultures (like Japan and China) the focus seems to lie on a more collectivistic processing (e.g., Markus & Kitayama, 1991; Oyserman & Lee, 2008). In more recent research, cultural

comparisons are no longer focused on research comparing people in North American and East Asian contexts, but now include more complex distinctions across a variety of other significant local and social distinctions (e.g., Holloway, Waldrip, & Ickes, 2009; Kitayama, Park, Sevincer, Karasawa, & Uskul, 2009).

According to Oyserman and colleagues (Oyserman, Sorensen, Reber, & Chen, 2009), individualism and collectivism, specifically, are associated with "differences in content of self-concept, ways of engaging others, and cognitive style" (p. 218). The individualistic view puts the focus on the individual and states that societies exist to promote the well-being of individuals. Within collectivistic cultures, the focus is on the group. According to this view, individuals are expected to fit into society, to serve the common good and are seen as fundamentally connected through relationships. However, Oyserman and colleagues (2009) do not consider culture as producing fixed and almost unchangeable ways of thinking and of arranging one's social world. Instead, in accordance with the view of culture as situated cognition, they propose that societies merely differ in the likelihood that an individualistic or collectivistic mindset will be cued at a *particular moment* and that cultures differ with respect to the chronically accessible mindset. The respective environments of members of a certain culture, this way, can be seen as an almost omnipresent priming of individualism or collectivism.

Oyserman and colleagues repeatedly demonstrated how cultural priming can activate mindsets observed in collectivistic cultures like East Asian cultures or in individualistic cultures like the USA (for an overview, see Oyserman & Lee, 2008). In eight experiments (Oyserman et al., 2009), they used priming methods to manipulate the temporary accessibility of individualism and collectivism. Here, the Pronoun Circling Task was used as a prime: Participants were given a paragraph of text and were asked to circle all pronouns they found. Depending on the condition, they either had to circle singular pronouns (individualistic mindset prime: *I, me, myself* etc.) or plural pronouns (collectivistic mindset prime: *we, us, ourselves* etc.). Dependent variables were manifold (e.g. ability to recall spatial arrangements of objects, deciding whether a defined target figure was present or absent, performance in the stroop task, or in a dichotic listening task). They found that both accuracy and speed improve when the presently cued mindset is congruent with the task at hand and that this mindset is likely to be used even when it is incongruent with the respective task. For example, priming a collectivistic

mindset enhanced accuracy of recall for the spatial arrangement of previously presented objects. Authors assumed that this priming improved context-bound processing, presumably because it focused attention on the connection among items and the relationship between objects and their surroundings. Conversely, priming an individualistic mindset reduced response latencies in the stroop task. This task involves ignoring one source of information while focusing on another source—a process that is congruent with an individualistic mindset which is assumed to facilitate disjoined processing. The studies' results were independent of the participants' cultures which were systematically varied from study to study to include both cultures in the East (Hong Kong and Korea) and the West (Norway and USA), as well as different American ethnic groups (African, Asian or European Americans).

1.2.3 Conclusion

It has been shown that social status may shape basic psychological processes, as it constitutes a core aspect of how someone thinks of the self and also how someone relates to the social world (Kraus et al., 2012). Kraus and colleagues (2012) hypothesized that lower-class individuals—with a more pronounced focus on external social forces and other persons who influence the individual's life—will show heightened empathic accuracy compared to upper-class individuals and that they should develop a self-concept defined in terms of interconnectedness. In contrast, upper-class individuals—given their individualistic orientation towards the environment which reflects in a stronger focus on their respective goals, emotions, and motivations—are expected to make judgments about other individuals' emotions based on their own current feelings.

Similar and more extensive observations have been made with respect toward minority-majority group contexts, taking gender groups into account (Latrofa et al., 2010; Latrofa et al., 2012). It was found that low-status group members not only identified more strongly with their own group than high-status group members, but also showed an increased tendency to self-stereotype. According to Latrofa and colleagues, threatened group members protect their self-perception by increasing their similarity with the ingroup. Conversely, for high-status group members, they found a more pronounced tendency for social projection than for low-status group members what

they considered to be the result of an egocentric cognitive strategy for high-status group members (see also Cadinu & Rothbart, 1996; Krueger, 2003). Also in other minority contexts, such as numerical minorities, minorities based on social status, or both, other researchers were able to demonstrate that minority, low-status, or disadvantaged individuals self-stereotyped more strongly than majority or high-status individuals (e.g., Cadinu et al., 2012; Chiu et al., 1998; Pickett et al., 2002; Simon & Hamilton, 1994; Spears et al., 1997).

Focusing on cultural psychology, it has been shown that in some cultures an individualistic focus tends to be predominant (mostly in Western cultures, like in Northern America) while in other cultures the focus lies on a more collectivistic processing (mostly in East Asian cultures, like Japan and China; e.g., Choi et al., 1999; Cross et al., 2011; Kitayama et al., 1990; Markus & Kitayama, 1991; Oyserman & Lee, 2008). Distinctive individualistic cultures put the individual before the group and state that societies exist to promote the well-being of individuals. Contrarily, collectivistic cultures put the focus on the group and individuals are expected to fit into society to serve the common good. Although mostly not considered as producing fixed and almost unchangeable ways of thinking and of arranging one's social world, culture may be interpreted as an omnipresent priming of individualism or collectivism (Oyserman et al., 2009).

Taken together, there appear to be several possible global factors which may cause a shift in the individual's focus on either the person or the ingroup: (1) a person's social status, either determined by social class, socio-economic status, or by the minority-majority context relevant for the ingroup, or (2) the culture, from which a person originates, where the person lives, and where he or she is confronted with relevant everyday stimuli.

2 Socio-cognitive Mindsets

In a literature review, Markus and Kitayama (2010) discuss the meaning and mutual relevance of "self" and "culture". They state that "in an ongoing cycle of mutual constitution, people are socio-culturally shaped shapers of their environments" (p. 421). The self is always situated and therefore always reflects its contexts in significant ways, as does the context reflect the self. Here, the term "culture" in a broader sense is not limited to cultural contexts across countries or hemispheres (see also Snibbe & Markus, 2005). Similarly, I presume the definition of culture to extend to all areas presented above. I expect it to not be constraint to only the mere aspect of cross-cultural psychology, but also to be applicable to intra-societal systems as well: to social systems, social strata, or minority-majority group contexts. In general, I assume a definition of culture which more commonly refers to norms and values which in turn form and induce behavior. As described above, one way of distinguishing between cultures is by the set of patterns which prescribe the normatively appropriate relations between self and others individuals (see section 1.2.2). These two different sets will be referred to as an *independent* or an *interdependent* mindset or self-construal, respectively (Singelis, 1994).

According to Kraus and colleagues (2012, see section 1.2.1.1), social class is a core aspect of how someone thinks of the self and also how someone relates to the social world, distinguishing between individualistic (or independent) and contextualist (or interdependent) tendencies. They state that an individualistic mindset led to an orientation towards the environment with a person focusing more strongly on his or her own goals, emotions, and motivations. In contrast, contextualist tendencies are characterized by a focus on external social forces and other persons who influence the individual's life. Following their considerations, I expect basic socio-cognitive mindsets to be of consequence for social cognition in a way that they represent the individual's current focus from which he or she will construe the social world. The currently active mode of self-construal constitutes a fundamental factor which influences the construction of personal experience and behavior. This way, I argue that it determines the direction of inferential socio-cognitive processes. That is, I assume that an independent mindset with its distinctive focus on the individual will cause a person to interpret its world from the individual's point of view. From this perspective, I expect

social projection to be more dominant than self-stereotyping when a person is asked to characterize the self or his or her ingroup. Vice versa, I assume that an interdependent mindset with its more pronounced focus on the social context and other persons will trigger the reversed process. This person will interpret the world (and see the self) from a contextualist point of view. Here, I predict self-stereotyping to be the predominant process over social projection.

The goal of this dissertation is to examine the effects of experimentally primed independent or interdependent mindsets for the primacy of social projection or self-stereotyping. Here, I propose a model of socio-cognitive mindsets' effects on the predominance of social projection or self-stereotyping (see Figure 2-1).

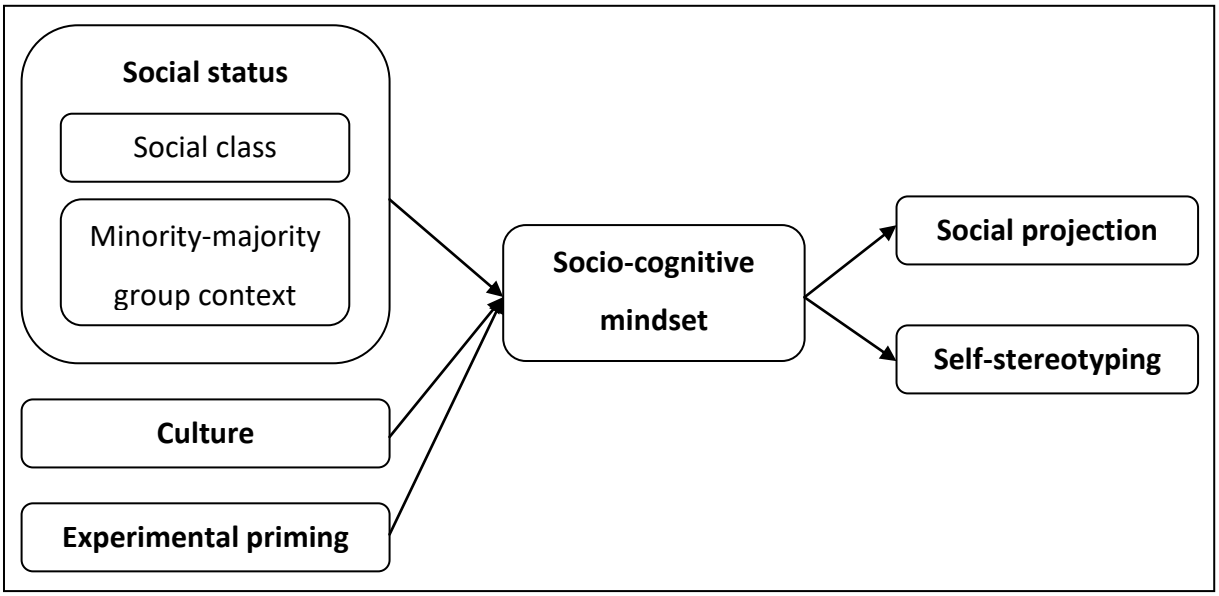


Figure 2-1. Proposed model of socio-cognitive mindsets' effects on the predominance of social projection or self-stereotyping.

Taken together, I propose that not social class (along with either the availability or the lack of resources), not a minority-majority context (along with the perception of dominance vs. the perception of threat), and not a certain cultural background *per se* is a causal factor leading to a predominance of either social projection or self-stereotyping, but a commonality behind all of these domains: the *socio-cognitive mindset* which is active in the respective moment, accounting for a basic factor which influences the individual's way of construing his or her world. The salience of and focus on one's personal or one's group identity is essential in this cognitive inferential model. One

socio-cognitive mindset may be predisposed due to chronically available cues present in everyday life, which in turn are shaped by one's culture and/or one's social class, or may be activated by other presently available situational stimuli.

Prior findings that social projection is a process more common than self-stereotyping may be due to the fact that research in this branch of social cognition has mostly been conducted in Western cultures (e.g., DiDonato et al., 2011; Krueger, 2007; Otten & Epstude, 2006; see section 1.1.3). With an independent socio-cognitive mindset chronically primed, research may not have taken all relevant variables into account, missing the effects of different socio-cognitive mindsets being the chronically primed standard in a certain country, region, or culture.

In a series of experiments, the antecedents of social projection and self-stereotyping shall be disentangled in several steps. In a more recent article, van Veelen et al. (2015) mentioned the possibility that levels of social projection and self-stereotyping may vary depending on an independent or interdependent self-construal being prevalent. My experiments had been conducted prior to their article being published. Independently, I share their assumptions.

2.1 Main Hypothesis

Connecting research and considerations on social status and cross-cultural differences (see section 1.2) with Oyserman's findings on the effective use of cultural priming (Oyserman & Lee, 2008; Oyserman et al., 2009), I assume that the priming of an interdependent mindset will cause a shift in focus towards the ingroup and will trigger a more pronounced occurrence of self-stereotyping compared to social projection. Conversely, moving participants' focus towards themselves and their individual characteristics by priming an independent mindset, I expect participants to they react with an increase in social projection compared to self-stereotyping.

Additionally, I expect that, in both cases, the degree of identification with one's ingroup is expected to be high (i.e., significantly different from the scale midpoint; see below). This construct constitutes Latrofa and colleagues' (2010) central mediating construct and is also listed as one of Krueger's (1997) conditions for the occurrence of self-stereotyping.

2.2 Overview of Experiments 1 to 3

In a first experiment, the effect of cultural priming on social projection and self-stereotyping is to be established in the first place, employing a reaction-time-based paradigm. The active socio-cognitive mindset (independent vs. interdependent) is manipulated using the Pronoun Circling Task (Gardner, Gabriel, & Lee, 1999). Furthermore, boundary conditions of self-stereotyping will be considered. As stated above, it has been claimed that self-stereotyping is only expected on positive traits (Krueger, 2007). The validity of this demand seems to be limited since several research teams were able to show the occurrence of self-stereotyping independently of trait valence (e.g., Latrofa et al., 2010; Pickett et al., 2002; Simon & Hamilton, 1994). Nevertheless, I will account for possible effects of trait valence in the experiment.

In a second experiment, a paradigm employing fictitious traits is used (based on Cadinu & Rothbart, 1996) to disentangle the processes of social projection and self-stereotyping. The idea behind the use of fictitious traits is that—because of the stated novelty of the presented dimensions—participants could not access existing mental representations. Again, the Pronoun Circling Task is employed to manipulate the activation of socio-cognitive mindsets.

In Experiment 3, a different priming procedure is employed. This time, instead of altering participants' focus via the Pronoun Circling Task, I will try to achieve this indirectly by manipulating their perceived social status (Kraus, Horberg, Goetz, & Keltner, 2011). As described above, in accordance with Kraus et al. (2012), I expect to observe social projection in the experimental condition where a high social status has been primed, while self-stereotyping should arise if a low social status has been primed.

3 Part I: Consequences of a Priming of Socio-Cognitive Mindsets for Social Projection and Self-Stereotyping

3.1 Experiment 1

3.1.1 Introduction

The aim of the first experiment was to establish the effect of different types of self-construal on social projection and self-stereotyping in the first place. Specifically, I predicted that shifting a person's focus toward his own person should lead to more social projection while self-stereotyping should be the stronger process if a person's current focus is directed outwards and toward his or her ingroup. To this end, for the experimental procedure, a reaction-time paradigm was adopted from Otten and Epstude (2006) to allow for the two processes to be separated. An independent versus an interdependent self-construal was achieved by means of the *Pronoun Circling Task* (Gardner, Gabriel, & Lee, 1999). The target group in the reaction-time paradigm was the group of Germans whose characteristics demonstrated to be well-suited in matters of stereotypicality in a pretest.

3.1.2 Method

Pretest. For later use in the experiments, participants were asked to assess the stereotypicality of adjectives with respect to different target groups: the group of university students, the group of Germans, and the group of Europeans. The selected traits should meet two criteria. Firstly, the goal was to select a balanced number of traits, some of which should be stereotypical, some counter-stereotypical, and some neutral in stereotypicality for the respective group. Secondly, I wanted to balance stereotypical and counter-stereotypical traits in terms of their valence so that they consisted of an equal number of positive and negative items.

For this pretest, $N = 70$ psychology students were recruited via a Facebook psychology group and an e-mailing list. Data were gathered using the online survey tool *SoSci Survey* (Leiner, 2014). For each of the groups (students, Germans, and Europeans), items were selected a priori: ten items which were believed to be stereotypical for the respective group and ten items which were believed to be counter-stereotypical. These

items were balance with respect to their valence. Furthermore, ten items were included which were believed to be neutral concerning their stereotypicality. On a 7-point Likert-scale ranging from 1 (*does not apply at all*) to 7 (*applies completely*), participants were asked to indicate how typical they perceived each trait to be for the respective group. Based on the resulting mean scores of stereotypicality, for each group, two positive and two negative stereotypical items, as well as two positive and two negative counter-stereotypical items, and four neutral items were selected. In Table 3-1, means of stereotypicality for the final selection of items in the different target groups are listed separately for stereotypical, counter-stereotypical, and neutral items. I decided to use the group of Germans as the target group in the first experiment, as the results showed some inconsistencies in the ratings for the groups of students and Europeans: For both the groups of students and Europeans, ratings for each group's two most counter-stereotypical positive items lay very close to or even above the scale mid-point of 4, $M_{Students}$ = 3.75 and $M_{Europeans}$ = 4.08. Hence, these items could not be described as clearly counter-stereotypical. Moreover, for Europeans, the mean of the two most stereotypical negative items lay very close to the scale mid-point, M = 4.27, and hence could not be interpreted as being clearly stereotypical for this group.

Table 3-1

Means of stereotypicality for the selected items in the group of Germans, students, and Europeans

Germans	Mean (positive items)	Mean (negative items)
stereotypical	5.69	5.27
counter-stereotypical	2.94	3.08
neutral (overall mean)	4.25	
Students	Mean (positive items)	Mean (negative items)
stereotypical	5.13	5.34
counter-stereotypical	3.75	2.58
neutral (overall mean)	4.09	
Europeans	Mean (positive items)	Mean (negative items)
stereotypical	5.37	4.27
counter-stereotypical	4.08	2.65
neutral (overall mean)	4.13	

For the group of Germans, means of stereotypicality were reasonably high for stereotypical items, $M_{positive}$ = 5.69, $M_{negative}$ = 5.27, and low for counter-stereotypical items, $M_{positive}$ = 2.94, $M_{negative}$ = 3.08. Additionally, four items neutral with respect to their

stereotypicality could be selected, $M_{neutral}$ = 4.25. The selection of 12 items can be found in Table A1 in Appendix A.

Participants. Participants in Experiment 1 were 112 students from the University of Mannheim majoring in various disciplines. The sample's age ranged from 18 to 43 years M = 21.86, SD = 3.51, its gender distribution was 79 female to 33 male participants. The study was advertised in lectures as a study on social perception. Participants were paid 4 Euro cash and a bar of chocolate for their voluntary participation. 12 participants were excluded from the final analysis for not having executed the priming procedure adequately or not being German native speakers, hence potentially having difficulties understanding all trait items used in the experiment. Analyses were conducted with N = 100 participants.

Dependent variables. As a first measure of social projection and self-stereotyping, a method introduced by Smith, Coats, and Walling (1999) and refined by Otten and Epstude (2006) was used. Underlying the work of Smith and his colleagues is a connectionist network model of memory (see Aron, Aron, Tudor, & Nelson, 1991; Smith & Henry, 1996). The more frequently certain elements are activated in conjunction, the stronger the activation spreading between these entities and, accordingly, the more likely the activation of one element triggers the activation of a connected element. This reflects in shorter response times between the activation of the first element and the retrieval of the second element. Accordingly, overlapping mental representations of social and personal information are indicated by faster response latencies on those dimensions on which self- and ingroup evaluations match compared to the dimensions on which they do not match. At this stage, such faster response time latencies are not conclusive concerning the direction of the self-ingroup overlap. Hence, the idea behind Otten and Epstude's refinement is the following: Given a person does not know for sure or is unwilling to decide whether a certain trait applies to the ingroup (vs. the self), that is, the ingroup (the self) is ill-defined. If he or she resolves this uncertainty by relying on the self (ingroup) representation and, thus, uses self (ingroup) defining traits to describe the ingroup (self), this would lead to shorter response latencies. Accordingly, this may be interpreted as an instance of social projection (self-stereotyping). Hence, on formerly ill-defined target dimensions, a match between ratings for self and ingroup should facilitate responses, which is reflected in shorter response latencies in matches compared to mismatches.

Furthermore, an additional measure to assess social projection and self-stereotyping was developed. For this purpose, the 12 items selected in the pretest, based on their stereotypicality concerning the group of Germans, were to be rated with regard to either the self or the ingroup: four items stereotypical for the ingroup, four counter-stereotypical items, and four distractor items which were neutral concerning their stereotypicality and which were not considered in the analysis. I assumed that the items' stereotypicality would lead to a smaller variance in the subjects' ratings for the group than for the self. I expected the magnitude in difference between the variance in subjects' ratings for the ingroup and for the self to depend on the priming as well as on the order of the ratings (i.e., the self or the ingroup being rated first). For a primed interdependent mindset and the ingroup being rated first, I expected the lower variability in ingroup ratings to be transferred to self-ratings, assuming self-stereotyping to be the predominant process. Accordingly for the order ingroup–self, the magnitude in difference between standard deviations of ratings for the ingroup and the self should be smaller under the interdependence priming than under the independence priming: $\Delta M_{SD}(IG\text{-}Self)_{interdependence} < \Delta M_{SD}(IG\text{-}Self)_{independence}$. Analogously, for the independence priming and the self being rated first, the higher variability between subjects' ratings for the self was assumed to be transferred to the ingroup, as I expected, here, social projection to be the predominant process. Hence for the order self-ingroup, the magnitude in difference between standard deviations of ratings for the self and the ingroup should be smaller under the independence priming than under the interdependence priming: $\Delta M_{SD}(Self\text{-}IG)_{independence} < \Delta M_{SD}(Self\text{-}IG)_{interdependence}$.

Procedure. A 2 (*Priming* of an independent or an interdependent mindset) x 2 (*Target* in the reaction-time paradigm) between-subjects design was employed. The experiment was run in a laboratory with a maximum of five participants in one session. The experimental software E-Prime (Psychology Software Tools, 2013) was used to present instructions and to record data. As has been described above, in this first experiment, a reaction-time paradigm was used (Smith et al., 1999; Otten & Epstude, 2006), which was expected to allow for the separation of social projection and self-stereotyping.

At the beginning of each experimental session, participants were greeted, seated at single-workplace stalls, and asked turn their cell phones to airplane mode. After filling out the informed-consent sheets, they were asked to follow the instructions presented

on the computer screen by E-Prime. Here, they were informed that the goal of the study was to assess their perception of themselves and of a social group they belonged to. In a first step, subjects were asked for a rating of the group of Germans and themselves on 90 adjectives (Otten & Epstude, 2006), which could be used to describe a person or a group (see Table A2 in Appendix A). Items were presented separately and consecutively along with a 5-point Likert scale ranging from 1 (*does not apply at all*) to 5 (*applies completely*). Furthermore, the order of the rating (i.e. first the rating of the self, then the rating of the group of Germans or vice versa) was varied introducing an additional method factor.

Next, participants were asked to complete the Pronoun Circling Task (Gardner et al., 1999; Oyserman et al., 2009; see section 1.2.2). This manipulation is designed to induce an independent or an interdependent mindset by shifting participants' current focus to either their own person or the group. Here, participants were handed out a short text of 169 words which had been translated from an English version and which contained a short story describing a relaxing ambiance at the sea during sunset (Oyserman et al., 2009). Participants were told that the text serves the purpose of helping them regenerate after the rather strenuous task they had been asked to perform beforehand. Participants were randomly assigned to one of two conditions: They received either a text in which exclusively singular or exclusively plural pronouns were used (*I, my, me* vs. *we, our, us* etc.) and were given the instruction to circle all occurring pronouns in the text. In this task, singular pronouns are expected to trigger an independent self-construal while plural pronouns are to trigger an interdependent self-construal. Text and instructions are included in Appendix B1. There was no limitation concerning the time participants had to complete the task. They were just instructed to return their attention to the computer screen once they finished circling all occurring pronouns. The two priming conditions constituted the first between-subjects factor *Priming*.

To distinguish between social projection and self-stereotyping, a second between-subjects factor was introduced: the judgmental target during the following response-time measurement. On the same 90 items which had to be rated on a 5-point Likert scale during the first part of the measurement, participants now were asked to give dichotomous answers: For half the participants, response latencies were measured for dichotomous ratings about the self, whereas for the other half, response latencies for the group of Germans were assessed. Again, on each screen, only one item was presented.

Subjects were instructed to use their left-hand index finger and press the key “S” on the keyboard if the trait applied to the target or to use their right-hand index finger and press the key “L” if it did not apply to the target. Participants were told to answer as quickly, but also as precisely as possible. After each answer, the next item appeared following an inter-trial interval of 500 ms.

Now, a re-priming procedure was introduced, for it was expected that the effects of the first priming might have worn off after the rather long and strenuous reaction-time paradigm. This second priming procedure was similar to the first one except that a different text was presented, depicting an evening at the favorite restaurant. Aside of the text’s content, the task’s procedure and instructions were identical to the first one. This text is included in Appendix B2. Subsequently, participants were asked to complete the alternative measure to distinguish between social projection and self-stereotyping, by making an assessment of the self and the group of Germans (or vice versa) on a 7-point Likert scale from 1(*does not apply at all*) to 7 (*applies completely*) concerning the 12 items selected in the pretest.

In a last step, demographic characteristics were assessed: participants' gender, their age, native language, nationality, the subject they majored in, and their year of study. After they finished the study, participants were thanked for their participation in the experiment, were paid, and asked not to speak with other students about the study's contents.

3.1.3 Results

Reaction-time paradigm. In a first step, I coded the data of these first 5-point ratings of self and ingroup for both *self-as-target* and *ingroup-as-target* condition as follows: Analogous to Otten and Epstude (2006), ratings from 1 to 2 were summarized as “no” responses and ratings from 4 to 5 as “yes” responses. Responses at the midpoint of the scale were interpreted as neutral or ambiguous, respectively. Following the logic behind this research paradigm, only those reaction-times were kept in the analysis for which, in the previous 5-point ratings,

(a) participants were undecided concerning the *target* and for which
(b) participants had a clear preference concerning the expected *anchor*[2] .

For example, if the target in the later response-time task was the group of Germans for which a participant was asked to make a dichotomous decision, the corresponding prior 5-point rating for the group of Germans had to have been at the scale midpoint, i.e., ill-defined. Hence, all response times for those items on which subjects had a clear preference in the previous 5-point rating for the target were excluded (i.e., if the response was 1, 2, 4, or 5). In addition, also those response latencies were dropped for which the corresponding item's anchor rating in the previous 5-point rating had been at the scale midpoint. To stay with the example, if the participant had been asked if the respective trait applied to him or herself and if the following response was at the scale midpoint, the corresponding response time was excluded as well. Also, I excluded response times larger than two standard deviations from the grand mean and shorter than 300 ms (see Bargh & Chartrand, 2000).

In a next step, I coded if there was a match or a mismatch between participants' dichotomous target ratings and the anchor ratings on the 5-point scale. This way, for each item, if a participant had been undecided before, concerning the target, and—if forced to make a dichotomous decision—relied on information about the anchor, it would be possible to identify the direction of the inferential process.

Response times were log (ln)-transformed (Fazio, 1991). All statistical analyses are based on these log-transformed means. For ease of interpretation, however, the untransformed means are reported. Since responses for matches vs. mismatches were expected to vary for different subjects and items, mixed-effects modeling was used in the analyses (Baayen, Davidson, & Bates, 2008). For this purpose, the *R* package "lme4" (Bates, Maechler, & Bolker, 2013; R Core Team, 2013) was employed. To test my predictions, I implemented the following model:

$$
\begin{aligned}
RT = {} & \beta_0 + \beta_1 \times Match + \beta_2 \times Target + \beta_3 \times Prime \\
& + \beta_4 \times Match \times Target + \beta_5 \times Match \times Prime + \beta_6 \times Target \times Prime \\
& + \beta_7 \times Match \times Target \times Prime \\
& + \beta_{0|Participant} + \beta_{1|Participant} \times Match \\
& + \beta_{0|Trait} + \beta_{1|Trait} \times Match + e
\end{aligned}
$$

[2] Throughout the experiments, information which is *expected* to serve as a source of information in inferential judgments will be referred to as the "anchor" or "anchor information".

with β_0 as intercept, β_1, β_2, β_3, β_4, β_5, β_6, and β_7 as regression weights, and e as residuals. In this model, since responses for matches vs. mismatches were expected to vary corresponding to different subjects and items, a random intercept and random slopes of *Participant* and *Trait* were defined, $\beta_{0|Participant}$, $\beta_{0|Trait}$, $\beta_{1|Participant}$, and $\beta_{1|Trait}$. *Match* was coded -1 for mismatches and +1 for matches. *Target* was coded -1 if the target was the group of Germans and +1 if the target was the self. *Prime* was coded -1 for the interdependence priming and +1 for the independence priming.

Additionally, the order of the first ratings on the 5-point scale was included as a method factor in the model: either participants were instructed to first make an assessment of the group of Germans and afterwards of themselves or vice versa. For ease of interpretation the factor *Order* and its corresponding interaction terms are not shown in the model above. As this factor had no effect on the relevant 3-way interaction *Match* x *Target* x *Prime*, also it is not reported any further.

The *Match* x *Target* x *Prime* 3-way interaction was significant, b = -0.111, SE = 0.052, t = -2.13, p = .033. However, a simple-slopes analysis revealed a pattern deviating from expectations (see Figure 3-1, p. 30). Furthermore, there was a significant main effect of *Match*, b = -0.070, SE = 0.022, t = -3.15, p = .002, indicating response times to be generally faster on matches than on mismatches. Also, the significant *Match x Target* interaction, b = -0.074, SE = 0.037, t = 2.04, p = .042, revealed that the match-mismatch response-time difference is especially pronounced for the ingroup being the target. The full results including random effects are included in Tables A3 a-d in Appendix A.

For a primed independent self-construal, reaction times for matches were faster than for mismatches both when the self was the target, b = -0.086, SE = 0.030, t = -2.92, p = .004, and when the group of Germans was the target, b = -0.049, SE = 0.023, t = -2.12, p = .034. The nonsignificant *Match x Target* interaction, b = -0.037, SE = 0.037, t = -1.02, p = .308, indicates that, under the independence priming, self-ratings facilitate group-ratings to the same extent as group-ratings facilitate self-ratings. For primed interdependent self-construal with the self as the target in the reaction-time task, the response-time difference between matches an mismatches was not significant, b = 0.004, SE = 0.029, t = 0.15, p =.879, indicating that self-stereotyping was not a relevant process in this condition. For the ingroup as target, reaction times for matches were faster than for mismatches, b = -0.070, SE = 0.022, t = -3.15, p = .002. For this priming condition, the *Match x Target* interaction reached significance, b = 0.074, SE = 0.036, t = 2.06, p = .039,

indicating that reaction-time differences of matches and mismatches were significantly larger if the group of Germans was the target compared to if the self was the target.

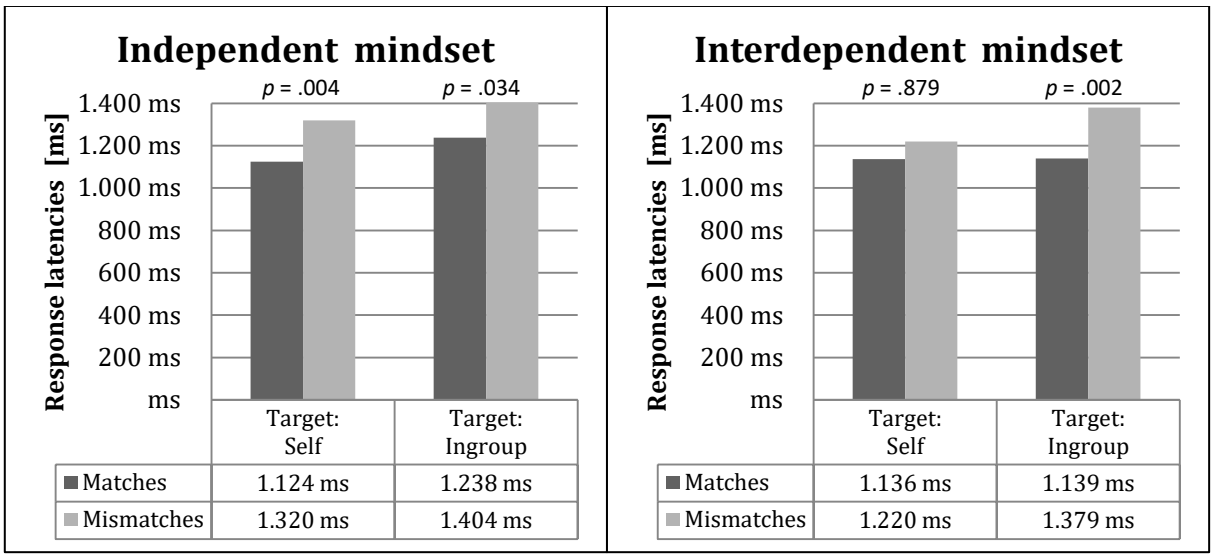


Figure 3-1. Response latencies in the reaction-time task. Significance values of the simple-slopes analyses for the relevant interaction *Match x Target x Prime* are shown above for each pair of response latencies. Faster response-times for matches than for mismatches indicate the occurrence of social projection (where the ingroup is the target) or self-stereotyping (where the self is the target).

Next, frequencies of matches and of mismatches were examined for those items on which the later target was not defined in the first rating task. I expected that, given the hypothesized effect, more matches than mismatches should have occurred in the following conditions: for a primed independent mindset if the group of Germans was the target and for primed interdependent mindset if the self was the target. An analysis of variance (ANOVA) was calculated with *Target* and *Priming* as independent variables. For the dependent variable, a new variable was computed: Because only those items were entered in the analysis that were (a) ill-defined with regard to the target and (b) defined with regard to the anchor, the number of data points varied between participants. Hence, the number of matches also depended on the number of items that fulfilled the outlined conditions. For this, the number of matches was divided by the total number of matches and mismatches, to set matches into proportion for each participant. However,

the *Target x Priming* interaction was not significant[3], $F(1,96) < 1$, $p = .541$, $\eta_p^2 = .004$. Descriptive statistics and the full results are listed in Tables A4 a and b in Appendix A.

Stereotypicality measure. In the analysis of this stereotypicality measure, standard deviations were calculated across subjects for ratings on *each* of the eight (counter-) stereotypical items, separately for the two priming conditions and the two targets. These item-wise standard deviations, then, were averaged for each condition. Results are shown in Table 3-2.

Table 3-2

Means of standard deviations (M_{SD}) for the analysis of the stereotypicality measure, averaged separately for Priming *and* Order *conditions*

Priming		**Order**
Independent mindset	Self first	Ingroup first
M_{SD} (self)	1.35	1.33
M_{SD} (ingroup)	1.12	1.10
Interdependent mindset	Self first	Ingroup first
M_{SD} (self)	1.24	1.27
M_{SD} (ingroup)	1.19	1.08

Due to the loss of distribution properties in the process of averaging these standard deviations, it was not possible to make inferential statistical decisions concerning the magnitude of the differences between standard deviation means of ratings for the self and for the ingroup. Hence, no critical differences could be calculated and data could only be inspected descriptively. An initial comparison of standard deviation means for the self and the ingroup indicated that, in general, self ratings showed a larger variance than ingroup ratings—independent of the priming and the variation of the order of ratings. These differences between standard deviation means for the self and the ingroup ranged from only 0.05 SDs for the *self first* condition and 0.19 SDs for the *ingroup first* condition of the interdependence priming to 0.23 SDs for both *Order* conditions of the independence priming.

Firstly, I hypothesized that, for the *ingroup* being assessed first, the magnitude in difference between standard deviation means of ratings for the ingroup and the self

[3] Throughout this text, η_p^2 refers to the partial Eta square parameter.

should be smaller under the interdependence priming than under the independence priming—given that self-stereotyping, here, is the predominant process. Although, for the *ingroup first* condition, the magnitude in differences between standard deviation means actually was smaller under the interdependence priming (1.27-1.08 = 0.19) than under the independence priming (1.33-1.10 = 0.23), this difference of 0.04 SDs was negligible taking into account the large 7-point rating scale.

My second hypothesis concerning this stereotypicality measure was that, for the self being assessed first, the magnitude in difference between standard deviation means of ratings for the self and the ingroup should be smaller under the independence priming than under the interdependence priming—assuming social projection being the stronger process in this condition causing subjects to project their individual characteristics to the ingroup. However, the magnitude in differences between standard deviation means turned out to be even larger under the independence priming (1.35-1.12 = 0.23) than under the interdependence priming (1.24-1.19 = 0.05). Notably, means of standard deviations (M_{SD}) did not diverge much between both priming conditions, except for self ratings in the *self first* condition. Here, means of standard deviations were larger under the independence priming (M_{SD} =1.35) than under the interdependence priming (M_{SD} = 1.24).

3.1.4 Discussion

In this first experiment, I tried to show that social projection is the predominant process after an independent mindset has been primed. For an interdependence priming, self-stereotyping should have been prevalent. However, these hypotheses could not be confirmed. Results in the reaction-time based measure (Otten & Epstude, 2006) showed that, for a primed independent mindset, instead of social projection being the predominant process, social projection and self stereotyping occurred to the same extent. In contrast, for a primed interdependent mindset, social projection was found to be stronger than self-stereotyping. Additionally, frequencies of matches and of mismatches were examined. I expected more matches than mismatches to occur for a primed independent mindset if the group of Germans was the target and for primed interdependent mindset if the self was the target. But also here, the expected differences in frequency could not be detected.

Although the differences between the means of standard deviations in the stereotypicality measure could not be analyzed using inferential statistical methods, descriptive analyses indicate that, also for this measure, hypotheses could not be confirmed. An initial comparison of standard deviation means for the self and the ingroup revealed that, independent of primings and the order of ratings, means of standard deviations were larger for self ratings than for ingroup ratings. This may be interpreted as evidence that the basic assumptions for the validity of this measure were appropriate: Stereotypicality of the traits led to smaller variance in ratings for the ingroup while the subjects' individual characteristics caused a larger variance in ratings for the self. However, while it was expected that self-stereotyping would lead to the attribution of group stereotypes to the self more pronouncedly after an interdependent mindset had been primed and the ingroup had been rated first, the smaller variance in ingroup ratings was not transferred to the self. In this condition, differences between standard deviation means were nearly identical to those under an independence priming. Also my second prediction in this paradigm could not be confirmed: I expected social projection to arise after an independent mindset had been primed and the self had been rated first, leading participants to project their individual characteristics—which were indicated by larger means of standard deviations—to the ingroup. For the ingroup, means of standard deviations should have increased as a consequence. Hence, the differences between standard deviation means should have been smaller under an independent mindset than under an interdependent mindset. Instead, differences between standard deviation means turned out to be even larger under the independence priming. Interestingly, the smallest difference between standard deviation means for the ingroup and the self could be observed in the *self first* condition after the priming of an interdependent mindset. Here, variance in ingroup ratings was 0.11 SDs higher than in the *ingroup first* condition. This difference suggests an instance of social projection having occurred: characteristics of the self are projected to the ingroup, as indicated by the larger variance in ingroup ratings compared to all other conditions.

To sum up, results in the stereotypicality measure did not support the hypotheses. However, the comparison of standard deviation means for the ingroup and the self in the *self first* condition under an interdependent mindset priming suggested that, here, social projection occurred. The presence of social projection and the absence of self-stereotyping after an interdependent mindset had been primed, however, is contrary to

expectations and cannot be explained at this point. Yet, the inability to calculate critical differences for the means of standard deviations left descriptive inspections and the conclusions drawn from these to be to some degree arbitrary and inconclusive. Hence, the interpretation of social projection occurring under an interdependent mindset might seem adequate on the descriptive level, but should nonetheless be regarded with caution.

At this point it was unclear how results in this first experiment could be interpreted. Since in both measures results either did not support or were even contrary to my hypotheses, as the priming procedure did not affect the occurrence of social projection and self-stereotyping in the predicted way, one interpretation could be that these hypotheses were incorrect. But it was also possible, that the Pronoun Circling Task, which was employed as the priming procedure in this first experiment, might not have induced the intended focus shift in participants. However, since this task had been proven to successfully induce independent or interdependent mindsets in past research (Gardner et al., 1999; Oyserman et al., 2009), the Pronoun Circling Task was employed once more in the second experiment.

Another possible reason for the absence of the expected effects in the reaction-time based paradigm could be that the measure itself has methodological shortcomings. One inherent problem in this paradigm is that, for each participant, matches and mismatches form on different items. Hence, for each subject, a *greatly* variable number of matches and mismatches did form. Such unequal cell occupation is not without problems concerning statistical analyses. For this reason, a different paradigm was employed in the next experiment. Also, the stereotypicality measure was dropped, as it does not allow analyses using inferential statistical methods.

3.2 Experiment 2

3.2.1 Introduction

In my second experiment, I tried once more to demonstrate that a focus shift towards the self should enhance projective tendencies while a shift towards the group should lead to a more pronounced effect of self-stereotyping. Again, I tried to achieve this shift in focus by employing the Pronoun Circling Task (Gardner et al., 1999). However, a different experimental paradigm was applied in the efforts of disentangling social projection and self-stereotyping: a modification of a paradigm employed by Cadinu and Rothbart (1996).

3.2.2 Method

Participants. In Experiment 2, participants were 135 students from the University of Mannheim majoring in different subjects. Age ranged from 18 to 46 years, M = 22.68, SD = 4.60, 66 % of the participants were female. Again, the study was advertised as a study on social perception in lectures and using leaflets. Participants were paid 3 Euro cash and got a bar of chocolate for their voluntary participation. 34 participants were excluded from the final analysis, for not having executed the priming procedure correctly or having participated in the first experiment, hence being familiar with the priming procedure. Also, participants were excluded if they were no native German speakers, for they might have attributed their lack of understanding of the fictitious trait dimensions, referred to in the paradigm, to a language deficit. This, in turn, could have distracted participants or could have triggered other processes. Analyses were conducted with N = 101 participants.

Dependent Variables. When someone is asked to assess the self and one of his ingroups on certain traits, it usually cannot be determined whether a resulting overlap in these assessments is the result of a projective process or actually one of self-stereotyping, that is, if a person ascribes his or her own characteristics to the group or characteristics of the group to her or himself. Cadinu and Rothbart (1996) engaged this problem by employing information on dimensions unknown to their participants. Fictitious trait dimensions were used to ensure that participants could not use pre-existing knowledge for the assessment of either the self or the ingroup and, this way, to control the source of information available to participants. Analogously to a *Minimal*

Group Paradigm (Tajfel, 1970), in which participants have no other information about the other participants except for their group membership, I refer to the present paradigm as *Minimal Traits Paradigm* since, to participants, only those information about the fictitious dimensions was available which they received during the experiment. A variation of Cadinu and Rothbart's (1996) original paradigm was employed. In the present experiment, participants first took part in six fictitious cognitive and perceptual tests to allegedly determine their score on these dimensions. They were told that recently a number of studies had been conducted at German universities considering both the conditions and consequences of newly identified characteristics of information processing which would allegedly be assessed by the tests. In fact, these tests did not measure any particular characteristics but merely consisted of easy solvable tasks to make participants believe that indeed real traits were assessed. Among others, participants were given a Stroop-like task where they were asked to remember the color in which certain color-words were written; or they were shown a slide with large letters which in turn were made out of small letters and they, next, were asked, e.g., how often they saw a large letter which consisted of small “F”s. Full instructions and a description of all tasks are included in Appendix C1.

After these “tests”, in the *self-as-anchor* condition, participants were given feedback in the form of a profile diagram and were asked to assess the group of Germans on the same dimensions. In the *group-as-anchor* condition, participants were given bogus information which, they were told, indicated how the group of Germans had scored so far and which allegedly had been calculated from data collected so far in the course of this and previous studies. Then, to supposedly validate test results, this group of participants was asked to guess how they thought they themselves had scored in the tests. In fact however, all participants were given the same profile plot of the alleged scoring on the fictitious trait dimensions. Ratings were to be made on an 11-point scale ranging from -5 (*not at all*) to +5 (*very much*).

Figure 3-2 shows the profile diagram presented to participants. In addition to their own “results” or those of the group of Germans, respectively (red line), a second line was included to offer an alternative source of information (gray line), in case participants wanted to avoid using information from the first option: If subjects were asked for an assessment of the group of Germans, the second line was labeled “a randomly selected former participant”. Instead, if subjects were to indicate how they themselves scored on

the fictitious trait dimensions, they were told that the second line indicated the results of another central-European country. In the course of creating the profile diagram, the anchor and alternative lines had been calculated to be uncorrelated, r = -.03. In this paradigm, a second, mirror-imaged version of the profile plot was included as a between-participants counter-balance factor, to control for the possibility that the specific pattern of the profile plot might influence participants' responses.

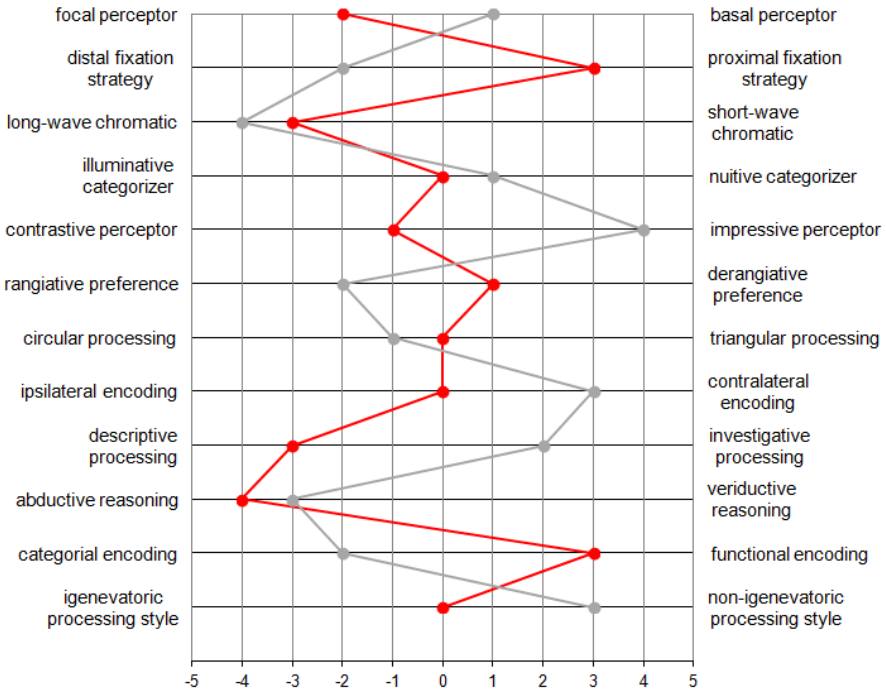


Figure 3-2. Profile plot of alleged scoring in the fictitious tests of the Minimal Traits Paradigm, showing an anchor line (their own results or the results collected so far from the group of Germans, respectively; red line) and an alternative line (profile of a randomly selected former participant vs. profile of another central European country; gray line).

Compared to the original paradigm (Cadinu & Rothbart, 1996), the paradigm employed in the present experiment was slightly altered. Instead of twelve dimensions allegedly measured by six tests, only six dimensions were to be assessed by only four tests in the original paradigm. With the employment of twelve dimensions, more data points were available for the later analysis and the execution of six tests for the assessment of twelve dimensions was more plausible. Another deviation from the original paradigm was the presentation of all information in a singular profile diagram without including a description of the dimensions. Instead, Cadinu and Rothbart (1996)

showed information about only one dimension at a time. Following a short description of the dimension, they presented the participant's or the group's score, respectively, and asked participants to make an assessment of the respective target. In addition, participants were then asked how desirable they thought the respective dimension to be. Since, in the adapted paradigm used in the present study, no descriptions of the dimensions were given and, hence, dimensions should not differ in perceived valence, it was thought unnecessary to ask for ratings of desirability.

According to some researchers, identification with the respective group is a necessary precondition for the occurrence of self-stereotyping (e.g., Brown & Turner, 1981) as well as for social projection (Krueger, 2007): “Once some specific social identification is salient, a person assigns to self and others the common, typical or representative characteristics that define the group as a whole. [Thus, they come to] perceive themselves as relatively interchangeable with other ingroup members” (Brown & Turner, 1981, p. 39). Hence, to confirm that, for participants in this experiment, the group of Germans indeed was a relevant category for self-categorization, identification with this group was measured with four items (e.g., “I identify with the group of Germans.”, see Table A-3 in Appendix A for a full list). These questions were also answered on 11-point scales ranging from -5 (*does not apply at all*) to +5 (*applies completely*).

Procedure. A 2 (*Priming* of an independent or an interdependent mindset) x 2 (*Anchor* in the Minimal Traits Paradigm) between-subjects design was employed. Again, the maximum number of participants during one lab session was five. After participants were welcomed and seated, they started executing the fictitious tests of the Minimal Traits Paradigm. As in Experiment 1, the experimental software E-Prime (Psychology Software Tools, 2013) was used to present instructions and to record data. After completion of the fictitious tests, participants were primed with an independent or an interdependent mindset by means of the Pronoun Circling Task (Gardner et al., 1999). The task itself was identical to Experiment 1, concerning both instructions and text. Following the priming procedure, back on the screen, participants were shown the profile diagram with the anchor and alternative information and were asked to assess either the self or the group of Germans, depending on the experimental condition. After this, identification with the ingroup was measured and demographic data were assessed.

After finishing the study, subjects were thanked for their participation in the experiment, were paid, and asked for secrecy concerning the study's contents.

If an independent mindset had been primed, participants were expected to rely more pronouncedly on information about the self when asked for an assessment of the group of Germans (social projection). Vice versa for a primed interdependent mindset, participants were expected to use the information indicating the German average to a larger extent when they were asked to make predictions about their own test results (self-stereotyping).

3.2.3 Results

Identification. The items of identification with the ingroup formed a reliable scale, Cronbach's α = .77. The general level of identification was relatively high, M = 1.99, SD = 1.80, on an 11-point scale from -5 to +5, and differed significantly from the scale midpoint of 0, $t(100) = 11.15$, $p < .001$. An ANOVA revealed no effect of priming on identification, $F(1,99) = 1.03$, $p = .312$, $\eta_p^2 = .010$.

Minimal Traits Paradigm. To determine if the priming had an effect on the occurrence of social projection and self-stereotyping, first, multiple regressions were calculated for each subject separately with the anchor information and the values of the alternative profile as independent variables while subjects' target ratings served as the dependent variable. In a multiple regression analysis, the effect of one predictor on the criterion is tested while keeping all other predictors constant (Eid, Gollwitzer, & Schmitt, 2013). This way, b-values were calculated for each subject individually. These parameters indicated the predictive value of the information presented to participants in the anchor profile (b_1) and the alternative profile (b_2), respectively controlling for each other (see Krueger & Stanke, 2001). Each b value was then included as a dependent variable in analyses of variance.

In a first step, to check if the *Priming* x *Anchor* target interaction depended of the version of the profile plot (mirror-imaged or not), it was included as a method factor in a 2 (*Priming*) x 2 (*Anchor*) x 2 (*Profile*) ANOVA. Here, the b_1 parameter, which had been calculated before, served as the dependent variable—the parameter indicating how strongly participants relied on information from the anchor line when being asked to make an assessment of the respective target. Since there was no effect of *Profile* on the

Priming x *Anchor* target interaction, $F(1,91) = 0.50$, $p = .483$, $\eta^2 = .005$, data were collapsed across profiles. In a subsequent 2 (*Priming*) x 2 (*Anchor*) ANOVA, effects on b_1 were examined. It revealed a significant *Prime x Anchor* 2-way interaction, $F(1,95) = 5.84$, $p = .018$, $\eta^2 = .058$, as depicted in Figure 3-3. There were no significant main effects of *Anchor* or *Prime*, both *F*'s < 1.

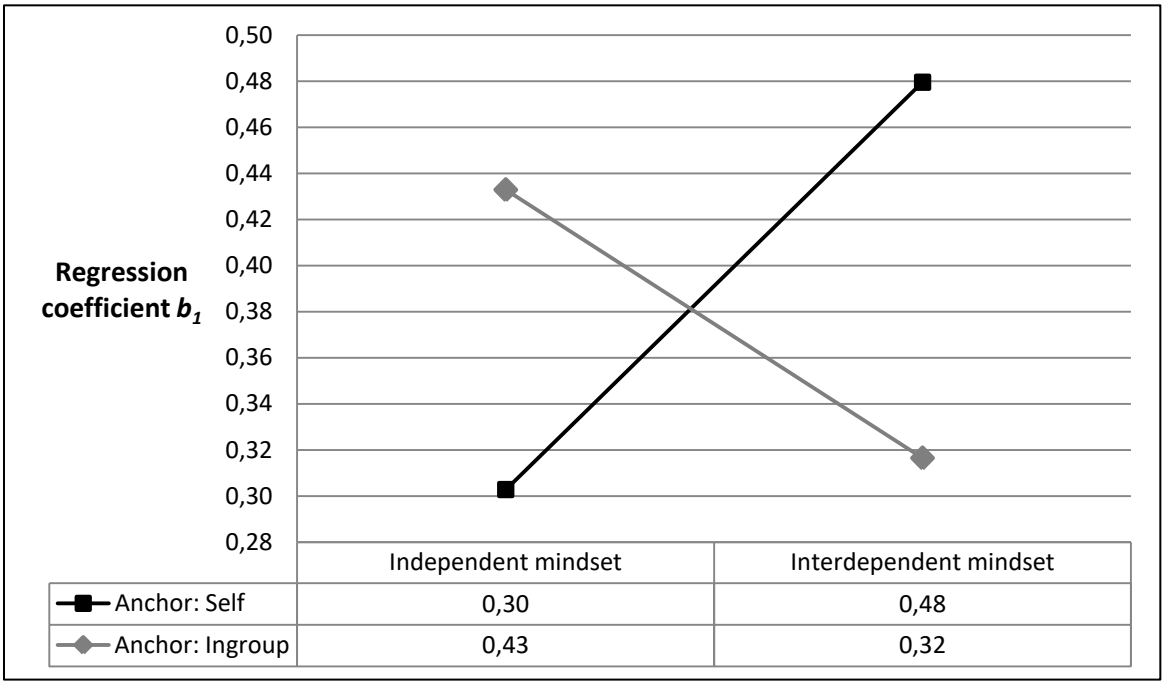


Figure 3-3. 2-way interaction (*Priming x Anchor*) for regression coefficient b_1 indicating the extent to which participants relied on information about the anchor (information about the self vs. information about the group) when being asked to make an assessment of the respective target, controlling for information from the profile's alternative line.

For the independence priming, simple effects analysis indicated that b_1 values in the *self-as-anchor* condition and the *ingroup-as-anchor* condition did not to differ significantly, $F(1,95) = 2.19$, $p = .142$, $\eta^2 = .023$, while for the interdependence priming, this difference was marginally significant, $F(1,95) = 3.80$, $p = .054$, $\eta^2 = .038$. For the *self-as-anchor* condition, the difference between primings was significant, $F(1,95) = 3.97$, $p = .049$, $\eta^2 = .040$, while for the *ingroup-as-anchor* condition, it was not significant, $F(1,95) = 1.98$, $p = .163$, $\eta^2 = .020$.

Next, to assess if the degree of identification with the ingroup influenced social projection and self-stereotyping, *Identification* was included in a regression analysis

with b_1 values as criterion and *Priming*, *Anchor*, *Identification*, and their interactions as predictors. Though the *Priming x Anchor* target interaction here just marginally reached significance, b = -0.054, SE = 0.029, t = -1.851, p = .067, there was a significant main effect of *Identification*, b = 0.055, SE = 0.017, t = 3.290 p = .001. Furthermore, there was a significant effect of the *Priming x Identification* term, b = -0.039, SE = 0.017, t = -2.371, p = .020. Next, for a moderation analysis, data were coded for a high degree of identification with the ingroup (SD = +1) or a low degree of identification (SD = -1), respectively. For a low degree of identification, marginally significant effects of *Priming*, b = 0.076, SE = 0.041, t = 1.85, p = .067, and of the interaction *Priming x Anchor* were found, b = -0.054, SE = 0.029, t = -1.858, p = .066. A simple slopes analysis revealed a significant difference between priming conditions if the self was the anchor, b = 0.240, SE = 0.110, t = 2.182, p = .032. For a high degree of identification, there was a significant effect of the *Priming x Anchor* interaction, b = -0.054, SE = 0.029, t = -1.858, p = .066. Here, a significant slope could be found between priming conditions if the group of Germans was the anchor, b = -0.261, SE = 0.113, t = -2.299, p = .024.

For regression coefficient b_2, *Anchor* had a significant main effect in an ANOVA implementing *Anchor* and *Priming* as independent variables, $F(1,95) = 15.82$, $p < .001$, $\eta^2 = .143$. b_2 parameters were higher in the *self-as-anchor* condition, M = 0.33, SD = 0.18, than in the *group-as-anchor* condition, M = 0.16, SD = 0.23. No significant effects of *Priming* or the interaction *Priming x Anchor* were detected, Fs < 1. Furthermore, in a regression analysis with b_2 values as criterion and *Priming*, *Anchor*, *Identification*, and their interactions as predictors, no significant effects of *Identification* and corresponding interaction terms were detected, all p's > .10.

3.2.4 Discussion

Results, again, were contrary to my hypotheses. If an independent mindset had been primed, the difference between b_1 values was not significant, indicating that social projection and self-stereotyping occurred to the same extent. However, for a primed interdependent mindset, b_1 values were higher in the *self-as-anchor* condition, a pattern which suggests that social projection, here, is the predominant process.

The significant main effect of *Anchor* in the ANOVA examining regression coefficient b_2 implies that, compared to participants in the *group-as-anchor* condition, participants in the *self-as-anchor* condition relied more heavily on the alternative source of

information which was labeled as indicating results of a "randomly selected former participant". Possibly, information about "another central-European country" has not been perceived as being a source of information as adequate and valid for the self as information about a "randomly selected former participant" might be for the group of Germans. To infer inform about another country (i.e., the outgroup) to the self is as implausible as to infer information about the self to the outgroup (see Krueger & Dawes, 2008, for a discussion).

Another interesting fact is that, under the independent priming, the use of the anchor as the source of information did not differ significantly either if information about the self or about the group had been presented. That implies that there is no egocentric bias under the independent, but only under interdependent priming. This deviates from previous research (e.g., Krueger & Stanke, 2001) where an egocentric bias had been found: Here, information about another group member was not used when participants were asked to make a statement concerning the group.

The significant main effect of *Identification* with the ingroup in the regression analysis of *Priming*, *Anchor*, *Identification*, and their interactions on b_1 values indicates that that the extent on how much subjects relied on anchor information increases with their level of identification, a finding which is in accordance with prior research (e.g., Brown & Turner, 1981; Krueger, 2007). In addition, among subjects who indicated lower levels of identification with their ingroup, a marginal significant main effect of *Priming* was found: After the interdependence priming, those subjects relied on anchor information generally to a larger extent than subjects who were primed with an independent mindset, independent of the type of anchor being presented. That is, after the interdependence priming, the anchor becomes a more relevant source of information. Results of the simple slopes analysis indicate that this effect is especially pronounced for subjects who received bogus information about themselves: After the interdependence priming, those information were used to a larger extent than after the independence priming. This finding implies that here, social projection is the predominant process, just as the results in the primary analysis indicates. For higher degrees of identification with the ingroup, information about the group of Germans is used to a larger degree after the priming of an independent vs. interdependent mindset, that is, the independence priming caused participants to rely more extensively on group

information (self-stereotyping). Both findings for the analysis including levels of identification with the ingroup were contrary to the initial hypothesis.

At this point, the question arose if there could have been a problem with the priming procedure employed in these first two experiments. It might have been the case that the Pronoun Circling Task for some reason did not cause the hypothesized shift in focus, that is, it may not have induced socio-cognitive mindsets as expected. To assess if the observed effects might have been due to an ineffective priming procedure, a different priming procedure, which was expected to alter participants' perceived social status, was employed in the next experiment. By manipulating participants' perceived social status, another approach for the inducement of a certain mindset could be engaged, which yields at another range of the construct.

3.3 Experiment 3

3.3.1 Introduction

Since the hypothesized effects could not be found in the first two experiments, now a different priming procedure was employed. Instead of altering participants' focus via the Pronoun Circling Task, I tried to achieve this indirectly by manipulating their perceived social status. According to Kraus and colleagues (Kraus et al., 2012), diminished resources and lower rank enhance lower-class individuals' contextualist tendencies, that is, a focus on external social forces and other persons who influence the individual's life (i.e., an interdependent mindset). The opposite is claimed to be the case for upper-class individuals. Here, the availability of resources and an elevated rank create a context which emphasizes personal freedom and gives rise to an individualistic (i.e., an independent) mindset. This mindset, in turn, leads a person to focus more on his or her own goals, emotions, and motivations (see also Markus & Kitayama, 1991, 2010; Snibbe & Markus, 2005; see section 1.2.1.1). Hence, I expected to observe social projection in the experimental condition where high social status is primed, while self-stereotyping should arise if a low social status has been primed.

Since the expected effects, once more, were not found in the last experiment and to rule out the possibility that this was due to the variation of the Minimal Traits Paradigm which had been applied, now I employed the original version of the paradigm as introduced by Cadinu and Rothbart (1996)[4].

3.3.2 Method

Participants. 124 students from the University of Mannheim majoring in different subjects participated in Experiment 3. The age range was 18 to 40 years, M = 21.59, SD = 3.43, 71 % of the participants were female. As in the previous studies, the experiment was advertised as a study on social perception in lectures and using leaflets. Participants were paid 2.50 Euro cash and a bar of chocolate for participating in the study. 18 participants were excluded from the final analysis for being non-native German speakers or being born outside of Germany. These two preconditions were of

[4] At this point, I would like to express my gratitude to Mara Cadinu for providing me with the original material and additional information necessary for employing this paradigm.

importance with regards to participants' identification with the group of Germans. Analyses were conducted with $N = 106$ participants.

Dependent Variables. In this third experiment, a variation of the Minimal Traits Paradigm was employed which tried to emulate the version originally introduced by Cadinu and Rothbart (1996). Here, just like in the adapted paradigm in Experiment 2, participants first have to go through a series of fictitious tests which are similar to the ones employed before. They are told that the tests are designed to determine their performance in the areas of perception, memory and spatial awareness. In contrast to the adaptation of the paradigm from the previous experiment, only four instead of six tests are to be executed to determine performance on only six instead of twelve dimensions. Since tests were designed to be executed via paper and pencil, they had to be slightly modified to make testing with the computer both possible and plausible. Yet, they remained similar to the original material. Full instructions and a description of the tasks are included in Appendix C2. Another modification is that, after the "tests", instead of presenting a profile diagram with the anchor information, in this original paradigm, this information is presented for each dimension consecutively: After a short description of each dimension (e.g., "Field orientation in problem-solving: The tendency to rely on relational information present in the problem context. High scores on the Field Orientation Scale indicate good problem-solving strategies."), participants receive bogus results on how they scored on the respective dimension (vs. information about how the group of Germans has scored so far) and were then asked to assess the group of Germans on the same dimension (vs. guess how they think they themselves have scored on the dimension). In fact however, all participants are given the same false feedback on how they or the group of Germans "scored" on the fictitious trait dimensions. Ratings are made on a 9-point scale ranging from 1 (*low values*) to 9 (*high values*), by pressing the corresponding key on the keyboard. Following the assessment of the target, participants were instructed to indicate how desirable they thought it would be to get a higher score on the respective dimension. Again, the scale ranged from 1 (*not desirable*) to 9 (*very desirable*) and ratings were to be given by pressing the corresponding key.

To assess the currently active mindset directly, the *Wezwe Task* was employed (Davis & Brock, 1975; Dijksterhuis & van Knippenberg, 2000; Marx, Stapel, & Muller, 2005). In this, participants are given a series of sentences which, they are told, are written in the language "Wezwe" spoken by only few ethnic groups in New Guinea.

Several words in the text are underlined. Participants are instructed to try to determine which German pronouns correspond to the underlined foreign pronouns. There are eleven sentences, containing a total of 15 alleged pronouns. Subjects are told to choose from a list of German personal and possessive pronouns: *ich*, *mein*, *du*, *dein*, *er*, *sein*, *sie*, *ihr*, *wir*, *unser*, *ihr*, *euer* (I, my, you, your, he, his, she, her, we, our, they, their). It was assumed that the currently active mindset would be reflected in their choice of pronouns, producing a higher proportion of singular pronouns (vs. plural pronouns) if an independent (vs. interdependent) mindset has been primed compared to the condition where an interdependent (vs. independent) mindset has been primed. Full instructions as well as the text allegedly written in Wezwe are included in Appendix C3.

Identification with the group of Germans was measured with the same four items as in Experiment 2 which, however, were to be answered on 9-point scales ranging from 1 (*does not apply at all*) to 9 (*applies completely*).

Procedure. Like in the last experiment, a 2 (*Priming* of a high or low perceived social status) x 2 (*Anchor* in the Minimal Traits Paradigm) between-subjects design was employed. The study was conducted in a research lab at the University of Mannheim with a maximum number of participants during one lab session of five. As before, the experimental software E-Prime (Psychology Software Tools, 2013) was used to present instructions and to record data. First, participants were instructed to complete the fictitious tests of the Minimal Traits Paradigm. To achieve a variation in participants' perceived social status, in this experiment, the *Social Ladder Task* (Kraus, Horberg, Goetz, & Keltner, 2011; Piff et al., 2010) was employed. Here, participants are shown a ladder with eight rungs and are instructed to interpret this ladder as representing social differences in Germany. They are then assigned to either a low or high relative social class rank position, based on the following instructions by Kraus and colleagues (2011):

> Please compare yourself to the people at the very bottom (top) of the ladder. People like these are the worst (best) off: They have the lowest (highest) incomes, lowest (highest) educational opportunities and the least (most) respected professions. Now, imagine for a moment in which way you differ from these persons in relation to your own income, your educational background and your profession. Where would you place yourself on this ladder, relative to the people at the bottom (top) of the ladder? (p. 1383)

Next, participants are asked to place themselves on the ladder relative to the person at the very top or at the very bottom (1 = bottom rung, 8 = top rung). Due to this manipulation, I expected an assimilation effect to occur: For participants asked to compare themselves to a person at the very top of the ladder (high-status condition), the priming was expected to induce an independent mindset. Vice versa, if subjects are asked to compare themselves to a person at the very bottom of the ladder (low-status condition), an interdependent mindset is expected to arise. This social status rating also served as a first manipulation check.

Following this priming procedure, participants were given the anchor information with bogus scores of the alleged performance tests (i.e. information about either their own performance or about results the group of Germans has shown so far) and were asked to assess either the group of Germans' score or to guess their own score, depending on the experimental condition. After the measurement of these dependent variables, participants were asked to complete the Wezwe translation task to allegedly determine in which way performance in the assessed domains affected their intuitive understanding of language. Finally, they were asked to answer the four questions regarding their level of identification with the ingroup and demographic data were assessed. After finishing the study, subjects were thanked for their participation in the experiment, were paid, and asked not to speak with potential future participants about the study's contents.

If participants had been primed to perceive their social status as being relatively high, they were expected to rely more pronouncedly on information about the self when they were asked for an assessment of the group of Germans (social projection) than participants in the *low-status* condition. Here, vice versa, participants were expected to make use of the information about the German average to a larger extent when they were asked to make predictions about their own test results (self-stereotyping) compared to participants in the *high-status* condition. Furthermore, in the Wezwe translation task, an increased use of singular pronouns and a diminished use of plural pronouns was expected after a high social status had been primed compared to the low-status priming.

3.3.3 Results

Identification. As in the previous experiment, items measuring identification with the ingroup formed a reliable scale, Cronbach's α = .79. The general level of identification was relatively high, $M = 6.79$, $SD = 1.41$, and differed significantly from the scale midpoint of 5, $t(105) = 13.07$, $p < .001$. Again, there was no effect of priming on identification, $F(1,104) < 1$, $p = .473$, $\eta_p^2 = .005$.

Social status rating. The social status rating following the status priming served as a manipulation check. An ANOVA revealed no significant effect of the status priming on status ratings, $F(1,104) < 1$, $p = .733$, $\eta_p^2 = .001$. However, the status ratings' mean, $M = 5.11$, $SD = 1.13$, differed significantly from the calculative scale midpoint of 4.5, $t(105) = 5.58$, $p < .001$, indicating that participants perceived their own social status to be relatively high, independent of the priming they had received.

Minimal Traits Paradigm. Again, in a first step, multiple regressions were calculated for each subject separately. The information presented about the anchor (the self or the group of Germans) was used as one predictor. Unlike in Experiment 2, now there was no need to control for information from an alternative line in the profile plot. This is due to the slightly different design of the original version of the Minimal Traits Paradigm (Cadinu & Rothbart, 1996) employed in Experiment 3 in which the anchor information is presented to participants without providing alternative information. Yet, subjects' desirability ratings were included as another predictor in the regression to control for the influence each dimension's valence might have on target ratings, the criterion variable. In a subsequent 2 (*Priming*) x 2 (*Anchor*) ANOVA, the anchor information's b_1 parameters were analyzed.

Results indicated a significant main effect of *Anchor*, $F(1,99) = 5.25$, $p = .024$, $\eta_p^2 = .050$. b_1 parameters were larger in the *group-as-anchor* condition, $M = 0.42$, $SD = 0.36$, than in the *self-as-anchor* condition, $M = 0.26$, $SD = 0.35$. Furthermore, the *Priming x Anchor* interaction was marginally significant, $F(1,99) = 2.82$, $p = .096$, $\eta_p^2 = .028$, see Figure 3-4.

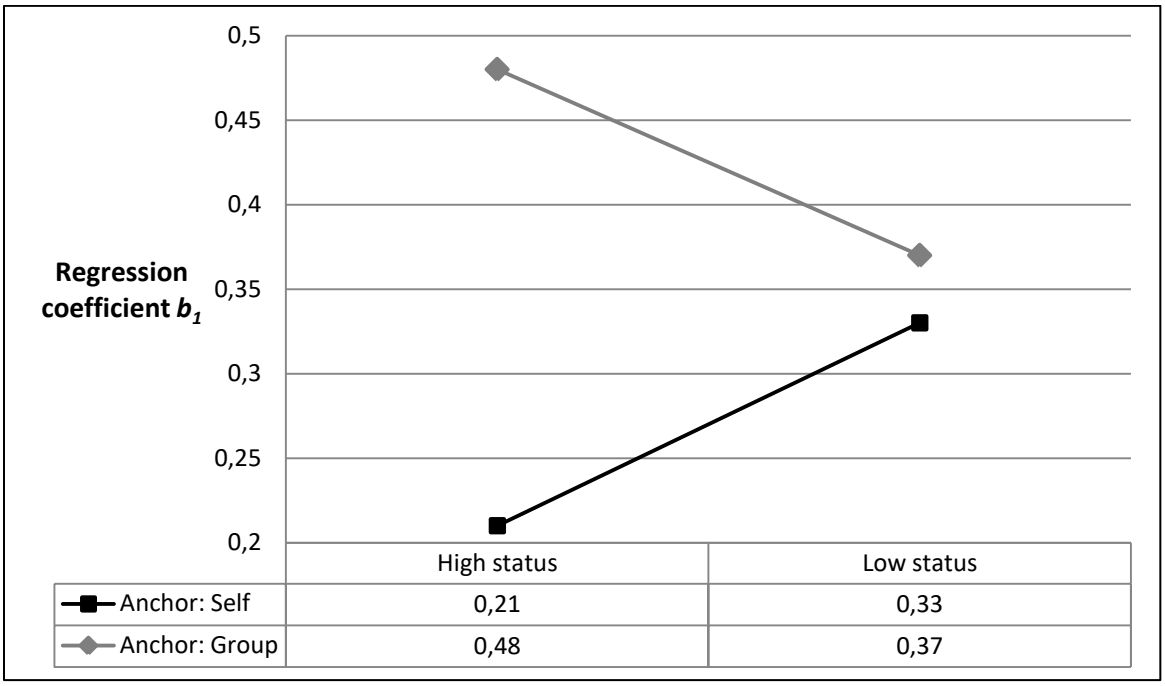


Figure 3-4. 2-way interaction (*Prime x Anchor*) for regression coefficient b_1 indicating the extent to which participants relied on information about the anchor (information about the self vs. information about the group) when being asked to make an assessment of the respective target.

For the high-status priming, simple effects analysis revealed that b_1 parameters in the in the *self-as-anchor* and *group-as-anchor* condition differed significantly, $F(1,99) = .81$, $p = .006$, $\eta^2 = .073$, while for the low-status priming, this difference was not significant, $F(1,99) = 0.19$, $p = .665$, $\eta^2 = .002$. For the *group-as-anchor* condition, the difference of b_1 parameters between primings was not significant, $F(1,99) = 1.34$, $p = .250$, $\eta^2 = .013$, as well as for the *self-as-anchor* condition, $F(1,99) = 1.48$, $p = .226$, $\eta^2 = .015$.

As in Experiment 2, to analyze if the extent of identification with the ingroup influenced social projection and self-stereotyping, *Identification* was included in a regression analysis with b_1 values as criterion and *Priming*, *Anchor*, *Identification*, and their interactions as predictors. Here, the *Priming x Anchor* target interaction only marginally reached significance, $b = 0.063$, $SE = 0.035$, $t = 1.816$, $p = .072$. There was no main effect of *Identification*, $b = 0.001$, $SE = 0.025$, $t = 0.054$, $p = .957$, also no other effects near significance could be detected, smallest $p = .101$.

Wezwe Task. For the analysis of this measure of the currently active mindset, participants' translations of the pronouns in the Wezwe Task were counted, singular and plural pronouns separately. The translations consisted of considerable more singular, $M = 9.21$, $SD = 2.50$, than plural pronouns, $M = 3.43$, $SD = 1.96$. This difference, in part, is due to the fact that there were eight singular pronouns which could be used in the translation, but only six plural pronouns. This unequal 8-to-6 ratio increased further because two pronouns had to be excluded in both singular and plural because, in German, they indicate singular and plural at the same time: *sie* and *ihre* (*she* and *her* or *they* and *their*, respectively). But even taking into account this ratio of possible choices, there still is a large surplus of singular pronouns in the translation: While, after this exclusion, for each plural pronoun there were potentially 1.50 singular pronouns available (six singular and four plural pronouns), for each plural pronoun 2.69 singular pronouns were used in the translation on average.

Due to the imbalance of potentially available singular and plural pronouns, pronoun categories were analyzed separately. In a 2 (*Priming*) x 2 (*Anchor*) ANOVA, for singular pronouns, there was neither a main effect of *Priming*, $F(1,96) < 1$, $p = .673$, $\eta_p^2 = .002$, nor of *Anchor*, $F(1,96) < 1$, $p = .895$, $\eta_p^2 < .001$, nor of the *Priming x Anchor* interaction, $F(1,96) < 1$, $p = .577$, $\eta_p^2 = .003$. For plural pronouns, the factor *Priming* also had no significant effect, $F(1,96) < 1$, $p = .724$, $\eta_p^2 = .001$, as well as the *Priming x Anchor* interaction, $F(1,96) < 1$, $p = .699$, $\eta_p^2 = .002$. However, there was a significant main effect of *Anchor*, $F(1,96) = 6.96$, $p = .010$, $\eta_p^2 = .068$, indicating that participants used more plural pronouns if they had been instructed to make an assessment of their own performance in the previous Minimal Traits Paradigm, $M_{Self} = 3.94$, $SD = 2.11$ vs. $M_{Group} = 2.92$, $SD = 1.66$.

3.3.4 Discussion

While it was expected that social projection is the predominant process after a high social status has been primed, self-stereotyping should have been prevalent after the low-status priming. Results, however, paint a different picture: After a low social status had been primed, both social projection and self-stereotyping occur to the same extent. In the *high-status* condition, participants attributed group characteristics more readily to the self than vice versa: self-stereotyping is the predominant process. These results are in conflict with previous research which indicated that low-status or stigmatized

individuals reacted with an increase in self-stereotyping after their status had been made salient and their group identity had been threatened (e.g., Cadinu et al., 2012; Latrofa et al., 2009; Latrofa et al., 2012; see also section 1.2.1).

Also, the Wezwe Task (Davis & Brock, 1975; Dijksterhuis & van Knippenberg, 2000; Marx et al., 2005), which had been employed as a direct way to assess the currently active socio-cognitive mindset, did not yield the expected results: apparently, the priming had no effect on this measure. This might be due to several factors. Firstly, the priming's effects might have been depleted by the earlier Minimal Traits Paradigm. Secondly, this task could have been implemented at a point in time too late after subjects had received the priming so that its effects simply might have worn off, independent of another measure preceding this one. Finally, the Wezwe translation task might not be sensitive to a priming of perceived social-status as employed in this experiment. While it, at this point, is not possible to clarify if one of the first possibilities might be true, at least it seems unlikely that the third proposition applies. Results of the Minimal Traits Paradigm indicate that the priming did influence which source of information subjects preferred when being asked to make social judgments or judgments concerning the self, respectively. Though these effects were not in the expected direction, they at least indicated the presence of a connection between the social-status priming and the occurrence of social projection and self-stereotyping. Furthermore, as can be seen from the results in Experiment 2, variations in primed socio-cognitive mindsets can be detected with the Minimal Traits Paradigm as well. And since the Wezwe Task has been demonstrated before to be sensitive for the detection of the currently active socio-cognitive mindset, too (Marx et al., 2005; here called a personal vs. collective self-construal orientation), it is not implausible to infer that this measure is suitable for the detection of variations in perceived social status as well.

By now, for a third time in the course of my experiments, a pattern has emerged which is contrary to the predicted pattern. In this instance, a primed high social status was associated with self-stereotyping. At least two approaches of explanation for the absence of the a priori hypothesized patterns seem plausible. The first one will be presented here while the second will be pointed out in detail in the following section.

The first approach yields at the priming procedure. In previous research employing the Social Ladder Task (Kraus et al., 2011; Piff et al., 2010) as well as in the present study, an assimilation effect was obviously expected to occur: When participants had

been asked to compare themselves to a person of high status, they should have adapted to high-status individuals' solipsistic tendencies. In contrast, the comparison with a person of low status should have led participants to relate to low-status individuals' contextualist social cognitive tendencies. This assumption of assimilative predominance, however, is dependent on other factors and does not apply necessarily in any case. Mussweiler (2001, 2003) described preconditions determining the occurrence of an assimilation effect or the oppositional contrast effect. He assumes that, in most cases, people compare themselves to a certain standard by testing the initial hypothesis that their standing along the judgmental dimension is indeed *similar* to that of the comparison standard. According to Mussweiler and Strack's Selective Accessibility Model (Mussweiler & Strack, 2000), as a consequence of this initial evaluation, a person generates evidence supporting this first assumption of similarity. This process, in turn, increases the accessibility of evidence in support of the assumption which, then, causes it to be more likely used in later self-evaluations (Trope & Liberman, 1996). Hence, self-evaluative consequences should depend on the hypothesis which a person has at the beginning of a comparison process. Mussweiler (2001) states that before engaging in the more elaborate process of further hypothesis testing, the hypothesis which is to be tested has to be generated in the first place. If the initial assessment of similarity indicates a similarity to the standard, a person is likely to test this hypothesis of similarity by generating consistent information. However, if the initial similarity assessment leads a person to assume dissimilarity, he or she is likely to continue testing for dissimilarity.

Following Mussweiler's (2001) reasoning and considering that participants in this experiment were all university students, they will probably tend to perceive their own social status as being relatively high by default. Hence, for participants who are asked to position themselves on a scale compared to high-status individuals, an assimilation effect might indeed occur: An initial assessment of similarity would result in perceived similarity which, in turn, would lead to further assimilative processes. However, if participants from a university student sample are asked to position themselves in relation to low-status individuals, to whom an initial similarity judgment will most likely result in a perceived dissimilarity, this could trigger the impulse to distance themselves from a low-status position. This might explain why status ratings in the Social Ladder Task did not differ between both priming conditions. Subjects primed with a high social

status might have assimilated to a high social status while subjects in the low-status condition might have contrasted away from the low-status position and towards a high social status as well.

Yet, these considerations do not explain the pattern found in the Minimal Traits Paradigm. If the priming procedure would have effectively led to the same extent of perceived social status in both conditions, this should have reflected in a pattern which does not differ extensively between these groups. Instead, results indicate that, of all conditions, participants who had been asked to compare themselves with a person of high social standing react to this priming with an increase in self-stereotyping. Vice versa, according to my hypotheses, self-stereotyping was expected to occur for subjects who perceived themselves to possess a low social status. However, in this low-status condition, both social projection and self-stereotyping occur to the same extent. The post-hoc explanation described in the previous paragraph does not cover this observation, for here, no group perceiving their own social standing as being low would exist. Furthermore, to produce the effects found in the *high-status* condition based on this alternative explanation, a contrast effect would have had to occur just in the priming condition where subjects had been asked to compare themselves to persons of high status. This assumption, however, lacks a theoretical basis. Another fact contradicting the post-hoc explanation is that the Social Ladder Task has proven effective in the past in producing the predicted assimilation effects (e.g., Kraus et al., 2011; Piff et al., 2010).

3.4 Discussion of Part I

It was expected that a shift in focus towards the self and its characteristics should have enhanced individualistic, egocentric tendencies, hereby leading a person to project his or her own characteristics to other persons or his or her ingroup (social projection). That is, after an independent mindset had been induced, I expected participants to use information about the self to a larger extent as a source of information when they were asked to make an assessment of the group of Germans (compared to the priming of an interdependent mindset). On the other hand, it was predicted that a focus shift toward the ingroup and its characteristics (i.e., the induction of an interdependent mindset) would make information about this group more available and enhance a person's contextualist tendencies. This, in turn, should increase the readiness to attribute information about the group to the self (self-stereotyping). Accordingly, after the induction of an interdependent mindset a person should feel inclined to use information about his or her social group more readily as a source to answer questions regarding the self.

In Experiment 1, results contradict these initial hypotheses. For a primed independent mindset, data suggest that social projection and self stereotyping occur to the same extent, instead of social projection being the predominant process. In contrast, for a primed interdependent mindset, social projection was observed while there was no clear indication of self-stereotyping, as indicated by response times which were similarly fast for matches and mismatches.

The second experiment replicated the effects reported for Experiment 1: After the induction of an independent mindset, b_1 parameters indicating the strength of the relationship between the judgmental anchor and the target did not differ significantly, regardless of the self or the ingroup being the anchor. This indicated social projection and self-stereotyping, again, to occur to the same extent. However, if an interdependent mindset had been primed, b_1 parameters were significantly higher in the *self-as-anchor* condition, a pattern which suggests that, here, social projection is the predominant process.

Lastly, in Experiment 3, results differed from those in the first two experiments, but were contrary to my initial hypotheses nonetheless. When participants in the *high-status* condition received information about the ingroup and were asked to estimate their

individual results in the previous fictitious tests, they relied on this information more pronouncedly than participants who received information about their own characteristics and were asked to make an assumption about their ingroup. This pattern indicates that self-stereotyping was predominant after the priming of a high social status. In contrast, after a low social status had been primed, the nonsignificant difference between b_1 parameters from both *Anchor* conditions indicates that, here, both processes did not differ in strength.

After the predicted results could not be obtained after three experiments, alternative explanations were explored. Apparently, both priming procedures effectively influenced the occurrence of social projection and self-stereotyping—however not in the expected way. Notably, while results in each experiment were contrary to my initial hypotheses, these contradictions emerged in different ways. While, in Experiments 1 and 2, it was an increased degree of social projection after the interdependence priming which especially stood out in the results, in Experiment 3, the occurrence of self-stereotyping after the independence priming—in this case, in the form of the high-status priming—was the part which contradicted my hypotheses the most.

After the Pronoun Circling Task produced rather "ironic" effects in Experiments 1 and 2, similar effects could be observed after the use of the Social Ladder Task. While unexpected and contradictory effects in my first two experiments were most pronounced in the interdependence priming condition where social projection was found to be the predominant process, in Experiment 3, the most noticeable observation stems from the independence priming condition where self-stereotyping turned out to be prevalent. Concerning the research paradigms, results from both the reaction-time based paradigm implemented in Experiment 1 and results from the Minimal Traits Paradigm showed the contrary effects. This observation may be interpreted as countering concerns of invalidity in measurement.

On the basis of these ironic effects, an alternative explanation is being proposed in the following section of this thesis, which takes implications of *Optimal Distinctiveness Theory* (Brewer, 1991) into consideration. With this alternative approach I will try to reconcile the results of the first three experiments.

4 Part II: Ironic Effects Following the Induction of Socio-cognitive Mindsets

4.1 Optimal Distinctiveness Theory

According to Brewer (1991), social psychologists have become "increasingly 'self'-centered" (p. 475) in a way that they focused insufficiently on the importance of group membership in connection to individual functioning. While this view might have been partially adequate in the early 1990s, social psychology has gained momentum in this area with, for example, the further exploration of and the ongoing emphasis on the domain of social cognition. Brewer herself met her concerns by developing *Optimal Distinctiveness Theory* (ODT; Brewer, 1991). It posits that human beings are characterized by two opposing needs that direct the relationship between self-concept and membership in a social group. One need is a need for inclusion, for assimilation, and for belonging which motivates an immersion in one's ingroup to a certain degree. The other need is a need for differentiation from others, for expressing one's individuality, which works in opposition to the need for inclusion.

Following Leonardelli, Pickett, and Brewer (2010), the needs for inclusion and differentiation may induce relevant changes in self concept, similar to how other motivations influence the way in which individuals view themselves. A central statement in SCT, following the distinction between a personal self and a social self, is that the categorization of the self as a group member brings about a shift from defining the self in terms of its individual traits to a definition of the self in terms of traits and attributes which are prototypical of the ingroup (Turner et al., 1987). Hence, ingroup members high in prototypicality generally experience feelings of high ingroup inclusion (Oakes, Haslam, & Turner, 1998). Accordingly, one way to satisfy the need for inclusion is for individuals to alter the self to be more consistent with the ingroup prototype. This can be achieved, for example, by changing one's behavioral patterns, one's appearance (e.g., by following an informal or a formal dress code specific to the group), or by adopting attitudes or beliefs which are specific to or typical of the group. Also, prototypicality can be increased by attributing traits which are stereotypical of the ingroup to the self (self-stereotyping; see section 1.1.2). Since prototypicality comprises a shift towards the ingroup's prototype as well as a shift away from the outgroup's prototype, it can also

serve the need for differentiation. In a series of studies, Pickett, Bonner, and Coleman (2002) found support for these assumptions.

Brewer's ODT (1991) puts a strong emphasis on group processes, stating that an individual seeks an individually different optimal level of distinctiveness by serving the need for inclusion *within* a certain group as well as the need for differentiation *from* other groups. Yet, these two opposing drives or motives can also be comprised in a more general sense. Especially, the need for differentiation may be seen as a striving for individuality (Brewer & Roccas, 2001).

Inclusion and differentiation motives vary depending on the current level of satiation or deprivation, just like any other need or drive. As opposing drives, the motives of inclusion and differentiation hold each other in check. The more an individual feels part of a social group, the more the need for inclusion is satisfied, but also the more the level of activation of the differentiation motive increases (Brewer & Roccas, 2001). Conversely, as a person moves towards a disconnection from a social group, the need for differentiation is diminished, but the level of activation of the need for inclusion rises. As a result of these two needs antagonizing each other, optimal distinctiveness can be understood as a dynamic equilibrium, as it is not necessarily fixed due to variations and changes in contextual properties which interact with the activation of inclusion and differentiation motives. Accordingly, an individual may seek to achieve an optimal level of distinctiveness between a personal identity and an identity as a group member (as depicted in Figure 4-1).

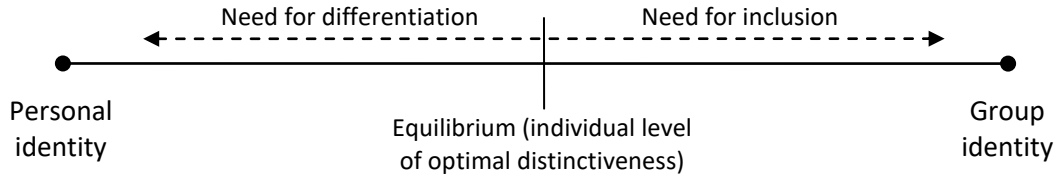


Figure 4-1. The (individually different) point of equilibrium of optimal distinctiveness on the dimension personal vs. group identity depends on the current degree of activation of the needs for differentiation and inclusion.

As stated by Leonardelli et al. (2010), a common misunderstanding of the ODT model is that optimal distinctiveness was a property of some groups rather than others, which would lead individuals to prefer and to directly seek identification with such

optimal groups. Instead, they emphasize that optimal distinctiveness is highly *context* specific. Following this reasoning, it may be assumed that both needs and the resulting individually preferred level of distinctiveness may not only be specific to a certain situational context, but may also be shaped by the individual's culture. Hereby, I suggest that socio-cognitive mindsets are in direct connection to this level of distinctiveness, that is, a person's individually preferred level of distinctiveness is proposed to depend on the currently active socio-cognitive mindset. This way, identity motives shape a preferred level of optimal distinctiveness which is unique to each individual while sharing commonalities within a certain culture.

As described above, while I had hypothesized that after the priming of an independent socio-cognitive mindset social projection is the predominant process, I expected self-stereotyping to exceed social projection after the priming of an interdependent mindset. However, results from the experiments showed rather the opposite pattern: In the first two experiments, which employed the Pronoun Circling Task as the priming procedure, both processes occurred to the same extent after an independent mindset had been primed. After the priming of an interdependent mindset, social projection was the stronger process. In Experiment 3, in the condition in which a perceived high social status and, hence, an independent mindset had been primed, self-stereotyping instead of social projection was found to be the predominant process. In the condition in which a low social status was supposed to be primed, both processes occurred to the same extent.

As a possible post-hoc explanation, I propose that the priming via the Pronoun Circling Task, which had been employed in Experiments 1 and 2, as well as the priming via the Social Ladder Task in Experiment 3 could have had paradox effects. As described in the current section, in dependence on Optimal Distinctiveness Theory (Brewer, 1991; Brewer & Roccas, 2001), it may be assumed that individuals seek an optimal balance between their personal identities and their identities as group members. In Western cultures, an independent self-concept is the chronically primed standard (e.g., Markus & Kitayama, 1991; see section 1.2.2). Here, the average point of equilibrium is set at a position towards the dimension of a personal identity (see Figure 4-2 a, p. 59). By priming participants employing the Pronoun Circling Task or the Social Ladder Task, some kind of *reactant* response may have inadvertently been triggered. Both primings are expected to induce a shift in participants' momentarily active socio-cognitive

mindsets towards a more independent or a more interdependent processing mode. This, however, may have shifted participants' equilibrium along the dimension personal vs. social identity towards an undesirable position (for an illustration, see Figure 4-2 b).

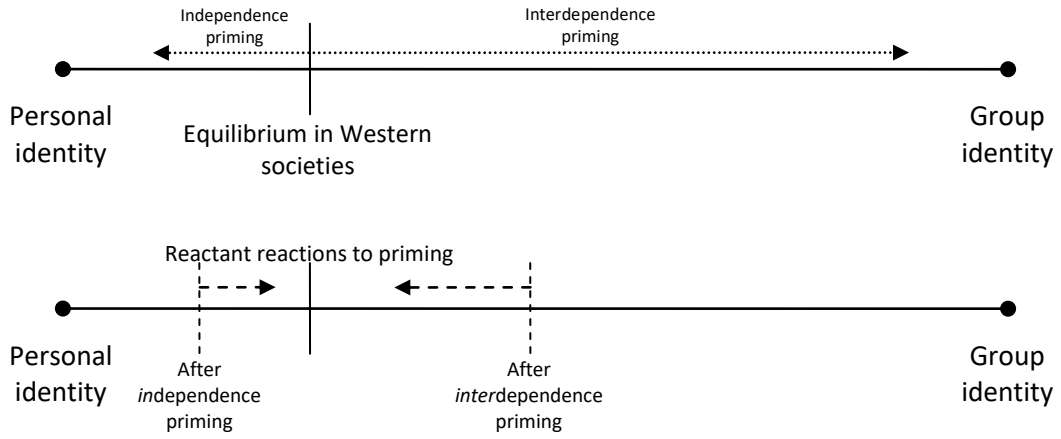


Figure 4-2a. In Western societies, the point of equilibrium, on average, is set towards the pole of a personal identity by default. The *intended* effects of the employed priming methods (Pronoun Circling Task; Social Ladder Task) are indicated by dotted arrows. *b.* Proposed *reactant* reactions as a means to compensate the shift in equilibrium caused by the employed primings, as indicated by dashed arrows.

In Experiments 1 and 2, in an attempt to restore their preferred balance, subjects in the interdependence condition of the Pronoun Circling Task could have tried to compensate this shift towards their group identity by putting their individual selves into focus. Due to the resulting heightened accessibility of information about the self, this information would be used when being asked to describe the ingroup (social projection stronger than self-stereotyping). Vice versa, after the independence priming both processes occurred in equal intensity. Apart from the "standard" processing mode in Western cultures (social projection, see section 2), participants reacted with self-stereotyping as a means to counteract the shift in balance caused by the priming: For participants who grew up and live in an individualistic society and for whom the aforementioned equilibrium is set somewhere in direction of the individuality pole by default, the priming of an independent socio-cognitive mindset via the Pronoun Circling Task might not have caused a particularly large increase in perceived individuality. The resulting need for differentiation might not have been as large as the need for

individuation in case of the interdependence priming. Accordingly, social projection and self-stereotyping did not differ significantly in the independence priming condition.

Concerning Experiment 3, observed effects are not easily explainable on a basis of ODT. As discussed in section 3.3, assuming that an assimilative process did take place in the independence condition of the priming as expected, this should have caused participants to perceive their own status to be high. Hence, I had originally expected participants to have their focus shifted towards an egocentric position. Accordingly, I had expected them to react with an increase in social projection. In this condition, however, self-stereotyping was the dominant process. Assuming the here postulated, in ODT terms, undesirable increase in perceived individuality occurred after this priming had been employed, this, again, may have induced a reactant reaction. To explain the predominance of self-stereotyping in the high-status condition, a stronger reactant reaction would have had to take place than proposed in Experiments 1 and 2. One might speculate that a "direct" priming of socio-cognitive mindsets via the Pronoun Circling Task may have different effects than an "indirect" approach via the Social Ladder Task. Members of the upper class have long been stereotyped in ways that speak to a lack of social esteem, e.g., as "greedy", "condescending", or "posh" (Fiske, Cuddy, Glick, & Xu, 2002). Accordingly, for a student sample, the assimilation to and the identification with a high social status might be undesirable if this identification included the activation of corresponding unfavorable upper-class stereotypes. However, if the identification with a high social status was unattractive for participants in the first place, this would violate Experiment 3's basic assumption that an initial similarity judgment will cause an assimilation effect to occur (Mussweiler, 2001). Bearing in mind that I could not be sure that in *both* priming conditions an assimilation process arose (see section 3.3.4), a test of my new ODT-derived hypothesis will focus on priming via Pronoun Circling Task, comparable to Experiments 1 and 2.

Indications for this new hypothesis could be observed not only in the primary measures of prior experiments. In my first experiment's stereotypicality measure (see section 3.1.4), as a confirmation of basic assumptions, stereotypicality of the traits led to smaller variance in ratings for the ingroup while the subjects' individual characteristics resulted in a larger variance in ratings for the self. However, after an interdependent mindset had been primed, the difference between standard deviation means (M_{SD} self vs. M_{SD} ingroup) amounted to only 0.05 in the *self first* condition and to 0.19 in the *ingroup*

first condition. Standard deviation means in ingroup ratings were 0.11 SDs higher in the *self first* than in the *ingroup first* condition. Although only on a descriptive level, these results suggest that an instance of social projection occurred.

Accounting for the reported paradoxical results from prior experiments, I tried to make them directly visible in a final experiment. While Part I of this thesis pursued a cognitive approach toward social projection and self-stereotyping, the second part seeks to confirm a motivational explanation of social projection and self-stereotyping as a means to regulate an imbalance caused by the priming of socio-cognitive mindsets.

4.2 Alternative Hypotheses

Based on Optimal Distinctiveness Theory, I hypothesize that the priming of socio-cognitive mindsets via the Pronoun Circling Task will shift the preferred equilibrium each individual seeks along the dimension personal vs. social self in an undesired way. The individual will then try to compensate this imbalance by engaging in counter-reactions: After the independence priming and the subsequent increase in perceived individuality, participants are expected to react similarly to prior experiments and show self-stereotyping and social projection to the same extent. Vice versa, the interdependence priming is expected to cause participants to counter the emphasis on a group identity by emphasizing their individuality. The center of attention, as a result, would be shifted to the self. If participants, then, will be asked to make an assessment of the ingroup, they are expected to use their own characteristics as a source of information and engage in social projection.

4.3 Experiment 4

4.3.1 Introduction

In addition to a replication of the paradoxical effects found in precedent experiments and in order to provide evidence for my alternative hypotheses, two new measures were employed in Experiment 4. The first one served to assess the degree of participants' conformity concerning social influence. Taking considerations from Optimal Distinctiveness Theory into account, it was expected that participants were less susceptible to alleged estimations of prior subjects in a letter-counting exercise if they have been primed with an interdependent mindset compared to an independent mindset. The priming of an interdependent mindset is expected to shift participants' preferred equilibrium towards the social self in an undesired way. As a counter-reaction, the individual is expected to accentuate his or her personal identity, characteristics, and estimations and will rely less pronouncedly to the given alleged estimations of prior subjects.

With the second measure, I attempted to compare the accessibility of self-related knowledge across the two priming conditions via a reaction-time based measure. If the hypothesized process of restoring one's individuality after the priming of an interdependent mindset was the cause for the observed effects in Experiment 1 and 2, information about the self should be more accessible in this condition, as here the focus will have been reactantly shifted towards the self. This should result in shorter response latencies when participants are asked to make dichotomous assessments on characteristics for the self after the priming of an interdependent mindset, compared to a condition in which an independent mindset has been primed.

4.3.2 Method

Participants. In Experiment 4, participants were 162 students from the University of Mannheim who majored in various disciplines. The sample's age ranged from 18 to 40 years, $M = 21.92$, $SD = 3.91$, and comprised 66% female participants. The study was advertised both in lectures and via e-mail as a study on social perception. Participants were paid 4 Euro cash and a bar of chocolate for their participation. In total, 14 participants were excluded from the final analysis because they did not execute the priming procedure correctly, were no German native speakers, or had participated in

recent experiments with similar experimental paradigms. Analyses were conducted with *N* = 146 participants.

Dependent Variables. In order to provide evidence for the ironic priming effect, a conformity task was employed which is an adaptation from van Cappellen and colleagues (van Cappellen, Corneille, Cols, & Saroglou, 2011; Castelli, Vanzetto, Sherman, & Arcuri, 2001). In this task, participants are asked to make an estimation of the number of the letter "a" appearing on a computer screen. Overall, there are 16 screens for which the number of "a"s varied from 148 to 1127. Each screen appears for only four seconds to avoid the application of counting strategies (e.g., by counting the numbers of "a"s per line and multiplying it by the number of lines). After each screen, participants are asked to enter their estimates directly in the experimental software. On the top of eight of the 16 screens, three estimates for the number of letters are given, which deviate 20, 25, and 30%, respectively, above (on four screens) or below (on four screens) the actual number of "a"s. Participants are told that the estimates had been provided by other participants, who have taken part in a pretest. Already in the introduction, participants are told that they can decide for themselves whether to use this information in their estimation or not. In addition to these eight screens, eight screens with no estimates are intermixed. These were added to increase the salience of peer estimates, but also to obtain a baseline of accuracy for each subject. This way, it is possible to examine if the Pronoun Circling Task might affect participants' accuracy in any way. Full instructions are included in Appendix C4.

To further test my hypotheses derived from Optimal Distinctiveness Theory, a reaction-time based measure was created to assess the accessibility of information about the self. In this, participants are shown 60 adjectives consecutively and are asked to use the keyboard to make a dichotomous assessment if the respective adjectives apply to them or not. The list of 60 items comprised 20 positive, 20 negative, and 20 neutral items, and was selected from a set of items used by Otten and Epstude (2006). This task's instructions and the list of items are included in Appendix C5. I hypothesized that subjects who are urged to identify with their ingroup strive to restore this balance by highlighting their individuality and vice versa. Accordingly, information about a person's own characteristics should be more accessible if an interdependent mindset has been primed. This should result in shorter response latencies, compared to the priming condition where an independent mindset has been primed.

Identification with the ingroup was measured with the same items as in Experiments 2 and 3, but—as a replication of Experiment 2—were to be answered on an 11-point scale ranging from -5 (*does not apply at all*) to +5 (*applies completely*) .

Procedure. A 2 (*Priming* of an independent or an interdependent mindset) x 2 (*Anchor* in the Minimal Traits Paradigm) between-subjects design was employed. Again, the maximum number of participants during one lab session was five. The experiment started with the fictitious tests of the Minimal Traits Paradigm. For a replication of the ironic effects found in previous experiments, the alternative version of the Minimal Traits Paradigm from Experiment 2 was employed instead of the original version of Cadinu and Rothbart (1996). I chose this alternative version due to the implementation of the Pronoun Circling Task in this experiment. Hence, for a full replication, priming procedure and experimental paradigm should match. The alternative version of the Minimal Traits Paradigm has been described in detail in Experiment 2 (see section 3.2.2).

Next, participants were primed by means of the Pronoun Circling Task. Instructions and the text were the same as in Experiments 1 and 2 (Gardner et al., 1999). Employing this priming procedure, participants' focus was attempted to be shifted to either their own person or the group which, in turn, was expected to cause the hypothesized paradoxical reaction. Following the priming procedure, participants completed the conformity task to allegedly assess the speed of their visual perception and their visual accuracy. All in all, they were shown eight screens with bogus estimates of "prior participant's estimates from the pretest" on the top of each screen, as well as eight screens without such social estimates. Each screen was shown for only four seconds, then participants were asked to enter the number of letters "a" they estimated to have seen.

Now, as an additional method factor, the order of the next two measures was varied: Constituting the factor *Order*, participants were either asked to execute the reaction-time based measure first and then the Minimal Traits Paradigm, or vice versa. The reason for this variation of order was that after the measurement of two dependent variables—the conformity task and the reaction-time based paradigm or the Minimal Traits Paradigm, respectively—the priming effect might have worn off and no longer work for the last measure. In the beginning of the reaction-time based measure, participants were told that they now would be asked to give estimates concerning

personal characteristics and whether these characteristics tend to apply to them or not. They were asked to use the "S" key to indicate that the trait applies to them, and to use the "L" key to indicate its rejection. Being told to use each hand's index or middle finger to enter a response, they started the measurement by pressing one of the buttons. After an answer was given, an inter-stimulus interval of 500 ms was employed before the next trait was shown. This procedure was repeated for all 60 traits.

The Minimal Traits Paradigm's procedure was identical to Experiment 2. Participants were told that, based on the tests executed at the beginning of the experiment, a profile of their personal information processing style had been created (*self-as-anchor* condition) or that—due to the study "having been conducted at various universities for some time now"—a preliminary profile of the average German person had been created (*group-as-anchor* condition). They were shown the profile diagram's twelve dimensions with the anchor and alternative information being identical in both experimental conditions. Next, participants were either asked to assess the group of Germans on the respective dimensions (*self-as-anchor* condition) or they were asked to allegedly validate the test results by estimating how they think they themselves scored in the tests (*group-as-anchor* condition).

Finally, they were asked to answer the four questions regarding their level of identification with the ingroup, and demographic data were assessed. After finishing the study, subjects were thanked for their participation in the experiment, were paid, and were asked for secrecy concerning the study's contents.

4.3.3 Results

Identification. Items employed for the assessment of identification with the ingroup formed a reliable scale (Cronbach's α = .88). The general level of identification was relatively high (M = 8.13, SD = 2.17, on an 11-point scale) and it differed significantly from the scale midpoint of 6, $t(145)$= 11.88, $p < .001$. Just as in previous experiments, there was neither an effect of *Priming* on identification, $F(1,142) = 0.43$, $p = .512$, $\eta_p^2 = .003$, nor of the judgmental *Anchor* in the Minimal Traits Paradigm, $F(1,142) = 0.05$, $p = .943$, $\eta_p^2 < .001$, nor of their interaction, $F(1,142) = 0.71$, $p = .400$, $\eta_p^2 = .005$.

Conformity task. To assess the degree of conformity, which—according to my new hypotheses based on Optimal Distinctiveness Theory—was expected to vary in

correspondence to a manipulation of socio-cognitive mindsets, participants' estimates of the letter "a" in the conformity task (van Cappellen et al., 2011, Castelli et al., 2001) were analyzed separately for screens with or without the alleged estimates by prior subjects. I expected that participants primed with an independent mindset—who had their focus shifted towards their own person, pronouncing their individuality—would react in this task by relying to these estimates to a higher degree than participants whose focus of attention was directed towards the group, hereby restoring the shifted balance on the continuum *personal* vs. *group identity*. Participants who received the interdependence priming were expected to restore said balance by relying on social estimates to a lower degree, hereby promoting their individuality. To this end, for each participant and for each of the eight screens with social estimates, average absolute values of proportional difference scores were calculated:

$$DifferenceScore_x = \frac{ABS\left(\frac{Estim_x - Person_A}{Person_A}\right) + ABS\left(\frac{Estim_x - Person_B}{Person_B}\right) + ABS\left(\frac{Estim_x - Person_C}{Person_C}\right)}{3}$$

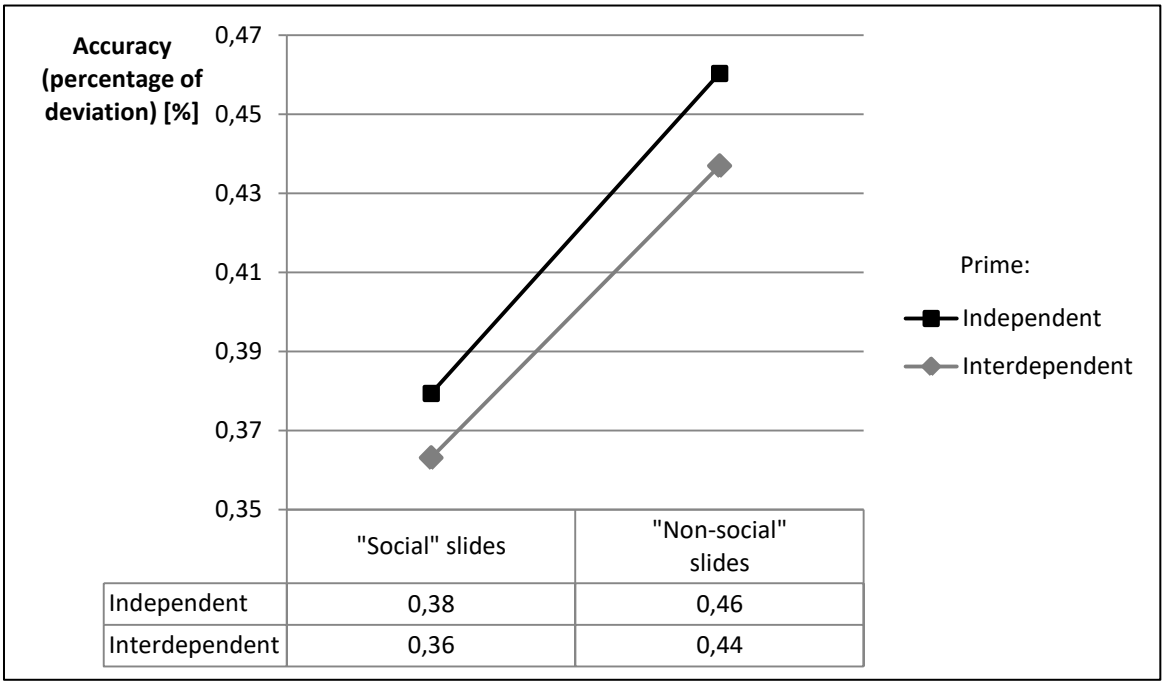
$Estim_x$ indicates the estimate a subject made on screen x; $Person_A$, $Person_B$, $Person_C$ indicate the social estimates which were presented to subjects on top of eight of the screens. Next, these eight difference scores were averaged for each participant. Smaller scores indicating more conformity, the averaged scores served as the dependent variable in a one-way ANOVA for the factor *Priming*. Results indicated no significant effect, $F(1,144) = 0.10$, $p = .749$, $\eta_p^2 = .001$.

Furthermore, to examine if the accuracy of participants' estimation was influenced by the type of screen (with or without social estimates) and the priming they received, an additional accuracy score was calculated separately for screens with or without social estimates. This accuracy score indicated each participant's deviation from the *actual* count of letters on each type of screen. For this purpose, accuracy scores were calculated for each screen:

$$AccuracyScore_X = ABS\left(\frac{Estim_x - ActualCount}{ActualCount}\right)$$

Again, $Estim_x$ indicates each participant's estimate for the number of the letter "a" on screen x, whereas *ActualCount* refers to the actual number of letters shown on each screen. These accuracy scores, too, were averaged for each participant and for the type of screen (with or without social estimates), resulting in two mean scores for each participant. These were entered in a 2 (type of screen) x 2 (*Priming*) mixed ANOVA with

the first factor varying within and the second factor varying between participants. If participants who have been primed with an interdependent mindset would refrain from using information given by social estimates (i.e., accuracy on slides with social estimates would be poorer than on slides without them), this would be evidence for the "ironic" effect proposed above. However, results just show a significant main effect of the within factor, $F(1,144) = 30.37$, $p < .001$, $\eta_p^2 = .174$, indicating higher accuracy on slides with social estimates than on slides which showed only the letters "a", see Figure 4-3. The effects of *Priming* and the interaction of *Priming* and type of slide were not significant, all Fs < 1.



	"Social" slides	"Non-social" slides
Independent	0,38	0,46
Interdependent	0,36	0,44

Figure 4-3. Accuracy of participants' estimation on slides including social estimates ("social" slides) and slides without this information ("non-social" slides), depending on the primed socio-cognitive mindset (independent vs. interdependent).

Minimal Traits Paradigm. Since a modified version of the Minimal Traits Paradigm was employed, just as in Experiment 2, multiple regressions were calculated for each subject separately in a first step. Subjects' target ratings served as the dependent variable, while the information from the anchor line (b_1) and the information from the alternative line (b_2) in the profile plot were entered as independent variables. In a 2 (*Priming*) x 2 (*Anchor*) ANOVA, effects on b_1 were examined, the parameter indicating the relation between anchor information and target ratings while controlling for

information given in the alternative line of the profile plot[5]. The ANOVA revealed neither main effects nor an effect of the *Priming x Anchor* 2-way interaction, all *F*s < 1. In a next step, to check for an effect of *Order*—i.e., participants either were first asked to execute the reaction-time based measure, then the Minimal Traits Paradigm or vice versa—a 2 (*Priming*) x 2 (*Anchor*) x 2 (*Order*) ANOVA was conducted which did not show any effects of the *Order* factor, all *F*'s < 1.

Just as in Experiment 2, for regression coefficient b_2 there was a significant main effect of *Anchor* in an ANOVA implementing *Anchor* and *Priming* as independent variables[6], $F(1,127) = 29.80$, $p < .001$, $\eta^2 = .190$. b_2 parameters were higher in the *self-as-anchor* condition ($M = 0.33$, $SD = 0.29$) than in the *group-as-anchor* condition ($M = 0.06$, $SD = 0.27$). Also for the b_2 parameter, there was not effect of *Order* on the interaction *Anchor x Priming*, $F(1,123) = 2.01$, $p = .159$, $\eta^2 = .016$.

Accessibility of information about the self. A reaction-time based measure was employed as a means to assess the accessibility of information about the self. Reaction times were logarithmized and averaged across the 60 traits for which participants had been asked to assess if the trait applied to them. A one-way ANOVA with *Priming* as the independent variable was calculated, which revealed a marginal significant effect of the priming, $F(1,144) = 2.79$, $p = .097$, $\eta^2 = .019$. Response latencies were shorter if participants had been primed with an independent mindset, $M = 1075$ ms, than with an interdependent mindset, $M = 1166$ ms. Also for this measure, there was no effect of the order—participants executing either this reaction-time based measure first or the Minimal Traits Paradigm—as indicated by the nonsignificant *Prime x Order* interaction, $F(1,142) = 1.52$, $p = .219$, $\eta^2 = .011$.

Furthermore, effects of trait valence and subjects' responses were taken into account because "yes" responses are typically faster than "no" responses (e.g., Latrofa, 2008; Otten & Epstude, 2006). Since responses varied across subjects and items, linear mixed-effects modeling was chosen for the analyses, like in Experiment 1. Again, the *R*

[5] In an initial step, I had tested for effects of the version of the profile (mirror-imaged or not) which participants were shown as a source of information. A 2 (*Priming*) x 2 (*Anchor*) x 2 (*Profile*) ANOVA did not show an effect of profile for the target interaction *Priming x Anchor*, $F(1,123) = 0.72$, $p = .399$, $\eta^2 = .006$. Hence, data were collapsed across profile versions.

[6] Also for regression coefficient b_2 the interaction *Priming x Anchor x Profile* was not significant, $F(1,123) = 0.677$, $p = .412$, $\eta^2 = .005$, and data were analyzed collectively across both profile versions.

package "lme4" (Bates et al., 2013; R Core Team, 2013) was employed. The following model[7] was implemented:

$$RT = \beta_0 + \beta_1 \times Priming + \beta_2 \times Response + \beta_3 \times Valence + \beta_4 \times Priming \times Response + \beta_5 \times Priming \times Valence + \beta_6 \times Response \times Valence + \beta_7 \times Priming \times Response \times Valence + \beta_{0|Participant} + \beta_{1|Participant} \times Response + \beta_{0|Trait} + \beta_{1|Trait} \times Response + e$$

with β_0 as intercept, β_1, β_2, β_3, β_4, β_5, β_6, and β_7 as regression weights, and e as residuals. *Priming* was coded -1 for the interdependence priming and +1 for the independence priming. *Response* was coded -1 for "no" responses and +1 for "yes" responses. *Valence* was coded -1 for negative trait valence and +1 for positive trait valence. For *Response*, random-slopes effects of *Participant* and *Trait* were defined since participants' responses on traits were expected to vary both across subjects and items. Significant main effects resulted for *Valence*, b = -0.040, SE = 0.014, t = -2.93, p = .003, and *Response*, b = -0.050, SE = 0.013, t = -3.90, p < .001. Response latencies were shorter for positive than for negative items, M_{pos} = 1045 ms vs. M_{neg} = 1180 ms, and shorter for "yes" than for "no" responses, M_{yes} = 1069 ms vs. M_{no} = 1215 ms. Furthermore, a significant *Response* x *Valence* interaction indicated that reaction times were fastest for positive items which applied to participants and negative items which did not apply to participants, b = -0.073, SE = 0.012, t = -6.28, p < .001. Additionally, an interaction of *Priming* and *Valence* was found, b = 0.022, SE = 0.011, t = 1.97, p = .049. Responses were especially fast if participants had been primed with an independent mindset and if trait valence was positive compared to if trait valence was negative. For the interdependence priming, response latencies did not differ depending on trait valence. Full results including random effects can be found in Tables A5 a-d in Appendix A.

[7] In first step, also *Order* had been included as an additional factor. As in the prior ANOVA, *Order* had no effects on other relevant variables or interactions.

4.3.4 Discussion

In this fourth experiment, I attempted to explain the ironic effects found throughout Experiments 1 to 3 and tried to find evidence for my new hypotheses based on Optimal Distinctiveness Theory. Here, I assumed that primings of socio-cognitive mindsets cause an imbalance along the continuum of distinctiveness–inclusion and, this way, lead to an effect opposite to the one originally proposed: Subjects primed with an independent mindset are urged to focus on themselves and their individuality. This process, then, was expected to trigger a reactant reaction causing participants to attribute group characteristics to the self more pronouncedly as a means to reestablish the equilibrium. Similarly, if participants were primed with an interdependent mindset, this was also expected to shift optimal distinctiveness out of balance, overemphasizing participants' social identity. As a result, participants were expected to put their individuality more into focus which would lead them to project their own characteristics to their ingroup to a larger extent: Participants might be motivated to see themselves as the center and tend to construe their surroundings from their own point of view. Accordingly, this priming condition was also expected to go along with a better accessibility of information about the self.

However, in two of the measures' results, there was no effect of priming. In the conformity measure, it was expected that participants primed with an independent mindset react with increased conformity to social estimates compared to participants primed with an interdependent mindset. Yet, the priming procedure had no significant effect on levels of conformity. Furthermore, I tested if the type of screen (with or without social estimates) and the priming participants' received influenced accuracy of estimation. It would have been interesting to observe if participants primed with an interdependent mindset deliberately neglected the use of social estimates in the process of their own estimation, resulting in lower accuracy compared to the independence priming. But also here, there was no effect of priming, but merely an effect of the type of screen: Accuracy was higher on slides with social estimates than on slides lacking these estimates. Typically it is logical to follow a majority's estimation, especially since—in this case—the alleged prior subjects' estimates did not deviate *noticeably* from the actual number of letters on the screen. Hence, participants had no reason to doubt the estimates' validity.

As in the conformity measure, also results in Minimal Traits Paradigm did not show the expected effects. Replicating results from earlier experiments, there was an effect of *Anchor* for the b_2 parameter, indicating that participants in the *self-as-anchor* condition relied more pronouncedly on the alternative source of information in the profile plot than participants in the *group-as-anchor* condition. This, again, might indicate that this condition's source ("randomly selected former participant") was perceived to be a more adequate and more valid source of information than the labeling "another central-European country" in the *group-as-anchor* condition. Yet, the absence of priming effects for the b_1 parameter was rather unexpected, for both priming and paradigm were identical to those employed in Experiment 2 where the ironic effects had been found.

Ultimately, in the measure assessing the accessibility of information about the self, response latencies were expected to be shorter for participants who had been primed with an interdependent mindset compared to those primed with an independent mindset: I hypothesized that the interdependence priming, which had been implemented to shift participants' focus towards the group, might lead participants to emphasize their individuality. Hence, in this instance, information about the self should be more accessible as should have been indicated by shorter response latencies in an assessment of personal characteristics. Indeed, a marginal significant effect of priming was found. Response latencies, however, were shorter if an independent mindset had been induced beforehand. These results could be seen as first-time indication for my initial hypothesis, which did not consider possible ironic effects. Furthermore, responses were faster for positive than for negative items and faster for "yes" than for "no" responses. These two factors' interaction indicated, in addition, that reaction times were fastest for positive items which applied to participants and negative items which did not apply to participants. These findings are not unknown in the domain of decision making (e.g., Latrofa, 2008; Otten & Epstude, 2006).

To sum up, none of the measures I employed in this experiment showed the expected ironic effects which had been found in three prior experiments. In two of these measures, no effect of priming was found whatsoever while the task designed to assess accessibility of information about the self indicated a pattern which actually had been expected according to my initial hypothesis in the first three experiments. All in all, one possibility is that the new hypothesis is not correct. Still, it remains unclear why the priming did not show any effects at all in the conformity task as well as in the Minimal

Traits Paradigm, but, in the task assessing accessibility of information about the self, caused response latencies to be shorter for participants primed with an independent mindset compared to those primed with an interdependent mindset. This is remarkable given that this experiment, for the most part, was a replication of Experiment 2, employing the same priming and its research paradigm being the alternative version of the Minimal Traits Paradigm.

Two explanations for these results come to mind: On the one hand, priming effects might have been weakened or undone by the conformity task itself, which was placed in order prior to the other measures. This possibility is suggested by the fact that the research design in Experiment 4 was the same as in Experiment 2, with the exception that the measurement of the Minimal Traits Paradigm was preceded by the conformity task. While the priming was intended to alter participants' currently active socio-cognitive mindsets, the conformity task's employment of multiple social estimates might have influenced the active socio-cognitive mindset as well. In retrospect, a re-priming of socio-cognitive mindsets after the conformity task appears to be sensible, similar to the re-priming already introduced in Experiment 1.

On the other hand, in this experiment, the priming for some reason might simply not have worked at all. Bearing in mind that already in the conformity task no effect of the priming had been detected, this explanation seems plausible as well. Considering that also in the Minimal Traits Paradigm no effect of the priming was detected and that the effect detected in the reaction-time based measure was only marginal significant, the latter finding might also have been a chance finding. Multiple analyses of the priming's effects on multiple dependent variables have been conducted in this experiment, increasing the probability of erroneously rejecting the null hypothesis. This explanation is strengthened by the fact that no effect of *Order* (Minimal Traits Paradigm or reaction-time based measure first) has been found in this experiment, leaving it unclear why the priming should have had an effect in the reaction-time task, but in none of the other measures.

5 General Discussion

5.1 Overview

The purpose of this dissertation was to investigate the role of socio-cognitive mindsets in the activation of cognitive inferential processes. My hypotheses were inspired by research on social class which stated this construct to be an important influential factor in shaping basic psychological principles (see section 1.2.1.1). It has been reasoned that an individual's social class is a context which is anchored in the material foundation of social life as well as in a person's distinct construal of his or her class rank (Kraus et al., 2012). Hence, social class can be seen a core aspect of how someone thinks of the self and also how someone relates to the social world (see also Piff et al., 2010; Stellar et al., 2012). In a literature review, Kraus and colleagues (2012) stated that an individualistic mindset led to an orientation towards the environment causing a person to focus more strongly on his or her own goals, emotions, and motivations. In contrast, contextualist tendencies are characterized by a focus on external social forces and other persons who influence the individual's life. These propositions first led me to investigate a relation of socio-cognitive mindsets and cognitive inferential processes.

Similar observations have been made in connection with the minority or majority status of groups (see section 1.2.1.2). In the respective literature, high-status group members, on several occasions, reacted with an increase in social projection. For example, Latrofa and colleagues considered this observation to be the result of an "egocentric cognitive strategy" (Latrofa et al., 2010, p. 919). For low-status group members, instead, the overlap between the self and the ingroup is explained to derive from a group-based cognitive strategy that deduces ingroup characteristics to construe one's self-image. This way, the consideration of gender differences in terms of status differences implicates the prediction that men will be motivated to augment their personal identity to emphasize their personal tribute to the high status of their group, while women might enhance their social identity to defend themselves from the perceived threat against their low-status group or their individual selves (Lorenzi-Cioldi, 1991, 2006).

Aside from research on social status, also cross-cultural psychological research revealed similar observations concerning socio-cognitive mindsets' influence on cognitive inferential processes. Some cultures have been found to place a more pronounced emphasis on the importance of the individual self and others to stress the significance of society over the individual (e.g., Choi et al., 1999; Cross et al., 2011; see section 1.2.2). Within mainly collectivistic cultures, individuals are expected to fit into society, to serve the common good and are seen as fundamentally connected through relationships; the individualistic view, on the other hand, puts the focus on the individual and states that societies exist to promote the well-being of individuals. However, some researchers do not consider culture to produce fixed and unchangeable ways of thinking and of arranging one's social world (e.g., Oyserman et al., 2009). Instead, they proposed that cultures differ with respect to the chronically accessible mindset which in turn largely influences whether an individualistic or collectivistic mindset will be cued at a *particular moment*. Oyserman and colleagues (2009) used a priming method to induce an individualistic or a collectivistic mindset. They observed that the priming of the latter caused context-bound processing to improve, presumably because it focused attention on the connection among the tasks' items and the relationship between objects and their surroundings. Conversely, after the priming with an individualistic mindset, a disjoined processing was facilitated.

Based on these propositions, I assumed that the currently active mode of self-construal constitutes a fundamental factor which influences the construction of personal experience and behavior and which determines the direction of inferential socio-cognitive processes: Socio-cognitive mindsets were proposed to account for a basic factor which influences the individual's way of construing his or her world. Based on this central assumption, I hypothesized that an independent mindset with its distinctive focus on the individual causes a person to interpret its world from the individual's point of view, and I expected social projection to be more dominant than self-stereotyping when a person is asked to characterize the self or his or her ingroup. On the contrary, I assumed that an interdependent mindset with its more pronounced focus on the social context and other persons will trigger the reversed process. A person primed with an interdependent mindset was expected to interpret the world (and hence see the self) from a contextualist point of view. This way, self-stereotyping should have been the predominant process over social projection.

The proposed effects of the two modes of self-construal on social projection and self-stereotyping had to be established in the first part of this dissertation's empirical section. To this end, for the first experimental procedure, a reaction-time paradigm was adopted from Otten and Epstude (2006) to allow for the two processes to be separated, which is based on a connectionist network model of memory (see Aron et al., 1991; Smith & Henry, 1996). Accordingly, overlapping mental representations of social and personal information are indicated by faster response latencies on those dimensions on which self- and ingroup evaluations match compared to those dimensions on which they do not match (see section 3.1.2 for a detailed description). An independent versus an interdependent mode of self-construal was expected to be achieved by means of the *Pronoun Circling Task* (Gardner et al., 1999). Target group in the reaction-time paradigm was the group of Germans in general whose characteristics were shown to be well-suited in matters of stereotypicality in a pretest. In this first experiment, my hypotheses could not be confirmed. Results showed that, for a primed independent mindset, instead of social projection being the predominant process, social projection and self stereotyping occurred to the same extent. In contrast, for a primed interdependent mindset, social projection was found to be stronger than self-stereotyping. After the analysis of this first experiment, it was unclear how its results could be interpreted. For reasons of concerns for methodological shortcomings, a different paradigm was employed in the second experiment.

In Experiment 2, I tried once more to demonstrate that the hypothesized effects of different socio-cognitive mindsets on the directionality of inferential processes can be produced. Once more employing the Pronoun Circling Task, a different experimental paradigm was applied in the efforts of disentangling social projection and self-stereotyping: a modification of a paradigm employed by Cadinu and Rothbart (1996) which I referred to as a *Minimal Traits Paradigm*, since, to participants, only those information about fictitious trait dimensions was available which they received during the experiment. Here, participants first took part in six fictitious cognitive and perceptual tests to allegedly determine their score on these dimensions. They were subsequently given false feedback on their results in the alleged tests, as a means to control the content and source of information available to them: in the *self-as-anchor* condition, participants were given feedback in the form of a profile diagram and were asked to assess the group of Germans on the same dimensions. In the *group-as-anchor*

condition, participants were given bogus information which, they were told, indicated how the group of Germans had scored and were then asked to guess how they thought they themselves had scored in the tests. However, also in this second experiment, results were contrary to my hypotheses, indicating that social projection and self-stereotyping occurred to the same extent after an independent mindset had been primed. For a primed interdependent mindset, a pattern emerged which suggested that social projection was the predominant process. This now repeatedly found effect led me to question the validity of the priming procedure employed in both Experiment 1 and 2. The Pronoun Circling Task might not have caused the hypothesized shift in focus, that is, it may not have induced socio-cognitive mindsets as expected. To rule out the possibility of an ineffective priming procedure being the cause of the observed effects, a different priming procedure was employed in the next experiment.

In Experiment 3, I tried to achieve a change of the active socio-cognitive mindset *indirectly* by manipulating participant's perceived social status against the background of Kraus and colleagues' literature review (Kraus et al., 2012). According to these researchers, diminished resources and a lower societal rank enhance lower-class individuals' contextualist tendencies and induce a focus on external social forces and other persons who influence the individual's life, respectively (i.e., an interdependent mindset). Oppositely, for upper-class individuals, the availability of resources and an elevated rank was described to create a context which emphasizes personal freedom and to give rise to an individualistic (i.e., an independent) mindset. To achieve a variation in participants' perceived social status, the *Social Ladder Task* (Kraus et al., 2011; Piff et al., 2010) was employed in my third experiment. In addition, to rule out the possibility that the repeated failure to produce the expected effects was due to the variation of the Minimal Traits Paradigm which had been used, here, I employed the original version of the paradigm as introduced by Cadinu and Rothbart (1996). Yet, also in this third experiment, results diverged from expectations: After a low social status had been primed, both social projection and self-stereotyping occurred to the same extent. In the high-status condition, participants attributed group characteristics more readily to the self than vice versa: self-stereotyping was the predominant process.

To broadly summarize the first part of this thesis, results could not be obtained as predicted after three experiments. Although not in the expected way, both priming procedures did effectively influence the occurrence of social projection and self-

stereotyping. Remarkably, while results in all three experiments were contrary to initial hypotheses, these contradictions emerged in different ways. In Experiments 1 and 2 an increased degree of social projection after the interdependence priming especially stood out in the results. In Experiment 3, however, the occurrence of self-stereotyping after the independence priming was most noteworthy. Concerning research paradigms, results from the reaction-time based paradigm implemented in Experiment 1 as well as results from the two versions of the Minimal Traits Paradigm implemented in Experiments 2 and 3 showed effects contrary to my hypotheses, in one way or the other. This may be interpreted as countering concerns of a fundamental invalidity in measurement.

An alternative explanation was proposed in the second section of this thesis which took implications of *Optimal Distinctiveness Theory* (ODT; Brewer, 1991) into consideration. Hereby I tried to explain the results from the first section and made allowance for the ironic effects which were observed. ODT posits that human beings can be characterized by two divergent needs which influence the relationship between their self-concept and their membership in a social group: a need for inclusion or assimilation, and a need for differentiation or individuality. ODT strongly emphasizes group processes, stating that an individual seeks an optimal level of distinctiveness by serving the need for inclusion within a certain group as well as the need for differentiation from other groups. However, the need for differentiation may also be seen as a striving for individuality in general (Brewer & Roccas, 2001). Just as any other need, inclusion and differentiation motives vary depending on the current level of satiation or deprivation, and they counterbalance each other. The more an individual feels part of a social group, the more the need for inclusion is satisfied, but also the more the level of activation of the differentiation motive increases. Vice versa, as a person moves towards a separation from a social group, the need for differentiation is diminished, but the level of activation of the need for inclusion rises. Accordingly, optimal distinctiveness can be understood as a dynamic equilibrium, which is not necessarily fixed due to variations and changes in contextual properties which interact with the activation of inclusion and differentiation motives: an individual seeks to achieve an optimal level of distinctiveness between a personal identity and an identity as a group member (for a more detailed account of ODT see section 4.1).

I suggested that the socio-cognitive mindsets directly connect to this level of distinctiveness, that is, I proposed that a person's individually preferred level of distinctiveness may depend on the currently active socio-cognitive mindset. As described above, in all experiments in part one, effects opposite to my hypothesis were observed. As a possible post-hoc explanation in part two of this thesis, I proposed that by priming participants by means of the Pronoun Circling Task or the Social Ladder Task *reactant* responses may inadvertently have been triggered. The shift in participants' momentarily active socio-cognitive mindsets towards a more independent or a more interdependent processing mode, which was intended by both priming methods, was suggested to have shifted participants' equilibrium along the dimension personal vs. social identity towards an undesirable position. In an attempt to restore subjects' preferred balance, hence, they might have engaged in corresponding counter-reactions.

In a final experiment, the Minimal Traits Paradigm was employed once more two replicate the paradoxical results detected in prior experiments. After the independence priming and the subsequent shift towards individuality, participants were expected to engage in self-stereotyping and describe themselves in terms of their ingroup as a means to satisfy their need for belonging. Vice versa, the interdependence priming was expected to cause participants to counter the emphasis on a group identity by giving priority to their individuality. In addition, to make the paradoxical effects directly visible, two new measures were employed. The first one was designed to assess the degree of participants' conformity concerning social influences (an adaptation from van Cappellen et al., 2011). I expected participants being less susceptible to alleged estimations of prior subjects in an estimation task if they had been primed beforehand with an *inter*dependent mindset compared to an *in*dependent mindset, accentuating their personal identity, characteristics, and estimations. With a second measure, I attempted to compare the accessibility of self-related knowledge across the two priming conditions via a reaction-time based measure (see section 4.3.2). Because participants' focus was hypothesized to have been reactantly shifted towards the self after the priming of an interdependent mindset, here, information about the self was expected to be more easily accessible compared to the independence condition, resulting in shorter response latencies when participants were asked to make dichotomous assessments on characteristics for the self. As a priming method, the Pronoun Circling Task was employed once again.

Unfortunately, the priming did not yield the expected effects. In the conformity measure, the priming procedure had no significant effect on levels of conformity. Also results in Minimal Traits Paradigm did not show an effect of the priming. This was rather unexpected, for both priming and paradigm were the same as those employed in Experiment 2 where the ironic effects had been found. Ultimately, in the measure assessing the accessibility of information about the self, a marginal significant effect of priming was found—however, response latencies were shorter if an independent mindset had been induced beforehand. This could be seen as first-time evidence for the initial hypothesis, which did not consider ironic effects. One explanation for this combination of results may be that priming effects might have been weakened or undone by the conformity task itself, which was placed prior to the other measures. This possibility was suggested by the fact that the research design employed in Experiment 4 was the same as in Experiment 2, with the exception that the measurement of the Minimal Traits Paradigm was preceded by the conformity task. It might be the case that the conformity task's employment of multiple social estimates might have influenced the active socio-cognitive mindset in a way similar to the Pronoun Circling Task. Another explanation might be that this priming for some reason might not have worked at all. Bearing in mind that already in the conformity task no effect of the priming had been detected, also this explanation seems plausible. Considering that also in the Minimal Traits Paradigm no effect of the priming could be detected and that the effect detected in the reaction-time based measure was only marginal significant, the latter finding might also have been a chance finding, an artifact produced by the analyses of the priming's effects on multiple dependent variables.

To broadly summarize the empirical parts of this thesis, while my initial hypotheses could not be confirmed in the course of three experiments, several indications for an ironic effect of the priming of socio-cognitive mindsets (e.g., via the Pronoun Circling Task or the Social Ladder Task) were found. In dependence on Optimal Distinctiveness Theory (Brewer, 1991; Brewer & Roccas, 2001), I hence assumed that by priming participants employing either of both priming methods, I may have inadvertently triggered a kind of reactant response after the balance of a personal optimal equilibrium on the continuum of a personal vs. an identity as a group member had been disturbed. As a means to restore this equilibrium, participants might have engaged in reactions contrary to those first hypothesized, accentuating their individual or group identity.

Considerations on this new hypothesis, unfortunately, could not be resolved satisfyingly in a final fourth experiment of this thesis, and possible causes remain unclear.

5.2 Limitations of the Presented Experiments

In this line of research, it was assumed that the activation of different socio-cognitive mindsets is directly related to the predominance of different inferential processes. During the course of my first three experiments, I originally expected that the priming of an independent mindset would elicit social projection while the priming of an interdependent mindset would cause self-stereotyping to be the stronger process. However, results in these first experiments could not confirm my initial hypotheses as patterns were paradox in a way that they, in part, were contrary to my expectations. These findings I explained by means of research on Optimal Distinctiveness Theory and its implications that the priming could have unbalanced an individually favorable equilibrium on the dimension personal vs. social identity. In a final experiment, I tried to replicate the findings of the first experiments and to make the paradox effects directly visible. However, this experiment failed to yield the proposed effects which appear to be unstable. As described before, it remains unclear why the effects of prior experiments could not be replicated although both the same priming and the same experimental paradigm were employed as in Experiment 2.

The present thesis relies on prior research on social projection and self-stereotyping which takes implications of Social Identity Theory (Tajfel & Turner, 1979) and Self Categorization Theory (Turner et al., 1987) into account. These emphasize the importance of a person's social identity for their self-concept. Accordingly, identification with the ingroup constitutes Latrofa and colleagues' (2010) central mediating construct and is also listed as one of Krueger's (1997) conditions for the occurrence of self-stereotyping. In all my experiments in which the degree of identification with the ingroup was measured, identification levels were high, that is, significantly different from the scale midpoint. In each case, the degree of identification did not vary across experimental conditions. Continuing Krueger's list of conditions for the occurrence of self-stereotyping, salience of social categories was ensured in three of four experiments by explicating the comparative categories of both ingroup and outgroup. In Experiments 2 to 4, these categories were made salient by introducing a profile plot with values of the group of Germans vs. those of another central European country. Additionally, in

Experiment 3, participants were shown a ladder representing social differences in Germany and were asked to compare themselves with either people at the very bottom or the top of the ladder. Accordingly, both the Minimal Traits Paradigm and the Social Ladder Task fulfilled the requirement of making the relevant social categories salient.

Another requirement proposed by Krueger (2007) is that attributes, for which self-stereotyping is to be observed, should be of relevance, meaning, and should be evaluatively charged. This was the case for the reaction time paradigm employed in Experiment 1. Here, participants were asked for a rating of the group of Germans and themselves on a list of 90 adjectives (Otten & Epstude, 2006), which can be used to describe a person or a group. As these adjectives are in everyday use, Krueger's requirement can be regarded as being met. However, in Experiments 2 to 4, in order to make use of the Minimal Traits Paradigm's features, traits employed here, had to be fictitious. This way, it was ensured that participants could not use pre-existing knowledge for the assessment of either the self or the ingroup. Accordingly, items lacked meaning and evaluative charge. Yet, items should still have been considered by participants as being of relevance as the fictitious dimensions were introduced as being important for information processing.

A shortcoming can be seen in the omission to assess subjects' socio-economic status or their perceived societal standing in all experiments. In Experiment 3, I tried to actively manipulate the latter as a means to induce an independent or an interdependent and expected to observe social projection after the priming of a high social status, while self-stereotyping should have arisen after a low social status had been primed. Accordingly, the construct of social status is seen to be of considerable influence. Yet, only in Experiment 3, this variable was assessed, although only as a manipulation check. It may have been useful in the other experiments as well to determine if participants' social status interfered with the priming, which may have been the case if randomization was unsuccessful and there was an imbalance in priming conditions.

It may have been the case that the direct priming of socio-cognitive mindsets (here via the Pronoun Circling Task or the Social Ladder Task) was "too strong" in a sense that it was incompatible with participants' chronically primed standard. This way, both primings may retrospectively have caused participants to engage in a reactant counter-reaction as described in detail in the second part of this thesis. In everyday life,

participants may have grown accustomed to the socio-cognitive mindset which is predominant in their respective culture (above, I defined the term "culture" as extending beyond cultural contexts across countries or hemispheres to intra-societal systems as well: social strata, or minority-majority group contexts). Instead, if one were to succeed in avoiding a reactant reaction, I would expect my original hypotheses to apply: an independent socio-cognitive mindset being prone to elicit social projection and an interdependent mindset to favor self-stereotyping. Aside of experimental research, support for these hypotheses may be found in quasi-experimental research (see below).

Despite the limitations discussed, the present line of research provides first evidence that the activation of different socio-cognitive mindsets is indeed directly related to the predominance of different inferential processes. Although my initial hypotheses could not be confirmed, results to this point successfully indicate that the manipulation of socio-cognitive mindsets in general influences the predominance of social projection or self-stereotyping.

5.3 Future Research

In this dissertation, socio-cognitive mindsets were proposed to account for a basic factor which influences the individual's way of construing his or her world. As described and discussed before, in the first part of this thesis resulting patterns were paradox in a way that they, partially, were contrary to my expectations. While I examined in Part II whether these proposed reactant results can be provoked directly, future research should further investigate if the originally proposed effect can be found. If it should not be possible to induce socio-cognitive mindsets directly without causing a reactant response, research could focus on quasi-experimental studies investigating the proposed effects in a "natural" environment where the situational priming is expected to be omnipresent. For example, research could further consider the effects of the membership in a high vs. a low social class for social projection and self-stereotyping. While Kraus and colleagues' (Kraus et al., 2012) research offers a theoretical view of how social class may shape basic psychological processes and describes social class as a core aspect of how someone thinks of the self and how someone relates to the social world, the effect of social class on socio-cognitive inferential processes is yet to be determined (see section 1.2.1.1). Similar research ought to be conducted in the area of cross-cultural psychology. I expect that for people who are raised in an individualistic

culture (e.g. the USA, see Oyserman & Lee, 2008) and who are confronted with respective stimuli in everyday life, social projection is the predominant process. In the same way, I predict that for people from collectivistic cultures (e.g., Hong Kong or Korea) self-stereotyping is the more natural process and predominant over social projection.

In the field of research on minority-majority contexts, Latrofa and colleagues (Latrofa et al., 2009, 2010) examined the process of self-stereotyping focusing on relative ingroup status, using gender groups. They found that low-status group members (women) more easily engage in a process of self-stereotyping than high-status group members (men). For high-status group members, results showed that the observed self-ingroup overlap was due to social projection (see section 1.2.1.2). Additionally, other socially disadvantaged groups should continue to be included and focused on in the future. In spite of large advances in recent decades, there still is a lot of discrimination present in Western societies against homosexuals, not to speak of a lot of other countries where discrimination extends to severe punishments for homosexuality, to the point of prison or even death sentence. Accordingly, in respective research on minority-majority context, homosexuals could be included as a minority or low-status group, and heterosexuals as a majority or high-status group. While it has been demonstrated that homosexuals tend to self-stereotype in similar ways compared to other low-status group members (e.g., Fasoli et al., 2018), research focusing on this minority group with respect to socio-cognitive inferential processes is still scarce.

In addition to an effort to produce the originally proposed effect in a natural environment, it should be further investigated whether the primings used in this thesis are able to trigger a reactant reaction in the manner described in Part 2. In a first step, an experiment similar to Experiment 4 should be conducted in order to detect the effects found repeatedly in Part 1 and to make this reactant reaction directly visible. Careful consideration should be put to the possibility that priming effects might have been weakened or undone by the conformity task itself which, in Experiment 4, was placed in order prior to the other measures. This was the only difference in research design between Experiments 4 and 2, where paradox effects had been produced. Accordingly, for example, a re-priming of socio-cognitive mindsets after the conformity task could be introduced. Furthermore, results might have been due to unknown external factors which could not be accounted for in this last experiment via, for example, the assessment of demographics (see section 4.3.4).

The topic of priming methods should be another subject of investigation. Special effort should be put on the question if priming via the Social Ladder Task and priming via the Pronoun Circling Task do indeed influence the same construct. Basically, this recommendation for further research takes into consideration the very foundation of this thesis and its hypotheses: Is there really a common construct of socio-cognitive mindsets underlying research focusing on cultural mindsets and those focusing on social status and social class? As my deduction in the theoretical part of this dissertation states, I expect this to be the case. On the one hand social class has been found to shape basic psychological processes, with lower-class members focusing more pronouncedly on external social forces and higher-class members focusing on their respective goals, emotions, and motivations (e.g., Kraus et al., 2012). On the other hand, similar observations have been made with respect toward minority-majority group contexts: for example, low-status group members have been found to identify more strongly with their own group than high-status group members do (Latrofa et al., 2010; Latrofa et al., 2012). For high-status group members, a more pronounced tendency for social projection was found than for low-status group members, which was considered to be the result of an egocentric cognitive strategy for high-status group members (see also Cadinu & Rothbart, 1996; Krueger, 2003). Finally, in cultural psychology, it has been shown that in some cultures an individualistic focus tends to be predominant, while in other cultures the focus lies on a more collectivistic processing (e.g., Kitayama et al., 1990; Markus & Kitayama, 1991; Oyserman & Lee, 2008). Bearing these commonalities in mind, the existence of a common global construct of socio-cognitive mindsets appears plausible, despite of my last experiment's results.

Finally, it remains to be hoped that in future research new valid and reliable measures for the disentanglement of social projection and self-stereotyping will be available. While research paradigms currently in use appear promising, there still are methodological issues to settle. There have been several approaches to achieve the disentanglement of social projection and self-stereotyping in past research. As discussed in section 3.1.4, the reaction-time based paradigm in Experiment 1 has methodological shortcomings. When employing the Social Ladder Task, experiences from Experiment 3 suggest that it is imperative to carefully consider participants' social status in order to induce an assimilation effect: asking participants to compare themselves to a person of high status, they should have adapted to high-status individuals' solipsistic tendencies.

Vice versa, the comparison with a person of low status should have led participants to relate to low-status individuals' contextualist social cognitive tendencies (see also Piff et al., 2010). However, given the assumption that—subjects in this case all being university students—they will probably have tended to perceive their own social status as being relatively high by default. As a result, if such subjects are primed with a high social status, they might have assimilated to a high social status while subjects in the low-status condition might have contrasted away from the low-status position and towards a high social status as well (see section 3.3.4). The Minimal Traits Paradigm which was employed in two of this thesis' experiments, to this author, still appears most promising, as here fictitious trait dimensions are used to ensure that participants cannot use pre-existing knowledge for the assessment of either the self or the ingroup and, this way, the source of information available to participants can be controlled.

5.4 Conclusion

The current research addressed the question how the priming of socio-cognitive mindsets influences the predominance of cognitive inferential processes. In the progress of this research, my initial hypotheses could not be confirmed, but the effects found in the first part of this thesis gave rise to a possible and promising alternative hypothesis. Although a final experiment was not able to demonstrate the effects found in the previous three experiments, these three experiments provided first evidence of a possible reactant effect taking place after the use of different priming methods of socio-cognitive mindsets.

Although partially different in reasoning, the presented research is in line with prior research on cultural mindsets in a broader sense—on differences in social status on the one hand, as influenced by majority-minority status relations, social class, or socioeconomic status, and on cross-cultural differences on the other hand—and research on the directionality issue of cognitive inferential processes. It is a first step in demonstrating that socio-cognitive mindsets effectively influence the predominance of social projection and self-stereotyping. Although future research still needs to examine the effects produced by respective priming procedures more closely, the alternative hypothesis offered in the second part of my dissertation may provide a promising solution. In this regard, the search for priming procedures which clearly produce or clearly do *not* produce a reactant effect appears to be of importance.

Research on the effects of socio-cognitive mindsets on the direction of cognitive inferential processes (social projection or self-stereotyping), as conducted in this thesis, is far from being concluded and needs to be continued. Along with the introduction of Social Identity Theory (Tajfel & Turner, 1986) and especially Self-Categorization Theory (Turner et al., 1987) the notion of an intrinsic connection of group and self has become topic of innumerable research programs. One cannot neglect the importance of the interplay of group membership *and* individual functioning. Appropriately, the two cognitive inferential processes examined in this dissertation, which let the individual and the group grow closer, should continue to receive similar attention.

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Summary

This doctoral thesis is concerned with the question how the priming of socio-cognitive mindsets influences the predominance of cognitive inferential processes. Incorporating research on social-status differences on the one hand and on cross-cultural differences on the other hand, it takes a new perspective on the directionality issue of cognitive inferential processes. Based on previous research in these areas, it is assumed that the currently active mode of self-construal constitutes a fundamental factor which influences the construction of personal experience and behavior and which determines the direction of inferential socio-cognitive processes: Socio-cognitive mindsets are proposed to account for a basic factor which influences the individual's way of construing his or her world. It was hypothesized that an experimentally induced independent mindset with its distinctive focus on the individual would cause a person to interpret his or her world from the individual's point of view. Accordingly, in this instance, social projection was expected to be more dominant than self-stereotyping. On the other hand, it was suggested that the priming of an interdependent mindset with its more pronounced focus on social context and on other persons would trigger the reversed process. Here, self-stereotyping was expected to be the predominant process over social projection.

After these initial hypotheses could not be confirmed in the course of three experiments, an alternative hypothesis was suggested in an attempt to explain the contrary but largely consistent results. In the second part of this thesis, implications of Optimal Distinctiveness Theory (Brewer, 1991) were taken into account. A person's individually preferred level of distinctiveness was suggested to depend on the currently active socio-cognitive mindset. As a post-hoc explanation, it was proposed that, via the employed priming methods, *reactant* responses may inadvertently have been triggered: participants' preferred equilibrium may have been shifted undesirably along the dimension *personal* vs. *social* identity. As a result, participants may have engaged in corresponding compensating counter-reactions. The final experiment was an attempt to replicate previously obtained paradox effects and to make them directly visible.

Although this last experiment did not yield the expected results, the line of research presented in this doctoral thesis is a first but nonetheless promising step in demonstrating that socio-cognitive mindsets effectively influence the predominance of social projection and self-stereotyping.

Appendix A: Tables

Table A1

Traits used in the stereotypicality measure in Experiment 1

	positive traits	negative traits
stereotypical	pflichtbewusst [dutiful]	statusorientiert [status oriented]
	fleißig [diligent]	unzufrieden [discontented]
counter-stereotypical	temperamentvoll [vivacious]	langsam [slow]
	rebellisch [rebellious]	unbedacht [imprudent]
Traits neutral concerning stereotypicality	umgänglich [agreeable]	fröhlich [cheerful]
	groß [large]	dankbar [grateful]

Table A2

List of 90 traits used in the reaction time measure in Experiment 1, derived from Otten & Epstude (2006)

abhängig [dependent]	gierig [greedy]	primitiv [primitive]
aggressiv [aggressive]	glücklich [happy]	rational [rational]
aktiv [active]	grob [rough]	reizbar [irritable]
albern [silly]	groß [great]	roh [raw]
ängstlich [anxious]	gründlich [thorough]	romantisch [romantic]
arrogant [arrogant]	hektisch [hectic]	sachlich [objective]
attraktiv [attractive]	herzlich [cordially]	schwach [weak]
belastbar [resilient]	hilflos [helpless]	selbstbewusst [self-conscious]
besorgt [worried]	hilfsbereit [helpful]	selbstlos [selfless]
clever [clever]	intelligent [intelligent]	sensibel [sensitive]
dankbar [grateful]	kalt [cold]	sentimental [sentimental]
dick [thick]	klein [small]	sicher [sure]
direkt [direct]	kleinlich [petty]	sinnlich [sensual]
dominant [dominant]	konsequent [consistent]	sozial [social]
dünn [thin]	kreativ [creative]	sparsam [thrifty]
egoistisch [selfish]	kritisch [critical]	sportlich [athletic]
ehrgeizig [ambitious]	langweilig [boring]	stark [strong]
ehrlich [honest]	laut [loud]	stur [stubborn]
eigensinnig [headstrong]	lieb [kind]	tolerant [tolerant]
eitel [vain]	loyal [loyal]	träge [lazy]
emotional [emotional]	lustig [funny]	treu [faithful]
empfindlich [sensitive]	modern [modern]	umsichtig [prudent]
faul [lazy]	nachlässig [careless]	undiszipliniert [undisciplined]
flexibel [flexible]	nervös [nervous]	unhöflich [rude]
freundlich [friendly]	nett [nice]	verletzlich [vulnerable]
furchtlos [fearless]	neugierig [curious]	vielseitig [versatile]
geduldig [patient]	objektiv [objective]	vorsichtig [cautious]
genau [exact]	offen [open]	warm [warm]
gerecht [fair]	ordentlich [tidy]	weinerlich [whiny]
gesellig [sociable]	passiv [passive]	zielstrebig [determined]

Tables A3 a-d

Results of linear mixed-effects modeling in Experiment 1

Table A3 a: Model fit

AIC	BIC	logLik	deviance	df.resid
1289.0	1414.2	-621.5	1243.0	1686

Table A3 b: Scaled residuals

Min	1Q	Median	3Q	Max
-2.4419	-0.6986	-0.1283	0.6288	3.7031

Table A3 c: Random effects

Groups	Name	Variance	Std.Dev.	Corr
Participant	(Intercept)	3.818e-02	0.195399	
	Match	1.889e-04	0.013745	-0.19
Trait	(Intercept)	6.428e-05	0.008018	
	Match	1.971e-03	0.044399	-1.00
Residual		1.067e-01	0.326722	

Note. Number of observations: 1709, groups: Participant, 100; Trait, 90

Table A3 d: Fixed effects

	b	*SE*	*t*	χ^2	*df*	*p* (χ^2)
(Intercept)	6.985	0.056	116.44	13558.72	1	< .001
Match	-0.070	0.022	-3.15	9.90	1	.002
Target	-0.018	0.089	-0.20	0.04	1	.842
Prime	0.037	0.085	0.44	0.19	1	.661
Order	0.083	0.087	0.95	0.90	1	.344
Match x Target	0.074	0.037	2.04	4.14	1	.042
Match x Prime	0.021	0.031	0.66	0.44	1	.506
Target x Prime	-0.096	0.126	-0.76	0.58	1	.445
Match x Order	-0.017	0.033	-0.50	0.25	1	.618
Target x Order	-0.095	0.124	-0.76	0.58	1	.446
Prime x Order	-0.037	0.120	-0.30	0.09	1	.761
Match x Target x Prime	**-0.111**	**0.052**	**-2.13**	**4.56**	**1**	**.033**
Match x Target x Order	-0.049	0.051	-0.97	0.94	1	.333
Match x Prime x Order	0.028	0.046	0.62	0.38	1	.536
Target x Prime x Order	0.191	0.173	1.10	1.22	1	.270
Match x Target x Prime x Order	0.075	0.072	1.04	1.09	1	.297

Note. The relevant 3-way interaction is printed in **bold** font.

Tables A4 a + b

Table A4 a

Descriptive statistics for the number of matches divided by the total number of matches and mismatches, as a means to set matches into proportion for each participant (Experiment 1)

Priming	Target	*M*	*SD*	*n*
Independence priming	Self	0.5726	0.15248	26
	Ingroup	0.6278	0.18560	26
Interdependence priming	Self	0.5857	0.17763	25
	Inroup	0.5988	0.16521	23

Table A4 b

Results of the 2 (Priming) x 2 (Target) ANOVA for the number of matches divided by the total number of matches and mismatches (Experiment 1)

	Sum of squares	*df*	Squared means	*F*	*p*	Partial η_p^2
Corrected Model	0.043 [a]	3	0.014	0.495	.687	.015
Constant	35.457	1	35.457	1215.544	.000	.927
Prime	0.002	1	0.002	0.054	.816	.001
Target	0.029	1	0.029	0.996	.321	.010
Prime x Target	0.011	1	0.011	0.377	.541	.004
Error	2.800	96	0.029			
Sum	38.392	100				
Corrected Sum	2.844	99				

Note. [a] R^2 = .015 (fitted R^2 = -.016)

Tables A5 a-d

Results of linear mixed-effects modeling in Experiment 4

Table A5 a: Model fit

AIC	BIC	logLik	deviance	df.resid
3512.3	3611.0	-1741.1	3482.3	5305

Table A5 b: Scaled residuals

Min	1Q	Median	3Q	Max
-3.2105	-0.6349	-0.1634	0.4577	6.7902

Table A5 c: Random effects

Groups	Name	Variance	Std.Dev.	Corr
Participant	(Intercept)	0.043427	0.20839	
	Response	0.002119	0.04604	-0.12
Item	(Intercept)	0.004726	0.06875	
	Response	0.002618	0.05117	-0.04
Residual		0.100924	0.31769	

Note. Number of observations: 5320, groups: Participant, 133; Item, 40

Table A5 d: Fixed effects

	b	*SE*	*t*	χ^2	*df*	*p* (χ^2)
(Intercept)	6.959	0.029	244.13	59600.82	1	< .001
Priming	0.046	0.038	1.23	1.51	1	.219
Response	-0.050	0.013	-3.90	15.21	1	< .001
Valence	-0.040	0.014	-2.93	8.60	1	.003
Priming x Response	-0.019	0.014	-1.40	1.97	1	.160
Priming x Valence	0.022	0.011	1.97	3.87	1	.049
Response x Valence	-0.073	0.012	-6.28	39.50	1	< .001
Priming x Response x Valence	-0.003	0.011	-0.27	0.07	1	.788

Table A6

List of identification items used in Experiments 2 to 4

Ich fühle mich der Gruppe der Deutschen zugehörig. [I feel like belonging to the group of Germans.]
Ich bin gerne deutsch. [I like being German.]
Manchmal bedaure ich, deutsch zu sein. (-) [Sometimes I regret being German. (-)]
Ich identifiziere mich mit der Gruppe der Deutschen. [I identify with the group of Germans.]

Appendix B: Priming Procedures

B1 Pronoun Circling Task

Instructions and texts used in Experiments 1 (first priming), 2, and 4.

Studien haben gezeigt, dass die Leistungsfähigkeit von Menschen, die zuvor eine anstrengende und Konzentration erfordernde Aufgabe durchgeführt haben, je nach Aufgabentyp stark reduziert sein kann. Um Ihnen daher eine kleine Ruhepause zu gönnen und Sie auf den folgenden Teil der Studie vorzubereiten, bearbeiten Sie nun bitte die folgende Sprachaufgabe. Lesen Sie dazu bitte die folgende Naturbeschreibung und umkringeln Sie dabei mit einem Stift alle vorkommenden Pronomen (z.B. **ich, mein, mir, mich**).

[Studies have shown that the performance of people who have previously performed an exhausting task requiring concentration can be greatly reduced depending on the type of task. Therefore, to give you a little rest and to prepare you for the next part of the study, please execute the following language task. Please read the following description of nature and circle all occurring pronouns (e.g., **I, my, me**) with a pen.]

German	
Independence priming	Interdependence priming
Ich liebe es, den Sonnenuntergang über dem See zu beobachten. Jede Nacht im Sommer fahre ich mit meinem Auto über den Strand in der Nähe meines Hauses, wo ich mich entspannen und beobachten kann, wie die Abendsonne Farben auf die Leinwand des Himmels malt. Ich finde es schön, meine Hände in den kühlen Sand zu stecken und die goldene Feuerkugel zu sehen, wie sie im Wasser versinkt. Die Hitze, die mein Gesicht eben noch erwärmt hat, lässt langsam nach und ich fühle eine kühle Brise auf meiner Haut. Die hellen Farben im Himmel über mir schmerzen in meinen Augen, aber die Szene ist zu schön, um den Blick abzuwenden. Langsam verblasst das Licht vollständig und ich bin in zunehmende Dunkelheit gehüllt. Während ich aufstehe, klopfe ich den Sand von meinem Körper ab und denke mir, wie glücklich ich mich schätzen darf, so einen wunderschönen Ort jeden Tag erleben zu dürfen. Die Nacht ruht auf mir und ich kehre nach Hause zurück, um einzuschlafen und auf einen neuen Tag zu warten.	Wir lieben es, den Sonnenuntergang über dem See zu beobachten. Jede Nacht im Sommer fahren wir mit unserem Auto über den Strand in der Nähe unseres Hauses, wo wir uns entspannen und beobachten können, wie die Abendsonne Farben auf die Leinwand des Himmels malt. Wir finden es schön, unsere Hände in den kühlen Sand zu stecken und die goldene Feuerkugel zu sehen, wie sie im Wasser versinkt. Die Hitze, die unsere Gesichter eben noch erwärmt hat, lässt langsam nach und wir fühlen eine kühle Brise auf unserer Haut. Die hellen Farben im Himmel über uns schmerzen in unseren Augen, aber die Szene ist zu schön, um den Blick abzuwenden. Langsam verblasst das Licht vollständig und wir sind in zunehmende Dunkelheit gehüllt. Während wir aufstehen, klopfen wir den Sand von unseren Körpern ab und denken uns, wie glücklich wir uns schätzen dürfen, so einen wunderschönen Ort jeden Tag erleben zu dürfen. Die Nacht ruht auf uns und wir kehren nach Hause zurück, um einzuschlafen und auf einen neuen Tag zu warten.

English	
Independence priming	Interdependence priming
I love to watch the sunset across the lake. Each night during the summer, I drive my car over to the beach near my house where I relax my body and watch the colors paint the canvas in the sky. I like to bury my hands in the cool sand and stare into the golden ball of fire as it sinks into the water. The heat that warmed my face slowly fades away and leaves my body with a cool chill. The bright colors in the sky above me hurt my eyes but the scene is too beautiful to look away. Slowly, the light fades completely and I am immersed into the growing darkness. As I get up, I brush the sand off my body and think to myself, how fortunate I am to experience such a beautiful site every day. The night rests upon me and I return home to fall asleep to wait for a new day.	We love to watch the sunset across the lake. Each night during the summer, we drive our car over to the beach near our house where we relax our bodies and watch the colors paint the canvas in the sky. We like to bury our hands in the cool sand and stare into the golden ball of fire as it sinks into the water. The heat that warmed our faces slowly fades away and leaves our bodies with a cool chill. The bright colors in the sky above us hurt our eyes but the scene is too beautiful to look away. Slowly, the light fades completely and we are immersed into the growing darkness. As we get up, we brush the sand off my bodies and think to ourselves, how fortunate we are to experience such a beautiful site every day. The night rests upon us and we return home to fall asleep to wait for a new day.

Wenn Sie mit dieser Aufgabe fertig sind, drehen Sie bitte das Blatt wieder um und wenden sich erneut dem Computerbildschirm zu. Drücken Sie dort ENTER, um mit der Studie fortzufahren.

[Once you finished this task, please turn the paper around and turn towards the computer screen. Then press ENTER to proceed with the study.]

B2 Pronoun Circling Task (re-priming)

Instructions and texts used in Experiment 1 for re-priming.

Bitte bearbeiten Sie nun auch diese zweite Aufgabe nach demselben Muster wie bei der ersten Aufgabe: Lesen Sie bitte die folgende Naturbeschreibung und umkringeln Sie dabei mit einem Kugelschreiber alle vorkommenden Pronomen (z.B. **ich, mein, mir, mich**).

[Now, please execute this second task the same way as the first task: Please read the following description of nature and circle all occurring pronouns (e.g., **I, my, me**) with a pen.]

German

Independence priming	Interdependence priming
Ich gehe nicht sehr oft essen – aber wenn ich dann mal essen gehe, finde ich es schwierig, zu entscheiden, wohin ich will. Thailändisches, mexikanisches und indisches Essen sind ja sehr lecker, aber mein absolutes Lieblingsessen ist Chinesisch. Es gibt ein chinesisches Restaurant in der Nähe meines Hauses, in dem es das beste Essen gibt, das ich je gegessen habe. Wenn ich dort herein komme, strömt der Duft in meine Nase. Es ist ein süßer, würziger Geruch, der mich hungrig macht. Ich setze mich und bestelle das Essen. Alles auf der Speisekarte lacht mich an. Ich weiß: Egal, was ich bestellen werde, es wird mich begeistern. Die Platten sind so schön angerichtet, dass es mir fast Leid tut, davon zu essen. Der beste Teil der Mahlzeit ist der, wenn ich mir einen Nachtisch aussuchen kann. Nichts kann schief gehen, wenn ich in meinem Lieblingsrestaurant esse.	Wir gehen nicht sehr oft essen – aber wenn wir dann mal essen gehen, finden wir es schwierig, zu entscheiden, wohin wir wollen. Thailändisches, mexikanisches und indisches Essen sind ja sehr lecker, aber unser absolutes Lieblingsessen ist Chinesisch. Es gibt ein chinesisches Restaurant in der Nähe unseres Hauses, in dem es das beste Essen gibt, das wir je gegessen haben. Wenn wir dort herein kommen, strömt der Duft in unsere Nasen. Es ist ein süßer, würziger Geruch, der uns hungrig macht. Wir setzen uns und bestellen das Essen. Alles auf der Speisekarte lacht uns an. Ich weiß: Egal, was wir bestellen werden, es wird uns begeistern. Die Platten sind so schön angerichtet, dass es uns fast Leid tut, davon zu essen. Der beste Teil der Mahlzeit ist der, wenn wir uns einen Nachtisch aussuchen können. Nichts kann schief gehen, wenn wir in unserem Lieblingsrestaurant essen.

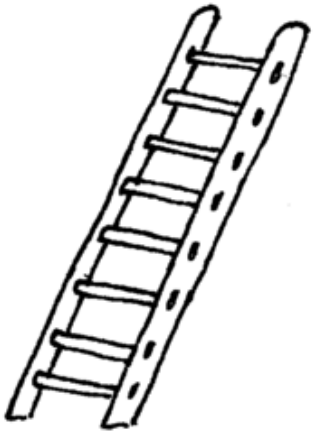
English	
Independence priming	Interdependence priming
I don't go out to dinner very often, but when I do, I have a hard time choosing where I want to go. Thai food, Mexican food, and Indian food are all delicious, but my all time favorite is Chinese. There is a Chinese restaurant near my house that serves the best food I have ever eaten. When I enter, the aroma fills my nostrils. It's a sweet and spicy smell and it makes me hungry. I sit down and order the food. Everything on the menu appeals to me. I know whatever I order will delight me. The plates are decorated so nicely, it almost makes me feel bad eating from them. The best part of the meal is when I get my choice of dessert. I can't go wrong with anything I order at my favorite restaurant.	We don't go out to dinner very often, but when we do, we have a hard time choosing where we want to go. Thai food, Mexican food, and Indian food are all delicious, but our all time favorite is Chinese. There is a Chinese restaurant near our house that serves the best food we have ever eaten. When we enter, the aroma fills our nostrils. It's a sweet and spicy smell and it makes us hungry. We sit down and order the food. Everything on the menu appeals to us. We know whatever we order will delight us. The plates are decorated so nicely, it almost makes us feel bad eating from them. The best part of the meal is when we get our choice of dessert. We can't go wrong with anything we order at our favorite restaurant.

B3 Social Ladder Task

Instructions used in Experiment 3.

In dieser Studie wird untersucht, in wie weit soziale Unterschiede sich in der Leistungsfähigkeit in den Bereichen Wahrnehmung, Gedächtnis und räumliches Vorstellungsvermögen widerspiegeln. Stellen Sie sich nun diese Leiter als eine Möglichkeit vor, mit der soziale Unterschiede in Deutschland dargestellt werden können:

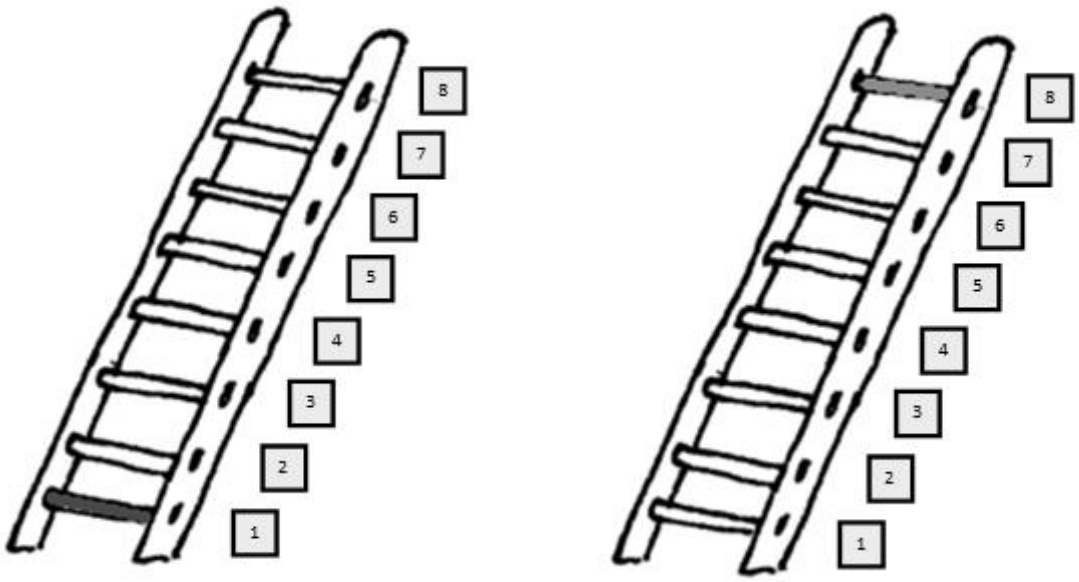
[In this study, we investigate to what extent social differences are reflected in the performance in the fields of perception, memory and spatial sense. Now imagine this ladder to represent one possibility by which social differences in Germany can be represented:]



German	
Low-status condition	High-status condition
Bitte vergleichen Sie sich nun mit einer Person, die auf dieser Leiter auf der *untersten* Sprosse steht. Personen wie diesen geht es unter den Deutschen am *schlechtesten*: Sie haben das *niedrigste* Einkommen, die *geringsten* Bildungschancen und die am *wenigsten* angesehenen Berufe.	Bitte vergleichen Sie sich nun mit einer Person, die auf dieser Leiter auf der *obersten* Sprosse steht. Personen wie diesen geht es unter den Deutschen am *besten*: Sie haben das *höchste* Einkommen, die *höchsten* Bildungschancen und die am *meisten* angesehenen Berufe.
Stellen Sie sich nun einen Moment lang vor, inwiefern Sie sich von diesen Personen in Bezug auf Ihr eigenes Einkommen, Ihren Bildungshintergrund und Ihren Beruf unterscheiden.	Stellen Sie sich nun einen Moment lang vor, inwiefern Sie sich von diesen Personen in Bezug auf Ihr eigenes Einkommen, Ihren Bildungshintergrund und Ihren Beruf unterscheiden.
Wo würden Sie sich selbst auf dieser Leiter einschätzen, relativ zu den Personen ganz *UNTEN* auf der Leiter? Bitte geben Sie im Textfeld die Zahl ein, die neben der von Ihnen gewählten Sprosse steht.	Wo würden Sie sich selbst auf dieser Leiter einschätzen, relativ zu den Personen ganz *OBEN* auf der Leiter? Bitte geben Sie im Textfeld die Zahl ein, die neben der von Ihnen gewählten Sprosse steht.

English	
Low-status condition	High-status condition
Please now compare yourself with a person standing on this ladder on the *bottom* rung. People like these are the *worst* off among Germans: they have the *lowest* income, the *worst* educational opportunities and the *least* respected professions.	Please now compare yourself with a person standing on this ladder on the *top* rung. People like these are the *best* off among Germans: they have the *highest* income, the *best* educational opportunities and the *most* respected professions.
Now imagine for one moment in which way you differ from these persons concerning your own income, your educational background and your profession.	Now imagine for one moment in which way you differ from these persons concerning your own income, your educational background and your profession.
Where would you place yourself on this ladder, relative to the people at the very *BOTTOM* of the ladder? In the text box, please enter the number that is next to the rung you selected.	Where would you place yourself on this ladder, relative to the people at the very *TOP* of the ladder? In the text box, please enter the number that is next to the rung you selected.

Note. Words highlighted in this table by italics were <u>not</u> highlighted in the experiment's instructions. In this table, highlighting serves the better visibility and discrimination of differences between both priming conditions.



Appendix C: Description of Research Paradigms

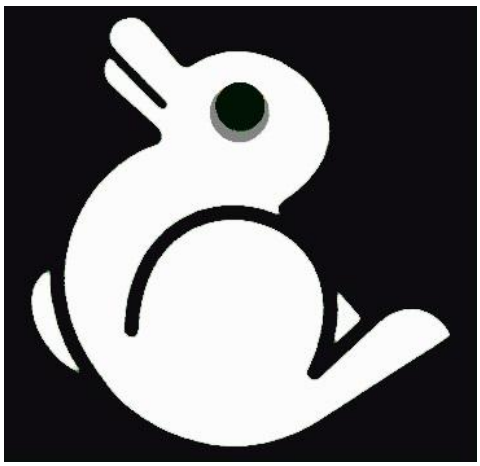
C1 Minimal Traits Paradigm: Alternative Version

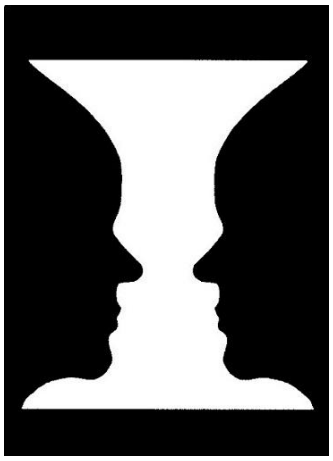
Instructions and tasks to be executed in the alternative version of the Minimal Traits Paradigm employed in Experiment 2 and 4; based on Otten & Epstude (2006).

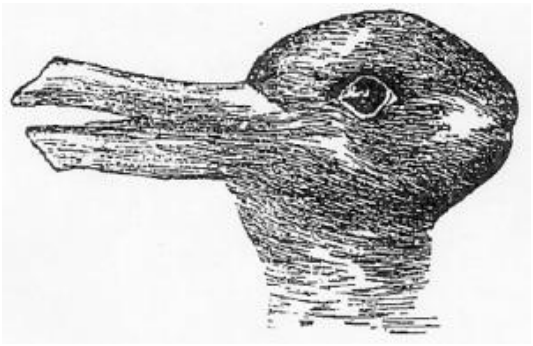
Task 1

Mittels des nun folgenden ersten Tests soll erfasst werden, ob Sie basal oder fokal wahrnehmen und dabei eine distale oder proximale Fixationsstrategie anwenden. Sie werden im Folgenden einige Bilder sehen, in denen jeweils zwei unterschiedliche Motive wahrgenommen werden können. Entscheiden Sie bitte für jedes der Bilder, welches Motiv Sie zuerst wahrgenommen haben und worauf Sie sich konzentriert haben.

[By means of the following first test we want to assess if you are a basic or focal perceiver and if you apply a distal or proximal fixation strategy. Below, you see some images in which two different motives can be perceived. Please decide on each of the images, which motive you perceive first and which part of the images you focused.]







For each of these six images, two questions were asked:

German
Haben Sie zuerst den Mann oder die Frau gesehen? Haben Sie sich auf die Mitte des Bildes konzentriert oder eher auf die Seiten geachtet?
Haben Sie zuerst den Hasen oder die Ente gesehen? Haben Sie sich auf die Mitte des Bildes konzentriert oder eher auf die Seiten geachtet?
Haben Sie zuerst die Vase oder die Gesichter gesehen? Haben Sie sich auf die Mitte des Bildes konzentriert oder eher auf die Seiten geachtet?
Haben Sie zuerst die Frau oder das Gesicht gesehen? Haben Sie sich auf die Mitte des Bildes konzentriert oder eher auf die Seiten geachtet?
Haben Sie zuerst den Hasen oder die Ente gesehen? Haben Sie sich auf die Mitte des Bildes konzentriert oder eher auf die Seiten geachtet?
Haben Sie zuerst die alte oder die junge Frau gesehen? Haben Sie sich auf die Mitte des Bildes konzentriert oder eher auf die Seiten geachtet?

English
Did you first see the man or the woman? Did you focus more on the center of the image or on the sides?
Did you first see the hare or the duck? Did you focus more on the center of the image or on the sides?
Did you first see the vase or the faces? Did you focus more on the center of the image or on the sides?
Did you first see the woman or the faces? Did you focus more on the center of the image or on the sides?
Did you first see the hare or the duck? Did you focus more on the center of the image or on the sides?
Did you first see the old or the young woman? Did you focus more on the center of the image or on the sides?

Task 2

Vielen Dank! Mit dem nun folgenden zweiten Test soll erfasst werden, ob Sie Langwellen- oder Kurzwellenchromatiker sind und ob Sie illuminativ oder nuitiv kategorisieren. Sie werden nun einige Zahlen sehen, denen Sie Farben zuordnen sollen. Wählen Sie bitte jene Farbe aus, die Ihrem Gefühl nach am besten zu der Zahl passt. Drücken Sie die entsprechend zugeordnete Taste.

[Thank you! The following second task shall test if you are a long-wave or short-wave chromatic and whether you categorize illuminatively or nuitively. You will now see some digits to which we ask you to assign colors. Please choose the color that fits best according to your feeling. Please press the corresponding button.]

Numbers from 1 to 9 are shown on the screen, including a scale indicating the colors red, yellow, green, and blue.

Task 3

Mit dem folgenden Test wird erfasst, ob Sie kontrastiv oder impressiv wahrnehmen. In Kombination mit der vorherigen Aufgabe kann ebenfalls eine Aussage über Ihre rangiative oder derangiative Präferenz gemacht werden. Sie werden nun jeweils zwei Zahlen sehen, von denen immer eine größer dargestellt ist. Bitte drücken Sie möglichst schnell die Zahlentaste der Tastatur, die der größer dargestellten Zahl entspricht.

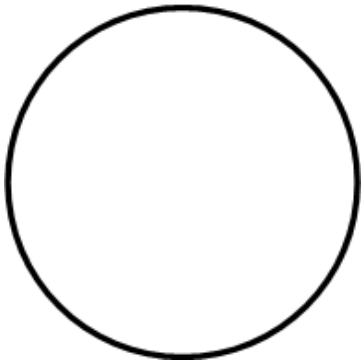
[The following test will assess whether you perceive contrastively or impressively. In combination with the previous task, this is an indication whether you have a rangiative or a derangiative preference. You will now see two numbers, one of which is always larger in size than the other. Please press as quickly as possible the key on the keyboard that corresponds to the number larger in size.]

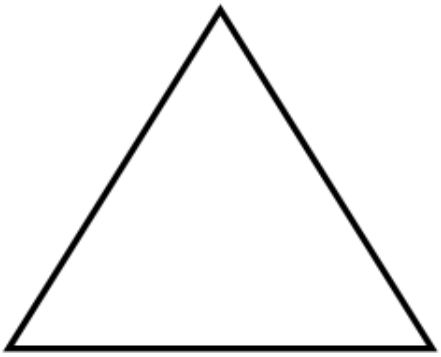
Repeatedly, two digits are shown on screen, of which one is depicted larger than the other one.

Test 4

Der folgende Test erfasst, ob Sie circulär oder triangulär verarbeiten. Zusätzlich soll ermittelt werden, ob Sie eher ipsilateral oder contralateral enkodieren. Es werden Ihnen gleich für jeweils 500 Millisekunden Dreiecke und Kreise auf dem Bildschirm dargeboten. Ihre Aufgabe besteht darin, die Leertaste so schnell wie möglich zu drücken, wenn zwei gleiche Formen aufeinander folgen.

[The following test assesses if you process circularly or triangularly. In addition, we want to determine whether you encode rather ipsilaterally or contralaterally. Now, for 500 milliseconds each, triangles and circles are shown on the screen repeatedly. Your task is to press the space bar as quickly as possible as soon as two identical forms are shown consecutively.]





Test 5

Vielen Dank! Jetzt möchten wir gerne erfassen, inwiefern Sie einen deskriptiven oder investigativen Verarbeitungsstil haben und ob Sie eher zum abduktiven oder veriduktiven Schlussfolgern neigen. Ihnen werden nun einzelne Sätze dargeboten, die Sie vervollständigen sollen. Dazu haben Sie jeweils zwei Möglichkeiten zur Auswahl. Nutzen Sie bitte die Buchstaben-Tasten "a" und "b" um Ihre Antworten zu geben.

[Thank you! Now we want to assess if you possess a descriptive or investigative processing style, and if you are more prone to abductive or veriductive reasoning. Now you will be shown sentences which we ask you to complete. For this, you have two options to choose from. Please use the keys “a” and “b” to enter your answers.]

German	**English**
Ein Marienkäfer ist... a) schwarz-rot. b) ein Insekt.	A ladybug is... a) black and red. b) an insect.
Der Elefant... a) lebt in Afrika oder Indien. b) ist das größte Landsäugetier.	Elephants... a) live in Africa or India. b) are the largest mammals on land.
Die Gezeiten sind... a) Ebbe und Flut. b) durch den Mond bedingt.	The tide is... a) high or low. b) an effect of the moon.
Eis ist... a) lecker. b) ein Aggregatzustand von Wasser.	Ice [cream] is... a) delicious. b) a physical state of water.

Amerika... a) wird von Atlantik und Pazifik umschlossen. b) wurde von Kolumbus entdeckt.	America... a) is surrounded by the Atlantic and the Pacific. b) was discovered by Columbus.
Die Alpen... a) sind ein Gebirgszug in Europa. b)wurden von Hannibal mit seinen Elefanten überquert.	The Alps... a) are a mountain range in Europe. b) were crossed by Hannibal with his elephants.
Eine Nektarine... a) ist meist rot-gelb und hat eine glatte Haut. b) ist aus der Kreuzung von Pfirsich und Pflaume entstanden.	A nectarine... a) is mostly red-yellow and has a smooth skin. b) originated as a hybrid of peach and plum.
Die Polkappen... a) schmelzen. b) liegen an den Punkten der Erde, an denen die Sonneneinstrahlung am schwächsten ist.	The polar ice caps... a) melt. b) lie at the points of the earth where the sunlight is weakest.
Die Jahreszeiten... a) bestehen aus Frühling, Sommer, Herbst und Winter. b) unterscheiden sich auf der Nord- und Südhalbkugel.	The seasons... a) are spring, summer, autumn and winter. b) differ on the Northern and Southern hemispheres.
Eine Mondfinsternis... a) sieht man auf der Nachtseite der Erde. b) entsteht, wenn sich die Erde zwischen Mond und Sonne bewegt.	A lunar eclipse… a) can be seen only on the night side of the earth. b) arises when the earth moves between the sun and moon.

Test 6

Es folgt nun ein Test, der Auskunft darüber geben soll, ob Sie eher kategorial oder eher funktional enkodieren. In Kombination mit der vorherigen Aufgabe kann ebenfalls ermittelt werden, ob Sie einen eher igenevatorischen oder einen eher nonigenevatorischen Verarbeitungsstil haben. Sie sehen nun eine Wortliste, die Sie sich bitte so gut wie möglich einprägen. Im Anschluss an die Darbietung entscheiden Sie bitte für eine Reihe von Wörtern, ob diese in der Liste dargeboten worden sind oder ob sie neue Wörter darstellen.

[The following test provides information whether you encode more categorically or more functionally. In combination with the previous task it can be determined if you possess a rather igenevatoric or rather nonigenevatoric processing style. Now, you will see a list of words that you memorize up as good as possible. Following this presentation, you are asked to decide for a series of words whether these have been presented in the list before or whether they are new words.]

German		English	
Lernliste	**Rekognitionsliste**	**Learning list**	**Recognition list**
Spachtel	Spachtel	spatula	spatula
Hammer	*Feile*	hammer	*rasp*
Ratsche	*Zange*	ratchet	*pliers*
Schraubendreher	Schraubendreher	screwdriver	screwdriver
Bohrer	*Beil*	drill	*hatchet*
Wasserwaage	Wasserwaage	spirit level	spirit level
Esel	*Pferd*	donkey	*horse*
Schnabeltier	Schnabeltier	platypus	platypus
Specht	*Elster*	woodpecker	*magpie*
Dachs	Dachs	badger	badger
Ziege	*Schaf*	goat	*sheep*
Haubentaucher	Haubentaucher	great crested grebe	great crested grebe
Banane	Banane	banana	banana
Apfel	*Birne*	apple	*pear*
Guave	Guave	guava	guava
Ananas	*Orange*	pineapple	*orange*
Pflaume	Pflaume	plum	plum
Maracuja	*Litschi*	passion fruit	*lychee*

(New words are written in *grey italics*.)

Vielen Dank für die Bearbeitung unserer Testaufgaben! Ihre Daten werden nun gespeichert – bitte haben Sie einen Moment Geduld!

[Thank you for taking part in these tests! Your data are being saved—please be patient!]

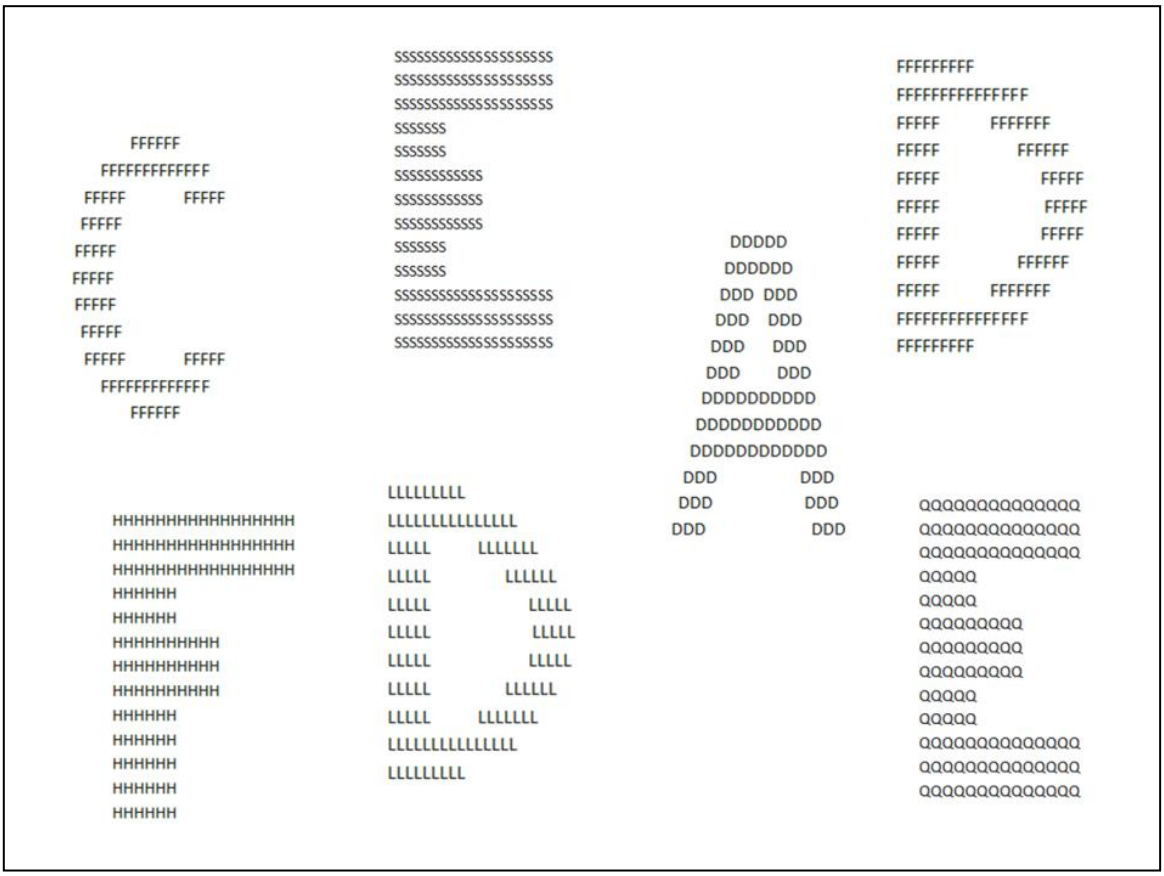
C2 Minimal Traits Paradigm: Original Version

Instructions and tasks to be executed in the original version of the Minimal Traits Paradigm (Otten & Epstude, 2006) employed in Experiment 3.

Test 1

In diesem ersten Test werden Ihnen 15 Sekunden lang einige große Buchstaben präsentiert, die wiederum aus vielen kleinen Buchstaben aufgebaut sind. Bitte versuchen Sie, sich diese Buchstaben, wie auch deren räumliche Anordnung zueinander, gut einzuprägen. Bei den im Anschluss folgenden Fragen können Sie bei Fragen mit mehreren Antwortmöglichkeiten mit den Pfeiltasten zwischen diesen Möglichkeiten wählen; mit Enter bestätigen Sie Ihre Auswahl. Bei offenen Fragen, bei denen nach einem Buchstaben gefragt wird, geben Sie bitte NUR den Buchstaben an, damit Ihre Antworten automatisiert ausgewertet werden können.

[In this first test you are shown some large letters which are in turn made up of many small letters. These are shown for 15 seconds each. Please try to memorize these letters as well as their spatial relationship to each other. In the subsequent questions, you can use the arrow keys to move between the alternatives of possible answers. Please press Enter to confirm your selection. For open questions, where you are asked for a letter, please indicate only the letter, so that your responses can be analyzed automatically.]

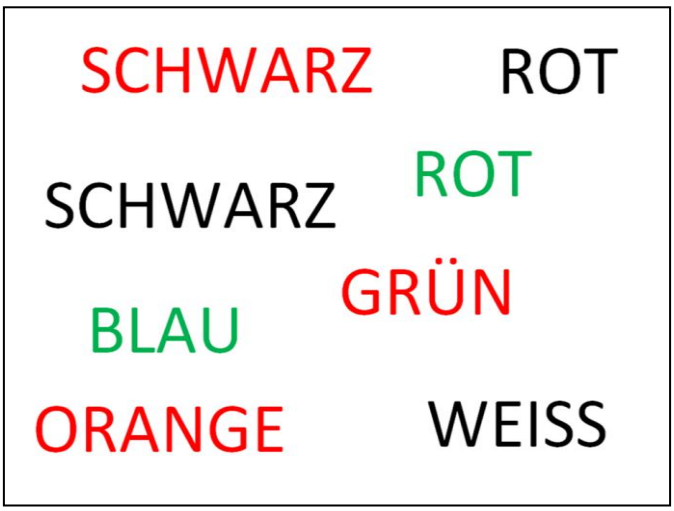


German	English
Wie oft haben Sie ein großes 'A' gesehen? - 1 mal - 2 mal	How many times have you seen a large 'A'? - 1 time - 2 times
Wie oft haben Sie einen großen Buchstaben gesehen, der aus kleinen 'F's aufgebaut war? - 1 mal - 2 mal	How many times have you seen a large letter which was made up of small 'F's? - 1 time - 2 times
Welcher große Buchstabe befand sich direkt unterhalb des großen Buchstabens 'C'?	Which Large Letter was directly below the large letter 'C'?
Welcher große Buchstabe befand sich ganz rechts unten auf dem Bildschirm?	Which large letter was positioned on the very right bottom of the screen?
Aus welchen kleinen Buchstaben war der große Buchstabe 'E' aufgebaut? - L - Q	Which small letters made up the large letter 'E'? - L - Q
Wie oft haben Sie ein großes 'B' gesehen? - 1 mal - kein mal	How many times did you see a large 'B'? - 1 time - never

Test 2

Im nun folgenden zweiten Test werden Ihnen 15 Sekunden lang einige Wörter dargeboten, die in verschiedenen Farben geschrieben sind. Bitte prägen Sie sich die Wörter wie auch deren Farbe gut ein, um anschließend Fragen hierzu beantworten zu können.

[In the subsequent second test, some words will be presented for 15 seconds which are written in different colors. Please memorize the words as well as their colors, so that you can answer questions later.]



German	English
Wie viele Worte waren in schwarzer Farbe geschrieben? - 2 Wörter - 3 Wörter	How many words were written in black color? - 2 words - 3 Words
Und wie viele Worte waren in grüner Farbe geschrieben? - 2 Wörter - 3 Wörter	And how many words were written in green color? - 2 words - 3 Words
Wie oft kam das Wort ROT vor? - 1 mal - 2 mal	How often did you see the word RED? - 1 time - 2 times
Wie viele Farbwörter kamen vor, deren Farbe selbst aber nicht zu sehen war? - 2 Wörter - 3 Wörter	How many color *words* did you see whose *color* itself was not visible? - 2 words - 3 Words
Gab es überhaupt ein Farbwort, bei dem Farbe und Wort übereingestimmt haben? - ja -nein	Was there a color word at all for which color and color word did match? - Yes -No
Welches Farbwort kam NICHT zweimal vor? - schwarz - grün	Which color word was not there twice? - black - green
Leiden Sie an einer Rot-Grün-Schwäche? - ja -nein	Do you suffer from a red-green color blindness? - yes - no

Test 3

Vielen Dank! Im dritten Test sehen Sie 15 Sekunden lang eine Wortliste, die Sie sich bitte so gut wie möglich einprägen. Im Anschluss an die Darbietung entscheiden Sie bitte für eine Reihe von Wörtern, ob diese in der Liste dargeboten worden sind oder ob sie neue Wörter darstellen.

[Thank you! In the third test, you see a list of words for 15 seconds which we ask you to memorize as good as possible. Following the presentation, please decide for a series of words whether these had been presented in the list before or whether they are new words.]

German		English	
Learning list	**Recognition list**	**Learning list**	**Recognition list**
Birke	Birke	birch	birch
Kastanie	*Buche*	chestnut	*beech*
Katze	Katze	cat	cat
Beil	Beil	hatchet	hatchet
Klemme	*Axt*	clamp	*ax*
Kaninchen	Kaninchen	rabbit	rabbit
Hammer	*Zange*	hammer	*pliers*
Schaufel	Schaufel	shovel	shovel
Schildkröte	*Echse*	turtle	*lizard*
Schere	Schere	scissors	scissors
Pinie	*Kiefer*	pine	*pine*
Zypresse	Zypresse	cypress	cypress
Weide	Weide	willow	willow
Kuh	*Schaf*	cow	*sheep*
Hund	Hund	dog	dog

Note. New words are written in *italics*.

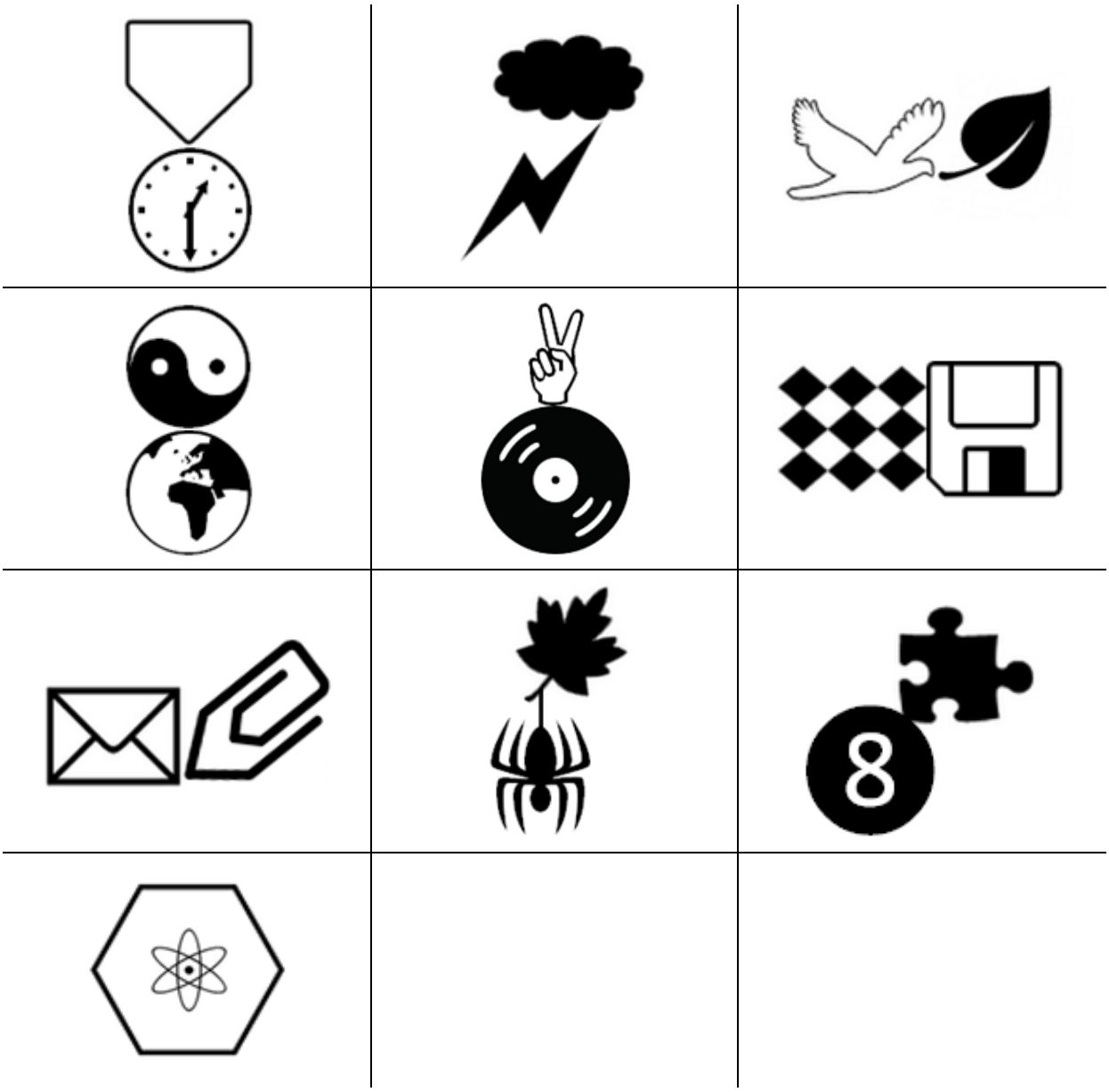
Test 4

Vielen Dank! Im folgenden letzten Test werden Ihnen 15 Sekunden lang einige Piktogramme präsentiert. Versuchen Sie bitte auch hier, sich diese so gut wie möglich einzuprägen.

[Thank you ! In the following final test, you will be shown some pictograms for 15 seconds. Also here, try to memorize them as good as possible.]

Ihnen werden nun Kombinationen aus Piktogrammen präsentiert. Bitte geben Sie für jede der Kombinationen an, ob sie aus Einzel-Piktogrammen besteht, die in der vorigen Zusammenstellung enthalten waren, oder ob mindestens eines der Bestandteile neu ist.

[Now, you are presented combinations of pictograms. Please indicate for each of the combinations whether it consists of singular pictograms that were included in the previous compilation or whether at least one of the components is new.]



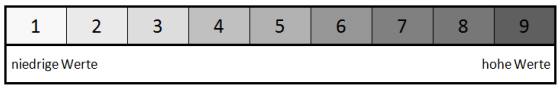
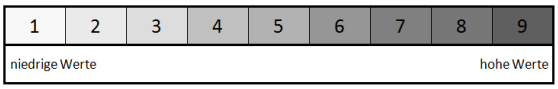
Vielen Dank für die Bearbeitung unserer Testaufgaben! Ihre Daten werden nun gespeichert – bitte haben Sie einen Moment Geduld!

[Thank you for taking part in these tests! Your data are being saved—please be patient!]

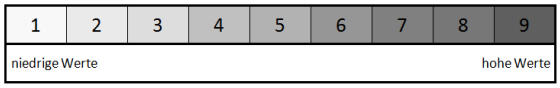
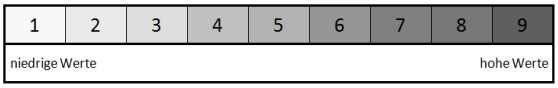
Vielen Dank für Ihre Einschätzung! Ihre Ergebnisse bei den anfänglichen Leistungstests wurden ausgewertet und Ihre Ausprägungen auf den sechs Dimensionen ermittelt.

[Thank you for your assessment! Your results in the initial performance tests have been analyzed and your results on the six dimensions were calculated.]

German

Anchor: Group	Anchor: Self
Da die verschiedenen Leistungsbereiche mittlerweile gut erforscht sind, liegen bereits Durchschnittswerte für die Gruppe der Deutschen auf den jeweiligen Dimensionen vor.	Ihnen wird nun gleich Ihre Ausprägung auf den jeweiligen Dimensionen nacheinander präsentiert. Da in dieser Studie unter anderem untersucht wird, welchen Einfluss Ihre Leistungsfähigkeit auf den verschiedenen Dimensionen auf Ihre Fähigkeit zur Fremdeinschätzung hat, werden Sie zusätzlich gebeten, eine Einschätzung darüber abzugeben, wie die Deutschen insgesamt im Mittel auf diesen Dimensionen abschneiden.
Diese Werte werden Ihnen eine nach der anderen dargeboten und Sie werden gebeten, sich selbst entsprechend auf den Dimensionen einzuschätzen. Dies dient dazu, die Übereinstimmung Ihrer mithilfe des Tests ermittelten Werte mit der persönlichen Selbsteinschätzung zu überprüfen.	Die Einschätzung einer Gruppe ist sicherlich keine ganz einfache Aufgabe. Es hat sich aber herausgestellt, dass Menschen recht gut darin sind, derlei soziale Urteile abzugeben. Wir sind auch nicht an richtigen oder falschen Antworten interessiert, sondern an Ihrer spontanen Meinung.
Zusätzlich werden Sie noch gefragt, für wie wünschenswert Sie eine hohe Ausprägung auf der jeweiligen Skala halten.	Zusätzlich werden Sie noch gefragt, für wie wünschenswert Sie eine hohe Ausprägung auf der jeweiligen Skala halten.
Zur Einschätzung steht Ihnen eine Skala von 1 (niedrige Werte) bis 9 (hohe Werte) zur Verfügung. Nutzen Sie bitte zur Beurteilung die Tasten 1 bis 9 der Tastatur.	Zur Einschätzung steht Ihnen eine Skala von 1 (niedrige Werte) bis 9 (hohe Werte) zur Verfügung. Nutzen Sie bitte zur Beurteilung die Tasten 1 bis 9 der Tastatur.
	
Sie erhalten nun jeweils erst eine kurze Beschreibung einer Dimension. Auf dem nächsten Bildschirm erhalten Sie dann eine Rückmeldung, wie die Deutschen im Schnitt auf der jeweiligen Dimension abgeschnitten haben, und werden dann gebeten, sich selbst einzuschätzen.	Sie erhalten nun jeweils erst eine kurze Beschreibung einer Dimension. Auf dem nächsten Bildschirm erhalten Sie dann eine Rückmeldung, wie Sie selbst auf der jeweiligen Dimension abgeschnitten haben, und werden dann gebeten, eine Einschätzung über die Deutschen abzugeben.

English

Anchor: Group	Anchor: Self
Since these various types of performance have been well researched by now, average scores for the group of Germans on the respective dimensions are available.	One after another, your score on each dimension will be presented to you. In this study, among other things, we examine which influence your performance on the various dimensions has on your ability to assess other people. Hence, you will next be asked to assess how the group of Germans scored on average on these dimensions.
Now, these scores will be presented to you one after another and you will be asked to assess yourself on the same dimensions. This serves as a validity check. We want to verify if your score which we determined with the previous tests matches your personal self-assessment.	The assessment of a group is surely not an easy task. However, it has been found that people are quite good at making this kind of social judgments. Also, we are not interested in right or wrong answers, but rather in your spontaneous opinion.
In addition, you will be asked, how desirable you think a high score on the respective scale to be.	In addition, you will be asked, how desirable you think a high score on the respective scale to be.
For your assessment, you may use a scale ranging from 1 (*low values*) to 9 (*high values*). Please use the keys 1 to 9 of the keyboard.	For your assessment, you may use a scale ranging from 1 (*low values*) to 9 (*high values*). Please use the keys 1 to 9 on the keyboard.
	
Now, you are first shown a brief description of a respective dimension. On the next screen, you will receive feedback on how the group of Germans scored on average on this dimension, and are then asked to assess yourself.	Now, you are first shown a brief description of a respective dimension. On the next screen, you will receive feedback on how the group of Germans scored on average on this dimension, and are then asked to assess yourself.

Description of the six dimensions, followed by the questions asked after the presentation of each dimension's description:

German
1.) Clustering bei Digital-Span-Aufgaben Spiegelt die Tendenz wider, Einzelelemente zu gruppieren, wenn einer Person eine Liste mit Einzelelementen (z.B. Ziffern) dargeboten wird und die Person gebeten wird, diese auswendig zu lernen. Hohe Werte auf dieser Skala deuten auf gute Leistungen bei Gedächtnis- und Wiedererkennungsaufgaben hin.
2.) Parallele Informationsverarbeitung Die Tendenz, verschiedene Teile oder Aspekte eingehender Informationen parallel zu anderen Teilen oder Aspekten von Informationen zu verarbeiten. Hohe Werte auf dieser Skala weisen auf eine gute Verständnisleistung hin.
3.) Ganzheitliche Orientierung in Bezug auf kreative Aufgaben Die Tendenz, kreative Aufgaben auf eine ganzheitliche anstatt auf eine analytische Weise zu beginnen. Hohe Werte auf dieser Skala weisen auf eine effiziente Strategie bei der Bearbeitung kreativer Aufgaben hin.
4.) Kontext-Orientierung bei der Problemlösung Die Tendenz, sich auf Vergleichsinformationen zu verlassen, die im Kontext der Aufgabenstellung verfügbar sind. Hohe Werte auf dieser Skala deuten auf gute Problemlösefähigkeiten hin.
5.) Lateralisierung von Hirnfunktionen beim Sprachverständnis Die Tendenz, dass die verschiedenen Hirnfunktionen jeweils auf eine der beiden Gehirnhälften konzentriert sind (im Gegensatz zu einer relativ gleichmäßigen Verteilung). Hohe Werte auf dieser Skala weisen auf einen effizienten und schnellen Verständnisprozess hin.
6.) Modalitätsdominanz bei der synästhetischen Wahrnehmung Bezieht sich auf die gleichzeitige Wahrnehmung von Reizen auf verschiedenen Sinnesorganen. Hohe Werte auf der Skala deuten auf einen effizienten Wahrnehmungsprozess hin, da die Trennung zwischen den Sinneseindrücken aufrecht erhalten wird.

Anchor: Group	Anchor: Self
Die durchschnittliche Ausprägung der Deutschen auf der Dimension **[dimension]**:	Ihre Ausprägung auf der Dimension **[dimension]**:
Was denken Sie, wie Sie selbst auf der Dimension **[dimension]** abgeschnitten haben?	Was denken Sie, wie die Deutschen auf der Dimension **[dimension]** abgeschnitten haben?
Geben Sie bitte an, wie wünschenswert es ist, einen hohen Wert auf der Dimension **[dimension]** zu haben.	Geben Sie bitte an, wie wünschenswert es ist, einen hohen Wert auf der Dimension **[dimension]** zu haben.

English

1.) Clustering in digital span recall

The tendency to group items together when a person is presented with a list of numbers and asked to memorize it. High scores on the clustering scale indicate good performance in recall and recognition tasks.

2.) Parallel information processing

The tendency to process various parts or aspects of incoming information in parallel with other parts or aspect of information. High scores on the Parallel Processing Scale indicate good comprehension process.

3.) Global orientation in design construction

The tendency to start the construction of a design in a global rather than in an analytic way. High scores on the Global Orientation Scale indicate an efficient construction strategy.

4.) Field orientation in problem-solving

The tendency to rely on relational information present in the problem context. High scores on the Field Orientation Scale indicate good problem-solving strategy.

5.) Lateralization of brain functions in language comprehension

The tendency for brain functions to be highly distributed within one of the two cerebral hemispheres. High scores on the Lateralization Scale indicate an efficient and quick comprehension process.

6.) Modality dominance in synesthetic perception

Refers to the simultaneous perception of different sensory modalities. High scores on the Modality Dominance Scale indicate an efficient perception process because the correct distinction between the two sensory modalities is obtained.

Anchor: Group	Anchor: Self
How the group of Germans scored on average on the dimension **[dimension]**:	How you personally scored on the dimension **[dimension]**:
How do you think you personally scored on this dimension?	How do you think the group of Germans scored on average on this dimension?
Please rate how socially desirable it is to have a high score on **[dimension]**.	Please rate how socially desirable it is to have a high score on **[dimension]**.

C3 Wezwe Task

Instructions and procedure of the Wezwe Task (Davis & Brock, 1975) employed in Experiment 3.

Sprachpsychologen haben wiederholt gezeigt, dass Menschen oft in der Lage sind, fremde Sprachen zum Teil intuitiv zu verstehen. Die meisten Deutschen können recht gut abschätzen, was einzelne Wörter auf Italienisch, Spanisch und Französisch bedeuten. Uns interessiert hier jedoch, wie Menschen ganz intuitiv relativ unbekannte Sprachen übersetzen.

Der Text auf der nächsten Seite ist auf **Wezwe** verfasst, einer Sprache, die von wenigen indigenen Volksgruppen in Neuseeland gesprochen wird.

Im Text werden Sie eine Reihe unterstrichener Wörter vorfinden. Diese Wörter sind von 1 bis 15 durchnummeriert. Auf Wezwe stellen diese Wörter **Pronomen** dar. Ihre Aufgabe ist es nun, den Text auf der nächsten Seite zu lesen und die deutsche Bedeutung der unterstrichenen Wörter anzugeben. Sie können bei der Übersetzung aus allen deutschen Personal- und Possessivpronomen wählen, das heißt, sie können wählen zwischen:

Singular	1. Pers.	**ich, mein**
	2. Pers.	**du, dein**
	3. Pers.	**er, sein; sie, ihr**
Plural	1. Pers.	**wir, unser**
	2. Pers.	**ihr, euer**
	3. Pers.	**sie, ihr**

Nach jedem unterstrichenen Wort sehen Sie eine Zahl in Klammern. Unter dem Text können Sie dann angeben, welches deutsche Pronomen dem unterstrichenen Wort auf Wezwe entspricht. Versuchen Sie dabei, **so schnell wie möglich** zu arbeiten. Folgen Sie **Ihrer Intuition** und geben Sie das erste Pronomen an, das Ihnen einfällt. Denken Sie dabei nicht zu sehr über die Bedeutung der Worte nach.

Todo de poi dele ban (1) numa te cloi san dem toi sel neldomo dan ko (2) cas im todo de oidemo dan. Beme de lo ban (3) seldemo ko jano cas. Te dem (4) de perdoiba ko (5) berbanoi. Te demi (6) sel cas doimo pan iri toi poban hili numoi son ban (7) perdoiba. Todo bois de bani (8) demai. Joi num jenoio bano (9) no jala membarjar koi (10) cas lano. Te sel demo pojan membaj er bano (11) don todo perdoiban. Oi, de deme hilie semoi bani (12) te dola inaidemo. De dolo hili (13) neldemoi membajar son! Soi tui. Ban (14) canto deme jan biri biri, deloi poba hin po koi (15) noi eme.

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English version

Language psychologists have shown repeatedly that people often are able to understand foreign languages intuitively in some cases. Most Germans can estimate quite well what singular words mean in Italian, Spanish, and French. However, we are interested in how people translate relatively unknown languages intuitively.

The text on the next page is written in **Wezwe**, a language which is spoken by a few indigenous peoples in New Zealand.

In this text, you will find words which are underlined. These words are numbered from 1 to 15. In Wezwe these words represent **pronouns**. It is your task to read the text on the next page and specify the German meaning of the underlined words. In the translation, you can choose between all German personal and possessive pronouns, i.e., you can choose between:

Singular	1. Pers.	**ich, mein**
	2. Pers.	**du, dein**
	3. Pers.	**er, sein; sie, ihr**
Plural	1. Pers.	**wir, unser**
	2. Pers.	**ihr, euer**
	3. Pers.	**sie, ihr**

After each underlined word you see a number in parentheses. Below the text you can specify which German pronoun corresponds to the underlined word in Wezwe. Try to work **as fast as possible**. Follow **your intuition** and enter the first pronoun which you can think of. Do not overthink the meaning of the words.

Todo de poi dele ban (1) numa te cloi san dem toi sel neldomo dan ko (2) cas im todo de oidemo dan. Beme de lo ban (3) seldemo ko jano cas. Te dem (4) de perdoiba ko (5) berbanoi. Te demi (6) sel cas doimo pan iri toi poban hili numoi son ban (7) perdoiba. Todo bois de bani (8) demai. Joi num jenoio bano (9) no jala membarjar koi (10) cas lano. Te sel demo pojan membaj er bano (11) don todo perdoiban. Oi, de deme hilie semoi bani (12) te dola inaidemo. De dolo hili (13) neldemoi membajar son! Soi tui. Ban (14) canto deme jan biri biri, deloi poba hin po koi (15) noi eme.

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C4 Conformity Measure

Instructions and procedure of the conformity measure (van Cappellen et al., 2011) employed in Experiment 4.

In einem weiteren Test ermitteln wir Ihre visuelle Wahrnehmungsgeschwindigkeit und -genauigkeit. Gleich wird Ihnen wiederholt 4 Sekunden lang eine unterschiedlich hohe Anzahl des Buchstabens „a“ gezeigt. Ihre Aufgabe ist es, jeweils eine Schätzung über die Anzahl der Buchstaben abzugeben.

[In another test, we will determine your visual perception speed and accuracy. You will be repeatedly presented a screen each showing a variable number of the letter "a". Your task is to give an estimate of the number of letters shown on each screen.]

In einigen Fällen werden Ihnen zusätzlich die Antworten von drei zufällig ausgewählten Teilnehmern an einer Voruntersuchung angezeigt. Es steht Ihnen frei, diese Information in Ihre Schätzungen mit einzubeziehen oder sie außer Acht zu lassen.

[In some cases, the answers of three randomly selected former participants from a pretest are also displayed. You are free to include this information in your estimation or to ignore them.]

Mit ENTER wird Ihnen die erste Seite mit Buchstaben gezeigt.

[Pressing ENTER, the first page with letters will be presented.]

Example:

Person 1: **158**
Person 2: **168**
Person 3: **147**

aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
aa
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
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aaaaaa
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa

In total, eight screens with the estimates of alleged participants from a pretest are shown, and eight screens without this “social” information. The actual number of letters “a” varies between 148 letters and 1,127 letters.

C5 Reaction-Timed Based Measure

Instructions and procedure of the reaction-time based measure employed in Experiment 4.

In einer nächsten Aufgabe werden Sie gebeten, Einschätzungen über verschiedene Eigenschaften abzugeben, d.h. ob diese Eigenschaften tendenziell auf Sie zutreffen oder ob sie dies nicht tun.

[In the following task, you will be ask to make assessments concerning various personal characteristics, i.e., whether these characteristics tend to apply to you or if they do not.]

Verwenden Sie für Ihre Angaben bitte die markierten Tasten ("S" für "ja" und "L" für "nein"). Bitte geben Sie Ihre Einschätzung bei dieser Reaktionszeitaufgabe so schnell, aber auch so präzise wie möglich ab!

[For the assessment, please use to marked buttons ("S" for "yes" and "L" for "no"). In this reaction-time based task, please enter your assessments as quickly and as precise as possible!]

Legen Sie nun bitte Ihre beiden Zeige- oder Mittelfinger auf die "S"- und "L"-Taste und drücken Sie eine dieser Taste, um zu beginnen!

[Now, please place both your index or middle fingers on the "S" and "L" key and press one of these buttons to start the task!]

positive traits	negative traits	neutral traits
ehrlich [honest]	abhängig [dependent]	albern [silly]
flexibel [flexible]	aggressiv [aggressive]	besorgt [worried]
freundlich [friendly]	ängstlich [anxious]	direkt [direct]
geduldig [patient]	egoistisch [selfish]	dünn [thin]
gerecht [fair]	eigensinnig [headstrong]	ehrgeizig [ambitious]
gesellig [sociable]	eitel [vain]	empfindlich [sensitive]
glücklich [happy]	faul [lazy]	genau [exact]
gründlich [thorough]	hektisch [hectic]	groß [great]
herzlich [cordially]	hilflos [helpless]	klein [small]
hilfsbereit [helpful]	kalt [cold]	modern [modern]
intelligent [intelligent]	kleinlich [petty]	neugierig [curious]
kreativ [creative]	langweilig [boring]	rational [rational]
lustig [funny]	nachlässig [careless]	reizbar [irritable]
nett [nice]	nervös [nervous]	sachlich [objective]
offen [open]	primitiv [primitive]	sensibel [sensitive]
selbstbewusst [self-conscious]	schwach [weak]	sentimental [sentimental]
sinnlich [sensual]	stur [stubborn]	sparsam [thrifty]
tolerant [tolerant]	träge [languid]	verletzlich [vulnerable]
treu [faithful]	undiszipliniert [undisciplined]	vorsichtig [cautious]
vielseitig [versatile]	weinerlich [whiny]	warm [warm]