

*A dynamic perspective on social identification:
Predictors and consequences of identification during group
formation*

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CONTENTS

| | |
|--|-----------|
| 1 INTRODUCTION | 6 |
| 2 THEORETICAL BACKGROUND | 9 |
| 2.1 Social Identity Theory | 9 |
| 2.2. Self-Categorization Theory | 10 |
| 2.3 The role of identification in SIT and SCT | 11 |
| 2.4 Identification and its consequences | 12 |
| 2.5 Identification as a moderator and mediator | 13 |
| 2.6 Models of group development | 14 |
| 2.7 Group formation and the development of identification | 15 |
| 2.8 Predictors and consequences of identification during group formation | 18 |
| 2.9 The functions of identification | 24 |
| 3 MODEL AND HYPOTHESES | 30 |
| 3.1 Cross-sectional hypotheses | 31 |
| 3.2 Mean level hypotheses | 31 |
| 3.3 Longitudinal predictions | 32 |
| 3.4 Summary of the hypotheses | 34 |
| 4 EMPIRICAL EVIDENCE | 35 |
| 4.1 Study 1: The development of identification in student groups | 35 |

| | |
|--|------------|
| | 5 |
| 4.2 Study 2: A cross-validation: Examining the generalizability of the results | 59 |
| 4.3 Study 3. One year after Study 1 | 80 |
| 4.4 Study 4: The development of identification in organizations | 85 |
| 5 GENERAL DISCUSSION | 107 |
| 5.1 Overview of the presented studies | 107 |
| 5.2 Integration and implications | 112 |
| 5.3 Possible limitations of the presented studies | 115 |
| 5.4 Suggestions for future research | 117 |
| 5.5 Conclusion | 118 |
| REFERENCES | 119 |
| APPENDIX | 143 |
| SUMMARY | 148 |
| ZUSAMMENFASSUNG | 151 |
| CURRICULUM VITAE | 155 |

1 INTRODUCTION

Our everyday life is influenced by the groups we belong to. There are groups into which we are born (e.g., gender and ethnicity) and others which we can choose (e.g., occupational groups and sports teams). In all these different contexts, the importance and centrality of group membership has a powerful impact on the individual. The closer the relation between the individual and the group, the more the individual will tend to *think* and *behave* in terms of this group membership.

Numerous examples illustrate the impact social identification has on emotions, perceptions, and behavior. In the context of organizations, highly identified employees have been shown to more strongly support their own company (Mael & Ashforth, 1992), to have lower turnover intentions (Mathieu & Zajac, 1990), and to be more willing to participate in collective action (Veenstra & Haslam, 2000). In sports, highly identified team members are more likely to personally take the blame for a team loss (Taylor & Doria, 1981) and highly identified sport fans report a higher willingness to act aggressively against the opposing team (Wann, Peterson, Cothran, & Dykes, 1999). In social movements, identification is one of the determinants influencing the willingness to engage in collective action (Simon et al., 1998).

In social psychology, identification with social groups has been studied within the theoretical framework of the social identity approach (Tajfel & Turner, 1979, 1986). In this tradition, theoretical considerations and empirical findings have generated an extensive list of variables assumed to be predictors of identification. Among them are motives and needs, such as the self-esteem motive (Rubin & Hewstone, 1998), the need for inclusion, the need to belong (Baumeister & Leary, 1995; Brewer, 1991), and the need for uncertainty reduction (Hogg, 2000; Hogg & Mullin, 1999). Other predictors include socio-structural variables, such as the status of the group (e.g., Ellemers, 1993) and distinctiveness (e.g., Ashforth & Mael, 1989).

Due to the important consequences, one would expect to find extensive research on the *development* of identification with social groups. Up to date, however, identification and its related variables have been investigated without considering the *dynamic aspects over time* (Condor, 1996). Nonetheless, identification with real life groups develops over time

(Deaux, 1991, 1996), and theories of group development suggest that the relationship between the self and the group changes during group formation (Tuckman, 1965; Worchel, Coutant-Sassic, & Grossman, 1992). More specifically, the individuals' needs to be fulfilled by their group membership and the respective functions of identification can be presumed to change during group development. Therefore, it is crucial to consider the role of time when investigating predictors and consequences of identification.

The present research accounts for the role of change over time. It is based on the idea that predictors of identification might be differentially linked to identification over time. Whereas some predictors of identification might be consistently associated with identification over time, other predictors might be linked to identification only during specific stages of group development. Taking the organizational context as an example, the factors that instigate employees to identify with the team or the organizations might shift during organizational membership. From a practical perspective, human resource management needs to take this into account to successfully manage organizational identification.

To summarize, the literature on social identity has discussed a variety of predictors and consequences of identification. So far, however, research on social identification has mostly taken a static perspective. Therefore, we do not yet know which variables are relevant during different stages of the development of identification. The present thesis aims to provide an answer to this question by investigating the development of identification in a dynamic framework.

The following chapters present the theoretical model of the development of identification and the empirical findings testing the model. In chapter 2, the theoretical background is discussed. First, the research on identification in the social identity tradition is reviewed. It is concluded that the current understanding of identification would benefit from a dynamic perspective. Further, relevant models of group development are considered that provide an understanding of change processes in groups. Based on these models, relevant predictors and consequences of ingroup identification during group formation are derived and integrated with the research on functions of identification. In chapter 3, the theoretical model specifying the hypotheses is presented. Subsequently, in chapter 4, the empirical

evidence testing the predictions of the model is reported. The longitudinal Studies 1 and 2 cross-validate the proposed model in a student context. Following up on the results of Study 1, the further development of identification is investigated in Study 3. Finally, longitudinal Study 4 provides an application of the model predictions to an organizational context. In chapter 5, all empirical findings that were obtained by the present research are summarized and discussed with regard to their theoretical and practical implications.

2 THEORETICAL BACKGROUND

2.1 Social Identity Theory

Over the last decades, Social Identity Theory (SIT; Tajfel & Turner, 1986) has become one of the most influential theories on intergroup behavior (Brewer & Brown, 1998). It is based on the notion that our social environment is divided in groups and social categories that convey meaning and orientation to their members. Social identity has been defined as “that part of an individual’s self-concept which derives from his knowledge of his membership of a social group (or groups) together with the value and emotional significance attached to that membership” (Tajfel, 1978, p. 63). Personal identity denotes the definition of the self in terms of unique characteristics and interindividual differences. SIT emphasizes the distinction between personal and social identity and, correspondingly, between situations that are determined by interpersonal versus intergroup processes.

SIT has been developed to explain the findings of the ‘minimal group studies’ (Tajfel, Billig, Bundy, & Flament, 1971). In these studies, the baseline condition was defined by an artificial ingroup-outgroup categorization in order to explore the minimal conditions for intergroup discrimination. Unexpectedly, this minimal setting was sufficient to instigate ingroup favoritism as participants were willing to maximize the profit of their ingroup in relation to an outgroup. Building on that finding, extensive empirical evidence has demonstrated that ingroup favoritism under minimal conditions is a robust finding across samples and operationalizations of independent and dependent measures (Hewstone, Rubin, & Willis, 2002).

In general, groups to which one belongs (ingroups) are evaluated with respect to relevant other groups (outgroups) resulting in either favorable or unfavorable comparison outcomes. SIT posits that individuals engaged in intergroup comparisons strive to achieve and maintain a positive social identity. Therefore, the ingroup is considered as positively differentiated from the outgroup(s). SIT further elaborates which strategies individuals choose in the face of a negative comparison outcome and depending on the perceived characteristics of the social structure. More specifically, perceived stability, legitimacy, and permeability are discussed as the relevant belief structures about the social context.

The core notions of SIT provide a powerful explanation for a variety of intergroup

phenomena comprising ingroup favoritism, the responses of lower status groups to inequality, stereotyping, and the perception of ingroup and outgroup homogeneity (see Brown, 2000 for a review). Empirically, an impressive amount of evidence supported the major predictions of SIT, such as the impact of the intergroup situation and the belief structures on group strategies and intergroup relations (see Brown, 2000 for a review; Ellemers, 1993). In turn, the broadened application of SIT in diverse areas has challenged some of the SIT derived predictions including the link between identification and ingroup favoritism and the self-esteem hypothesis (Brown, 2000; Rubin & Hewstone, 1998).

2.2. Self-Categorization Theory

Self-Categorization Theory (SCT; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) can be considered as a complementary theory to SIT by further specifying antecedents and consequences of categorization on a personal or social level (Turner & Reynolds, 2001). Individuals belong to several groups (e.g., gender, nationality, or profession) and can categorize themselves on a personal level or on different levels of social identities (e.g., fencer, French, woman) ranging in the degree of inclusiveness. The salient self categories vary depending on the category accessibility and fit and, thus, the self is seen as a dynamic concept. Fit is further divided in comparative and normative fit. Comparative fit follows the meta-contrast principle meaning that the differences perceived within the category should be less than between the categories. Normative fit postulates that the meaning of the social categories has to match the situation.

SCT postulates that the personal and the social self correspond to different levels of categorization which entail different self perceptions. At the individual level of self-categorization, the self is perceived in terms of unique characteristics. Self-categorization at the group level instigates the process of self-stereotyping which “systematically biases self-perception and behavior to render it more closely in accordance with stereotypic ingroup characteristics and norms” (Hogg & Turner, 1987, p. 326). Stereotypic ingroup characteristics and norms are represented by the ingroup prototype. When the self is depersonalized, individuals tend to perceive themselves more in terms of the stereotypic ingroup characteristics and tend to behave more in line with the ingroup norms (Turner et al., 1987; Turner, Oakes, Haslam, & McGarty, 1994). Depersonalization reflects the shift from the personal to the social level of identity and, accordingly, from interpersonal to

intergroup behavior.

Research has shown the impact of depersonalization on a variety of group phenomena. On the intragroup level, depersonalization increases perceived ingroup cohesion and homogeneity (Simon, Pantaleo, & Mummendey, 1995). Moreover, depersonalization implies a shift from interpersonal to social attraction. This means that the perception of other ingroup members is more strongly focused on the closeness of the others to the prototype, and not on interpersonal liking (Hogg, 1992; Hogg & Hains, 1996; Hogg & Hardie, 1991). On the intergroup level, depersonalization leads to stereotyping, collective behavior, and ethnocentrism (Turner et al., 1987).

SCT as a theoretical framework has been applied to a wide range of social psychological processes, such as social stereotyping, prejudice, and social influence (Turner, 1991; Turner et al., 1987). SCT has explored the notion of different categorization levels and their antecedents, and has emphasized the role of the social context in determining the content of the self and social categories (Haslam, Oakes, Turner, & McGarty, 1995). The self and social categories are considered as mental structures that are variably construed depending on the context (Turner et al., 1994).

2.3 The role of identification in SIT and SCT

In SCT as well as in SIT, identification as the closeness between the individual self and the social category is seen as a central variable. More specifically, SCT regards identification as a determinant of category accessibility (Turner, 1999). By capturing the importance and centrality of a specific group membership, identification influences the understanding and constructing of an individual's social environment. Consequently, high identifiers are more likely to categorize themselves at the group level and to define themselves in terms of stereotypic ingroup characteristics (Doosje & Ellemers, 1997; Hogg & Turner, 1987; Spears, Doosje, & Ellemers, 1997).

SIT considers identification with the group as the crucial variable influencing intragroup and intergroup behavior. Ingroup identification relates to the importance of group membership to the self, and it determines to what extent group members think and behave in terms of this group membership (Ellemers, Spears, & Doosje, 2002). As outlined previously

(see section 2.1), Tajfel considered social identity as a tri-dimensional construct including the knowledge of group membership (cognitive component), the value attached to that membership (evaluative component), and the emotional ties (affective component). The subsequent research has often conceptualized and measured the construct ‘identification’ in different ways. Nonetheless, most of the researchers (Brown, Condor, Matthews, & Wade, 1986; Ellemers, Kortekaas, & Ouwerwerk, 1997; Hinkle, Taylor, Fox-Cardamone, & Crook, 1989; Jackson & Smith, 1999; Karasawa, 1991; see Jackson, 2002 for an overview) agree upon Tajfel’s (1981) tri-dimensional conceptualization of identification. However, the literature has often not distinguished between the terms ‘social identification’ and ‘social identity’. Based on Ellemers et al. (2002), social identity denotes “the nature or content of a particular identity” (p. 164), and identification can be considered as “the strength of association with a particular social category” (p. 164). The understanding of identification in the present research considers its tri-dimensional nature and its distinction from identity building on the definition of Ellemers et al. (2002).

2.4 Identification and its consequences

Extensive research based on SIT and SCT revealed the consequences of identification in different settings. In general, group identification increases the tendency to *think* and *behave* more strongly in terms of group membership than in terms of individual interests (Tajfel, 1981). Ingroup identification has been shown to influence perceptions, such as group homogeneity (Doosje, Spears, & Ellemers, 2002) and self-stereotyping (Spears et al., 1997), and the experience of emotions, such as collective guilt (Doosje, Branscombe, Spears, & Manstead, 1998). Moreover, the literature reports numerous effects of identification on group normative behavior and group loyalty. More specifically, high identifiers tend to adhere to the norms of the ingroup (Jetten, Spears, & Manstead, 1997; Terry & Hogg, 1996) and to be more loyal by sticking to their group even in hard times (Ellemers, Spears, & Doosje, 1997). Furthermore, they are more willing to take collective action (Kelly & Breinlinger, 1996; Veenstra & Haslam, 2000) and to spend efforts on behalf of the group in experimental as well as applied settings (Ouwerkerk & Ellemers, 2002; Ouwerkerk, Ellemers, & de Gilder, 1999). Finally, the link between identification and the tendency to favor the ingroup has been extensively discussed in the literature (Hewstone et al., 2002; Hinkle & Brown, 1990; Mullen, Brown, & Smith, 1992; Mummendey, 1995).

2.5 Identification as a moderator and mediator

In addition to the research on identification as an independent variable, there is broad evidence that identification operates as a powerful moderator and mediator in intergroup processes. As a *moderator*, ingroup identification determines the emotional and behavioral responses of group members to contextual conditions. Especially in situations of ingroup threat, high and low identifiers have been shown to employ different strategies. Whereas high identifiers tend to opt for a ‘social change strategy’ in order to ameliorate the situation of the ingroup, low identifiers tend to choose ‘individual mobility’ as a strategy to change their own situation (e.g., Branscombe & Ellemers, 1998; Spears et al., 1997). Thus, low identifiers under threat are less willing to exert efforts on behalf of the group and their behavior is more strongly guided by strategic reasoning. Moreover, high identifiers in situations of ingroup threat have been demonstrated to self-stereotype more strongly (Doosje & Ellemers, 1997; Spears et al., 1997) and to perceive the ingroup as less variable compared to low identifiers (Doosje, Ellemers, & Spears, 1995). In summary, low identifiers are more likely to act in terms of their self interests, whereas high identifiers are more likely to act in terms of the ingroup interests.

Secondly, the strength of ingroup identification or self-categorization has been discussed as a central *mediator* in intergroup processes, and extensive research supports this notion. The nature of the intergroup context (e.g., stability, legitimacy) affects identification which in turn influences emotional and behavioral responses in different settings. For example, during an organizational merger, Terry and colleagues (Terry, Carey, & Callan, 2001) found that identification mediates the effect of socio-structural variables (e.g., premerger status) on employee adjustment. In the context of stigmatized groups, the rejection identification model developed by Branscombe, Schmitt, and Harvey (1999) addresses the mediating role of identification in dealing with discrimination. Empirical evidence supports the model prediction that identification should mediate the effect of discrimination on self-esteem and well-being (Jetten, Branscombe, Schmitt, & Spears, 2001; Schmitt & Branscombe, 2002).

In conclusion, SIT and SCT provided a broad theoretical framework for the explanation of intra- and intergroup processes. Both theories stress the importance of ingroup identification as an influential variable in these processes and, consequently,

research has been concerned with the predictors of identification. Yet, ingroup identification has often been investigated in a rather static way, and research has either concentrated on the role of identification as an independent (e.g., Doosje et al., 1995; Jetten et al., 1997) or a dependent variable (e.g., Ellemers, 1993). From a methodological perspective, research in the SIT tradition has mostly employed an experimental approach building upon the classic ‘minimal group paradigm’. The investigation of identification within this paradigm, however, restricts the analysis of processes in a temporal dimension (Condor, 1996). Recently, very few studies started addressing the question of identification change. Within an organizational setting, Jetten, O’Brien and Trindall (2002) measured pre- and post-restructure identification with the organization and the work-team. In an experimental context, Doosje et al. (2002) assessed ingroup identification before and after the manipulation of changes in the intergroup status hierarchy.

Up to date, however, the dynamic aspects of identification *over a longer time period* and the *role of identification as both a cause and an effect* have been neglected. The present research aims to provide an understanding of identification processes by taking a long-term perspective. Accounting for the role of change over time, predictors and consequences of identification during *group formation in novel groups* were analyzed. A dynamic understanding of the identification process requires assumptions about the change processes in groups along the different stages of group formation. These assumptions were derived from models of group development.

2.6 Models of group development

The relevant context of change processes in groups is depicted by models of group development. They suggest that novel groups pass through several stages from the beginning until the end of their group life. One of the first models of group development was formulated by Tuckman (1965). Grounded in an extensive review of studies, he contended that groups go through the stages of forming, storming, norming, and performing. The forming stage denotes that group members in a novel group are at first concerned with issues of acclimatization and inclusion. Afterwards, the group members carry out their conflicts during the storming stage. In the norming stage, the group determines its structure and develops cohesiveness. Subsequently, task goals can be pursued in the performing stage. In general, Tuckman’s model was an inspiring starting point for the following research on

group development, even though it was based only on specific kinds of groups (i.e., therapeutic, training, and small laboratory groups).

Another more recent model has been developed by Worchel and colleagues (1992). They constructed a six-stage cycle of group development starting with a first stage of discontent in which the group does not serve its members' needs any more. Dissatisfaction is followed by a precipitating event (second stage) that leads to a disintegration of the group in the loyal and the leaving fraction. The novel splinter group then has to shape its distinct identity in relation to other outgroups (third stage: group identification) and tackle issues, such as structure and leadership, before being able to work on its goals (fourth stage: group productivity). The fifth stage is characterized by individuation as the group members put their personal output ahead of the group output and start reevaluating their rewards. As a consequence, members start to disengage from the group (sixth stage: decay) and the cycle begins once again. In contrast to Tuckman (1965), the model developed by Worchel and colleagues starts with a stage of existing groups breaking apart and, hence, alludes to intergroup aspects. Furthermore, it has been grounded in a review of group development in different kinds of groups (e.g., professional organizations, civil rights movements, religious groups).

Both models discussed above contain several similarities: the 'discontent stage' in the model proposed by Worchel et al. (1992) resembles Tuckman's (1965) 'storming stage' resulting in a different conflict resolution (i.e., a split up versus a unified group). In general, the issue of conflict reemerges in many group development models (Wheelan, 1994). In a similar way, the stage of 'group identification' and the 'norming stage' both deal with the establishment of a group identity, which is in both models followed by a stage of productivity.

2.7 Group formation and the development of identification

Models of group development typically describe a sequence of stages from group formation to group decay. These stages outline *general changes at the group level*. Furthermore, these models are mostly based on the study of specific kinds of groups including small groups and productivity groups. Therefore, issues, such as the formation of a leadership structure and the existence of a common productivity goal are addressed. In

general, the assumptions about the general sequence of stages and the change processes during group development are claimed to be generalizable across groups. The duration of the stages is assumed to vary across groups and to depend on several contextual factors, such as the duration of group life and group tasks (Taylor & McKirnan, 1984; Tuckman, 1965; Worchel, 1998).

The models of group development are more concerned with the general description of change processes within groups. They do not provide a perspective focused on the development of ingroup identification¹. Furthermore, models of group development deal more strongly with intragroup processes than with intergroup relations. The present research, however, aimed to investigate *the development of identification* during group formation and the relationship between predictors and consequences of identification over time. It was based on the notion that functions and motivations related to identification should change during group development.

Although models of group development do not focus on identification, they provide nonetheless a broad theoretical background for specifying the general change processes in groups during group formation. From this, the following assumptions about the change process related to the development of identification were derived. At the beginning of group membership, when the newcomers enter the novel and unknown group, they should be prone to experience uncertainty because they lack of knowledge about their group, its members, norms, and practices (Louis, 1980; Ryan & Bogart, 2001; Tuckman, 1965). Furthermore, group members were assumed to have a need for affiliation at the beginning of group membership. Hence, socializing with the other ingroup members and establishing interpersonal bonds was expected to influence the initial development of ingroup identification (Tuckman, 1965) as the group provides a means to satisfy this need. In the following, it was expected that group members get acquainted with each other and satisfy

¹ Although the relationship between the individual and the group is addressed in models of group socialization (e.g. Levine & Moreland, 1994), these models are based on a different theoretical perspective than the present research. More specifically, models of group socialization outline different stages in the relationship between an individual and an *existing* group. Hence, these models provide an analysis at the individual level focusing on changing role relationships and the reciprocal evaluation of rewards between the individual and the group. In the present research, however, the focus is on the *general process* of the development of identification.

their need to establish interpersonal relationships within the group (Park, Kraus, & Ryan, 1997). As group development proceeds, the role of interpersonal bonds for identification with the group as a whole should diminish (Wheelan, 1994). Once the interpersonal relationships within the group have formed, there should be an increasing need for identified group members to emphasize group boundaries (Tuckman, 1965) and to differentiate the ingroup from relevant outgroups. This should be indicated by an emerging link between identification and ingroup favoritism. To summarize, interpersonal concerns were expected to influence identification at the beginning of group formation, but they should lose importance when interpersonal relationships have established. At that time, intergroup concerns and, hence, the link between identification and ingroup favoritism were hypothesized to strengthen.

Similar to models of group development, the described processes of the development of identification should only apply to *achieved*, but not *ascribed* social identities. In achieved social identities (Allport, 1954; Deaux et al., 1999) group membership is chosen, whereas in ascribed social identities, group membership is a permanent part of the self. Furthermore, within the cluster of achieved social identities, two necessary conditions of model application should be pointed out. First, *personal interaction* within the group is an important feature. Only in those groups where members interact (personally) on a regular basis, interpersonal attraction is predicted to influence the identification process longitudinally at the beginning of the group membership. Secondly, *intergroup competition* at the beginning of group membership might have an impact on the longitudinal relationship between identification and ingroup favoritism. More specifically, under this condition, the positive relationship between identification and ingroup favoritism might already exist from the beginning on (see section 4.2.3 for a further discussion of the model generalizability).

The changes during these stages of group formation imply that some of the many variables known to be related to ingroup identification are especially relevant in the context of group formation. As to the predictors of identification, the individual *uncertainty* motive was assumed to be cross-sectionally important due to the novel situation at the beginning of group formation. The importance of interpersonal relationships within the group was tapped by *interpersonal attraction*. The centrality of the intragroup position was captured by *self-prototypicality* representing both a predictor and consequence of identification. Finally,

ingroup favoritism was measured in order to reflect the intergroup dimension.

The present research aims to provide an understanding of the changing relationships between these variables over time. In the following, the predictors and consequences of identification will be discussed regarding their influence on identification during the process of group development.

2.8 Predictors and consequences of identification during group formation

2.8.1 Uncertainty

Uncertainty about one's attitudes, beliefs, perceptions, and emotions can be claimed to be an aversive experience (Kruglanski & Webster, 1996) associated with feelings of unease (Fiske & Taylor, 1991). Therefore, people strive to reduce uncertainty (e.g., Baumgardner, 1990; Festinger, 1954; Sedikides & Strube, 1995). In his classic theory of social comparison, Festinger (1954) already stated that people need to validate their beliefs about themselves and their social environment. Uncertainty is reduced by sharing beliefs with similar others, who are part of the same reference group. Research showed that individuals expect to agree more strongly on subjective judgments with their own group and, thus, only members of the ingroup are considered to be appropriate sources of validation (Gorenflo & Crano, 1989). In the subsequent research, the uncertainty motive was often discussed when investigating social judgment and conformity processes. Likewise, Turner (1999) referred to the uncertainty motive when discussing the link between uncertainty and self-prototypicality in groups.

Drawing on these aspects, Hogg (2000) further developed the idea that uncertainty reduction plays a major role in group contexts. He distinguished between different forms of uncertainty according to their source (Mullin & Hogg, 1998): task related uncertainty, situational uncertainty, and self-concept uncertainty. It is assumed that these different kinds of uncertainties are linked to each other and that the uncertainty reduction process does not depend on the source of uncertainty (Hogg, 2000). Uncertainty is then assumed to be reduced by identification with a salient social category because the ingroup prototype provides orientation. In a series of minimal group experiments, Hogg and colleagues (Grieve & Hogg, 1999; Hogg & Grieve, 1999) investigated the effects of uncertainty and social categorization on identification and ingroup favoritism. Their empirical findings illustrated

that the participants, who were categorized under uncertainty showed significantly stronger ingroup identification and ingroup bias than the participants in the other conditions. The results of a study conducted in a naturalistic context (Hogg, 2000) indicated that self-concept uncertainty of students might be associated with a higher willingness to join student clubs and with a higher level of identification.

In general, uncertainty is assumed to be instigated in situations of novelty and change when people lack information. In his experiments, Hogg (2000) employed the minimal group paradigm to evoke uncertainty. In the applied field, entering a novel group as a newcomer has been discussed as a situation of uncertainty in the literature (Kramer, 1998; Louis, 1980). So far, empirical evidence mostly speaks for a cross-sectional, and not a longitudinal relation between uncertainty and identification.

2.8.2 Interpersonal attraction

For a long time, group processes have been analyzed in terms of interpersonal relations (see Hogg, 1992; Turner et al., 1987 for a review). Interpersonal attraction was considered as a necessary precondition of psychological group formation and belonging (Schachter, Ellertson, McBride, & Gregory, 1951). Moreover, interpersonal attraction has been regarded as a determinant of group cohesiveness (Festinger, Schachter, & Back, 1950; Lott & Lott, 1965) and as the underlying process turning individuals into a group.

This approach has been challenged by Hogg and collaborators (Hogg, 1987, 1992; Hogg & Hardie, 1992; Hogg & Turner, 1985; Turner et al., 1987). Drawing on SIT (Tajfel & Turner, 1979) and SCT (Turner et al, 1987), Hogg and others have emphasized the distinction between interpersonal and group processes. SIT research in minimal group experiments has illustrated that individuals engage in intergroup behavior (i.e., stereotyping and discrimination) even in highly artificial, anonymous groups (Tajfel et al., 1971). The findings in these experiments could not be explained by interpersonal processes, and led Turner and colleagues (1987) to conclude that group based processes can be instigated without the occurrence of interpersonal attraction.

Hogg and Turner (1985) differentiated between interpersonal attraction, which rests on the characteristics of close personal relationships, and social attraction, which is simply

based on the knowledge of a common ingroup identity. In this sense, an ingroup member is socially attractive when he or she represents the distinct characteristics of the group and resembles the ingroup prototype. Though these levels are clearly different, it is doubtful whether this strict distinction applies to all kinds of groups (e.g., real groups) and to different stages of group development. Postmes and Spears (2000) concluded that “it is functional to distinguish between the social processes in small groups operating at both levels simultaneously and possibly in interaction with each other” (p. 74). In the present research, this notion is applied to larger social groups in which members interact with each other. Adopting a dynamic perspective, it is argued that in those groups, the interpersonal and the group level can both be salient and influence each other. This prediction is in line with the literature from different contexts illustrating that interpersonal attraction and relatedness within the group has been found to be a reliable predictor of identification (Ashforth & Mael, 1989; Brown et al., 1986; Reade, 2001; Sheldon & Bettencourt, 2002).

Furthermore, the literature on group development asserts that interpersonal attraction is an important variable at the beginning of the group membership as the group members want to establish interpersonal relationships with one another (Tuckman, 1965). Thus, in the present studies, interpersonal attraction was expected to be an important longitudinal predictor for identification only at the beginning of group formation. When the interpersonal relationships within the group have formed, the longitudinal influence of interpersonal attraction on identification should diminish.

2.8.3 Self-prototypicality

The concept of self-prototypicality is closely linked to SCT and has been defined as the perceived closeness of the self to stereotypic ingroup characteristics and norms (Turner et al., 1987). Hence, self-prototypicality denotes the extent to which an ingroup member is exemplary of the ingroup in comparison to an outgroup (Turner et al., 1987). The prototype reflects the consensus of the ingroup in relation to an outgroup (Turner, 1991), providing orientation and validation for the judgement and behavior of the group members.

Similar to identification, self-prototypicality has been ascribed a pivotal role in predicting intragroup and intergroup behavior (Jetten et al., 1997; Simon et al., 1995; Spears et al., 1997). Existing research revealed that prototypical group members are more likely to

exert influence within the group (Turner, 1999) and to become leaders of the group (Hogg, Hains, & Mason, 1998). Additionally, self-prototypicality is linked to social attractiveness (Hogg, Cooper-Shaw, & Holzworth, 1993), to conformity to group norms (Terry & Hogg, 1996), and to intragroup evaluations (Schmitt & Branscombe, 2001).

Prototypical group members embody the ingroup characteristics and, therefore, represent the identity of the group. Hence, self-prototypicality is related to collective self-esteem (Jetten et al., 2002) and identity security with respect to group membership (Jetten, Branscombe, & Spears, 2002; Jetten et al., 1997). For example, prototypical group members tend to show increased discrimination under ingroup identity threat in order to defend the threatened identity (Jetten et al., 1997). Depending on the importance of group membership, peripheral group members are more motivated to improve their position within the group by gaining acceptance (Noel, Wann, & Branscombe, 1995). To this end, peripheral group members are more likely to present themselves as behaving in line with the norms of the ingroup. These findings correspond to research on the inclusion motive addressed by optimal distinctiveness theory (Brewer, 1991). In experimental studies, the inclusion motive was instigated by threatening the self-prototypicality of the group member (Brewer & Pickett, 1999). As a consequence, the threatened group members tend to restore a secure social identity by self-stereotyping even on negatively evaluated group characteristics (Branscombe & Ellemers, 1998; Brewer & Pickett, 1999). To summarize, self-prototypicality reflects the centrality of the intragroup position and is driven by the need to be safely included in the group. As outlined above, extensive research emphasized the importance of self-prototypicality in intergroup processes.

Small group research supports the notion that self-prototypicality matters when becoming a member of a new group. More specifically, peripheral group members and new members have been shown to be more anxious and uncertain than prototypical members (Kramer, 1998; Moreland, 1985). Furthermore, the literature discussed self-prototypicality as a predictor (Kashima, Kashima, & Hardie, 2000) and as a consequence of identification. Accordingly, “if an individual feels for any reason that his or her individual attributes make him or her suited to the group, this ... may be reflected in enhanced group identification” (Spears, 2001, p. 187). In addition, identification was argued to influence the self-perception as a prototypical group member (McGarty, 1999). In conclusion, the present research gives

reason to assume that self-prototypicality and identification should reciprocally influence each other.

2.8.4 Ingroup favoritism

In addition to self-prototypicality, the literature focused on ingroup favoritism as an important consequence of identification. SIT (Tajfel & Turner, 1986) contends that people strive to achieve and maintain a positive social identity by means of biased intergroup comparisons. Generally SIT does not imply clear predictions on the relationship between identification and ingroup favoritism. Depending on the status of the ingroup and the perceived structural context (i.e., stability, permeability, and legitimacy), individuals resort to different strategies to create and maintain a positive social identity. When positive self-esteem is threatened by an inferior status of the ingroup in relation to the outgroup, the perceived structural context influences the choice between individualistic or collective strategies. Thus, ingroup favoritism is considered as one possibility of maintaining and enhancing a positive self-concept.

According to the theory, any expression of ingroup favoritism depends on several interacting factors, including group status and power, the relevance of the comparison dimensions, the salience of the ingroup, the perceived social structure of intergroup relationships, and the consequences of the comparison on the status of the ingroup (Blanz, Mummendey, & Otten, 1995; Hinkle & Brown, 1990; Mullen et al., 1992; Turner, 1999). Empirically, a high amount of research focused on the relation between ingroup identification and ingroup favoritism or outgroup derogation. The resulting picture is ambiguous. While some of the studies speak in favor of a positive relationship between identification and ingroup favoritism or outgroup bias (Branscombe & Wann, 1994; see Mullen et al., 1992 for a meta-analysis), the effect sizes of the relationships across studies are generally modest and illustrate considerable variability (Hinkle & Brown, 1990; see Hewstone et al., 2002 for a review).

In addition to the variables proposed by SIT, several other variables have been demonstrated to moderate the relationship between identification and ingroup favoritism. A meta-analysis conducted by Mullen and colleagues (1992) revealed that the status of the group, the reality of the group, and the relevance of the dimensions were determinants of the

relationship between identification and ingroup favoritism. Furthermore, under conditions of a comparative outgroup orientation, a strong link between identification and outgroup derogation was observed (Brown, Hinkle, Ely, Fox-Cardamone, Maras, & Taylor, 1992; Mummendey, Klink & Brown, 2001). Moreover, a positive-negative asymmetry of discrimination was reported showing that ingroup bias was dependent on the valence of the intergroup comparison dimension (Mummendey & Otten, 1998). Taken together, the empirical findings on the link between identification and ingroup favoritism have not revealed a clear-cut picture, and the literature has reported several variables moderating this relationship.

In the present research, it is proposed that the stage of group development is a further moderator of this relationship that has been neglected so far. This notion should especially hold for real groups to which we chose to belong. In contrast to the artificial context of minimal groups, it is assumed that in these real groups, other concerns than intergroup differentiation should be prevalent at the beginning of the group membership. Therefore, a positive association between identification and ingroup favoritism should not exist from the beginning, but should unfold over time.

To summarize, uncertainty, interpersonal attraction, and self-prototypicality were assumed to be relevant *predictors* of identification in the context of group formation. In addition, self-prototypicality and ingroup favoritism were considered to be relevant *consequences of identification*. It was postulated that these predictors and consequences should be differentially linked to identification during group formation. The differential links with identification reflect changes in the motivations and functions related to identification over time. For example, uncertainty represents a predictor and a motive of identification (e.g., Hogg, 2000). Furthermore, it can be argued that interpersonal attraction reflects the need for affiliation, and ingroup favoritism relates to the need for differentiation between groups. Building on this reasoning, it seems fruitful to relate the work on predictors and consequences of identification to the research on functions and motives of identification.

2.9 The functions of identification

“Is it the case, for instance, that the relative importance of different functions changes over the life-time of a group?” (Aharpour & Brown, 2002, p. 181)

SIT assumes that the need to achieve and maintain a positive self-concept is the driving force of intergroup behavior. Therefore, self-esteem is a central motive to social identity. This notion led Hogg and Abrams (1990; see also Abrams & Hogg, 1988) to derive two corollaries of the self-esteem hypothesis: first, the self-esteem of group members should increase after having displayed ingroup favoritism and, secondly, low self-esteem individuals should be especially prone to favor the ingroup. In their review of the existing literature on the self-esteem hypothesis, Rubin and Hewstone (1998) concluded that corollary 1 was empirically better supported than corollary 2. In addition, even corollary 1 was only corroborated by a slight majority of the studies. In a nutshell, empirical evidence related to the self-esteem hypothesis has not revealed a clear-cut picture (Aberson, Healy, & Romero, 2000).

In the face of this empirical ambiguity, researchers have questioned the general applicability of the self-esteem postulate across different groups. Brown and Williams (1984) raised the issue that different kinds of groups might serve different identity functions. Elaborating on this idea, different researchers came up with further motives or functions of identification operating in intergroup processes (Brewer, 1991; Deaux, Reid, Mizrahi, & Cotting, 1999; Hogg, 2000). Based on McClelland (1987), motives can be defined as “recurrent concerns for affectively charged incentives” (Schultheiss & Brunstein, 1999, p. 3). The traditional literature on motives (McClelland, 1987) has primarily focused on the power motive, the affiliation motive, and the achievement motive. In the intergroup literature, several other motives (e.g., the need for differentiation) have been discussed to be relevant in intergroup processes (e.g., Brewer, 1991; Tajfel & Turner, 1986). In the literature, the terms ‘functions’ and ‘motives’ have often been used interchangeably (Deaux et al., 1999). However, the approaches to functions of identification often employ explicit measures, whereas the research on motives tends to use manipulations. Therefore, both approaches aim to study similar psychological processes, but they differ with regards to their methodologies. For example, ‘social interaction’ has been suggested as a function of

identification (Deaux et al., 1999) and can be assumed to be related to the affiliation motive. Likewise, the function of ‘intergroup comparison’ (Aharpour & Brown, 2002; Deaux et al., 1999) should be driven by a need to differentiate the ingroup from relevant outgroups (e.g., Brewer, 1991). In the following, theoretical approaches involving motivational and functional perspectives on identification are depicted.

2.9.1 Uncertainty reduction theory

Facing the inconsistent findings related to the self-esteem motive, Hogg and Abrams (1990) initially proposed that several motives including needs for affiliation, self-esteem, self-knowledge, meaning, balance, and power should be linked to social identification. Later, the authors (Hogg, 2000; Hogg & Abrams, 1993; Hogg & Mullin, 1999) suggested that uncertainty reduction should be the central motive driving group processes and intergroup relations. The previously outlined motives were then considered as consequences of the underlying uncertainty reduction process. Identifying with a group was assumed to reduce uncertainty as the social consensus and agreement with other ingroup members provides orientation. The shared norms and beliefs of the group are represented by the prototype of the ingroup.

Empirical findings from experimental studies have provided support for the uncertainty reduction model (Hogg, 2000). However, voices have been raised against theories suggesting a single motive for the explanation of social identity processes in different kinds of groups (Deaux, 1996). In addition, one might doubt whether uncertainty as a motive on the individual level can explain intra- and intergroup processes.

2.9.2 Optimal distinctiveness theory

According to *optimal distinctiveness theory* developed by Brewer (1991, 1993), two fundamental motives for social identification exist: the need for inclusion and the need for differentiation. The inclusion motive reflects the individual’s desire to be safely included within the group, whereas the differentiation motive taps the individual’s desire to feel distinct. Individuals strive to achieve an optimal level of intragroup inclusion and intergroup differentiation. As a consequence, an optimal social identity would offer safe inclusion on the intragroup level and clear distinctiveness on the intergroup level.

Empirical evidence supporting optimal distinctiveness theory mainly comes from experimental studies in which the needs for inclusion and differentiation have been manipulated. In these studies, threat imposed on one of the motivational levels led individuals to re-establish an optimal social identity. For example, categorization in an overly inclusive group was shown to motivate the differentiation of the group into distinctive subgroups (Brewer & Pickett, 1999). Likewise, threatening inclusion in the group activated the participants' need to restore a secure position within the group (Brewer & Pickett, 1999; Brewer & Weber, 1994).

In general, the model claims that the motives represent basic processes underlying every type of social identity and, therefore, the model does not specify under which conditions (e.g., in which kind of groups and in which contexts) these alternative motives operate. Other models developed by Brown and collaborators (see section 2.9.3) or Deaux and collaborators (see section 2.9.4) integrated a related line of research showing that social groups can be classified into major clusters (Deaux, Reid, Mizrahi, & Ethier, 1995; Lickel, Hamilton, Wierzchowska, Lewis, Sherman, & Uhles, 2000). These models consider that functions of identification are specific for different types of social identities.

2.9.3 The research by Brown and collaborators

Brown and Williams (1984) were among the first to tackle the issue whether ingroup identification has the same meaning to all group members. Based on SIT, they argued that there should be a positive relationship between identification and intergroup differentiation. However, their findings from an organizational context (Brown & Williams, 1984) did not speak for a clear-cut relationship between identification and intergroup differentiation, but revealed a broad range of relationships across different organizational subgroups. This ambivalent pattern was consolidated in a review of 14 studies conducted in a broad variety of settings (Hinkle & Brown, 1990). The authors reported correlations of modest size and noticeable variability. Hence, they concluded the necessity to specify the SIT derived prediction on the relationship between identification and ingroup favoritism.

As an explanation for their findings, the authors (Brown et al., 1992; Hinkle & Brown, 1990) proposed that the psychological processes underlying group identification should differ across groups. More specifically, groups and their meaning were argued to

differ along the individualist-collectivist and the autonomous-relational dimension. Individualism-collectivism reflects the dominance of the personal versus the collective self, whereas the autonomous-relational dimension captures the degree of intergroup comparison. Hinkle and Brown (1990) suggested that SIT has focused mainly on the collectivist-relational group leaving the other types of groups along the two dimensions aside. Across different samples, the authors could show that the positive association between identification and ingroup bias was strongest in collectivist groups with a relational orientation and zero in individualist groups with an autonomous orientation. Therefore, the authors concluded that the motives of self-enhancement and self-maintenance posited by SIT can only be applied to a specific group type, and that different processes operate in other groups.

Aharpour and Brown (2002) further elaborated on the idea that functions of identification differ across groups. Drawing on previous work by Deaux and colleagues (1999), Aharpour and Brown (2002) designed a scale for the measurement of functions of identification. They administered this scale to different groups (e.g., trade unionists and football supporters) than Deaux and colleagues and set up a list of five functions including 1) interdependence, 2) independence, 3) self and social learning, 4) ingroup comparison, and 5) ingroup homogeneity/ intergroup comparison. Interdependence taps emotional and material benefits of the group, whereas independence reflects autonomy from the group. Self and social learning and ingroup comparison refer to intragroup processes, whereas ingroup homogeneity/ intergroup comparison reflect the intergroup dimension discussed by SIT. The list of functions is conceptually very similar to the results that were obtained by Deaux and colleagues (see section 2.9.4). Aharpour and Brown (2002) further showed that these functions were differentially endorsed in different kinds of groups, and that the relationship between these functions, identification and ingroup bias differed across groups. For example, groups that emphasize the importance of interdependence (i.e., trade unions) displayed a strong relationship between identification and outgroup stereotyping.

2.9.4 The model of Deaux and collaborators

Building on the research of Brown and colleagues (Brown & Williams, 1984; Hinkle & Brown, 1990), Deaux et al. (1995) followed the notion that social identities might serve different functions. Deaux et al. (1995) developed a typology of social identities (i.e., ‘relationships’, ‘vocation’, ‘political affiliation’, ‘ethnic/religious identities’, and

‘stigmatized identities’) resulting from a cluster analysis of similarity ratings. In addition, Deaux et al. (1995) explored the psychological properties that differentiate between and within the clusters. For example, vocational identities were seen as more social, achieved, and more agentic compared to other social identities. Consistent with these findings, Lickel and colleagues (2000) identified several clusters of groups including ‘intimacy groups’, ‘tasks groups’, ‘social categories’, ‘weak social relationships’, ‘and transitory groups’. Several of the clusters in both studies correspond to each other. The ‘vocation’ cluster and the ‘relationship’ cluster (Deaux et al., 1995) are comparable to the ‘task group’ cluster and the ‘intimacy group’ cluster (Lickel et al., 2000), respectively. The ‘ethnicity’ and the ‘stigma’ cluster (Deaux et al., 1995) fall into the ‘social categories’ cluster (Lickel et al., 2000). Furthermore, Lickel et al. (2000) reported that the perceived entitativity and related aspects including interaction, importance, and similarity were crucial group properties capturing the differences between the group clusters. To summarize, the evidence converges to suggest that social groups are perceived as distinct clusters along different dimensions.

Drawing on these findings, Deaux et al. (1995) concluded that the distinct types of social identity imply different motives or functions related to these identities. Drawing on previous research in small groups (Forsyth, Elliott, & Welsh, 1991), Deaux and colleagues (1999) construed a scale for the measurement of functions of identification. They validated their scale in a variety of social groups. The results yielded a list of functions of identification: 1) self-insight and understanding, 2) downward social comparison, 3) collective self-esteem, 4) ingroup cooperation, 5) intergroup comparison and competition, 6) social interaction, and 7) romantic involvement.

Social identities are assumed to vary in the degree to which they fulfill these needs. Therefore, “individuals may choose to identify with a particular group or category in order to satisfy some particular set of individual needs” (Deaux, 2000, p.13). In a study across different group types (e.g., religious groups, members of a sports team), the relative importance assigned to intergroup competition was highest in the sports team compared to the other groups (Deaux et al., 1999). Similarly, ingroup cooperation was considered as highly important in the sports team and the religious group.

2.9.5 Summary

To recapitulate, several theoretical models have discussed motives and functions of identification in the literature. Drawing on SIT, these models go beyond the original self-esteem hypothesis. The optimal distinctiveness model (Brewer, 1991, 1993) and the uncertainty reduction model (Hogg, 2000) assume a general motivational process explaining identification in all kinds of groups. The models addressing the functional aspects of identification (Aharpour & Brown, 2002; Deaux et al., 1999) showed that social identities fall into different clusters that serve different functions of identification.

So far, a dynamic perspective on functions of identification has not been adopted. As revealed by the quote that opened this section, until now, it has only been speculated that social identification can serve more than one function over time (Aharpour & Brown, 2002; Deaux, 1996). The present work builds upon the notion that functions of identification change across different stages of group membership. It is assumed that some functions are more important during early stages of group membership, and other functions come into play during later stages.

3 MODEL AND HYPOTHESES

The assumptions about the change processes related to the development of identification during group formation have already been outlined previously (see section 2.7 for a detailed discussion). In summary, the newcomers were expected to experience uncertainty due to the lack of knowledge about their group and its members (Louis, 1980; Ryan & Bogart, 2001; Tuckman, 1965). Furthermore, group members were assumed to have a need for affiliation at the beginning of group membership and, thus, the strength of interpersonal relationships with other ingroup members was hypothesized to influence the initial development of ingroup identification (Tuckman, 1965). When the interpersonal relationships within the group have formed, this should result in an increasing need to emphasize group boundaries (Tuckman, 1965) and to differentiate the ingroup from relevant outgroups. In conclusion, interpersonal concerns were expected to influence identification at the beginning of group formation, but they should lose importance when interpersonal relationships have been established. At that time, intergroup concerns and, hence, the link between identification and ingroup favoritism were hypothesized to strengthen.

The outlined change process is reflected in a model considering longitudinal predictors as well as consequences of identification during group formation. In the present research, the general model about the development of identification is validated in two samples of student groups. Student groups were chosen as they represent an achieved and highly important social identity. In addition, the transition to university seemed perfect for the investigation of change as well as the development of identification with a novel group (Bettencourt, Charlton, Eubanks, Kernahan, & Fuller, 1999; Cassidy & Trew, 2001; Deaux, 1993)².

² When applying the model to other groups, however, the specific context of the group such as the length of group life and intergroup events (Worchel, 1998) has to be taken into account. The importance of contextual conditions has already been discussed in the group development literature (Tuckman, 1965; Worchel, 1998). More specifically, they can be assumed to influence the time lags of the longitudinal relationships between the variables.

In the present studies, a longitudinal design based on *three measurement points* (T1, T2, and T3) with *time lags of six weeks* was used in order to analyze the change process of identification and its related variables. The model formulates hypotheses for identification and its predictors and consequences across three measurement points. The hypotheses relate to the cross-sectional associations between the variables (see section 3.1), to the mean change of the variables over the three measurement points (see section 3.2), and to the longitudinal predictions for the model variables (see section 3.3).

3.1 Cross-sectional hypotheses

The cross-sectional hypotheses refer to the correlations between the variables at each measurement point. It was posited that *self-prototypicality, interpersonal attraction, and uncertainty* should be cross-sectionally correlated with identification. In line with the existing research (see section 2.8), self-prototypicality and interpersonal attraction were predicted to be *positively* associated with identification. The direction of the correlation between uncertainty and identification depends on the process of uncertainty reduction. A positive correlation could be assumed during the stage of group choice or assignment as Hogg's experiments (2000) illustrated that high uncertainty instigates high identification with the assigned group. After group choice or assignment, however, identification is argued to reduce uncertainty. Therefore, *a negative correlation between uncertainty and identification might* be expected at that stage. In the present studies, the relationship between uncertainty and identification was measured after the students have joined their group and, thus, *a negative relation* was hypothesized. Further, it was hypothesized that the cross-sectional correlations should be stable or even increase across the three measurement points. The only exception should be the correlation between identification and ingroup favoritism. Reflecting the increasing importance of intergroup concerns for identification, it was predicted that the positive correlation between ingroup favoritism and identification should not exist at T1, but should unfold at T3.

3.2 Mean level hypotheses

Between T1 and T2, the newcomers should have learnt to handle their situation and, hence, to reduce their uncertainty successfully (Hogg, 2000; Ryan & Bogart, 2001; Tuckman, 1965). Therefore, the mean level of uncertainty should decrease significantly between T1 and T2, and should stabilize between T2 and T3. In line with the previous

findings (Park et al., 1997), the mean level of interpersonal attraction was predicted to increase between T1 and T2 as the newcomers manage to establish interpersonal bonds at the beginning of their group membership. When they have established their interpersonal relationships, the mean level of interpersonal attraction was expected to stabilize (between T2 and T3). Additionally, the mean level of self-prototypicality was expected to increase between T1 and T3 as new group members should be striving to achieve a central and stable position in the group. In addition, newcomers tend to have an overoptimistic view on their group at the beginning (Wanous, Poland, Premack, & Davis, 1992) and they are likely to perceive the ingroups as less positively over time (Ryan & Bogart, 2001). This expectancy adjustment might result in decreasing mean levels of identification. The overall mean level of ingroup favoritism was hypothesized to remain at the same level between T1 and T3. More specifically, the emerging relationship between identification and ingroup favoritism might imply that the mean level of ingroup favoritism develops differently for high and low identifiers between T2 and T3.

3.3 Longitudinal predictions

3.3.1 Uncertainty

Uncertainty reduction theory (Hogg, 2000) claims that uncertainty should have a situational as well as a longitudinal impact on identification. Evidence on the uncertainty reduction theory, however, has been mostly obtained in laboratory settings corroborating the situational influence of uncertainty. A field study with first-year students suggested that uncertainty might predict identification with university clubs at a later point in time (Hogg, 2000). In the present research, however, uncertainty was conceived of as having only situational influence on identification. This hypothesis was based on the notion that uncertainty was argued to be an aversive experience that needs to be rapidly reduced (Kruglanski & Webster, 1996). Consequently, the model (see Figure 1) posits that uncertainty should not have a longitudinal impact on identification.

3.3.2 Self-prototypicality

According to SCT, identification should strengthen the self-perception in terms of prototypical ingroup characteristics and norms (McGarty, 1999; Turner et al., 1987). In turn, perceiving the self as prototypical for a group enhances the likelihood to identify with that group (Kashima et al., 2000; Spears, 2001). Thus, the model assumes that self-

prototypicality and identification predict each other reciprocally over time (see Figure 1). Furthermore, striving to achieve self-prototypicality and, therefore, a central position within the group can be expected to be consistently linked to identification over time. In other words, the reciprocal influence should not depend on a specific stage of group formation. More specifically, highly identified group members at the beginning of the group formation process should feel more prototypical later on. At the same time, high self-prototypicality at the beginning should lead to higher ingroup identification later on.

3.3.3 Interpersonal attraction

The literature on group development postulates that interpersonal attraction plays an important role at the beginning of the group membership (Tuckman, 1965). Hence, group members strive to establish interpersonal relationships with other ingroup members. This hypothesis is in line with the empirical findings showing that the establishment of interpersonal bonds is of high importance for students and their development of identification (Baker & Siryk, 1984; Bettencourt et al., 1999). When interpersonal relationships have formed, other needs related to ingroup identification should be activated. Thus, interpersonal attraction was expected to be an important longitudinal predictor for identification only at the beginning of group formation (between T1 and T2). At later stages (between T2 and T3), the longitudinal influence of interpersonal attraction on identification should diminish (see Figure 1).

3.3.4 Ingroup favoritism

Research inspired by SIT has extensively studied the link between identification and ingroup favoritism. In the present work, it is proposed that the stage of group development in real groups is a further moderator of this relationship that has been neglected so far. The model posits that a positive longitudinal association between identification and ingroup favoritism does not exist from the beginning, but unfolds over time. Although the students know about the other outgroups and their respective stereotypes from the beginning, the differentiation from the other outgroup(s) was hypothesized to gain relevance when interpersonal relationships within the group have established. Consequently, it was expected that identification and ingroup favoritism should be positively linked to each other only between T2 and T3.

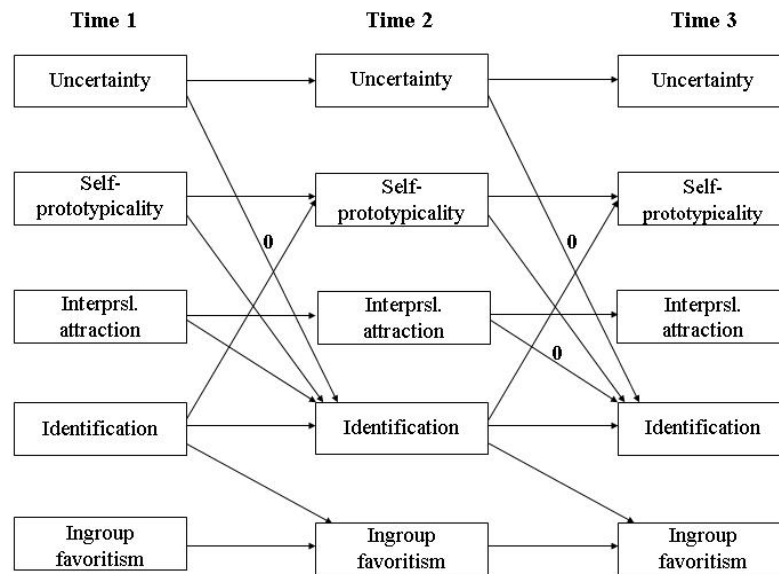


Figure 1. Proposed model depicting the longitudinal relationships

3.4 Summary of the hypotheses

To sum up, the following expectations about predictors and consequences of identification in the course of group formation are specified. Based on existing findings, all reported variables except ingroup favoritism were assumed to be correlates of identification at each of the measurement points. The positive correlation between identification and ingroup favoritism was expected to emerge over time.

The theoretical model depicts the longitudinal relationships between the variables over the three measurement points (see Figure 1). Identification was hypothesized to be related to different variables longitudinally. Whereas uncertainty was not predicted to have a longitudinal impact on identification, self-prototypicality was assumed to be reciprocally interrelated with identification over time. Interpersonal attraction and ingroup favoritism reflect interpersonal and intergroup concerns, respectively. Interpersonal attraction should influence identification longitudinally only at the beginning of the group formation process (i.e., between T1 and T2). In addition, identification should only have a longitudinal, positive impact on ingroup favoritism at later stages (i.e., between T2 and T3). Thus, the functions related to identification were expected to change over time.

4 EMPIRICAL EVIDENCE

In the following, the empirical evidence based on three longitudinal studies and one follow-up study will be reported. Two longitudinal studies comprise a cross-validation of the theoretical model in two student samples (Studies 1 and 2). Study 3 was realized as a follow-up study to Study 1 and investigated the further development of identification after one year. Moreover, a longitudinal study (Study 4) in a German airline company was realized to test the predictions in an organizational context.

4.1 Study 1: The development of identification in student groups

Pretest

In order to measure ingroup favoritism, it was important to identify an outgroup that was highly relevant to psychology students. Therefore, a pretest was conducted, in which thirty-five undergraduate psychology students ($M_{\text{age}} = 23.77$, $SD = 3.14$; sex: 27 female, 8 male) were asked via electronic mail how often on a 5-point Likert-scale (ranging from 1 = “very rarely” to 5 = “very often”) they compared themselves with other student groups, such as philosophy students, medical students, and educational science students (see Table 1).

Table 1. Mean values and standard deviations of reported comparison frequency with outgroups

| | <i>M</i> | <i>SD</i> |
|----------------------------------|----------|-----------|
| Medical students | 3.09 | 1.29 |
| Educational science students | 2.80 | 1.18 |
| Law students | 2.03 | .90 |
| Business administration students | 2.03 | .95 |
| Philosophy students | 1.94 | 1.11 |
| Computer Science students | 1.91 | 1.12 |
| Informatics students | 1.46 | .66 |

In this pretest (see Table 1), the medical students turned out to be the most prominent outgroup for the psychology students. The second prevalent outgroup were educational

science students, with the difference between them and medical students not being significant, $t(34) = 1.33, p = .19$. In general, the results of this pretest confirmed that medical students represent a highly relevant outgroup for psychology students.

4.1.1 Method

Participants

Two hundred and twenty two students ($M_{\text{age}} = 20.91, SD = 3.28$; sex: 156 female, 26 male, 40 missings for the gender variable) from three universities in Germany participated at the first measurement point (T1) of the study. The majority of participants came from the University of Jena ($n = 91, M_{\text{age}} = 20.36, SD = 2.56$; sex: 70 female, 15 male, 6 missings for the gender variable) while the two smaller sub-samples originated from the Universities of Münster ($n = 66, M_{\text{age}} = 21.53, SD = 4.42$; sex: 33 female, 5 male, 28 missings for the gender variable) and Trier ($n = 65, M_{\text{age}} = 21.31, SD = 3.28$; sex: 53 female, 6 male, 6 missings for the gender variable). The sub-samples were similar regarding their gender and age distribution. At the second measurement point (T2), 162 students ($M_{\text{age}} = 20.68, SD = 2.87$; sex: 139 female, 23 male) out of the initial 222 students took part in the survey. After the third measurement point (T3), 135 datasets of participants ($M_{\text{age}} = 20.84, SD = 2.96$, sex: 115 female, 20 male) were matched over time.

Procedure

At the very beginning of the winter term 2001/ 2002, the participants were recruited from introductory courses for first-year-psychology students or by advertisements either posted in the psychology department or distributed via e-mail or flyer. The participants completed the online questionnaire at the beginning, in the middle (after 6 weeks), and at the end (after 12 weeks) of their first term. Hence, the three measurement points were scheduled with time lags of 6 weeks. At all three universities that took part in the survey, the data were collected at the same time. At the first measurement point, courses for the first-year-students had not yet started, but they had welcome- and introductory-sessions (from October 15, 2001 until November 4, 2001). The second survey took place before the Christmas holidays (from December 10, until December 23, 2001), and the third at the end of term (from February 11 until February 24, 2002).

The study was introduced as a longitudinal investigation on how individuals form

their attitude towards their study topic and colleagues when they enter novel groups. It was explained that participation was voluntary and that anonymity and confidentiality would be ensured. The participants were asked to give only codes in order to match their data files longitudinally. They could voluntarily insert their e-mail address in order to facilitate the call for participation at later measurement points. After having participated three times, the students were either given course credit or they were paid 10 Euro.

Measures

The online questionnaire consisted of several scales.

Uncertainty. The uncertainty measurement consisted of a shortened version of the uncertainty scale of Ullrich-de-Muynck & Ullrich (1977) asking the participants on 5-point scales to judge their temporary situation on semantic differentials. Six item pairs (e.g., “non demanding” vs. “demanding”, “easy” vs. “difficult”) were chosen according to their appropriateness to the students’ situation. The shortened version showed high reliability (T1: $\alpha = .82$; T2: $\alpha = .84$; T3: $\alpha = .89$). Moreover, a factor analysis over the items resulted in a one-factor solution (T1: Eigenvalue of 3.08 accounting for 51.34% of the variance; T2: Eigenvalue of 3.42 accounting for 57.07% of the variance; T3: Eigenvalue of 3.84 accounting for 64.06% of the variance). Over time, this scale showed a consistently high correlation with the anchor item “At the moment there are lots of situations in which I feel uncertain.” (T1: $r(133) = .64, p < .001$; T2: $r(133) = .65, p < .001$; T3: $r(133) = .58, p < .001$).

Self-prototypicality. Self-prototypicality captured the global similarity between the group prototype and the self (“In many respects I am a typical psychology student”, Simon & Massau, 1991) and the assumed perspective of the others (“Others would describe me as a typical psychology student”, Kashima et al., 2000). Both items (scale range from 1 = “do not agree at all” to 5 = “fully agree”) correlated significantly over time (T1: $r(133) = .62, p < .001$; T2: $r(133) = .65, p < .001$; T3: $r(133) = .65, p < .001$), so that the cross-sectional mean value was used in further analysis.

Interpersonal attraction. Interpersonal attraction was measured according to Hogg and colleagues (Hogg & Hains, 1998; Hogg & Hardie, 1991). Participants were asked to indicate how many of their friends were psychology students, and how much of their leisure time they spent with other psychology students (scale range from 1 = “very rarely” to 5 = “a lot”). Both items correlated highly significantly over time (T1: $r(133) = .62, p < .001$; T2: r

(133) = .71, $p < .001$; T3: $r(133) = .67, p < .001$), so that the cross-sectional mean value was used in further analysis.

Identification with the ingroup. Respondents' identification with the ingroup was assessed with a 10-item scale (scale range from 1 = "do not agree at all" to 5 = "fully agree"). Six items were taken from the Brown et al. (1986) identification scale (e.g., "I feel strong ties with the psychology students", "I identify with the psychology students", "I see myself as belonging to the group of psychology students", "I feel held back by the group of psychology students"). Four items focusing on behavioral intention and evaluation were added (e.g., "I am willing to commit myself to the psychology students' concerns", "I am pleased to be a psychology student"). The reliability of the resulting scale over time was very satisfying (T1: $\alpha = .83$; T2: $\alpha = .78$; T3: $\alpha = .83$). Confirming the tri-dimensional structure of identification, a factor analysis over the 10 items at each of the three measurement points yielded a three-factor solution (T1: Eigenvalues of 4.15, 1.93 and 1.01 accounting for 71.58% of the variance, T2: Eigenvalues of 3.71, 2.01 and 1.24 accounting for 69.59% of the variance, T3: Eigenvalues of 4.31, 1.80 and 1.23 accounting for 73.37% of the variance). The factors consistently reflected the evaluative component ("I am pleased to be a psychology student", "I am glad to be a psychology student"), the cognitive-affective component ("I feel strong ties with psychology students", "I consider the group of psychology students as important", "I identify with psychology students"), and the behavioral intention component ("I am planning to contribute to psychology students' initiatives", "I am willing to commit myself to the psychology students' concerns").

Ingroup favoritism. There is a large variety of measures assessing ingroup favoritism and differentiation, such as evaluations of group traits (Deschamps & Brown, 1983), resource allocations on matrices (Jetten, Spears & Manstead, 1996), and intentions to engage in positive or negative interactions with ingroup and outgroup members (Hornsey & Hogg, 1999). In the present study, ingroup favoritism was assessed with five items on 5-point scales (scale range from 1 = "do not agree at all" to 5 = "fully agree"). Derived from a scale developed by Weber, Mummendey, and Waldzus (2002), the items comprised aspects, such as liking, willingness to contact the outgroup, and statements concerning the academic and social skills of the ingroup compared to the outgroup (T1: $\alpha = .75$; T2: $\alpha = .79$; T3: $\alpha = .79$). Consistent with the theoretical assumptions, a factor analysis over the five items at each of the three measurement points yielded a one-factor solution (T1: Eigenvalue of 2.65 accounting for 53.06% of the variance; T2: Eigenvalue of 2.72 accounting for 54.29% of the

variance; T3: Eigenvalue of 2.79 accounting for 55.81% of the variance). Finally, the participants answered some demographic questions regarding their age, sex, and home university.

4.1.2 Results

Construct validation: Differentiation between self-prototypicality and identification

Given the fact that (cognitive) ingroup identification has often not been clearly distinguished from self-prototypicality in the literature, it seemed important to test the theoretical distinction between the two concepts empirically. In the present work, it was argued that identification denotes acknowledging group membership and attachment to it, whereas self-prototypicality refers to the perceived position of the individual in the group. A factor analysis over the items resulted in a four-factor solution (T1: Eigenvalues of 4.28, 1.96, 1.49, and 1.08 accounting for 35.68%, 16.31%, 12.45%, and 9.00% of the variance). Only the two items capturing self-prototypicality loaded highly on the third factor, and none of the identification items loaded on this factor. The other three factors reflected the tri-dimensional nature of the identification construct. Hence, the data support the notion that identification and self-prototypicality are clearly distinguishable.

Dropout analysis

Between T1 ($N = 222$) and T2 ($N = 162$) 60 students dropped out of the analysis. Between T2 ($N = 162$) and T3 ($N = 135$) another 27 participants dropped out. In order to assume a random attrition of participants not related to the model, those people, who dropped out of the study after T1 should not be different from those, who stayed in the sample at T2 (Little, Lindenberger, & Maier, 2000). A multivariate analysis of variance (MANOVA) across the measures with the dropout variable (T1-T2) as a between-subjects factor confirmed that both groups were not significantly different from each other on the multivariate level at T1³, $F(5, 210) = .42, p = .83, \eta_p^2 = .01$. The analysis further revealed no significant differences on the measures at the univariate level. Moreover, the influence of the dropout factor between T2 and T3 on the model variables at T2 was tested. A multivariate analysis of variance (MANOVA) across the measures with the dropout variable (T2-T3) as a between-subjects factor yielded a marginal difference between both groups on

³ η_p^2 denotes squared partial η^2 as computed by SPSS 11/12.

the multivariate level at T2, $F(5, 156) = 2.07, p = .07, \eta_p^2 = .06$. The analysis on the univariate level further revealed that this effect was due to a significant difference on the variable interpersonal attraction at T2, $F(1, 160) = 4.55, p = .03, \eta_p^2 = .03$.

Further, the impact of the dropout factor (T2-T3) on the development of the variable means between T1 and T2 was examined. In line with the predictions, the crucial interaction between the dropout factor and time was not significant, $F(5, 156) = .74, p = .60, \eta_p^2 = .02$. Taken together, the analyses supported the hypothesis of a random dropout process.

Sample homogeneity

As the sample consisted of students from three different universities in Germany, the homogeneity between the sub-samples was examined. First, a MANOVA with university as a between-subjects factor and time as a within-subjects factor was calculated. Although the overall effect of the variable university was significant, $F(10, 258) = 2.63, p = .01, \eta_p^2 = .09$, the crucial interaction between time and university was not significant, $F(20, 248) = 1.13, p = .32, \eta_p^2 = .08$. Hence, there were no significant differences between the universities in the changes of the variable means over time.

Secondly, the cross-sectional bivariate correlations were analyzed regarding the differences between university locations. In total, 30 correlations between identification and related variables were compared between the three groups. Due to these multiple comparisons, a familywise error rate of $\alpha = .0017$ was determined⁴. None of the comparisons between the sub-samples was significant at this level. In summary, the sub-samples can be considered as homogeneous with regard to the model variables.

Correlational analyses

The cross-sectional correlations between identification and its predictors and consequences are displayed in Tables 2 to 4 according to the measurement points. Several noteworthy results could be observed in these patterns of correlations across the

⁴ The familywise error rate (FW) denotes the probability that a set of comparisons contains *at least* one type I error and is defined as $FW: \alpha = 1 - (1 - \alpha')^c$, with c = number of comparisons and α' = error rate for any one comparison (see Howell, 1997, p. 350).

measurement points. Corroborating the hypotheses, all assumed predictors (i.e., uncertainty, self-prototypicality, and interpersonal attraction) were significantly related to identification at the first measurement point (see Table 2). *Self-prototypicality* and *interpersonal attraction* were positively associated with identification. Hence, group members perceiving themselves as core members of the ingroup were likely to identify more strongly with the ingroup. At the same time, those group members with strong interpersonal relationships within the group tended to be more strongly identified with the group. *Uncertainty* was negatively related to identification. This means that group members scoring low in uncertainty identified more strongly with the group and those scoring high in uncertainty identified less with the group. In line with the hypothesis, identification was not positively but even negatively related to ingroup favoritism at T1. In general, all predictors of identification were not significantly interrelated at T1 reflecting the desired independence of the predictors.

Supporting the predictions, the correlation between identification and ingroup favoritism was the only relationship that changed signs over time ($z = 2.71, p = .004$, one-tailed) and shifted from a negative direction to a positive direction (see Tables 2 to 4). In addition, the positive relation between identification and ingroup favoritism was significant at T3 (see Table 4). Furthermore, the correlation between identification and self-prototypicality ($z = 2.87, p = .002$, one-tailed) increased significantly over time. In general, the results confirmed the hypothesis that the variables were important correlates of identification across time.

Changes in variable means over time

A repeated-measures analysis of variance (ANOVA) was calculated to assess the change of the variable means over time. In general, changes in the variables means were mainly observed between T1 and T2 (see Table 5).

Taking uncertainty, the mean value dropped significantly over time, $F(2, 268) = 3.21, p = .04, \eta_p^2 = .02$, due to a marginally significant decrease between T1 and T2 ($p = .06$)⁵. Likewise, identification with the ingroup of psychology students changed significantly

⁵ The (Bonferroni adjusted) probability values were calculated based on a *t*-test comparing the mean differences over time.

over time, $F(2, 268) = 7.00, p = .001, \eta_p^2 = .005$. More specifically, it decreased significantly only between T1 and T2 ($p = .01$). This finding was in line with existing research on the development of organizational identification in newcomers (Mael & Ashforth, 1995). As predicted, interpersonal attraction, $F(2, 268) = 57.50, p < .001, \eta_p^2 = .30$, and self-prototypicality, $F(2, 268) = 4.92, p = .01, \eta_p^2 = .04$, changed significantly over time due to a significant increase between T1 and T2 (interpersonal attraction: $p < .001$; self-prototypicality: $p = .05$). Corresponding to the hypotheses, the mean level of ingroup favoritism did not change significantly over time, $F(2, 268) = 1.27, p = .28, \eta_p^2 = .01$ ⁶.

Table 5. Means, standard deviations and the change of means over time

| | Time 1 | Time 2 | Time 3 | F (2, 268) |
|--------------------------|-------------|-----------------------------|-------------|------------|
| | M (SD) | M (SD) | M (SD) | |
| Uncertainty | 2.84 (0.65) | 2.71 (0.67) | 2.73 (0.77) | 3.21* |
| Self-prototypicality | 2.66 (0.94) | 2.83 (0.94) ^{c1,2} | 2.86 (0.95) | 4.92** |
| Interpersonal attraction | 2.24 (0.99) | 2.91 (1.12) ^{c1,2} | 3.04 (1.09) | 57.50*** |
| Ingroup favoritism | 2.07 (0.76) | 2.16 (0.79) | 2.16 (0.80) | 1.27 |
| Identification | 3.59 (0.57) | 3.46 (0.54) ^{c1,2} | 3.44 (0.61) | 7.00** |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

^{c1,2} Mean change between T1 and T2 was significant ($p < .05$) according to the (Bonferroni adjusted) probability values based on a t -test

⁶ As speculated, the development of the mean between T2 and T3 differed for high and low identifiers.

Whereas the mean level for *high identifiers* showed a trend to increase between T2 and T3, $F(1, 68) = 2.04, p = .16, \eta_p^2 = .03$, it showed a trend to decrease between T2 and T3 for *low identifiers*, $F(1, 65) = 2.48, p = .12, \eta_p^2 = .04$.

Longitudinal Effects

To investigate the longitudinal relationships between the variables, path analyses were performed. Path analysis is a specific form of structural equation modeling based on manifest, instead of latent variables. In the present study, the path analytic approach was chosen as it better deals with the multidimensional nature of the identification construct and the complexity of the model in relation to the sample size.

Path analyses determine the degree to which the obtained data fit the hypothesized model and the proposed relationships between the variables. The analyses were conducted on the covariance matrix using AMOS 4 to yield maximum likelihood parameters. The path analytic model consisted of the autoregressions within each variable, the relations between the variables at each measurement point, and the cross-lagged path coefficients. The *autoregressions* in the hypothesized model indicate in how far each variable at a given point in time can be predicted by the same variable at an earlier point in time. A first-order autoregressive process was assumed meaning that each variable at a given point in time is only influenced by the previous points in time, and not earlier ones. For example, identification at T3 should be influenced by identification at T2, but not by identification at T1. The *cross-lagged path coefficients* reflect the influence that variable X at T1 exerts on variable Y at T2, controlling for the autoregressive process. This implies that a change in X at T1 will result in a change in Y at T2 with all other variables in the model held constant (Loehlin, 1992).

Fit indices: Theoretical background

The hypothesized model was evaluated from two aspects. The overall fit of the model as well as the significance of the model parameters was analyzed. A number of fit indices have been developed in the literature to assess the degree of congruence between the model and the data. Structure equation modeling has traditionally relied on the χ^2 test statistic as an index for assessing the fit between the proposed model and the observed data. Yet, the sensitivity of the χ^2 test statistic to various model assumptions (e.g., linearity, multivariate normality) and sample size (see Bentler & Bonnett, 1980; Jöreskog, 1982; Marsh & Hocevar, 1985) led to the development of alternative fit indices in addition to the χ^2 test statistic. Marsh, Balla, and McDonald (1988) developed a framework for the

classification of the various fit indices. Following their approach, fit indices fall into the categories 'absolute' and 'relative'.

Absolute fit indices indicate the fit between the model implied and the empirical covariance matrix. The χ^2 test statistic provides a significance test for the degree to which the hypothesized model replicates the empirical covariance matrix. As the χ^2 -test statistic is dependent on the sample size and, correspondingly, the degrees of freedom (Bentler & Bonnet, 1980), it has been suggested to interpret the normed χ^2 that results from dividing the χ^2 by the degrees of freedom (Wheaton, Muthen, Alwin, & Summers, 1977). Values ranging between 1.0 and 2.0 indicate a reasonable model fit (Byrne, 1989; Marsh & Hocevar, 1985; Tabachnick and Fidell, 1996). The RMR (Root Mean Residual) and the RMSEA (Root Mean Square Error of Approximation) belong to the residual based fit indices and indicate the average difference between the sample (co-)variances and the estimated population (co-)variances. Following Browne and Cudeck (1993)

a value of the RMSEA of about 0.05 or less would indicate a close fit of the model in relation to the degrees of freedom. ... We are also of the opinion that a value of about 0.08 or less for the RMSEA would indicate a reasonable error of approximation and would not want to employ a model with a RMSEA greater than 0.1 (p.144).

Further, the GFI (Goodness of Fit Index) represents the portion of variances and covariances accounted for by the model by setting the estimated squared variances in relation to the sample squared variances (see Jöreskog & Sörbom, 1984). It ranges from zero to 1.00 with values close to 1.00 indicating an optimal fit.

The relative indices compare the fit of the model to a nested baseline model. Typically the baseline is the independence model that assumes no interrelationships between the variables and, thus, represents a worst fitting model. There are different subtypes of relative fit indices (Marsh et al., 1988). Although popular, the NFI (Normed Fit Index; Bentler & Bonnett, 1980) as a Type 1 relative fit index has been criticized for being dependent on the sample size (Hu & Bentler, 1995). More consistent across sample size is the TLI as a prominent Type 2 relative fit index (Tucker-Lewis index; Tucker & Lewis, 1973). Yet, the TLI is not bounded by 0 and 1, rendering an interpretation more difficult. Moreover, the CFI (Comparative Fit Index; Bentler, 1990) as a Type 3 index is based on the

BFI (Bentler's Fit Index, Bentler, 1990) and the RNI (Relative Noncentrality Index, McDonald & Marsh, 1990) adjusting them to a range between 0 and 1.

In addition to absolute and relative fit indices, adjusted or parsimonious fit indices have been discussed in the literature (Maruyama, 1998; Mulaik, James, van Alstine, Bennett, Lind, & Stilwell, 1989). These indices take the number of estimated parameters (i.e., the degrees of freedom in the theoretical model) into account. Therefore, models that consume a lot of degrees of freedom in model specification yield much worse parsimonious than relative fit indices. For example, the Akaike Information Criterion (AIC, Akaike, 1987) designates parsimony and fit referring to the χ^2 statistic and degrees of freedom.

The robustness of fit indices across different sample sizes has been investigated by several Monte Carlo studies (Anderson & Gerbing, 1984; see Gerbing & Anderson, 1993 for a review). Bollen (1990) pointed out that fit indices can be influenced by two different types of sample size effects. Either the calculation of the fit index is directly based on the sample size (e.g., the χ^2 test statistic) or the means of sampling distributions of a fit index are related to the sample size (e.g., the GFI). These studies consistently found that in addition to the χ^2 test statistic some of the fit indices including the NFI and the GFI show higher sampling variability than others comprising the RNI and the CFI (Bentler, 1990).

The use of fit indices was discussed extensively in the structural equation modeling literature. Several researchers have commented on the selection of fit indices (Boomsma, 2000; MacCallum, 1990; Marsh et al., 1988). They emphasized that the assessment of fit should rely on multiple indices that cover different aspects. For example, they proposed to supplement the χ^2 statistic with information about the residuals (e.g., the RMR). Further, the advantages of employing indices that provide confidence intervals (e.g., the RMSEA) have been emphasized (MacCallum & Austin, 2000; Steiger, 1990). Hu and Bentler (1999) analyzed to what extent a combination of different fit criteria in structural equation modeling detected misspecified models. They found that a combination of a RMSEA cut-off value of close to .06, a SRMR cut-off value of .06, and a CFI cut-off value close to .95 was extremely sensitive to detect model misspecification. Likewise, a combination of a TLI or CFI cut-off value of .95 and a SRMR cut-off value close to .09 minimized the sum of error

rates in model testing (Hu & Bentler, 1998; 1999). Schumacker and Lomax (1996) suggested that values close to .90 for the GFI and TLI indicate an acceptable model fit.

Taken together, the various fit indices differ according to their degree of susceptibility to sample size, their value range, their assumptions about underlying distributions, and their appreciation of parsimony. Researchers need to be aware of the interdependence between model complexity and goodness of fit denoting that adding parameters to a model will automatically improve goodness of fit. Therefore, the assessment of fit should cover these different aspects (Jöreskog, 1993; Steiger, 1990). Accounting for these arguments, the selection of indices in the present studies was based on multiple criteria including the *normed χ^2* , *the CFI*, *the GFI*, *the AIC*, *the RMSEA*, and *the RMR in addition to the traditional χ^2 statistic test statistic*. In line with the recommendations in the literature, the value of the normed χ^2 should be less than 2, the value of the GFI and CFI should exceed .90, and the values of the RMSEA and the RMR should be close to .06 (Byrne, 1989; Kline, 1998; Schumacker & Lomax, 1996) The AIC was used to assess model fit and parsimony when comparing nested models (e.g., Hu & Bentler, 1998, 1999; Schumacker & Lomax, 1996).

Testing nested models: Theoretical background and empirical application

Referring to the above mentioned fit indices, the hypothesized model depicting the relationships between the variables over time was tested within a sequence of nested models. In general, a model M2 is nested within another model M1 when one or more parameters that are freely estimated in M1 are constrained in M2. Imposing constraints implies that the paths are either fixed at a specific value (i.e., typically zero) or that two parameters are constrained to have the same value. The idea of a nested model sequence is to proceed stepwise from the most general and liberal model to more restricted sub-models (Bentler, 2000; Steiger, Shapiro & Browne, 1985). Steiger and colleagues (1985) showed that the test statistics of the sequential χ^2 difference tests are asymptotically independent and, therefore, appropriate to test the corresponding null hypothesis of a non significant difference between two nested models.

In general, the range of models is defined by the least restricted model (independence model) and the saturated model. The independence model specifies only the

variances and constrains all covariances to zero. In contrast, the saturated model fits any data set without error and is a structural model that can not be rejected. In a nested model testing strategy, the null model, the saturated model, the postulated model and alternative models are evaluated relative to each other using χ^2 difference tests.

Bentler and Bonnett (1980) proposed a sequence of model tests to analyze the quality of overall model fit in structural equation modeling. Following their approach, the baseline for the model tests is the independence model. In a next step, the hypothesized model is fitted and, subsequently, alternative theoretical models should be tested⁷. Based on the Bentler and Bonnett approach (1980), a sequence of model tests was conducted. The rationale in this analysis is to test a series of increasingly restrictive hypotheses (see also Bollen, 1989; Mulaik & Millsap, 2000). After testing the independence model, the hypothesized unrestricted model was fitted and revised. Then, nested model comparisons were calculated by imposing equality constraints sequentially on cross-lagged paths (Bollen, 1989). In the present study, specific cross-lagged paths were assumed to be invariant over time and, thus, equality constraints were imposed on these paths. When the χ^2 difference test between the unconstrained and the constrained model is not significant, the hypothesis assuming equal cross-lagged paths is supported. Finally, the hypothesized model was given further credit by comparing it against alternative models.

⁷ In addition, the fit of an optimal theoretical model can be calculated by taking the χ^2 -value of one of the theoretically proposed or competing models and testing it with one degree of freedom less than the independence model. In structural equation modeling, the calculation of an optimal model determines the adequacy of the measurement model before testing the structural model (Anderson & Gerbing, 1988). In contrast to structural equation modeling, path analysis is not based on a measurement model and, thus, the assessment of an optimal model is not relevant in this context.

Table 6 gives a comprehensive overview of the hierarchical model tests and a complete listing of the employed fit indices. The independence model supported the hypothesis that the model variables were interrelated, $\chi^2 (105, N = 135) = 1015.55, p < .001$ (see Table 6). In a second step, the hypothesized model (model A1) was tested and yielded marginal support, $\chi^2 (58, N = 135) = 107.89, p < .001, \chi^2/df = 1.86, AIC = 231.89, CFI = .95, RMSEA = .08$. In the model, the cross-lagged paths between uncertainty and identification were fixed at zero. In line with the predictions, this model did not fit significantly worse compared to a model in which these paths were freed (model A2), $\chi^2 (56, N = 135) = 107.68, p < .001, \chi^2/df = 1.92, AIC = 235.68, CFI = .94, RMSEA = .08$, with $\Delta\chi^2 (2, N = 135) = .21, p = .90$. Hence, uncertainty did not contribute to a longitudinal prediction of identification⁸.

After having tested the expectation that uncertainty did not contribute to a longitudinal prediction of identification, uncertainty was excluded in the following model tests to obtain a more parsimonious model (model B1). Moreover, two model modifications were performed (model B2). On the basis of theoretical and statistical relevance, two cross-lagged paths predicting interpersonal attraction by self-prototypicality over time were added. This means that the centrality of a group member within the group should influence the extent of interpersonal bonds within the group at a later measurement point. From a theoretical perspective, this modification was in line with the ‘similarity attraction hypothesis’ (e.g., Newcomb, 1956; Byrne, 1961). Self-prototypicality should enhance perceived similarity of the other ingroup members, and this should increase interpersonal attraction. Furthermore, a second-order autoregression predicting self-prototypicality T3 from self-prototypicality T1 was inserted (model B2). These modifications improved the model fit significantly, $\Delta\chi^2 (3, N = 135) = 24.61, p < .001$. Although model revisions are problematic and will be critically reflected in the discussion (see section 4.1.3), they provide information about the robustness of the major model parameters in terms of a sensitivity analysis (Byrne, Shavelson, & Muthen, 1989). If the major model parameters do not change

⁸ In addition, the cross-lagged path between interpersonal attraction at T2 and identification at T3 was fixed at zero in model A1. As predicted, this model did not fit significantly worse compared to a model (see Table 6, model A3) in which this path was freed, $\chi^2 (57, N = 135) = 107.39, p < .001, \chi^2/df = 1.88, AIC = 233.39, CFI = .95, RMSEA = .08$, with $\Delta\chi^2 (1, N = 135) = .50, p = .48$.

substantially, when adding or deleting minor model parameters, then this finding indicates the empirical robustness of the model. In fact, the significance of the cross-lagged paths did not differ between the revised (model B2) and the previous model (model B1).

In the next step, the *cross-lagged paths* that were hypothesized to *change over time* were tested. In the model B2, the cross-lagged path between interpersonal attraction at T2 and identification at T3 was fixed at zero, reflecting the hypothesis that interpersonal attraction should not be a longitudinal predictor of identification between T2 and T3. Supporting this hypothesis, model B2 did not fit significantly worse compared to an alternative model in which this path was freed (model B3), $\chi^2(29, N = 135) = 46.79, p = .02, \chi^2/df = 1.61, AIC = 144.79, CFI = .98, RMSEA = .07$, with $\Delta\chi^2(1, N = 135) = .40, p = .53$. In addition, it was assumed that higher identification should lead to stronger ingroup favoritism only between T2 and T3. Thus, the cross-lagged paths between identification and ingroup favoritism should not be equal over time (model B4) and the invariance test corroborated this hypothesis, $\chi^2(31, N = 135) = 57.32, p = .003, \chi^2/df = 1.85, AIC = 151.32, CFI = .97, RMSEA = .08$, with $\Delta\chi^2(1, N = 135) = 10.13, p = .001$. Thus, the influence of identification on ingroup favoritism differed significantly over time.

Subsequently, equality constraints were imposed on the *cross-lagged paths* that were hypothesized to be *equal over time* (model B5). It was predicted that the cross-lagged paths between self-prototypicality and identification should be stable over time concerning both directions of influence. In addition, the impact of self-prototypicality on interpersonal attraction should be constant over time. Taken together, three equality constraints on cross-lagged paths were stepwise included in the model. Comparing the liberal (model B2) with the restricted model (model B5), showed that both models were not significantly different from each other, $\Delta\chi^2(3, N = 135) = 1.45, p = .69$. As the overall fit in terms of the χ^2 test was not significantly different in both models, the invariance assumption was supported for the tested parameters. *In summary, all constrained parameters proved to be equal over time. Furthermore, the overall fit of the final model (B5) with imposed equality constraints was acceptable.*

Concerning the autoregressions, a first-order autoregressive process was hypothesized. Table 7 displays the autoregressions for the final model (model B5). In general, the results indicated that the measured scales in the model were highly stable over time. The prediction of a first-order autoregressive process was confirmed for all variables except self-prototypicality (see Table 7) which displayed a second-order autoregression. This second-order autoregressive process reflected that self-prototypicality at T1 significantly predicted self-prototypicality at T3 controlling for measurement point T2. In other words, part of the variance in self-prototypicality at T3 was explained by self-prototypicality at T1 controlling for T2. Thus, self-prototypicality at T1 and T3 shared common variance not explained by self-prototypicality at T2. Common autoregressive variance reflects common meaning. One might speculate that this shared meaning referred to the content and definition of self-prototypicality that might be similar between T1 and T3.

Table 7. Standardized autoregressions of the variables over time (model B5)

| Model B5 Standardized autoregressions | First Order | | Second Order |
|--|-------------|--------|--------------|
| | T1-T2 | T2-T3 | T1-T3 |
| Self-prototypicality | .59*** | .48*** | .28*** |
| Interpersonal attraction | .57*** | .72*** | |
| Identification | .45*** | .69*** | |
| Ingroup favoritism | .48*** | .76*** | |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Concerning the *longitudinal predictors* of identification (see Table 8 for an overview), self-prototypicality remained a significant predictor of identification over time. Testing for invariance revealed that the impact of self-prototypicality on identification was stable over time. This implied that the centrality of the position within the group predicted the degree of ingroup identification longitudinally and consistently over time. In other words, high identifiers at T1 were more likely to feel prototypical at T2⁹. In line with the

⁹ The cross-lagged path coefficients reflect the influence that a variable X at T_n exerts on a variable Y at T_{n+1} controlling for the autoregressive process (Loehlin, 1992).

hypotheses, interpersonal attraction had a longitudinal impact on identification only between T1 and T2. Between T2 and T3, however, interpersonal attraction did not contribute to the longitudinal prediction of identification. This finding confirmed the hypothesis, that interpersonal relatedness within the group influenced identification only at the beginning of the group membership, but not later.

Referring to the *longitudinal consequences* of identification (see Table 8), the longitudinal path between identification at T1 and ingroup favoritism at T2 was found to be (marginally) significant in the negative direction ($\beta = -.15, p = .05$), implying that higher identification at T1 led to less ingroup favoritism at T2. Between T2 and T3, the expectation was confirmed that identification predicted ingroup favoritism in the positive direction. This path denotes that high identification at T2 resulted in higher ingroup favoritism at T3. In addition, the hypothesis was supported that self-prototypicality was predicted by identification over time, and that this influence was invariant. Hence, self-prototypicality and identification influenced each other in a reciprocal and stable way over time.

Table 8. Standardized cross-lagged paths over time

| Model B5: | T1-T2 | T2-T3 |
|---|-------|-------|
| Standardized cross-lagged paths | | |
| Self-prototypicality → identification | .17** | .15** |
| Interpersonal attraction → identification | .22** | Fixed |
| Self-prototypicality → interpersonal attraction | .14** | .14** |
| Identification → self-prototypicality | .10* | .09* |
| Identification → ingroup favoritism | -.14 | .16** |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

In order to evaluate the theoretical model against alternative positions, the proposed model (model B2) was tested against other alternative models. Based on theoretical reflections, the model was modified changing cross-lagged relationships within the model. Two longitudinal paths leading from self-prototypicality to ingroup favoritism over time were included. According to SCT, prototypical group members could be argued to be more likely to engage in increased ingroup favoritism at later time points (Jetten et al., 1997).

Comparing this model (model C1), $\chi^2(28, N = 135) = 45.74, p = .02, \chi^2/df = 1.63, AIC = 145.74, CFI = .98, RMSEA = .07$, with the proposed model (model B2), resulted in a non significant χ^2 difference test, $\Delta\chi^2(2, N = 135) = 1.45, p = .48$. Thus, the hypothesized model (model B2) did not fit significantly worse than the alternative model¹⁰ in terms of the χ^2 test-statistic. In addition, the proposed theoretical model had the advantage of being more parsimonious than the alternative model.

To further validate the hypothesized model (model B2) it was evaluated against two other models (see Kessler & Mummendey, 2001). First, including *all time-adjacent* cross-lagged paths (model C2) did not result in a significantly better fitting model, $\chi^2(15, N = 135) = 29.32, p = .02, \chi^2/df = 1.96, AIC = 155.32, CFI = .98, RMSEA = .08$, with $\Delta\chi^2 = (15, N = 135) = 17.87, p = .27$. In addition, the proposed model was more parsimonious than model C2. Then, deleting all cross-lagged paths (model C3) yielded a significantly worse fitting model compared to the proposed model (model B2), $\chi^2(39, N = 135) = 94.73, p < .001, \chi^2/df = 2.43, AIC = 172.73, CFI = .93, RMSEA = .10$, with $\Delta\chi^2 = (9, N = 135) = 47.54, p < .001$. Taken together, this implies that including additional cross-lagged paths did not improve the model fit, whereas removing the hypothesized cross-lagged paths significantly deteriorated the model fit.

4.1.3 Discussion

Existing experimental research has shown that uncertainty, interpersonal attraction, self-prototypicality, and ingroup favoritism are linked to identification. In line with these findings, the *cross-sectional results* of this study corroborated that uncertainty, self-prototypicality, and interpersonal attraction correlated significantly with identification at the beginning of the group membership. Interpersonal attraction and self-prototypicality were positively associated with identification over time. As suggested, uncertainty was negatively correlated with identification over time. This finding corresponds to the results of Jetten et al. (2002), who reported a negative (though not significant) correlation between uncertainty and identification in the course of an organizational merger. Following uncertainty reduction theory (Hogg, 2000), it might be the case that those group members showing low

¹⁰ Neither the standardized cross-lagged path between self-prototypicality and ingroup favoritism between T1 and T2 ($\beta = .08, p = .30$) nor between T2 and T3 ($\beta = .04, p = .55$) were significant.

uncertainty tend to be high identifiers as they have already successfully reduced their uncertainty by identifying with the group. Correlations, however, do not reveal the process of influence between two variables (MacCallum & Austin, 2000). Thus, this finding cannot be taken as strong evidence supporting uncertainty reduction theory. Supporting the hypotheses, the cross-sectional correlation between identification and ingroup favoritism showed a significant shift from a negative to a significant positive relation at the end of the term. In other words, high identifiers tended to show even less ingroup favoritism than low identifiers at the beginning of their group membership. Since high identifiers should be more motivated to adhere to group norms (Ellemers et al., 1997), this finding might be interpreted as assimilation to the assumed pro-social norms associated with psychology students.

Furthermore, the change of the variable means over time was investigated. In line with the expectations, the mean of uncertainty decreased over time reflecting that newcomers learned to handle their situation. In addition, self-prototypicality and interpersonal attraction increased over time. This supports the prediction that the degree of inclusiveness in the group and interpersonal relatedness within the group strengthens over time. Furthermore, identification decreased over time which should reflect an expectancy adjustment effect. Corresponding to the hypotheses, the mean level of ingroup favoritism did not change significantly over time. Interestingly, the mean level showed a tendency to increase between T2 and T3 for high identifiers and to decrease for low identifiers. This effect demonstrates that sub-groups might develop differently over time and that the development of the means on a group level might conceal these differential effects.

The *longitudinal relationships* between the variables were tested within a path analytic model. The empirical findings supported the *hypothesized model*. The overall fit of the original model was moderate, and some minor model revisions (e.g., including an autoregressive path from T1 to T3 for self-prototypicality) led to a satisfying overall model fit. Regarding the *cross-lagged paths* within the model, self-prototypicality and identification predicted each other over time. Including equality constraints in the model confirmed the expectation that all cross-lagged paths between identification and self-prototypicality were equal over time. Uncertainty did not contribute to the longitudinal prediction of identification at any of the measurement points. In line with the predictions, interpersonal attraction served as a longitudinal predictor at the beginning (between T1 and

T2), but not later (between T2 and T3). Ingroup favoritism was negatively related to identification between T1 and T2, and positively related between T2 and T3. The relationships between interpersonal attraction, identification, and ingroup favoritism reflected the changing functions related to identification during group development.

Concerning the longitudinal prediction of identification over time, the first central assumption that *cross-sectional* and *longitudinal predictors* need to be distinguished was supported. The role of uncertainty in the present study exemplified this. Uncertainty was expected to have a situational, rather than a long-term, influence on identification. Supporting the predictions, uncertainty was negatively correlated with identification over time, but did not predict identification at any measurement point longitudinally. In addition to uncertainty, other variables illustrated the importance to differentiate between cross-sectional and longitudinal processes. Whereas interpersonal attraction remained cross-sectionally correlated with identification over time, it predicted identification longitudinally *only* between T1 and T2.

The second central assumption denoted that some *longitudinal predictors or consequences* of identification *change over time*. Correspondingly, it was hypothesized that interpersonal attraction should be important for identification only at the beginning of the group formation process (between T1 and T2), whereas the positive relationship between intergroup concerns and identification should emerge over time (between T2 and T3). The findings confirmed the basic hypotheses that interpersonal concerns influenced identification only at the beginning of the group membership. Later on, the positive relationship between identification and ingroup favoritism unfolded.

To summarize the results so far, the study provides insights in the dynamics of identification during group formation. Evidence was reported that fully confirmed the proposed model. Hence, identification was related to different predictors and consequences over time. This implies that the functions associated with identification change during the group formation process.

Finally, some general comments on the methodology will be discussed and the restrictions imbued with the design and analysis of the study will be reflected on. First, some

major issues that arise with the use of longitudinal designs and structural equation modeling in general are *selection effects with respect to individuals, measures, and occasions* (Nesselroade, 1991). Moreover, the *revision of theoretical models* and the *procedure of hypothesis testing* in structure equation modeling will be discussed.

Selection effects with respect to individuals include two aspects. The *first aspect* denotes that the results could be subject to sampling error and, therefore, cannot be generalized to other samples. Researchers can take this problem into account with the help of sampling procedures or cross-validation. Employing a cross-validation strategy means that the model is then tested using an independent sample which is created by either collecting new data or splitting the original sample. The *second aspect* addresses the generalizability of the model across different populations. Theoretical models need to be evaluated in the populations to which they apply. The present study showed that the model holds for psychology students from different universities. Regarding the external validity of the model, however, it might be argued that psychology students are in some ways different from other groups. These *differences might have an impact on the theoretical model*. *On the one hand*, it is conceivable that psychology students have specific ingroup norms that influence, for example, the link between identification and ingroup favoritism. The strength of the negative relationship between identification at T1 and ingroup favoritism at T2 was unexpected. A possible explanation could be that pro-social group norms are associated with psychology students at the beginning of the students' group membership. Since those highly identified when entering the group are keen on sticking to the ingroup norms (Ellemers et al., 1997), they show less ingroup favoritism at the second measurement point. *On the other hand*, one might argue that the longitudinal influence of interpersonal attraction on identification between T1 and T2 could be moderated by the size of the group. This could mean that in larger scale groups, interpersonal concerns do not influence identification at the beginning. To summarize, the present results are not subject to sampling error and can be generalized across situations (i.e., universities). However, the generalizability across populations (e.g., other student groups) remains to be tested.

Selection effects with respect to measures involve the selection of the measured variables in the study. In path analysis, the manifest variables are assumed to be error-free representations of the respective constructs. Therefore, construct validity is a crucial

precondition for the further interpretation of the results. In the present study, construct validity was taken into account by selecting measures that have been extensively used and validated in the literature.

Researchers encounter *selection effects with respect to occasions* when planning the measurement points in longitudinal research. Whenever effects are studied that operate over time, the results could be dependent on the time lags of the research design (MacCallum & Austin, 2000). Hence, the longitudinal design should be embedded in a theoretical framework specifying the development of the group change process and legitimizing the selection of measurement points. In the present study, models of group development describing intragroup processes from the initial point of group formation until the eventual decay of the group provided a broad theoretical framework. They were specified to the student context by integrating existing research on the development of the variables over time. This included theoretical arguments and empirical findings on the development of identification or interpersonal attraction over time (Park et al., 1997; Worchel et al., 1992).

As outlined earlier, a second methodological point relates to the *revision of the theoretical model*. After testing the hypothesized model, a minor model revision was conducted based on theoretical and statistical considerations. In the literature, this step has been termed ‘specification search’ (Long, 1983), describing post-hoc model modifications to improve the correspondence between the proposed model and the population model. Post-hoc model fitting has been severely criticized (Browne, 1982; MacCallum, 1986) as it causes the danger of turning the research approach from a confirmatory into a data-driven strategy. This brings about the risk of inflating either Type I or Type II errors. Most psychological research, however, is “likely to require the specification of alternative models in order to attain one that is well fitting” (Byrne et al., 1989, p. 465). The assessment of results from a specification search depends on the number of changes taken, the sample size, and the theoretical arguments justifying these changes (MacCallum, 1986). In the present study, only minor model revisions were conducted. Moreover, the post-hoc modifications did not involve central assumptions of the model (i.e., the relationship between identification and its related variables) but affected the relationship between predictors of identification. On the one hand, two additional cross-lagged paths predicting interpersonal attraction by self-prototypicality were added. This denoted that group members who

perceived themselves to be in the centre of the group reported more interpersonal relationships with other group members at a later measurement point. From a theoretical point of view, this finding could be interpreted in terms of the 'similarity-attraction hypothesis' (e.g., Newcomb, 1956, Byrne, 1961) which posits that perceived attitude similarity leads to interpersonal attraction. On the other hand, a second-order autoregression between self-prototypicality at T1 and T3 was added. Hence, self-prototypicality at T1 and T3 shared a common meaning that was not shared by self-prototypicality at T2. One could further speculate that performance related traits are more salient in the definition of self-prototypicality at the beginning and the end of the term compared to the middle of the term. In general, one way to alleviate the problem of model modifications is to revert to a cross-validation strategy (Anderson & Gerbing, 1988; Cudeck & Browne, 1983).

A point that is related to this argument concerns the *procedure of hypotheses testing* in structural equation modeling and path analysis. The assessment of fit is influenced by personal interpretation. This might lead to a confirmation bias (Greenwald, Pratkanis, Leippe, & Baumgardner, 1986) meaning that the interpretation of the findings is biased in favor of the own theoretical model. Confirmation bias is present when either the results are interpreted in an overly optimistic way or alternative theoretical explanations for the presented findings are not considered (MacCallum & Austin, 2000). In structural equation modeling, alternative models are possible that fit the data to the same degree (Lee & Hershberger, 1990). The decision between equivalent models is then guided by theoretical reflections (Bollen, 1989). Therefore, examining and excluding alternative theoretical models is important as it strengthens the position of the favored theoretical model (Bentler & Bonnett, 1980). In the present study, this aspect was taken into account by testing the model against alternative theoretical models. The results showed that the hypothesized model was more parsimonious than the alternative models, and that it did not produce a worse fit, as indicated by the χ^2 difference test.

To summarize, the results of the first study revealed that the hypothesized model holds for psychology students from different universities. Yet, the model should not be restricted to psychology students, but should apply as well to other kinds of groups. Therefore, the longitudinal study was replicated with another sample in order to ensure the generalizability of the model and to further test the revision of the model. In addition, further

more general methodological concerns related to longitudinal research (e.g., the planning of measurement points) were addressed.

4.2 Study 2: A cross-validation: Examining the generalizability of the results

“An ounce of replication is worth a ton of inferential statistics” (Steiger, 1990, p. 176)

The main goal of this study was to analyze whether the model tenable for psychology students could be generalized across groups. More specifically, it might be argued that specific characteristics of psychology students (e.g., norms) could have an influence on the model variables and, therefore, endanger the generalizability of the model. The following considerations guided the decision to conduct the second study with a sample of medical science students. The second sample should be different from psychology students concerning specific group features that might have an impact on the hypothesized model. Especially the changing longitudinal links within the model were planned to be further tested. This included the longitudinal relationship between interpersonal attraction and identification, and between identification and ingroup favoritism.

First, the longitudinal relationship between interpersonal attraction and identification was planned to be further consolidated by taking a group that is more anonymous than psychology students. This means that the group size should be larger and that the students should have less opportunity for personal interaction within the group. The group of medical students fulfilled these criteria. Compared to psychology students, the group size of medical students is larger¹¹, and in their first term they usually have only a few courses with interaction in small groups. The *second* aspect concerned the longitudinal link between identification and ingroup favoritism. In the first study, identification and ingroup favoritism were negatively related (with marginal significance) between T1 and T2, and positively related between T2 and T3. Specific norms of psychology students were offered as a post-hoc explanation for the negative impact of identification on ingroup favoritism. The aim of the second study was to examine this longitudinal relationship between identification and ingroup favoritism in a group with different norms and a different status. Following SIT, the status of a group represents an influential socio-structural variable in intergroup relations. Extensive research has demonstrated the role of status as a powerful moderator (e.g.,

¹¹ For example, at the University of Jena, 264 students in medical science compared to 105 in psychology started their studies in the winter term 2003/ 2004 (see <http://www.zvs.de>)

Ellemers, 1993; Mullen et al., 1992) and has examined its influence on ingroup favoritism against outgroups. In general, members of high status groups tend to show more bias on status-relevant dimensions, whereas low status groups show more bias on dimensions unrelated to the status difference (for reviews, see Brewer & Brown, 1998; Hewstone et al., 2002; Mullen et al., 1992). In addition, low status group members tend to be more biased when the status difference is perceived as unstable and illegitimate (Ellemers, Wilke, & van Knippenberg, 1993; Hewstone et al., 2002). Moreover, status can be assumed to be a relevant moderator of the relationship between identification and ingroup favoritism (e.g., Mullen et al., 1992). In the context of the present study, medical students were expected to be the higher status group compared to psychology students. This prediction was tested in a questionnaire study with 30 undergraduate psychology students at the University of Jena ($M_{\text{age}} = 20.23$, $SD = 2.08$; sex: 28 female, 2 male). They were asked on 5-point bipolar scales (ranging from 1 = “psychology students” to 5 = “medical students”) which of both students groups they perceived to be higher on status in general. In addition, they indicated which of both students groups has better employment possibilities in the future and enjoys higher societal status. The results of a one-sample *t*-test against the scale mean confirmed that psychology students perceived medical students to be significantly higher on status compared to their own group ($M = 3.87$, $SD = .68$, $t(29) = 6.97$, $p < .001$), and to enjoy significantly higher societal status ($M = 4.23$, $SD = .90$, $t(29) = 7.53$, $p < .001$). They perceived both groups to be equal on status with regard to their future employment opportunities ($M = 2.77$, $SD = .97$, $t(29) = 1.32$, $p = .20$). The results revealed that psychology students regarded their own group as inferior in status compared to medical students. To summarize, the group of medical students can be assumed to be different from psychology students in terms of group size, status, and group norms. The second study aimed to test whether these differences have an impact on the model relationships.

Pretest

In order to measure ingroup favoritism, a pretest was conducted to determine the most important outgroup for medical students. Therefore, 31 medical students at the University of Jena ($M_{\text{age}} = 23.32$, $SD = 2.24$; sex: 21 female, 10 male) were asked to indicate how often on a 7-point scale they compared themselves with other student groups (e.g., psychology students, law students, biology students, dentist students). In addition, they expressed how important the respective comparison was for them. As expected, the

frequency and the importance of comparison were highly correlated and displayed almost the same order of groups (see Table 9). The group of dentist students was both, most often used for comparison and most important to medical students. In both cases, law students were mentioned secondly, followed by psychology students. The mean difference in the *frequency* of comparison between dentist students and law students was not significant, $t(30) = 1.64, p = .11$. However, the mean difference between the dentist and the law students was (marginally) significant regarding the *importance* of this comparison, $t(29) = 1.96, p = .06$. Building on these findings, dentist students were chosen as the most prominent outgroup for medical students.

Table 9. Mean values and standard deviations of reported frequency and importance of comparison with outgroups

| | $M_{FC} (SD_{FC})$ | $M_{IC} (SD_{IC})$ | r_{FC-IC} |
|---------------------|--------------------|--------------------|-------------|
| Dentist students | 2.97 (1.01) | 3.00 (1.09) | .45* |
| Law students | 2.42 (1.33) | 2.70 (1.15) | .51** |
| Psychology students | 2.19 (1.11) | 2.52 (.99) | .63*** |
| Biology students | 2.10 (.91) | 2.45 (.99) | .54** |
| Sports students | 1.93 (1.26) | 2.06 (.96) | .30 |
| Chemistry students | 1.84 (.90) | 2.39 (.92) | .40* |
| Philosophy students | 1.48 (.72) | 2.00 (.82) | .28 |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

FC = frequency of comparison; IC = importance of comparison;

4.2.1 Method

Participants

One-hundred and seventy four students ($M_{age} = 20.07, SD = 2.29$; sex: 126 female, 40 male, 8 missings for the gender and the university variable) from two universities in Germany participated at the first measurement point. The majority of them ($n = 126$) were students from the University of Jena ($M_{age} = 19.87, SD = 2.06$; sex: 97 female, 29 male) and a smaller portion ($n = 40$) were enrolled at the University of Mainz ($M_{age} = 20.73, SD = 2.84$; sex: 29 female, 11 male). Both samples were rather homogeneous regarding their gender and age distributions. At the second measurement point, 131 students ($M_{age} = 20.21, SD = 2.38$;

sex: 92 female, 34 male, 5 missings for the gender variable) filled out the questionnaire. After the third measurement point, 103 complete datasets of participants ($M_{age} = 20.46$, $SD = 2.45$; sex: 74 female, 28 male, 1 missing for the gender variable) were matched over time.

Procedure

In order to ensure comparability between the first and the second study, the study design in terms of the procedure and the measures was the same. At both universities, the data collection was realized simultaneously via online questionnaire. The students were recruited by advertisements, either posted in their department or distributed at the beginning of their courses. At the first measurement point, the courses for first-year students had just started and the students had welcome- and introductory-sessions (from October 25 until November 8, 2002). The second survey was conducted before the Christmas holidays (from December 16 until December 29, 2002), and the third survey was realized at the end of term (from February 10 until February 23, 2003).

The study was introduced as a longitudinal investigation on how individuals form their attitudes when they enter novel groups. It was explained that participation was voluntary and that anonymity and confidentiality would be ensured. The participants were asked to give only codes in order to match their data files longitudinally. They could voluntarily insert their e-mail address in order to facilitate the call for participation at later measurement points. After having participated three times, the students were paid 10 Euro. As a further incentive to stick with the study, an additional 25 Euro could be won in a lottery at the end of the study.

Measures

Uncertainty. The uncertainty measurement consisted of an adapted version of the uncertainty scale of Ullrich-de-Muynck & Ullrich (1977) asking the participants on 5-point bipolar scales to judge their temporary situation. Six item pairs (e.g., “non demanding” vs. “demanding”, “easy” vs. “difficult”) were chosen according to their appropriateness to the students’ situation. The scale was highly reliable over time (T1: $\alpha = .79$; T2: $\alpha = .82$; T3: $\alpha = .87$). Over time, this scale correlated highly with the anchor item “At the moment there are lots of situations in which I feel uncertain.” (T1: $r(101) = .56$, $p < .001$; T2: $r(101) = .54$, $p < .001$; T3: $r(101) = .58$, $p < .001$).

Self-prototypicality. The measure of self-prototypicality captured the global similarity between the group prototype and the self (“In many respects I am a typical medical student”, Simon & Massau, 1991) and the assumed perspective of the others (“Others would describe me as a typical medical student”, Kashima et al., 2000). Both items were measured with 5-point scales (ranging from 1 = “totally disagree” to 5 = “totally agree”) and correlated significantly over time (T1: $r(101) = .54, p < .001$; T2: $r(101) = .74, p < .001$; T3: $r(101) = .75, p < .001$). Thus, their cross-sectional mean value was used in further analysis.

Interpersonal attraction. Interpersonal attraction was measured according to Hogg and colleagues (Hogg & Hains, 1998; Hogg & Hardie, 1991). Participants were asked to indicate on 5-point scales how many of their friends were medical students (scale range from 1 = “very few” to 5 = “a lot”), and how much of their leisure time they spent with other medical students (scale range from 1 = “very rarely” to 5 = “a lot”). Both items correlated significantly over time (T1: $r(101) = .50, p < .001$; T2: $r(101) = .47, p < .001$; T3: $r(101) = .50, p < .001$) so that their cross-sectional mean value was used in further analysis.

Identification with the ingroup. Respondents’ identification with the ingroup (i.e., medical students) was measured with 10 items on 5-point scales (ranging from 1 = “totally disagree” to 5 = “totally agree”). Six items were drawn from the Brown et al. (1986) scale (e.g., “I feel strong ties with the medical students”, “I identify with the medical students”, “I see myself as belonging to the group of medical students”, “I feel held back by the group of medical students”). Four items focusing on behavioral intention and evaluation were added (e.g., “I am willing to commit myself to the medical students’ concerns”). Again, the reliabilities of the scale proved to be highly satisfying over time (T1: $\alpha = .80$; T2: $\alpha = .85$; T3: $\alpha = .85$).

Ingroup favoritism. The measure of ingroup favoritism comprised aspects, such as liking, willingness to get in contact with the respective outgroup (i.e., dentist students), and comparisons on the global academic and social skill dimension (Weber et al., 2002). The five items (ranging from 1 = “totally disagree” to 5 = “totally agree”) tapped ingroup favoritism towards dentist students. The scale yielded a high reliability over time (T1: $\alpha = .78$; T2: $\alpha = .87$; T3: $\alpha = .86$). Finally, the participants answered some demographic questions regarding their age, sex, and home university.

4.2.2 Results

Dropout analysis

In order to assume a random attrition of participants not related to the models' assumptions, it was tested whether those individuals, who dropped out of the study after T1 were different from those, who continued to participate at T2. A multivariate analysis of variance (MANOVA) across the measures with the dropout variable (T1-T2) as a between-subjects factor confirmed that both groups were not significantly different from each other at T1 on the multivariate level, $F(5, 167) = .82, p = .54, \eta_p^2 = .02$. The analysis further revealed no significant differences on the measures at the univariate level.

Furthermore, the influence of the dropout factor between T2 and T3 on the model variables was tested. A multivariate analysis of variance (MANOVA) with the dropout variable (T2-T3) as a between-subjects factor revealed no significant differences between both groups on the multivariate level at T2, $F(5, 123) = 1.28, p = .28, \eta_p^2 = .05$. In addition, the impact of the dropout factor (T2-T3) on the development of the variable means between T1 and T2 was examined. The interaction between the dropout factor (between T2-T3) and time was only marginally significant, $F(5, 121) = 1.94, p = .09, \eta_p^2 = .07$. In summary, the dropout analysis showed that the differences were negligible and that both groups (i.e., the dropouts and the continuing participants) can be assumed to be rather homogeneous regarding the model variables.

Sample homogeneity

As the sample consisted of students from two different universities in Germany, the homogeneity between the sub-samples was examined. First, a MANOVA with university as a between-subjects factor and time as a within-subjects factor was conducted. Although the overall effect of the factor university was significant, $F(5, 97) = 4.79, p = .001, \eta_p^2 = .20$, the crucial interaction between time and university was not significant, $F(10, 92) = .76, p = .66, \eta_p^2 = .08$. This indicated that there were no differences between the universities in the changes of the variable means over time.

Secondly, the cross-sectional bivariate correlations were examined with regard to differences between university locations. In total, 20 correlations between identification and related variables were compared between the two groups. Due to these multiple

comparisons, a familywise error rate of $\alpha = .0025$ was determined (Howell, 1997). None of the correlations between identification and uncertainty, self-prototypicality, interpersonal attraction, or ingroup favoritism was influenced by the university location. Taken together, the results supported the hypothesis that the two sub-samples were homogeneous regarding the model variables.

Correlational Analyses

The correlations between the model variables and identification were consistent with the findings from the first study. This means that uncertainty, interpersonal attraction and self-prototypicality were significantly correlated with identification at each of the measurement points (see Tables 10 to 12). As in the first study, uncertainty was negatively associated with identification over time denoting that high identifiers were more likely to score low in uncertainty. Comparable to the first study, interpersonal attraction ($r = .19, p = .05$) and self-prototypicality ($r = .39, p < .001$) were positively associated with identification. Furthermore, these correlations increased significantly between T1 and T3 (interpersonal attraction: $z = 1.58, p = .06$, one-tailed; self-prototypicality: $z = 1.67, p = .05$, one-tailed).

As in the first study, ingroup favoritism was negatively correlated with identification at T1 and positively (though not significantly) correlated at T3 ($r = .07, p = .46$). In line with the predictions, the change of the correlation was similar to the first study illustrating a (marginally) significant change from a negative to a positive direction ($z = 1.48, p = .07$, one-tailed). Corresponding to the findings of the first study, the correlations between the predictors and consequences were not significant at T1 reflecting their independence.

To recapitulate, the cross-sectional correlations at each measurement point were generally in line with the results from the first study. In both studies, the predictors were significantly related to identification and the strength of the correlations was comparable. Moreover, the correlation between identification and ingroup favoritism changed significantly from a negative to a positive relation in both studies (see Tables 10 to 12).

Changes in variable means over time

A repeated-measures analysis of variance (ANOVA) was calculated to assess the change of the variable means over time. As predicted, interpersonal attraction, $F(2, 204) = 52.50, p < .001, \eta_p^2 = .34$, and self-prototypicality, $F(2, 204) = 5.11, p = .01, \eta_p^2 = .05$, increased significantly over time (see Table 13). More specifically, interpersonal attraction increased significantly only between T1 and T2 ($p < .001$)¹², whereas self-prototypicality changed only between T2 and T3 ($p = .02$). The mean level of ingroup identification did not change over time, $F(2, 204) = .76, p = .47, \eta_p^2 = .01$. Although uncertainty was expected to decrease over time, the mean remained at the same level over time, $F(2, 204) = .15, p = .86, \eta_p^2 = .001$.

Table 13. Means, standard deviations and the change of means over time

| | Time 1 | Time 2 | Time 3 | F (2, 204) |
|--------------------------|------------|-----------------------------|-----------------------------|------------|
| | M (SD) | M (SD) | M (SD) | |
| Uncertainty | 3.15 (.68) | 3.12 (.68) | 3.15 (.76) | 0.15 |
| Self-prototypicality | 3.00 (.88) | 3.02 (1.00) | 3.24 (1.05) ^{c2,3} | 5.11** |
| Interpersonal attraction | 2.03 (.98) | 2.80 (1.10) ^{c1,2} | 2.95 (1.11) | 52.50*** |
| Ingroup favoritism | 1.80 (.80) | 2.02 (1.00) ^{c1,2} | 1.95 (.88) | 2.96 |
| Identification | 3.61 (.57) | 3.55 (.65) | 3.60 (.67) | 0.76 |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

^{c1,2} Mean change between T1 and T2 was significant ($p < .05$) according to the (Bonferroni adjusted) probability values based on a t -test.

^{c2,3} Mean change between T2 and T3 was significant ($p < .05$) according to the (Bonferroni adjusted) probability values based on a t -test.

The results for ingroup favoritism partly supported the hypothesis. Over time, ingroup favoritism increased with marginal significance, $F(2, 204) = 2.96, p = .05, \eta_p^2 = .03$, due to a significant change between T1 and T2 ($p = .04$). This increase might be explained by the fact that medical students and dentist students attend several classes and lectures together at the beginning of their first term. Therefore they might not yet

¹² The (Bonferroni adjusted) probability values were calculated based on a t -test comparing the mean differences over time.

differentiate strongly between the two groups¹³. Within the process of gaining knowledge about the differences in their subjects (i.e., at T2), the medical students might perceive the dentist students as a more salient outgroup. Supporting this explanation, the mean level of ingroup favoritism at T1 is lower in the sample of medical students compared to the sample of psychology students, and it is at a comparable level at T2.

Longitudinal Effects: Multi-sample analysis

The main aim of the second study was to cross-validate the theoretical model comprising the longitudinal relationships between the variables. It was hypothesized that the model should equally hold for the sample of psychology and medical students. Multi-sample modeling provides an adequate test of this hypothesis as it simultaneously determines the overall fit of a theoretical model to data from different populations. Therefore, the results for the longitudinal effects are presented across both studies.

The overall fit of a multi-sample model is “a weighted sum of the fit statistics of the different samples” (Maruyama, 1998, p. 260). With larger samples and complex models, the assessment of fit based on the χ^2 test statistic gets inappropriate because even trivial differences easily reach significance. Schumacker and Lomax (1996) therefore concluded that “as sample size increases (generally above 200), the χ^2 test has a tendency to indicate a significant probability level” (p. 125). Due to this problem, it is advisable to combine the χ^2 test statistic with other fit-indices that are less sensitive to sample size. Hence, in correspondence with the first study, adequacy of the model was determined by the normed χ^2 , the CFI, the GFI, the AIC, the RMSEA, and the RMR in addition to the traditional χ^2 test statistic. Following the recommendations of the literature, the value of the normed χ^2 should be less than 2, the value of the GFI and CFI should exceed .90, and the value of the RMSEA and the RMR should be close to .06 (e.g., Hu & Bentler, 1998, 1999; Schumacker & Lomax, 1996). The AIC was used to assess model fit and parsimony when comparing nested models.

In general, it is important to mention that multi-sample comparisons should be based on covariances and nonstandardized regression coefficients as variances between the

¹³ Due to this different ingroup-outgroup relationship, the means for high, $F(1, 54) = .10, p = .76, \eta_p^2 = .002$, and low identifiers, $F(1, 47) = .48, p = .49, \eta_p^2 = .01$, did not develop differentially between T2 and T3 as in Study 1.

samples might differ. Comparable to the one-sample model, a series of nested models proceeding from a liberal model to a more and more restricted model was analyzed (Grace, 2003). According to Bollen's approach (1989), the invariance of the model form is tested in the first step. The unconstrained model specifies the structure of the relationships between the variables, and parameter solutions are calculated for each sample separately (Loehlin, 1992). In a second step, the invariance of parameter values is tested in the constrained models (Bollen, 1989). Equality constraints on the cross-lagged paths were stepwise introduced in order to test whether these paths are equal. The constraints referred to the equality of cross-lagged paths across samples (path $A_{\text{sample 1}} = \text{path } A_{\text{sample 2}}$) and across time (path $A_{T1-T2} = \text{path } A_{T2-T3}$). The statistical significance of the parameter difference is influenced by the respective sample sizes and standard errors. The χ^2 difference test compares the nested models with the constraints. The introduced constraint holds if the χ^2 difference test is not significant (e.g., Kline, 1998).

Following Bollen's approach (1989), the paths were freely estimated for both student samples in a first step. The unrestricted model yielded a reasonable fit for both groups (see Table 14, model D1). Although the χ^2 test was significant due to the large sample size and the complex model, the remaining fit indices indicated an acceptable model fit, $\chi^2 (110, N = 238) = 172.72, p < .001, \chi^2/df = 1.57, AIC = 432.72, CFI = .96, RMSEA = .05$. Therefore, the same general model was confirmed in both groups. Corresponding to Study 1, the cross-lagged paths between uncertainty and identification were fixed at zero within the first model. As predicted, this model did not fit significantly worse than a model in which these cross-lagged paths were freed (model D2), $\chi^2 (106, N = 238) = 172.29, p < .001, \chi^2/df = 1.63, AIC = 440.29, CFI = .96, RMSEA = .05$, with $\Delta\chi^2 (4, N = 238) = .43, p = .98$. Thus, uncertainty did not contribute to a longitudinal prediction of identification and was excluded in the following model tests to obtain a more parsimonious model (see Table 14, model E1).

Subsequently, the *cross-lagged paths* that were hypothesized to *change over time* were tested. In the theoretical model, the cross-lagged path between interpersonal attraction at T2 and identification at T3 was fixed at zero reflecting the expectation that interpersonal attraction should not be a relevant predictor of identification between T2 and T3. Supporting this hypothesis, the model (model E2) did not fit significantly worse than an alternative model in which this path was freed, $\chi^2 (58, N = 238) = 119.23, p < .001, \chi^2/df = 2.06, AIC =$

315.23, CFI = .95, RMSEA = .07, with $\Delta\chi^2(2, N = 238) = .85, p = .65$. In addition, it was assumed that higher identification should lead to stronger ingroup favoritism only between T2 and T3. Thus, the cross-lagged paths between identification and ingroup favoritism should not be equal over time (model E3). As expected, the invariance test corroborated this hypothesis, $\chi^2(62, N = 238) = 130.21, p < .001, \chi^2/df = 2.10, AIC = 318.21, CFI = .95, RMSEA = .07$, with $\Delta\chi^2(2, N = 238) = 10.13, p = .01$. Hence, the influence of identification on ingroup favoritism proved to change over time.

In a next step, equality constraints on the cross-lagged paths across samples and time were introduced (Bollen, 1989). Each of the cross-lagged paths in sample A was compared to the respective path in sample B. To this end, the cross-lagged paths were stepwise constrained to be equal across the groups. The invariance assumptions were tested referring to the χ^2 difference test. In total, nine equality constraints across groups were stepwise introduced which revealed that the resulting fit of this model (see Table 14, model E4), $\chi^2(69, N = 238) = 130.88, p < .001, \chi^2/df = 1.90, AIC = 304.88, CFI = .95, RMSEA = .06$, was not significantly different from the unrestricted model, with $\Delta\chi^2(9, N = 238) = 10.80, p = .29$. Thus, *all cross-lagged paths linking identification to its predictors and consequences were equal across both groups*. Subsequently, three equality constraints were stepwise imposed constraining the cross-lagged paths to be equal over time (model E5). Invariance was assumed to hold for the cross-lagged paths between self-prototypicality and identification, and between self-prototypicality and interpersonal attraction. The resulting fit of model E5, $\chi^2(72, N = 238) = 133.67, p < .001, \chi^2/df = 1.86, AIC = 301.67, CFI = .95, RMSEA = .06$, did not differ significantly from model E4, $\Delta\chi^2(3, N = 238) = 2.79, p = .43$. In conclusion, the corresponding cross-lagged paths were equal across samples and time. In other words, *the same model with the same parameter values yielded an acceptable model fit for both data sets*.

The autoregressions of the final model are displayed in Table 15. As predicted, the analyses yielded a first-order-autoregressive process for the majority of variables. Hence, only proximate, and not distant, measurement points exerted an influence on the succeeding measurement point. Like in the first study, self-prototypicality showed a significant second-order autoregressive process between T1 and T3.

Table 15. Standardized and unstandardized autoregressions of the variables over time and across samples (model E5)

| Model E5 | First Order | | Second Order |
|---------------------------------------|-----------------|-----------------|-----------------|
| | T1-T2 | T2-T3 | T1-T3 |
| Standardized autoregressions | | | |
| <i>Unstandardized autoregressions</i> | | | |
| Self-prototypicality | .58*** (.52***) | .46*** (.56***) | .28*** (.22**) |
| | .57*** (.58***) | .46*** (.59***) | .27*** (.26***) |
| Interpersonal attraction | .57*** (.51***) | .73*** (.64***) | |
| | .64*** (.57***) | .70*** (.64***) | |
| Identification | .50*** (.67***) | .70*** (.65***) | |
| | .46*** (.75***) | .79*** (.68***) | |
| Ingroup favoritism | .49*** (.60***) | .76*** (.53***) | |
| | .51*** (.76***) | .77*** (.47***) | |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. The results for sample 2 are illustrated in brackets. Unstandardized autoregressions are written in italics.

Table 16 illustrates the cross-lagged paths over time for both samples. As outlined above, the reciprocal influence between self-prototypicality and identification proved to be stable across time and samples. This means that in both groups, group members feeling prototypical at a given point in time were more likely to identify higher at a later point in time, and vice versa. Furthermore, the cross-lagged paths between self-prototypicality and interpersonal attraction were significant across time and samples. Hence, multi-sample analysis confirmed the model revisions that were conducted in Study 1. In line with the hypotheses, interpersonal attraction had a positive longitudinal impact on identification only between T1 and T2. Between T2 and T3, the influence of interpersonal attraction on identification was not significant. This finding confirmed that the degree of interpersonal bonds within the group is important for identification only at the beginning of the group membership. Furthermore, the positive influence of identification on ingroup favoritism did not exist at the beginning, but emerged between T2 and T3.

Table 16. Standardized and unstandardized cross-lagged paths over time and across samples (model E5)

| Model E5 | T1-T2 | T2-T3 |
|---|------------------------------------|------------------------------------|
| Standardized cross-lagged paths | | |
| <i>Unstandardized cross-lagged paths</i> | | |
| Self-prototypicality → identification | .15*** (.12***) .09*** (.09***) | .13*** (.13***) .09*** (.09***) |
| Self-prototypicality → interpersonal attraction | .10** (.10**) .12** (.12**) | .11** (.11**) .12*** (.12***) |
| Interpersonal attraction → identification | .14* (.11*) .07** (.07**) | fixed |
| Identification → self-prototypicality | .11** (.11**) .19** (.19**) | .13** (.11**) .19** (.19**) |
| Identification → ingroup favoritism | -.06 (-.04) -.08 (-.08) | .13** (.14**) .20** (.20**) |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. The results for sample 2 are illustrated in brackets. Unstandardized autoregressions are written in italics.

Moreover, the proposed theoretical model was evaluated against an alternative theoretical model (see Study 1). The alternative theoretical model differed from the first model in terms of the cross-lagged relationships within the model. More specifically, two longitudinal paths leading from self-prototypicality to ingroup favoritism over time were included. According to SCT, prototypical group members should be more likely to engage in increased ingroup favoritism (Jetten et al, 1997). Comparing this model (model F1), $\chi^2(56, N = 238) = 113.73, p < .001, \chi^2/df = 2.03, AIC = 313.73, CFI = .96, RMSEA = .07$, to the proposed model (model E1) resulted in a non significant χ^2 difference test, $\Delta\chi^2(4, N = 238) = 6.35, p = .17$. Thus, the model E1 did not differ from the alternative model in terms of the χ^2 test-statistic and had the advantage of being more parsimonious than the alternative model. Furthermore, all path coefficients added in the alternative model were not significant in any of the samples.

For further validation, the hypothesized model (model E1) was evaluated against two other models (see Kessler & Mummendey, 2001). The first model included all time-adjacent cross-lagged paths (model F2). The resulting model fit was only marginally better compared

to the hypothesized model (model E1), $\chi^2(30, N = 238) = 79.38, p < .001, \chi^2/df = 2.65, AIC = 331.38, CFI = .96, RMSEA = .08$ with $\Delta\chi^2 = (30, N = 238) = 40.70, p = .09$. Besides, the AIC, the χ^2/df , and the RMSEA indicated that the proposed model was more parsimonious and better fitting than the model F2. In the second model, deleting all cross-lagged paths (model F3) yielded a significantly worse fitting model compared to the proposed model, $\chi^2(78, N = 238) = 181.45, p < .001, \chi^2/df = 2.33, AIC = 337.45, CFI = .92, RMSEA = .075$ with $\Delta\chi^2 = (18, N = 238) = 61.37, p < .001$. Taken together, this implies that including additional cross-lagged paths did only marginally improve the model fit. Moreover, removing the hypothesized cross-lagged paths significantly decreased the model fit.

4.2.3 Discussion

The second study was conducted in order to validate the findings that were obtained in the first study. Hence, the following discussion relates to both studies. The first part of the discussion summarizes the results of both studies regarding the correlations at each measurement point, the changes in the mean levels of the variables, and the longitudinal effects. The second part outlines the implications of the findings with respect to motivational and functional approaches to identification. In the third part, the limitations that might be associated with the methodology of the studies and the generalizability of the model are discussed.

Summary

First of all, the *pattern of cross-sectional correlations* across the three measurement points was highly consistent in both longitudinal studies. *Uncertainty, self-prototypicality, and interpersonal attraction* were significantly correlated with identification at each of the measurement points. As in the first study, interpersonal attraction and self-prototypicality were *positively* associated with identification across the measurement points. This means that individuals scoring high on interpersonal attraction and self-prototypicality were more likely to identify with the group of medical students. Similar to the first study, uncertainty was *negatively* correlated with identification denoting that group members scoring low in uncertainty showed higher levels of identification. However, this can not be taken as strong evidence for uncertainty reduction theory (Hogg, 2000) as cross-sectional correlations do not capture the proposed uncertainty reduction process. Therefore, it remains unclear whether group members low in uncertainty scored high on identification as they reduced

their uncertainty by identifying with the group. In general, the size of the correlations was comparable across samples. Considering the change of correlations over time, the correlation between identification and self-prototypicality increased significantly in both studies providing evidence that both variables grew intertwined more strongly over time. In both groups, the correlation between identification and ingroup favoritism was positive at T3 (although not significant in Study 2), but not at T1¹⁴. Moreover the results of both studies corroborated that the change in the correlation between T1 and T3 was significant.

The *change in mean levels* yielded similar results in both studies. In line with the predictions, the mean levels of self-prototypicality and interpersonal attraction increased between T1 and T3. More specifically, the mean of *interpersonal attraction* increased at the beginning of the group membership (i.e., between T1 and T2) and then stabilized later on (i.e., between T2 and T3). Hence, on average, the students indicated that their interpersonal relationships with other ingroup members strengthened between T1 and T2. Concerning *self-prototypicality*, the mean level increased significantly between T1 and T3 in both studies. More specifically, it increased significantly between T1 and T2 in Study 1, and between T2 and T3 in Study 2. Thus, on average, psychology students perceived themselves as more prototypical earlier than medical students. This effect might be explained by the different group sizes of psychology and medical students. It is conceivable that the development of the group prototype takes longer in larger (e.g., medical students) groups. Moreover, in Study 1, the hypothesis was confirmed that the mean level of uncertainty should decrease between T1 and T3. In Study 2, the mean of *uncertainty* reached the same level (i.e., around the scale mean) as in Study 1, but it did not change between T1 and T3. This finding might be due to the fact that recent reforms led to several changes in the German curriculum of medical science resulting in a constant level of uncertainty. The mean scores of *identification* ranged at a comparable level in both studies. In the sample of psychology students the mean decreased between T1 and T3, whereas in the sample of medical students this was not the case. The result of Study 1 was explained by an ‘expectancy adjustment effect’ (Ryan & Bogart, 2001). The experience of studying psychology might be different from the prior expectations, and this affects students’ ingroup identification. In fact, psychology students often report high levels of frustration with the

¹⁴ The correlation even displayed a tendency in the negative direction in both studies at T1.

strong focus on methods and statistics in the curriculum. In contrast, one might speculate that from the beginning, medical students have more realistic expectations concerning the topics covered by their degree. Finally, the hypothesis that *ingroup favoritism* should remain at the same level between T1 and T3, was supported in Study 1. In Study 2, the mean increased with marginal significance between T1 and T2. One possible explanation for this effect might be that medical students developed an increased awareness of dentist students as an outgroup between T1 and T2.

With respect to the *longitudinal effects between the variables*, the hypothesized model was confirmed across samples. In other words, the assumed generalizability of the model across groups was supported. Furthermore, imposing equality constraints confirmed that *all cross-lagged paths were equal* in both samples. More specifically, the reciprocal cross-lagged paths between identification and self-prototypicality were stable across time and samples. This supports the hypothesis that the perception to be a core member of the group and the importance of the group membership to the self influenced each other consistently over time. Moreover, being safely included in the group had an impact on the strength of interpersonal relationships within the group. This finding was interpreted in terms of the ‘similarity attraction hypothesis’ (e.g., Newcomb, 1956; Byrne, 1961). In addition, the longitudinal influence of interpersonal attraction on identification between T1 and T2 was equal across both samples. Between T2 and T3, however, the longitudinal impact of interpersonal attraction diminished in both groups. Thus, the results corroborated the importance of interpersonal bonds within the group for the initial development of identification. Moreover, identification was not related to ingroup favoritism at the beginning of the group membership. However, the longitudinal relationship between identification and ingroup favoritism equally emerged in both groups between T2 and T3. This means that the results of the multi-sample analysis were different from the findings of Study 1. More specifically, the negative longitudinal relationship between identification and ingroup favoritism between T1 and T2 was specific to the sample of psychology students (see Table 8). In general, even in a group of larger size and higher status, the findings from the first study were replicated. Thus, the hypothesized model with the same parameter values for the cross-lagged paths proved to fit both data sets.

Implications

Both studies clearly stress the importance to understand identification from a dynamic perspective. The consistent pattern of the results in both studies provided strong evidence for the two central model assumptions. The first assumption denoted the importance to distinguish between cross-sectional and longitudinal predictors or consequences of identification. The second notion postulated that longitudinal relationships between variables can change during group development due to changes in the motivations associated with identification. Therefore, the current studies have implications on the existing research about motivations and functions of identification.

In the framework of *optimal distinctiveness theory* (Brewer, 1991), it is assumed that the need for inclusion and the need for differentiation are the two basic motives driving the relationship between the self and the group. At present, however, it is unclear how these two motives and their relevance develop across different stages during the formation of group membership. The reported findings support the idea that these two social motives come into play at different stages of group membership. As shown in experimental studies (Brewer & Pickett, 1999), self-prototypicality reflects the need for inclusion within the group, whereas ingroup favoritism captures the need for differentiation between groups. Interpreting the results from this perspective, the need for intragroup inclusion, as measured with self-prototypicality, was consistently relevant for the development of identification during group formation. In contrast, the differentiation motive was not related to identification at the beginning of group formation when group members were more strongly focused on interpersonal relationships. Once these relationships within the group have been established, the positive relationship between identification and ingroup favoritism unfolded. Hence, the results suggest that different needs are related to the development of identification over time.

Furthermore, the present research investigated the role of uncertainty as a cross-sectional correlate and as a longitudinal predictor of identification. *Uncertainty reduction theory* (Hogg, 2000) claims that uncertainty should be the central motive driving group processes. In both studies, uncertainty was found to be negatively correlated with identification at each measurement point. However, it did not predict identification longitudinally. These findings support the argument that uncertainty needs to be rapidly reduced and, therefore, should only have a situational impact on identification. Therefore,

the present findings do not speak in favor of uncertainty reduction (Hogg, 2000) as a long-term motivation for social identification.

Moreover, the results shed new light on the research about the functions of identification. So far, researchers (Aharpour & Brown, 2002; Deaux et al., 1999) have developed a list of *functions of identification* that differ *across groups*. The findings from the present research emphasize that functions of identification vary *across time*, more specifically across different stages of group membership. The predictors and consequences of identification that were proposed by the present research capture functions of identification. For example, interpersonal attraction reflects the function of ‘social interaction’ (Deaux et al., 1999) which should therefore be especially important for the initial development of identification. The present results further indicate that only after establishing interpersonal relationships, the positive relationship between identification and ingroup favoritism emerged. The corresponding function has been termed ‘intergroup comparison’ in the literature (Aharpour & Brown, 2002; Deaux et al., 1999). In conclusion, the results suggest that the existing literature on functions of identification would strongly benefit from a dynamic perspective. More specifically, the present findings illustrate that some functions are more important during early stages of group membership, and other functions come into play at later stages.

Furthermore, the present research enriches the distinction between different kinds of groups with a dynamic perspective and, therefore, contributes to a more comprehensive understanding of group identification. One of the proposed distinctions refers to common bond and common identity groups (Prentice, Miller, & Lightdale, 1994). Common bond groups are characterized by the attachment among group members and, thus, these groups “serve to build friendships” (Prentice et al., 1994, p. 488). In contrast, common identity groups are characterized by the attachment to the group. As a consequence of their findings, Prentice et al. (1994) emphasized the necessity to integrate their group typology in a dynamic context, especially in real life groups. They outlined two possible processes with member attachment leading to group attachment, and vice versa. The results of the present studies imply that specific social groups change their meaning from common bond groups to common identity groups during subsequent stages of group development. At the beginning of group development, identification was predicted by interpersonal attraction and, thus, the

establishment of common bonds influenced the development of identification. Later on, identification was more strongly shaped by a common ingroup identity, as revealed by the emerging link between identification and ingroup favoritism.

Discussion of the methodological framework

Finally, some general comments on the methodology will be raised and restrictions associated with the design and analysis of the first two studies will be reflected on. For reasons of comparability, the research design and the data analysis were similar in the first and the second study. Several restrictions associated with the first study were approached with the help of cross-validation. More specifically, multi-sample analysis tackled the issue of selection effects with respect to populations and occasions (i.e., measurement points). As the model yielded an acceptable fit for both samples, external generalizability of the model across populations was demonstrated (Nesselroade, 1991). Furthermore, the replication of the findings validated the selection of measurement points as the longitudinal effects across the same time lags were equal in both samples.

Other comments and issues of concern pertaining to the first study also apply to the second study. One argument concerns the procedure of hypotheses testing in structural equation modeling and path analysis. The assessment of fit is influenced by personal interpretation as there is not just one way to combine different measures of fit (Steiger, 1990). This embodies the danger of confirmation bias meaning that the interpretation of findings is biased in favor of the own theoretical model. This problem was addressed by investigating alternative theoretical models and by referring to several indices which combined different aspects of fit, parsimony, and model comparison (Bentler & Bonnett, 1980). The results showed that the proposed model did not fit significantly worse than any of the alternative models in terms of the χ^2 difference test. In addition, the hypothesized model was more parsimonious than the alternative models. In general, researchers need to be aware that any model represents only an “approximation to reality” (Bollen, 1989, p. 71). Therefore, model validation across different samples is a crucial step.

Building on the conclusions drawn from the two longitudinal studies, the empirical findings confirmed that the hypothesized model depicting the development of identification during group formation holds in different student groups. Research has shown that social

identities fall into different clusters based on their features and their meaning (Deaux et al., 1995; Lickel et al., 2000). Concerning the generalizability of the proposed model, it is assumed that the model applies only to *achieved*, and not *ascribed* social identities. In achieved social identities (Allport, 1954; Deaux et al., 1999), such as vocational groups or sport teams, group membership is chosen. In ascribed social identities, such as gender or ethnic identities, group membership reflects a permanent and inextricable part of the self. In these social identities, identification can be assumed to develop differently and to be influenced by different factors than in achieved social identities. Especially when individuals belong to a lower status or stigmatized group, the knowledge of impermeable group boundaries might have a crucial impact on the development of identification with that group. Taking ethnic minorities as an example, the development of identification is strongly shaped by coping with discrimination and prejudice (Phinney, 2003). Therefore, the presented model should only hold for achieved social identities.

Furthermore, within the cluster of achieved social identities, two necessary conditions of model application should be pointed out. First, *personal interaction* within the group is an important feature. Only in those groups where members interact personally on a regular basis, interpersonal attraction is predicted to influence the identification process longitudinally at the beginning of the group membership. Secondly, *intergroup competition* can be assumed to influence the longitudinal relationship between identification and ingroup favoritism. More specifically, individuals entering competitive groups might already have a strong focus on intergroup differentiation from the very beginning. This might have an impact on the relation between identification and ingroup favoritism. For example, in the case of political parties that are in competition for votes, highly identified new members joining the party should be more likely to be biased against other parties from the very beginning. Apart from this model specification, the other model relationships should equally hold in this context. Hence, self-prototypicality in terms of the party's norms and program should predict identification over time, and the interpersonal relationships with other party members should matter for the initial development of identification.

So far, Studies 1 and 2 provided insights in the development of identification in student groups. The dynamic perspective shed new light on the relationships between identification and its predictors and consequences over time. Considering the findings, two

aspects remained noteworthy and were investigated in the following two studies. *First*, students belong to their group for a few years before leaving university. Thus, identification undergoes further development after the end of the first term. A follow-up study (Study 3) with the sample of psychology students investigated the further development of the model variables and their interrelations one year after the end of the first longitudinal study. *Secondly*, the presented studies dealt with student samples. As discussed above, the change process during group development was expected to be similar in other groups, such as sports teams and organizational groups. To test this prediction, the model assumptions were applied to an organizational context in Study 4.

4.3 Study 3¹⁵. One year after Study 1

In order to further investigate the development of identification in psychology students, a follow-up study one year after the end of Study 1 was conducted. According to models of group development (e.g., Tuckman, 1965), the intragroup and intergroup structure should have stabilized at that time. Accordingly, the size and direction of the cross-sectional correlations at the fourth measurement point should be similar to the third measurement point. With regard to the longitudinal prediction of identification, self-prototypicality should be the only predictor of identification between T3 and T4. Interpersonal attraction did not influence identification between T2 and T3 and therefore, was not expected to regain influence on identification between T3 and T4.

4.3.1 Method

Participants

After the third measurement point, 54 psychology students ($M_{\text{age}} = 21.70$, $SD = 2.15$; sex: 49 female, 5 male) from two universities in Germany participated at the fourth measurement point¹⁶. Corresponding to the previous measurement points, students from the University of Jena ($n = 17$, $M_{\text{age}} = 21.06$, $SD = 1.56$; sex: 16 female, 1 male), from the University of Münster ($n = 18$, $M_{\text{age}} = 21.94$, $SD = 2.86$; sex: 16 female, 2 male), and from the University of Trier ($n = 19$, $M_{\text{age}} = 22.05$, $SD = 1.78$; sex: 17 female, 2 male) participated in the study. All three samples were relatively similar regarding their gender and age distributions. Due to the time lag of one year, only 54 participants remained in the sample at T4.

Procedure

At both universities, data collection was conducted from February 3, 2003 until February 16, 2003. The students were recruited by advertisements sent either electronically per e-mail, posted in their department, or distributed at the beginning of their courses. The

¹⁵ This study was conducted with the help of Katrin Wodzicki, who received a grant from the German Research Council (DFG) to work as a research student in the International Graduate College at the University of Jena.

¹⁶ One participant was excluded from the analysis because she changed universities between T3 and T4.

study was introduced as a follow-up study of the first longitudinal study, and the students were told that the aim of the study was to investigate the further development of their opinions on their study topic and colleagues after one year. Like in Studies 1 and 2, anonymity and confidentiality was ensured by asking the participants to give only codes in order to match their data files longitudinally. As an incentive to participate in the study, 30, 20 and 10 Euro could be won in a lottery at the end of the study.

Measures

Except uncertainty, the same variables and measures were used as in the first longitudinal study. Hence, interpersonal attraction, self-prototypicality, identification, and ingroup favoritism were assessed.

4.3.2 Results

Dropout analysis

As mentioned, 81 students dropped out of the analysis between T3 and T4. In order to assume a random attrition of participants, those participants, who dropped out of the study after T3 should not be different on the model variables from those, who stayed in the sample at T4 (Little et al., 2000). A multivariate analysis of variance (MANOVA) across the measures with the dropout variable (between T3 and T4) as a between-subjects factor, confirmed that both groups differed with marginal significance on the multivariate level at T3, $F(5, 128) = 2.17, p = .06, \eta_p^2 = .08$. The analysis on the univariate level further revealed that this effect was due to significant differences on identification at T3, $F(1, 132) = 9.59, p = .002, \eta_p^2 = .07$ and self-prototypicality at T3, $F(1, 132) = 4.16, p = .04, \eta_p^2 = .03$.

Moreover, the cross-sectional bivariate correlations at T3 were analyzed concerning the differences between the dropouts and those participants continuing the study. In total, 12 correlations between identification and related variables were compared between the two groups. Due to these multiple comparisons, a familywise error rate of $\alpha = .004$ was determined (Howell, 1997). None of the comparisons between the sub-samples was significant at this level. In summary, the results showed that there was a marginal impact of the dropout factor on the mean levels of the variables at T3. However, the crucial interrelationships between the model variables at T3 displayed no differences between the sub-samples.

Cross sectional analysis

The cross-sectional correlations between identification and its predictors and consequences are displayed in Table 17. As the sample size at the fourth measurement point was considerably smaller than at the previous measurement points, it was reasonable to refer to the effect sizes in addition to the significance levels of the effects. Consistent with the previous measurement points, self-prototypicality at T4, and interpersonal attraction at T4 were highly correlated with identification at T4. This means that those group members, who felt more prototypical or those, who reported to have more friendships within the group were more likely to identify with the group. In line with the hypotheses and the results from the third measurement point, ingroup favoritism was positively correlated ($r(52) = .27, p = .05$) with identification. Thus, highly identified psychology students tended to show more ingroup favoritism against medical students at T4. In general, the correlation patterns at T3 and T4 were comparable, and not significantly different from each other. The only exception was that the correlation between self-prototypicality and ingroup favoritism showed a significant increase ($z = 1.67, p < .05$).

Table 17. Cross-sectional correlations between identification and the other variables at T4 (N = 54, two-tailed testing)

| Variables | 1. | 2. | 3. |
|-----------------------------|--------|-------|------|
| 1. Identification | | | |
| 2. Self-prototypicality | .57*** | | |
| 3. Interpersonal attraction | .48*** | .39** | |
| 4. Ingroup favoritism | .27 | .44** | -.08 |

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Longitudinal analysis

The main focus of the follow-up study was to study the cross-sectional and longitudinal relationships between the variables rather than the changes on the mean scores. Moreover, the mean values at T4 were subject to methodological restrictions due to the

influence of the dropout factor. Therefore, an interpretation of the means seemed problematic¹⁷.

Concerning the longitudinal interrelationships between T1 and T3, the hypothesized longitudinal model was analyzed with the help of a path analysis. The sample size required for the fitting of a path analytic model and for the parameter specification depends on the number of parameters to be estimated. Due to the attrition rate between T3 and T4, the remaining sample size ($N = 55$) was not large enough to fit a model comprising 16 variables. In addition, the time lag between T3 and T4 (i.e., one year) was different from the six-week time lags between T1 and T2 and T2 and T3. Thus, the longitudinal relationships between T3 and T4 were submitted to a hierarchical regression analysis. This analysis tested the hypothesis that self-prototypicality at T3 should be the only longitudinal predictor of identification at T4, controlling for identification at T3.

In a first step, identification at T3 was entered as a predictor for identification at T4. The resulting β -weight corresponds to the stability of the variable over time in a path analytic model. In a second step, self-prototypicality at T3 was entered and it was assumed, that the prediction of identification at T4 should be significantly improved. Furthermore, interpersonal attraction at T3 added in the third step should not contribute significantly to the prediction of identification at T4.

The results of the hierarchical regression analysis pointed into the hypothesized direction. After entering identification at T3 in the first step ($\beta = .70, p < .001$), self-prototypicality at T3 ($\beta = .18, p = .11$) showed a strong trend to predict identification at T4 (R^2_{change} for the second step: .03, $F_{inc}(1, 51) = 2.68, p = .11$). As expected, adding interpersonal attraction ($\beta = .07, p = .54$) in the third step did not significantly improve the prediction of identification at T4 (R^2_{change} for the third step: .004, $F_{inc}(1, 50) = .38, p = .54$)¹⁸.

¹⁷ A MANOVA with time as a within-subjects factor revealed that interpersonal attraction increased significantly between T3 and T4 ($F(1, 53) = 4.82, p = .03, \eta^2 = .08$) and identification decreased significantly between T3 and T4 ($F(1, 53) = 7.45, p = .01, \eta^2 = .12$).

¹⁸ Identification at T3 was not expected to predict ingroup favoritism at T4. Although identification at T2 predicted ingroup favoritism at T3, the time lag between T3 and T4 was much longer than between T2 and T3.

4.3.3. Summary

Taken together, the follow-up study investigated the further development of identification one year after the end of Study 1. The focus of the analysis was on the comparison of the correlation patterns at T3 and T4 and on the longitudinal prediction of identification between T3 and T4. Due to the impact of the attrition rate, it seemed problematic to interpret the changes in the mean levels between T3 and T4. The correlation pattern at T4 was comparable to T3 and, thus, supports the notion of a stabilized intra- and intergroup structure. Moreover, the results of the longitudinal regression analysis indicated that only self-prototypicality showed a strong (though not significant) trend to predict identification at T4.

So far, the reported studies were based on data generated from student samples. Therefore, a final study was conducted to further investigate the development of group identification in an organizational context.

In addition, empirical findings have demonstrated (e.g. Hinkle & Brown, 1990) that the relationship between identification and ingroup favoritism is of moderate effect size and influenced by several moderators (e.g. salience of the outgroup).

4.4 Study 4: The development of identification in organizations¹⁹

So far, the studies described were based on student samples. Membership in a student group reflects an achieved, stable, and highly relevant social identity. Students represent a specific kind of social identity that can be considered as different from other social groups (Lickel et al., 2000). Therefore, the fourth study aimed to investigate the development of professional identities in an organizational context and to test the central model assumptions in a different kind of group. More specifically, a study with a training group of flight attendants working for an airline company was conducted.

4.4.1 Theoretical background

The organizational context

“Nokia has a distinctive management and leadership approach based on the Nokia way at all levels. This creates commitment, passion ... and ensures focus and efficiency by setting targets, fulfilling goals and reviewing results” (<http://www.nokia.com>).

In a similar way, many companies express their goal to attract and retain committed employees as they acknowledge that economic ‘hard facts’ are strongly influenced by psychological variables (e.g., commitment/ identification, motivation). Especially in tight labor markets and with highly skilled and flexible employees, commitment is a key factor in order to gain competitive advantage (George & Jones, 2002). Empirical studies from organizational psychology corroborate the assertion that commitment to organizational groups is linked to employee attitudes and behavior, and consequently to economic success (Hawk & Sheridan, 1999). More specifically, affective commitment is negatively related to withdrawal cognitions and turnover, and is positively related to job performance and overall job satisfaction (Mathieu & Zajac, 1990; Meyer, Stanley, Herscovitch, & Topolnytsky, 2002). Whereas most of the industrial and organizational research so far has focused on the commitment construct (Meyer & Allen, 1997; Mowday, Porter, & Steers, 1982), some

¹⁹ An adapted version of this chapter has been submitted for publication (Eisenbeiss & Otten, 2004) and is currently under review.

recent work has shown that it is fruitful to apply SIT as a social psychological approach to the organizational field (Ashforth & Mael, 1989; Hogg & Terry, 2000, 2001; van Knippenberg & van Schie, 2000). SIT is concerned with the belonging of the individual to social groups and the relations between different groups. Correspondingly, identification with a social group denoting the importance of the group membership to the individual is a core variable. Identification with the group entails that the individual *thinks and behaves* in terms of the group membership.

Due to its economic impact, organizations need to know how to successfully create commitment and identification. Several researchers have addressed this topic by investigating predictors of organizational commitment (Meyer & Allen, 1997) and organizational identification (Ashforth & Mael, 1989). However, the studies did not specify at which time point during organizational membership these predictors are relevant. It is reasonable to assume that predictors differ with regard to their influence on identification. Some predictors might consistently influence identification in the organizational context, whereas others might lose their importance over time. Thus, identification at the beginning of organizational membership might be influenced by other predictors than at later stages. Especially crucial for the development of identification is the period when newcomers enter the organization (Schultz & Schultz, 1998). This notion is supported by models of group development (Worchel, 1996, 1998; Worchel et al., 1992) arguing that group members are initially focused on establishing a group identity and building up group identification.

During organizational entry, newcomers seek information about their job and the organization. The experiences that they gather shape their future attitudes and behavior. In this early period, the development of identification is dramatically influenced and shaped (Worchel, 1996, 1998). Thus, the present study was concerned with the development of identification during organizational entry and the topic is addressed by *integrating research from an organizational and social identity perspective*. Organizational research has studied predictors of commitment and levels of commitment within the organization. After outlining the existing work in this field, the importance to analyze these findings from a social identity perspective and to consider the role of time in the prediction of identification is stressed.

Commitment in organizational contexts

Along with the acknowledgement that economic ‘hard facts’ (e.g., productivity indices, turnover rates) are strongly influenced by psychological variables (e.g., commitment/ identification, motivation), industrial and organizational researchers started investigating commitment to organizational groups (e.g. Mowday, Steers, & Porter, 1979; Reichers, 1985). Commitment has been defined and measured in several different ways. Most often employed in the literature is attitudinal commitment defined as a three-dimensional construct that comprises an *affective, normative and continuance component* (Allen & Meyer, 1990; Meyer & Allen, 1991). Affective commitment reflects “the employee’s emotional attachment to, identification with, and involvement in the organization” (Meyer & Allen, 1991, p. 67). Normative commitment results from a feeling of obligation to remain with the organization, and continuance commitment refers to the calculation of costs associated with leaving the organization.

Extensive research has dealt with commitment and its related variables. A decade after the first meta-analytic review on the antecedents, correlates, and consequences of organizational commitment (Mathieu & Zajac, 1990), Meyer and colleagues (2002) based their meta-analysis on the three dimensional model of commitment (Meyer & Allen, 1991). Their results indicated that, in general, affective commitment showed the strongest relations to other organizational variables. Affective commitment was primarily predicted by work experience variables (e.g., role ambiguity, organizational support). Concerning the consequences, affective commitment was negatively correlated with turnover and absenteeism, and was positively correlated with job performance.

A second line of research has acknowledged the possibility and necessity to study multiple group memberships as a specific feature of the organizational context. Reichers (1985) brought up the notion that organizations consist of several subgroups (e.g., divisions, work teams) which are nested within each other (‘nested identities’). Hence, commitment to these subgroups should be investigated in addition to the overall organizational commitment. Following this idea, several studies have focused on the differentiation between levels of commitment (‘foci of commitment’) within the organization. The distinction between *foci of commitment* is crucial as these foci are differentially related to employee attitudes and behavior (e.g., job performance; Becker, Billings, Eveleth, &

Gilbert, 1996; Ellemers, de Gilder, & van den Heuvel, 1998). Becker & Billings (1993) clustered employees according to their commitment with different organizational levels (e.g., commitment to the workgroup and the organization). They identified four dominant commitment profiles that were differentially related to attitudes and behavior at the corresponding organizational level (e.g., satisfaction with the work group and the organization).

In the light of these results, research has been concerned with the antecedents of different commitment foci. Zaccaro and Dobbins (1989) found that group-related variables were stronger correlates and predictors of group commitment, whereas organization-related variables were more strongly associated with organizational commitment. Corroborating their findings, Mueller and Lawler (1999) showed that different work conditions (e.g., professional growth, pay) were predictive of commitment to the proximate unit compared to the distal unit. In conclusion, a differentiation between foci of commitment is necessary with regard to the antecedents and outcomes.

Identification and commitment

The majority of studies in the organizational literature dealt with commitment. Recently, however, it has been argued that it is fruitful to apply a social identity perspective to the organizational context and to focus also on social identification (Ashforth & Mael, 1989). SIT defined identification with social groups (e.g., teams or organizations) as the strength of the relationship between the self and the organization (Tajfel & Turner, 1986; Pratt, 1998). Mael and Ashforth (1992) defined identification as “the perception of oneness with or belongingness to an organization” (p. 104). This implies that individuals see themselves in terms of their organizational membership (Rousseau, 1998). Although identification and affective commitment appear to be similar, some authors argued that they should be conceptually differentiated (Ashforth & Mael, 1989; van Knippenberg, 2000). More specifically, commitment taps an attitude towards the organization (Pratt, 1998), whereas identification implies a cognitive and emotional involvement of the self (Dutton, Dukerich, & Harquail, 1994; Pratt, 1998; Tajfel & Turner, 1986).

Reflecting the similarities between the concepts, empirical findings showed that identification and affective commitment, as measured with the ‘Organizational Commitment

Questionnaire' (Mowday et al., 1979) or the 'Affective Commitment Scale' (Allen & Meyer, 1990), were highly correlated (Mael & Tetrick, 1992; van Knippenberg & Sleebos, 1999). On the other hand, the results from several confirmatory factor-analyses supported the theoretical argument that identification is distinguishable from affective commitment (Mael, 1988, in Ashforth & Mael, 1989; Mael & Tetrick, 1992; van Knippenberg & Sleebos, 1999). Additionally, findings from Mael and Tetrick (1992) suggested that commitment and identification could differ in the strength of their association with other variables (e.g., job satisfaction). Therefore, identification and affective commitment can be viewed as related constructs that are theoretically and empirically distinguishable. The present study was concerned with the *development of identification*, and integrated existing research from the *organizational literature*.

Antecedents of identification

Ashforth and Mael (1989) were among the first to apply the SIT approach to the organizational context. Similar to commitment, identification has been shown to be associated with employee behavior (e.g., 'organizational citizenship behavior'; Dutton et al. 1994), a stronger loyalty to the organization (Tyler, 1999), and less fluctuation (Abrams, Ando, & Hinkle, 1998).

Referring to the SIT literature, Ashforth and Mael (1989) suggested antecedents of organizational identification. Based on the SIT argument that the self-enhancement-motive is involved in identification processes, the authors (Ashforth & Mael, 1989) proposed that the prestige of the organization and its distinctiveness in comparison to other organizations should be important antecedents of identification. Other factors that were assumed to be predictive of identification were the salience of the intergroup context and intergroup competition. Finally, Ashforth and Mael (1989) included group formation factors as antecedents of identification not derived from SIT. Group formation factors primarily included interpersonal attraction, similarity, and shared goals. For a long time, group processes have been analyzed primarily in terms of interpersonal relations. Interpersonal attraction was seen as a major determinant of group cohesiveness and group formation (see Hogg, 1992, for a review). In general, Ashforth and Mael's approach (1989) highly influenced the subsequent research in pointing out perspectives on how to apply SIT to organizational settings. Similar to Ashforth and Mael (1989), Dutton et al. (1994) included

organizational attractiveness and distinctiveness as antecedents of organizational identification.

Reviewing the existing literature on antecedents of identification, the present research argues that the dynamics of variables over time needs consideration. It is reasonable to assume that predictors of identification change during organizational membership. For example, the prestige of an organization should influence identification at another time point than intergroup competition. Whereas organizational prestige might influence the decision to join an organization, competition between companies might be relevant during later stages. However, the vast majority of studies in social psychology has employed cross-sectional designs, and thus has neglected the way these predictors are linked to the development of identification. In the organizational field, the need to detect causal links with longitudinal designs has also been emphasized (Meyer et al., 2002). Yet, only very few studies addressed the issue to distinguish cross-sectional correlates of commitment from longitudinal predictors (Bateman & Strasser, 1984; Meyer, Bobocel, & Allen, 1991). In fact, those few studies supported the expectation that cross-sectional correlations do not allow inferences about longitudinal effects.

Considering the role of time implies the necessity to review the predictors proposed by SIT in the chosen context of the study. The present study was concerned with the development of identification during organizational entry as the crucial first stage of the group membership. The basic predictors suggested by SIT (e.g., distinctiveness, intergroup competition) do not specifically grasp the newcomers' situation. Hence, it seemed appropriate to take the existing research on organizational entry into account. Several organizational researchers have acknowledged the role that expectations play in motivation and decision making (see Wanous, Poland, Premack, & Davis, 1992 for a review).

Expectations about job circumstances are strongly shaped during the application process and during entry into the organization. After gaining work experience, the expectations are likely to transform into concrete assessments of job circumstances predicting (affective) commitment (Meyer et al., 2002; Mueller & Lawler, 1999). Another variable that has been studied in relation to organizational commitment is *professional motivation* defined as the strength of motivation to work in a chosen profession (Hackett, Lapierre, & Hausdorf, 2001). Some terms including career commitment (Blau, 1985), professional commitment

(Morrow & Wirt, 1989), and professional motivation (Hackett et al., 2001) have been used interchangeably in the literature. To avoid conceptual vagueness, the term professional motivation will be used in this chapter as the concept is defined and measured as a motivational concept (Hackett et al., 2001). In summary, expectations and professional motivation were included as predictors from the organizational literature.

At present, the study by van Knippenberg and van Schie (2000) is the only research integrating ideas from industrial and social psychology and investigating foci of identification and their consequences in an organizational context. Van Knippenberg and van Schie (2000) further elaborated the importance to differentiate between identification with the work group and identification with the organization in showing that work group identification was more salient and stronger than organizational identification and, in addition, was more strongly related to several organizational outcomes (e.g., job satisfaction and job motivation).

To summarize, it is an important but a broadly neglected task to consider two aspects when analyzing identification in organizational contexts. *First, foci of identification* need to be differentiated in the organizational context and *secondly*, identification needs to be studied with a dynamic perspective that allows the specification of longitudinal effects. While there is one study that has looked at the consequences of identification foci (van Knippenberg & van Schie, 2000), the investigation of different foci of identification and their predictors over time has not yet been conducted. Hence, the present study explored the development of training group and organizational identification and their respective cross-sectional and longitudinal predictors in the context of a flight attendant training. The training period lasted six weeks and the participants were surveyed at the beginning and the end of the training.

Comparing training groups with students

The setting of the present study was different from the previous studies conducted with student samples. Some of the differences need to be mentioned as they have an impact on the theoretical level. *First*, the organizational setting is comprised of several subunits within the organization (Mueller & Lawler, 1999; Ashforth & Johnson, 2001). The distinction between levels of identification is crucial in organizational research as the foci of

identification are differentially related to employee attitudes and behavior (Becker et al., 1996; Ellemers et al., 1998). This demands to investigate the development of identification on the organizational level as well as the subunit level (i.e., training group level) and to specify predictors that influence the development of identification on each of the levels (i.e., the organizational level and the training group level).

Secondly, the transition of the groups is different in comparison to the first two studies. Whereas the entry into the organization can be regarded as a longer-term decision, membership in the training group was restricted to six weeks. After six weeks, the training group got dissolved and the trainees started working within the organization. For practical reasons, the survey could only be administered at the beginning and the end of the training group. As a consequence, the design of the fourth study with two measurement points did only allow for the test between cross-sectional and longitudinal predictors of identification. Furthermore, the time lag of six weeks between the first and the second measurement point covered the complete training group life cycle.

Thirdly, existing organizational research on predictors of identification during organizational entry was integrated in the present study. Therefore, *expectations and professional motivation* were included as additional predictors derived from the organizational literature.

4.4.2 Hypotheses

As in the previous studies, newcomers entering a novel group were assumed to be primarily focused on learning about the novel group and on adjusting to it, in order to reduce their uncertainty (Hogg, 2000; Louis, 1980). They should be concerned about getting to know the other training group members and finding their own place within the group. In addition, their expectations about their future work are shaped by the experiences and knowledge they gain in the training group. Especially at the beginning of organizational membership, the proximal training or work group represents the “focal point for the transmission of the organization’s cultural values, group norms, and established customs and practices to the newcomer” (Anderson & Thomas, 1996, p. 424). Only after having finished the training, they start gathering work experience and get in touch with other, more distal parts of the organization.

Cross-sectional hypotheses

In general, identification at the training group and the organizational level were expected to be correlated at the beginning of the training (van Knippenberg & van Schie, 2000). However, training group and organizational identification were not hypothesized to be either cross-sectional or longitudinal predictors of each other.

With regard to the *cross-sectional prediction of both identification levels*, (positive) expectations about job circumstances (e.g., job safety, possibilities for personal development after the training) were assumed to be highly relevant. The expectations newcomers have about important aspects of the job and the organization have been argued to play a major role for the prediction of identification before and during organizational entry (Anderson & Ostroff, 1997; Feldman, 1976; Louis, 1980; Wanous et al., 1992). Supporting these theoretical arguments, expectations have been found to correlate with various outcome variables, most notably job satisfaction and commitment (Wanous et al., 1992; Zaccaro & Dobbins, 1989). The realization of expectations showed concurrent as well as time-lagged correlations with affective commitment during the entry phase (Meyer et al., 1991). As the expectations included important aspects of the more proximate workplace and the organization, they were assumed to be stable cross-sectional predictors of training group and organizational identification over time.

Concerning the *specific predictors of training group identification*, interpersonal attraction within the training group should be important. This hypothesis is in line with the organizational literature illustrating that interpersonal attraction within the work group is a reliable predictor of identification (Ashforth & Mael, 1989; Brown et al., 1986; Reade, 2001). As interpersonal attraction is a group-related variable it was expected to be positively correlated with training group identification, but not with organizational identification. Moreover, uncertainty should be a cross-sectional predictor of training group identification. The existing social psychological and organizational literature (Kramer, 1998; Moreland, 1985) alluded that organizational newcomers often experience uncertainty when entering a novel group (e.g., a training group or an organization). Uncertainty is caused by a lack of knowledge about the novel group, its members and norms, and has been claimed to be reduced by identifying with a salient group (Hogg, 2000; Kramer, 1998). As the flight attendants should perceive the training group as more salient than the organization,

uncertainty was predicted to be negatively correlated with training group identification, and not with organizational identification.

Regarding the *specific predictors for organizational identification*, it was presumed that professional motivation should be specifically relevant for the prediction of organizational identification. Professional motivation was defined as the strength of motivation to work in a chosen profession (Hackett et al., 2001). Previous organizational research supported the notion that professional motivation is a correlate of (affective) organizational commitment (Hackett et al., 2001; see Meyer et al, 2002 for a review). Therefore, professional motivation was hypothesized to be correlated with organizational identification, but not with training group identification.

Longitudinal hypotheses

The longitudinal analysis focused on the relationships between predictors at T1 and dependent variables at T2. The rationale was that longitudinal predictors were tested regarding the additional variance that they explained in the dependent variable at T2 controlling for the dependent variable at T1.

With regard to the *longitudinal prediction of training group identification*, it was hypothesized, that only (positive) expectations should have an impact on training group identification at T2 as these expectations are strongly tied to the training group experience, and not to work experience within the organization. Hence, expectations were not assumed to have a longitudinal impact on organizational identification. In addition, interpersonal attraction was not expected to influence training group identification at T2. In the previous studies, interpersonal attraction was shown to be a longitudinal predictor of identification only at the beginning of the group membership and lost its impact on identification later on. Compared to the group formation in the student samples, the members of the training group were in a different situation as they took part in a complete group life-cycle from the beginning to its dissolution, between the first and the second measurement point.

With respect to the *longitudinal prediction of organizational identification*, only professional motivation was presumed to have a longitudinal impact on organizational identification at T2. Professional motivation was argued to form prior to organizational entry

and, thus, to influence organizational identification longitudinally. Vandenberg and Scarpello (1994) empirically tested this prediction in a field study with a longitudinal design. They found support for the notion that professional motivation acted as a longitudinal predictor of organizational commitment, controlling for background variables (e.g., organizational and occupational tenure).

Concerning intergroup relations within organizational contexts, the literature has distinguished between outgroups within (e.g., another work team) and between organizations (e.g., another competitor organization, see Hogg & Terry, 2000). Intergroup conflict can occur on both levels, between subunits of one organization (Ashforth & Mael, 1989) and between organizations. In the present context, the training group of flight attendants was separated from the organizational context, and thus, an intra-organizational outgroup was not relevant. Instead, another competitor organization was the only definable outgroup. However, as the training group was postulated to be more salient than the organization, and thus, organizational identification was hypothesized to be neither cross-sectionally nor longitudinally associated with intergroup bias against another organization.

In the previous studies, self-prototypicality (i.e., the degree to which an ingroup member represents important group norms and values) proved to be a highly relevant cross-sectional and longitudinal predictor of identification. In the present study, though, self-prototypicality played a different role than in the student context. In the organizational context, self-prototypicality in terms of the organizational values and norms was a major criterion of selection during the application process (Anderson & Ostroff, 1997). Empirical findings supported that recruiters matched the characteristics of job applicants to the prototype describing the typical, or ideal employee (Dalessio & Imada, 1984). Applicants who came close to the prototype were more likely to be hired. Moreover, self-prototypicality can be related to the organizational literature around 'person-organization fit'. Person-organization fit denotes the match between individual and organizational values, and this similarity was argued to be crucial during the selection process (Chatman, 1989; 1991). The group members were not expected to vary a lot in their reported self-prototypicality for the organization or for the job, and, consequently, self-prototypicality was not assumed to predict identification after the selection process.

Summarizing the hypotheses, differential cross-sectional and longitudinal predictions for training group and organizational identification at the beginning of organizational membership were developed. While *training group identification* should be cross-sectionally predicted by *interpersonal attraction and expectations*, *organizational identification* was expected to be predicted by *professional motivation and expectations*. In addition, it was claimed that both identification levels should be influenced by different variables longitudinally. Whereas *training group identification* should be predicted longitudinally by *expectations*, *organizational identification* should be influenced longitudinally by *professional motivation*.

4.4.3 Method

Design and Procedure

A longitudinal study of flight attendant trainees employed by a major German airline company was undertaken. The present study was conducted at the beginning of the flight attendant trainings in spring 2004 and again six weeks later at the end of the trainings. In total, three training groups participated in the survey. The training aimed to prepare the participants for the job and included theoretical input and practical sessions. The training took place at a company location and the participants stayed in their usual environment during the training. The questionnaires were sent to the human resources department that organized the distribution during the training. The respondents were informed that the study investigated the development of opinions that newcomers have on company-related issues. They were reassured that the study was part of a PhD-project, and that their responses would be anonymous.

Participants

Fifty-nine flight attendant trainees ($M = 24.04$, $SD = 3.47$; sex: 44 female, 15 male) from three different training groups participated at the beginning of the training seminar. At the end of the training, 58 employees responded again to the questionnaire. Hence, the problem of attrition was successfully avoided as the questionnaire was filled out during the training course.

Measures

Uncertainty. The uncertainty measurement consisted of an adapted version of the uncertainty scale of Ullrich-de-Muynck and Ullrich (1977) asking the participants on 5-point scales to judge their temporary situation on semantic differentials. Six item pairs (e.g., “non demanding” vs. “demanding”, “easy” vs. “difficult”) were chosen according to their appropriateness to the situation. The cut down version showed high reliability (T1: $\alpha = .80$; T2: $\alpha = .82$).

Interpersonal attraction. Interpersonal attraction was measured with three items according to Hogg and colleagues (Hogg & Hains, 1998; Hogg & Hardie, 1991). Participants were asked on a 5-point scale (ranging from 1 = “do not agree at all” to 5 = “fully agree”) how much of their leisure time they spent with other training group members, how much they liked them and whether they thought that they could form friendships with others in the training group. The scale was highly reliable over time (T1: $\alpha = .71$; T2: $\alpha = .76$).

Expectations about job circumstances. Expectations about their future job circumstances were operationalized with a 7-item measure based on the Job Diagnostic Survey (Hackman & Oldham, 1975). The items on a 7-point scale (ranging from 1 = “does not apply at all” to 7 = “does fully apply”) reflected several important job and organizational aspects, such as career chances, job safety, and possibilities for personal development (T1: $\alpha = .71$; T2: $\alpha = .79$).

Professional motivation. The degree of motivation to work in the chosen profession was assessed with three items on a 5-point scale (ranging from 1 = “do not agree at all” to 5 = “fully agree”). The items (e.g., “It is important for me to work as flight attendant and not in another job”) were taken from a scale developed by Blau (1985) and specified to the context. The items formed a highly reliable scale over time (T1: $\alpha = .78$; T2: $\alpha = .89$).

Identification with the organization and the training group. To assess the strength of organizational identification, participants were asked to indicate their agreement to six items (ranging from 1 = “do not agree at all” to 5 = “fully agree”) based on a scale by Brown et al. (1986). Example items read as follows: “I identify with the organization”, “I see myself as belonging to the organization” and “I am glad to work for this organization” (organization specified in the questionnaire). The scale was highly consistent (T1: $\alpha = .82$, T2: $\alpha = .84$). The same items were applied to measure identification with the training group. Again, reliabilities were highly satisfying (T1: $\alpha = .90$; T2: $\alpha = .93$).

Ingroup favoritism. Ingroup favoritism was assessed with six items (ranging from 1 = “does not apply at all” to 7 = “does fully apply”). Participants were asked to evaluate their own organization and a competitor organization on relevant business dimensions (e.g., friendly and qualified employees, technical expertise, customer-friendly services; see Terry et al., 2001). The measure was obtained by calculating difference scores (ingroup rating minus outgroup rating). The highly reliable composite measure (T1: $\alpha = .80$; T2: $\alpha = .85$) was then used in further analysis.

4.4.4 Results

Sample Homogeneity

As the sample consisted of three different training groups of flight attendants, the assumption of homogeneity between these sub-samples had to be tested. First, a 3 by 2 MANOVA with training group as a between-subjects factor and time as a within-subjects factor was calculated. The interaction between time and group was only marginally significant, $F(14, 80) = 1.68, p = .08, \eta_p^2 = .23$. Secondly, the cross-sectional bivariate correlations were analyzed with regard to differences between groups. In total, 63 correlations between identification and its related variables were compared between the three groups. Due to these multiple comparisons, a familywise error rate of $\alpha = .0008$ was determined (Howell, 1997). None of the comparisons between the sub-samples was significant at this level. Taken together, the results showed that there were marginal differences between the three sub-samples on the mean level. However, the crucial interrelationships between the model variables illustrated no differences between the sub-samples.

Cross sectional analysis

Generally, both levels of identification within the organization were significantly related at the beginning and less so at the second measurement point (see Tables 18 and 19). This result could be explained by the disintegration of the training group after the second measurement point. Tables 18 and 19 give an overview of all cross-sectional correlations at both measurement points. To test the effects of the predictors on training group and organizational identification, hierarchical regression analysis was used. The rationale of this analysis was that after entering the assumed predictors in the first step, the prediction should not be improved by entering additional variables.

Prediction of training group identification

In the first step, those variables assumed to be predictors of training group identification were entered. The results for the first measurement point showed that training group identification was significantly predicted by interpersonal attraction ($\beta = .36, p = .01$) and expectations ($\beta = .32, p = .01$). In contrast to the hypotheses, uncertainty did not contribute significantly to the prediction ($\beta = .09, p = .49$). Hence, the higher the newcomers' expectations and the more interpersonal bonds they perceived, the higher their training group identification. In total, the hypothesized predictors accounted for 21% of the variance in training group identification at T1. In line with the argumentation, professional motivation did not contribute significantly to the prediction of training group identification ($\beta = .18, p = .16$; R^2_{change} for the second step: .03, $F_{inc}(1, 53) = 2.02, p = .16$)²⁰.

Interpersonal attraction and expectations were presumed to predict training group identification at the second measurement point. Supporting the hypothesis, interpersonal attraction ($\beta = .61, p < .001$) proved to be a significant predictor of training group identification. Unexpectedly, expectations ($\beta = .12, p = .26$) did not reach significance. Entering professional motivation ($\beta = .02, p = .88$) and uncertainty ($\beta = -.02, p = .89$) in the second step did not explain additional variance in training group identification at T2 (R^2_{change} for the second step: .00, $F_{inc}(2, 51) = .03, p = .97$).

Prediction of organizational identification

Professional motivation and expectations should be reliable cross-sectional predictors of organizational identification both at the beginning of organizational membership as well as six weeks later. The results of the hierarchical regression analysis were in line with these predictions. At the first measurement point, organizational identification was significantly predicted by professional motivation ($\beta = .46, p < .001$) and expectations ($\beta = .27, p = .02$). Confirming the expectations, interpersonal attraction ($\beta = -$

²⁰ Due to the disintegration of the training group the foci of identification were not expected to predict each other. The results supported this notion. Among the mentioned predictors, organizational identification did not add significantly to the cross-sectional (T1: $\beta = .16, p = .30$) or the longitudinal ($\beta = .04, p = .79$) prediction of training group identification. Neither did training group identification cross-sectionally (T1: $\beta = .14, p = .30$) or longitudinally ($\beta = .01, p = .95$) predict organizational identification.

.09, $p = .44$) and uncertainty ($\beta = -.10, p = .39$) did not significantly improve this prediction (R^2_{change} for the second step: .02, $F_{inc}(2, 53) = .59, p = .56$). In total, the hypothesized predictors of organizational identification explained 32% of the variance.

These results were replicated at the second measurement point. Both professional motivation ($\beta = .52, p < .001$) and expectations ($\beta = .39, p < .001$) remained significant predictors of organizational identification. Compared to this prediction alone, interpersonal attraction ($\beta = -.08, p = .46$) and uncertainty ($\beta = -.02, p = .83$) did not explain additional variance (R^2_{change} for the second step: .01, $F_{inc}(2, 51) = .31, p = .73$)²¹.

Changes in variable means over time

The change in the mean scores of the variables was assessed using repeated-measures analysis of variance (MANOVA). Table 20 shows that whereas organizational identification, $F(1, 54) = .41, p = .52, \eta_p^2 = .02$, remained at the same level, training group identification decreased significantly from T1 to T2, $F(1, 54) = 3.98, p = .05, \eta_p^2 = .05$. This finding might reflect that participants distanced themselves from the training group at the second measurement point as they knew that the group would dissolve. Moreover, professional motivation, $F(1, 54) = 4.17, p = .05, \eta_p^2 = .08$, and expectations about the job circumstances, $F(1, 54) = 8.97, p = .004, \eta_p^2 = .15$, decreased significantly from T1 to T2. This finding denotes that professional motivation and positive expectations were significantly lower at the end of the training compared to the beginning of the training. The mean levels of interpersonal attraction, $F(1, 54) = .40, p = .53, \eta_p^2 = .01$, and uncertainty, $F(1, 54) = .01, p = .94, \eta_p^2 < .001$, did not change over time.

²¹ Moreover, it was postulated that organizational identification should not be linked to ingroup favoritism against a competitor organization unless employees have worked in this organization. In accordance with this reasoning, organizational identification and ingroup favoritism were neither at T1 ($r(55) = .17, p = .22$) nor at T2 ($r(55) = .09, p = .50$) significantly correlated.

In accordance with the reasoning that newcomers were more concerned about intra-organizational than inter-organizational processes, bias against another airline company did not increase, $F(1, 54) = .37, p = .54, \eta_p^2 = .01$. Furthermore, it was noteworthy that all variable means at both measurement points differed significantly from the scale midpoints (all t -values > 6.2). With the exception of uncertainty (below the scale midpoint) all other variable means were significantly above the scale midpoint.

Table 20. Means, standard deviations and the change of means over time

| | Time 1 | Time 2 | |
|-------------------------------|------------|-------------|-----------|
| | M (SD) | M (SD) | F (1, 54) |
| Uncertainty | 2.44 (.75) | 2.44 (.77) | .01 |
| Expectancies | 6.00 (.56) | 5.70 (.72) | 8.97** |
| Professional motivation | 4.21 (.79) | 4.04 (1.00) | 4.17* |
| Interpersonal attraction | 4.26 (.75) | 4.33 (.77) | .40 |
| Identification (group) | 4.13 (.63) | 3.94 (.74) | 3.98* |
| Identification (organization) | 4.29 (.50) | 4.34 (.54) | .41 |
| Ingroup favoritism | .84 (1.05) | .92 (1.11) | .37 |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Longitudinal prediction of training group identification

Mean score changes do not reveal the dynamics between the variables. To explore the longitudinal dynamics, a hierarchical regression analysis was calculated. It was investigated whether the hypothesized predictors at T1 had an additional influence on training group identification at T2 controlling for training group identification at T1. Thus, training group identification at T1 was entered in the first step to control for the autoregression. Then, expectations as the hypothesized predictor were added in the second step. Finally, it was examined in the third step, whether the variables that were not expected to be predictors explained additional variance.

Expectations at T1 ($\beta = -.26, p = .03$) added significantly to a prediction of training group identification at T2 based on training group identification at T1 alone ($\beta = .47, p < .001$; R^2_{change} for the second step: .06, $F_{inc}(1, 55) = 4.76, p = .03$). As expected, entering interpersonal attraction ($\beta = .12, p = .36$), uncertainty ($\beta = .07, p = .56$), and professional motivation ($\beta = .14, p = .25$) in the third step did not significantly improve the prediction of training group identification at T2 (R^2_{change} for the third step: .03, $F_{inc}(3, 52) = .82, p = .49$). Hence, expectations at T1 were the only variable that yielded a significant effect above training group identification at T1, and together they explained 28% of the variance in training group identification at T2. More precisely, this implies that the higher the expectations about the job circumstances at T1, the lower the training group identification at T2.

An explanation for the negative direction of influence between expectations and training group identification could be based on the realistic job preview literature (Wanous, 1992). From this perspective, the training period might be interpreted as a realistic preview. Realistic job previews bring about an adjustment of the applicant and newcomer expectations to the job realities (Schneider, Kristof-Brown, Goldstein, & Smith, 1997). This explanation is further supported by the decrease in mean levels of expectations and training group identification between T1 and T2. Especially participants with very high expectations at the beginning should be more likely to be disappointed by the training and its content, so that they dis-identify from the group at the end of the training. Correspondingly, the negative impact of expectations at T1 on training group identification at T2 should especially hold for participants with very high expectations at T1. As the sample of participants was not large, only a preliminary test of this hypothesis was conducted. After a median split on expectancies the same hierarchical regression analyses were run separately for the participants with higher ($M = 6.47, SD = .25$) and lower expectancies ($M = 5.56, SD = .39$) at T1. For the participants with lower expectations at T1, expectancies at T1 did not add significantly to a prediction of training group identification at T2 based on training group identification at T1 alone, and the size of the beta-weight for expectancies was trivial ($\beta = -.01, p = .95$). For the participants with higher expectations at T1, adding expectancies at T1 ($\beta = -.25, p = .17$) also failed to reach the conventional level of significance (R^2_{change} for the second step: .06, $F_{inc}(1, 24) = 1.96, p = .17$). However, the size of the beta-weight was much stronger and displayed the expected negative direction. The failure to reach

significance could be due to the lack of statistical power. Thus, the findings give reason to assume that this effect is not trivial and that the offered explanation is worth being further explored.

Longitudinal prediction of organizational identification

The same hierarchical regression approach was used to assess the longitudinal influence of expectations, interpersonal attraction, and professional motivation at T1 on organizational identification at T2, controlling for organizational identification at T1. In this case, professional motivation at T1 was assumed to be the only longitudinal predictor for organizational identification at T2, and thus was entered in the second step. In the third step, expectations and interpersonal attraction were added.

Supporting the assumptions, professional motivation at T1 ($\beta = .25, p = .04$) contributed significantly to a prediction based on organizational identification at T1 alone ($\beta = .61, p < .001$; R^2_{change} for the second step: $.05, F_{inc}(1, 55) = 4.63, p = .04$). Together, the hypothesized predictors accounted for 42% of the variance in organizational identification at T2. Adding interpersonal attraction ($\beta = .08, p = .48$), uncertainty ($\beta = -.15, p = .16$), and expectations in the third step ($\beta = .06, p = .56$) did not significantly improve the prediction of organizational identification at T2 (R^2_{change} for the third step: $.03, F_{inc}(3, 52) = 1.06, p = .37$). This signifies that the higher the motivation of the newcomers to work in their job as flight attendants at the beginning, the higher their organizational identification at the end of the training (accounting for their initial level of organizational identification)²².

4.4.5 Discussion

The main goal of the study was to differentiate between variables that influence different foci of identification cross-sectionally or longitudinally at the beginning of organizational membership. Considering the multidimensionality of organizational groups, differential predictions for training group and organizational identification were formulated.

²² Concerning the longitudinal influence of organizational identification at T1 on ingroup favoritism at T2, the results confirm that organizational identification at T1 ($\beta = -.02, p = .84$) did not add significantly to a prediction based on ingroup favoritism at T1 ($\beta = .57, p < .001$; R^2_{change} for the second step: $.00, F_{inc}(1, 54) = .04, p = .84$).

The findings supported the notion that both foci of identification were predicted by a different pattern of variables.

Concerning the *cross-sectional analyses* at T1, training group identification was related to interpersonal attraction and expectations, but not to professional motivation. Unexpectedly, uncertainty did not cross-sectionally predict training group identification at T1. The minor role that uncertainty played in this study could be due to the norms of the organizational context calling for self-assuredness and competence. Organizational identification on the other hand was predicted by expectations and professional motivation at both measurement points. In general, the pattern of cross-sectional predictors for both foci of identification proved to be stable over time. The only exception was that expectations at T2 failed to predict training group identification at T2. This finding might be explained by the disintegration of the training group at T2.

Concerning the *longitudinal analyses*, *training group identification at T2* was influenced only by expectations at T1 (controlling for the autoregression). The negative sign of the path was not predicted, but it might be interpreted as an expectancy adjustment effect. Especially those training group members with very high expectations at the beginning might have employed a dis-identification strategy from the training group (Kreiner & Ashforth, 2004). A preliminary test of the hypothesis that the negative influence of expectations at T1 on training group identification at T2 should hold only for those participants with high expectations at T1 was conducted. The results pointed into the hypothesized direction. *Organizational identification at T2* was predicted longitudinally by professional motivation at T1. Those with a high motivation to work in their chosen profession were more likely to identify higher with the organization at the second measurement point. Finally, the findings suggested that both foci of identification were positively interrelated at the beginning, and subsequently become disentangled. This effect might reflect a general differentiation of foci over time or it might be due to the dissolution of the training group at the second measurement point.

The following *limitations* were associated with this study. First, the study was conducted in an organizational setting and used explicit measures. Therefore, some of the responses might be biased due to social desirability (Crowne & Marlowe, 1960). This might

be especially true for the identification scales where participants could be influenced by the organization's expectations and norms. The fact that all the scale means were significantly different from the scale midpoint in the direction desired by the organization resonates with this explanation. However, such tendency to exaggerate identification only affects the mean levels, but not the cross-sectional or longitudinal relationships between the variables. Secondly, all variables were assessed within the same questionnaire and, thus, common method variance could have increased the cross-sectional, but not the longitudinal, relationships between the variables (Kline, 1998).

With these caveats in mind, some important conclusions can be drawn. The findings illustrated that in nested identities, different foci of identification were predicted by different variables. This finding is fully consistent with research suggesting that different foci of identification also entail different consequences (van Knippenberg & van Schie, 2000). Thus, both foci of identification are influenced by different predictors and produce different outcomes. Moreover, the results suggest that both foci of identification differentially develop over time. This aspect needs further investigation accounting for the role of the salience of both foci.

Furthermore, the results emphasize the necessity to distinguish between cross-sectional correlates of identification and variables influencing identification longitudinally. The majority of research conducted in organizational or social psychology worked with cross-sectional designs and, thus, does not allow drawing inferences about the dynamics within and between variables. Future research should put increasing effort in understanding the development and dynamics of variables. This would help to understand the effect of time on the relationships between variables. So far, meta-analytic reviews on organizational commitment have only discussed general antecedents or consequences of commitment (Meyer et al., 2002). However, time as a powerful moderator of the relationships between the variables needs to be taken into account. As an example, interpersonal attraction was significantly correlated with training group identification, but did not contribute to the longitudinal prediction of training group identification at the second measurement point. Similarly, expectations were positively related to training group identification at both measurement points, but they had a *negative* longitudinal impact on training group identification at T2. In general, the present results should be taken as a first step towards an

analysis of the dynamics of identification in an organizational context. Further research should explore foci of identification and their related variables over time.

Predicting foci of identification in an organizational context called for the necessity to carefully review the predictors proposed by SIT and to combine them with antecedents that have been discussed in the industrial and organizational literature. The predictors proposed by SIT did not optimally reflect the situation of newcomers when entering an organization. Thus, in the present context of organizational entry, an integration of different theoretical approaches, namely SIT and industrial and organizational psychology proved to be fruitful. More specifically, expectations and professional motivation were included as predictors stemming from the organizational literature. The findings reveal that expectations represent a longitudinal predictor of identification with the training group, whereas professional motivation contributes to the longitudinal prediction of identification with the organization.

From a *practical perspective*, the reported findings that were obtained in the organizational context can contribute to the successful management of human resources. Given the tremendous impact that employee identification has on economic outcome variables (e.g., on job performance and turnover) organizations need to know about the factors influencing identification at the beginning of organizational membership. From the presented results, guidelines for organizational practices could be derived. Generally, one important notion resulting from this study is that different foci of identification are predicted by different antecedents. Professional motivation proved to be of major importance for the development of organizational identification from the very beginning. Companies might therefore consider professional motivation as an important criterion during the selection process. In addition, managing the expectations that newcomers develop about their future job seems to be a highly relevant organizational task targeting at both identification levels. This can be achieved by providing realistic information about the future job and the organizational frame (e.g., culture and policy) during the selection and the socialization process.

5 GENERAL DISCUSSION

5.1 Overview of the presented studies

Within the social identity framework, identification has been argued to play a substantial role in intra- and intergroup processes (e.g., Deaux, 1996; Ellemers et al., 2002). In line with this notion, extensive empirical evidence has illustrated the powerful effects of identification on perception, emotions, and behavior (e.g., Doosje et al., 1998; Ellemers et al., 1997; Kelly & Breinlinger, 1996; Mullen et al., 1992). Likewise, considerable research efforts grounded in SIT and SCT have dealt with the predictors of identification. To date, however, the theoretical and methodological approaches to the study of identification and its related variables have taken mostly a static perspective. That is, group identification has often been analyzed cross-sectionally in certain situational contexts and at certain points in time. Therefore, the dynamic aspects of identification *over a longer time period* and the roles of identification *as both a cause and an effect* have been neglected.

This thesis adopted a *dynamic perspective* and presented a model capturing the *development of identification* with social groups. The model referred to the group formation context where novel groups come together for the first time. A dynamic understanding of identification in this context required assumptions about the underlying group processes at different stages of group membership. Predictions were derived from models of group development (Tuckman, 1965; Worchel et al., 1992). Thus, the present research integrated the social identity perspective with assumptions about change processes in groups based on models of group development. The model developed in this thesis was concerned with the development of predictors and consequences of identification over time.

The model was based on two central assumptions. *First*, cross-sectional processes were posited to be different from longitudinal processes. In general, cross-sectional processes do not yield information about the causal direction of effects between variables, whereas longitudinal effects provide such information about causalities. For example, the *uncertainty* motive, activated by a lack of knowledge at the beginning of the group membership, was assumed to be only situationally, but not longitudinally associated with identification. *Secondly*, longitudinal effects should differ concerning the stability of influence over time. The stability of longitudinal effects over time depends on the change processes in groups derived from models of group development. This means that some

longitudinal predictors should exert a *stable influence* on identification, whereas the impact of other predictors should *change over time*. More specifically, *interpersonal attraction* was expected to influence identification at the beginning of the group membership when the group provides a means to satisfy the need for affiliation. After having established interpersonal bonds with other group members, interpersonal concerns should lose their impact on identification. When interpersonal relationships have been formed, other concerns related to identification should come into play. *Ingroup favoritism* reflecting the need to differentiate the ingroup from relevant outgroups, was expected to gain importance for identification. This means that the positive impact of identification on ingroup favoritism should not exist from the beginning, but should emerge over time. However, *self-prototypicality* indicating the need to belong safely to the group (Baumeister & Leary, 1995; Brewer, 1991) was proposed to be consistently related to identification, both as a predictor and a consequence. Thus, the predictors and consequences were hypothesized to be *differentially related* to identification over time.

In sum, *interpersonal attraction and uncertainty* were derived from the literature as relevant predictors of identification during group formation. Uncertainty was hypothesized to be relevant for the prediction of identification only cross-sectionally, but not longitudinally. Interpersonal attraction as a longitudinal predictor should have an impact on identification only at the beginning of the group membership. When interpersonal concerns have been settled, *ingroup favoritism* as a consequence should be positively linked to identification. Moreover, *self-prototypicality* was the only variable assumed to be stably related to identification as *both a predictor and consequence*.

Identification and group formation in student samples

Empirical evidence supporting the proposed model was provided by two longitudinal studies with three measurement points each. The second longitudinal study was conducted as a cross-validation of the first study to ensure the generalizability of the findings. The results of the two studies were analyzed regarding the pattern of cross-sectional correlations, the changes in the variable means, and the proposed model depicting the longitudinal relationships between the variables. With respect to the *pattern of cross-sectional correlations* across measurement points, the findings of the first and the second longitudinal study were highly consistent. In both studies, the predictor variables including uncertainty,

self-prototypicality, and interpersonal attraction were significantly correlated with identification at each measurement point. Furthermore, the size of the correlations was comparable across samples. Interpersonal attraction and self-prototypicality were positively associated with identification, and uncertainty was negatively correlated with identification. As discussed previously (see sections 4.1.3 and 4.2.3), correlations do not capture causal processes between variables and thus, the (negative) correlation between uncertainty and identification does not provide evidence for uncertainty reduction theory (Hogg, 2000). In both groups, the correlation between identification and ingroup favoritism was positive at T3 (though not significant in Study 2), but not at T1. Moreover the results of both studies corroborated that the change in the correlation between T1 and T3 was significant. This finding supported the idea that a positive relationship between identification and ingroup favoritism emerged over time.

Across both studies, the *change in mean levels* illustrated similar processes. In line with the expectations, the mean levels of self-prototypicality and interpersonal attraction increased between T1 and T3 in both studies. Thus, on average, the interpersonal relationships with other ingroup members strengthened over time, and the students perceived themselves to be more prototypical over time. Differences between the studies concerned the development of means in identification, uncertainty, and ingroup favoritism. Whereas the mean level of identification and uncertainty decreased in the sample of psychology students, the mean levels did not change for medical students. This finding was explained by differences in the curriculum and the way the degree courses are structured (see discussion 4.2.3 for further details).

The *longitudinal relationships between the variables* were analyzed with the help of path analysis. As expected, the hypothesized model was confirmed for both samples. Therefore, we can be confident about the generalizability of the findings. Imposing equality constraints within the model supported the prediction that *all cross-lagged paths were equal across samples*. Concerning the specific longitudinal relationships, the *reciprocal influence of identification and self-prototypicality* was stable across time and samples. This means that the perception to be a core member of the group and the importance of the group membership to the self influence each other consistently over time. Moreover, in both samples, the *positive impact of interpersonal attraction on identification between T1 and T2*

was invariant. Between T2 and T3, interpersonal attraction lost its influence on identification in both samples. In addition, the relationship between *identification and ingroup favoritism* was consistent across samples. At the beginning (i.e., between T1 and T2), the cross-lagged path between identification and ingroup favoritism was not significant in any of the samples. Between T2 and T3, an equal positive impact of identification on ingroup favoritism emerged. Thus, the results corroborated the importance of *interpersonal bonds within the group* for the initial development of identification at the beginning of the group membership. Later on, *intergroup concerns* were more strongly related to identification. In addition, *equality constraints across time* imposed on the cross-lagged path between identification and self-prototypicality were confirmed in both samples. In sum, the hypothesized model with the same parameter values for all cross-lagged paths proved to fit both data sets. Hence, the findings from the first study are stable across samples with different characteristics (e.g., status, group size).

Considering the *cross-sectional and the longitudinal* results, both studies confirmed the first model assumption that the two processes need to be distinguished. Several variables in the model illustrated this. In line with the predictions, the uncertainty motive was negatively correlated with identification over time, but it did not predict identification longitudinally at any time point. In addition, interpersonal attraction remained cross-sectionally correlated with identification over time, but it predicted identification longitudinally only between T1 and T2.

The second central assumption was that *specific longitudinal predictors or consequences of identification* change over time. These changes over time reflect different motives related to identification during the group formation process. In both studies, the empirical findings supported this notion. Correspondingly, interpersonal attraction capturing the need for affiliation was important for the longitudinal prediction of identification only at the beginning the group membership. When interpersonal concerns had settled, the relationship between identification and ingroup favoritism emerged. Furthermore, self-prototypicality capturing the need to be safely included within the group remained a longitudinal predictor and consequence of identification over time. This finding was further corroborated in a follow-up study (Study 3) representing a fourth measurement point one year after the end of the first study. The results indicated that only self-prototypicality

showed a strong trend to predict identification longitudinally between T3 and T4. In addition, the correlation pattern at T4 was highly consistent with the previous measurement point suggesting a further stabilization of the intra- and intergroup structure.

Identification and group formation in an organizational context

The fourth study investigated the development of identification in an organizational context. The study was conducted at the beginning and at the end of a flight attendant training during organizational entry. The organizational setting of the study required a specification of theoretical assumptions. *First*, relevant organizational research was considered to improve the predictions. The organizational literature (Mueller & Lawler, 1999; Reichers, 1985) has emphasized the importance to distinguish between levels of identification ('foci of identification') and, thus, predictors needed to be specified that influence the development of identification on both levels (i.e., the organizational level and the training group level). To this end, further predictors discussed as relevant in the organizational literature on organizational entry (i.e., expectations and professional motivation) were included in the study. Due to the selection process before organizational entry, self-prototypicality was not assumed to be a relevant predictor of training group or organizational identification. *Secondly*, group membership in the training group was restricted to six weeks since the training group was dissolved after six weeks. For practical reasons, the survey could only be administered at the beginning and the end of the training group. Thus, the design of the study including two measurement points aimed to differentiate between variables that influence the *development of different foci* of identification *cross-sectionally or longitudinally*. The study employed *uncertainty, interpersonal attraction, expectations, and professional motivation* as differential predictors of training group and organizational identification. Due to the limited number of measurement points, the stability of longitudinal predictors of identification over time was not examined.

Supporting the hypotheses, the findings indicated that both foci of identification were predicted by a different pattern of variables. Concerning the *cross-sectional analyses* at T1, *training group identification* was predicted by interpersonal attraction and expectations, but not by professional motivation. Unexpectedly, uncertainty did not cross-sectionally predict training group identification at T1. The minor role that uncertainty played in this study could

be due to the norms of the organizational context calling for self-assuredness and competence. *Organizational identification* at T1 was predicted by expectations and professional motivation. In general, the pattern of cross-sectional predictors for both foci of identification proved to be rather stable over time. The only exception was that expectations at T2 failed to predict training group identification at T2. This finding might be due to the disintegration of the training group at T2.

Concerning the *longitudinal analyses*, *expectations at T1* were the only predictor of training group identification at T2. The negative direction of influence was explained by an expectancy adjustment effect. Especially those with very high expectations at the beginning might have employed a dis-identification strategy from the training group (Kreiner & Ashforth, 2004). Preliminary analyses supported this explanation. Moreover, organizational identification at T2 was predicted longitudinally by *professional motivation at T1*. Those with a high motivation to work in their chosen profession at the beginning of the training were likely to identify more strongly with the organization at the end of the training. In summary, the results of the fourth study showed that in *nested identities*, different foci of identification were related to *different cross-sectional and longitudinal predictors*.

So far, the majority of research conducted in organizational or social psychology employed cross-sectional designs and, hence, has not investigated the dynamics of relationships between variables over time. The present results emphasize the necessity to consider the effect of change processes in groups over time on cross-sectional and longitudinal relationships with ingroup identification.

5.2 Integration and implications

In the present studies, the predictors and consequences of identification were selected based on their assumed relevance during stages of group formation. The cross-sectional findings were in line with existing research illustrating the importance of uncertainty (Hogg, 2000), interpersonal attraction (Brown et al., 1986; Reade, 2001), and self-prototypicality (Kashima et al., 2000; Spears, 2001) for the prediction of identification.

More importantly, the empirical evidence obtained in the three studies has implications on theoretical and practical perspectives on identification. *From a theoretical*

perspective, the present thesis represents a first step towards a dynamic understanding of identification. The results enrich existing theories on ingroup identification and emphasize the benefit of taking a dynamic, process-oriented perspective. Studies 1 and 2 revealed that longitudinal predictors of identification vary over time depending on change processes during group development. Therefore, the reported findings provided new insights in related theoretical approaches to functions and motives of identification.

The present studies shed a dynamic perspective on the functions of identification over time. So far, researchers in this area (Aharpour & Brown, 2002; Deaux et al., 1999) have developed a list of *functions of identification* that differ *across groups*. The findings from the present research project suggest that functions of identification vary *across time*, more specifically across different stages of group membership. For example, interpersonal attraction capturing the need for affiliation was found to be an important longitudinal predictor of identification at the beginning of the group membership. After the formation of interpersonal relationships, the identified group members develop an intergroup consciousness as indicated by the emerging link between identification and ingroup favoritism (between T2 and T3). This embodies a need to differentiate the group from relevant other groups, as expressed by the function ‘intergroup comparison’ (Aharpour & Brown, 2002; Deaux et al., 1999) in the literature. Therefore, the reported data suggest that functions of identification change during group membership.

Furthermore, the present research investigated the role of *uncertainty* as a cross-sectional correlate and as a longitudinal predictor of identification. In both studies, uncertainty was found to be negatively correlated with identification at each measurement point. However, it did not predict identification longitudinally. Therefore, it can be concluded that the effect of uncertainty on identification is rather instantaneous. In other words, the present findings do not support the idea of uncertainty reduction (Hogg, 2000) as a strong motivation for identification over time.

Moreover, the results shed new light on *optimal distinctiveness theory* (Brewer, 1991, 1993). This motivational theory assumes that the need for inclusion and the need for differentiation are the two basic motives driving the relationship between the self and the group. The reported findings support the idea that the two social motives come into play in

different phases of group membership. Interpreting the results from an optimal distinctiveness perspective, the need for inclusion, as indicated by self-prototypicality, consistently influenced the development of identification during group formation. However, the need for differentiation, as indicated by ingroup favoritism, did not come into play until the interpersonal relationships within the group had established. Hence, the present results imply that the optimal distinctiveness motives are differentially related to the development of identification over time.

The present findings demonstrated that a dynamic understanding enriches existing social psychological theories about the functions and motivations of identification. Furthermore, the results help to integrate ambiguous findings in the literature. So far, the existing studies on the link between identification and ingroup favoritism have yielded inconsistent findings (Hinkle & Brown, 1990; for a review see Hewstone et al., 2002). In the present studies, the stage of group development was shown to determine the association between identification and ingroup favoritism. Thus, changes in the functions of group identification need to be taken into account when investigating the relationship between identification and ingroup favoritism.

In addition, the present approach further integrated different perspectives on group processes. For a long time, group processes have been analyzed only in terms of interpersonal relations (see Hogg, 1992; Turner et al., 1987 for reviews). Interpersonal attraction was seen as a necessary precondition of psychological group formation and belonging. This approach was challenged by SIT and SCT as these theories stressed the need to distinguish between interpersonal and group processes. The reported results showed that a strict distinction between these processes does not apply to all kinds of groups and their development over time. Consistent with existing research (Brown et al., 1986; Reade, 2001; Sheldon & Bettencourt, 2002), identification with the group was shown to be influenced by interpersonal attraction, but only at the beginning of the group membership. After group members had developed affiliation with other ingroup members, the impact of interpersonal attraction on identification diminished.

Study 4 was conducted in an organizational context and illustrated the potential of integrating perspectives from social and organizational psychology. Organizational research

stressed the importance to differentiate between levels of commitment to subgroups within the organization (Mueller & Lawler, 1999; Reichers, 1985). This notion was applied to the identification concept ('foci of identification') showing that identification with the work group was more strongly related to several organizational outcomes (e.g., job satisfaction and job motivation) than identification with the company (van Knippenberg & van Schie, 2000). Study 4 shed new light on the prediction of foci of identification, revealing that identification with the work group was related to other cross-sectional and longitudinal predictors than identification with the company. Moreover, the results showed that the prediction of identification in an organizational context could be improved by integrating organizational research on predictors of commitment.

From a practical perspective, the results obtained in Study 4 contribute to the successful management of human resources. Given the tremendous impact of employee identification on economic outcome variables (e.g., job performance, turnover), organizations need to know about the factors influencing identification at the beginning of organizational membership. Generally, one important notion resulting from the fourth study was that different foci of identification were predicted by different antecedents. Professional motivation proved to be of major importance for the initial development of organizational identification. Companies might therefore consider professional motivation as an important criterion during the selection process. In addition, managing the expectations that newcomers develop about their future job seems to be a highly relevant organizational task targeting at both identification levels. This can be achieved by providing realistic information about the future job and the organizational frame (e.g., culture, policy) during the selection and the socialization process.

5.3 Possible limitations of the presented studies

In the following, some possible limitations imbued with the findings are discussed. From a methodological perspective, the data obtained in the three studies were based on self reports. Explicit measures embody the danger that the responses might be biased by social desirability (Crowne & Marlowe, 1960). In student samples and especially with internet-based questionnaires (Studies 1 and 2), social desirability can be assumed to play a minor role (Joinson, 1999). However, in organizational contexts (Study 4) the responses of the employees might be more strongly influenced by the organization's expectations and norms.

This might especially hold for crucial organizational issues, such as identification scales. The fact that the scale means in the fourth study were significantly different from the scale midpoint in the direction desired by the organization resonates with this explanation. However, such tendency to exaggerate identification only affects the mean levels, but not the cross-sectional and longitudinal interrelations between the variables. Moreover, the variables were cross-sectionally assessed within the same questionnaire. Thus, common method variance could have increased the cross-sectional relationships between identification and its related variables (Kline, 1998). However, as reported above (see section 2.8), the results were in line with existing research using different methods. In addition, longitudinal relationships between variables are not affected by common method variance.

In the present studies, some of the underlying model assumptions remain untested. More specifically, the model implied that underlying motives are related to the longitudinal predictors and consequences of identification. Therefore, it would have been interesting to directly test some of the hypothesis involving needs or motives. The data support the idea that the need for affiliation as indicated by interpersonal attraction should be predominant at the beginning of the group membership. At that stage, identification did not have an impact on ingroup favoritism. When the need for affiliation had been satisfied by establishing interpersonal bonds, the link between identification and ingroup favoritism, capturing the need for differentiation, emerged. These findings suggested that different motives are activated during group membership, and that these motives have different effects on ingroup favoritism. In a study not included in this thesis (Eisenbeiss & Wodzicki, 2004), the effects of different motives on ingroup favoritism were tested directly. Via a priming procedure (see Bargh, Gollwitzer, Lee-Chai, Barndollar, & Troetschel, 2001), either a need for affiliation or a need for power was activated. It was hypothesized that the need for affiliation and the need for power should affect ingroup favoritism differently. More specifically, manipulating the need for power should lead to stronger ingroup favoritism than manipulating the need for affiliation. These hypotheses were tested in an experimental study with business administration students ($N = 81$). The results confirmed that participants in the need for power condition showed significantly more ingroup favoritism towards a relevant outgroup (i.e., economics students) than participants in the need for affiliation or the control condition.

A final aspect concerns the test of the generalizability of the model. It was proposed that the model should apply to *achieved* social identities where members *interact* personally on a regular basis. The present empirical findings were obtained in ‘task groups’ (Lickel et al., 2000) with a certain form of group development. However, there are several other kinds of social identities with specific properties (Deaux et al., 1995). Therefore, the generalizability of the model to other kinds of social groups remains to be further investigated.

5.4 Suggestions for future research

Building upon the present findings, future research should evaluate the model in other kinds of groups (e.g., sports teams, social movements) and in other forms of group development. As discussed above (see chapter 3) and in the group development literature (Tuckman, 1965; Worchel, 1998), the specific context of a group, such as the length of group life can be assumed to affect the time lags between the stages of group development. Thus, the variables influencing the time lags of the model need to be further explored. Moreover, the sensitivity of time lags to capture the underlying longitudinal processes in different forms of group development needs to be specified. In addition, further research needs to identify and test *moderators* affecting the longitudinal relationships within the model. Intergroup competition, for example, was argued to influence the longitudinal relationship between identification and ingroup favoritism. Individuals entering competitive groups should have already a strong focus on intergroup differentiation from the very beginning. Therefore, the presented research could be enriched by specifying determinants of the model’s generalizability (i.e., other kinds of groups and forms of group development).

In addition, future research could endorse the reported findings by reverting to different methods than self-reported data. The model proposed in this thesis implied that underlying motives are related to the predictors and consequences of identification. As outlined above (see section 5.3), the results from an experimental study (Eisenbeiss & Wodzicki, 2004) that directly tested the effects of manipulated motives on ingroup favoritism were in line with the hypotheses derived from the first two studies. In a similar way, future research might directly manipulate relevant variables of the change process during group development and investigate their impact on identification and ingroup

favoritism. In addition, further variables need to be identified that comprehensively reflect the change from interpersonal to intergroup concerns during group development (e.g., comparison foci changing from the interpersonal to the intergroup dimension).

5.5 Conclusion

This thesis developed a new perspective on social identification processes that has not been taken so far. The reported research provides a dynamic understanding of identification processes in social groups. Therefore, the social identity framework was integrated with assumptions about the general change processes in groups derived from models of group development. Three longitudinal studies were conducted to provide insights in the development of identification and its related predictors and consequences during group formation. The presented findings strongly emphasize the importance of considering dynamic processes over time. The results enrich existing approaches to social identification including SIT, optimal distinctiveness theory (Brewer, 1991, 1993), uncertainty reduction theory (Hogg, 2000), and theories addressing functions of identification (Aharpour & Brown, 2002; Deaux et al., 1999). As shown in the present thesis, these theories would strongly benefit from an integration of dynamic aspects.

REFERENCES

- Aberson, C. L., Healy, M., & Romero, V. (2000). Ingroup bias and self-esteem: A meta-analysis. *Personality and Social Psychology Review*, *4*, 157-173.
- Abrams, D., Ando, K., & Hinkle, S. (1998). Psychological attachment to the group: Cross-cultural differences in organizational identification and subjective norms as predictors of workers' turnover intentions. *Personality and Social Psychology Bulletin*, *24*, 1027-1039.
- Abrams, D. & Hogg, M. A. (1988). Comments on the motivational status of self-esteem in social identity and intergroup discrimination. *European Journal of Social Psychology*, *18*, 317-334.
- Aharpour, S. & Brown, R. J. (2002). Functions of group identification: An exploratory analysis. *Revue Internationale de Psychologie Sociale*, *15*, 157-186.
- Akaike, H. (1987). Factor analysis and AIC. *Psychometrika*, *52*, 317-332.
- Allen, N. J. & Meyer, J. P. (1990). The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of Occupational Psychology*, *63*, 1-18.
- Allport, G. W. (1954). *The nature of prejudice*. Oxford, England: Addison-Wesley.
- Anderson, J. C. & Gerbing, D. W. (1984). The effect of sampling error on convergence, improper solutions, and goodness-of-fit indices for maximum likelihood confirmatory factor analysis. *Psychometrika*, *49*, 155-173.
- Anderson, J. C. & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103*, 411-423.
- Anderson, N. & Ostroff, C. (1997). Selection as socialization. In N. Anderson & P. Herriot (Eds.), *International handbook of selection and assessment* (pp. 413-440). Chichester: Wiley and Sons.

- Anderson, N. & Thomas, H. D. C. (1996). Work Group Socialization. In M. A. West (Ed.), *Handbook of Work Group Psychology* (pp. 423-450). Chichester: John Wiley & Sons Ltd.
- Ashforth, B. E. & Johnson, S. A. (2001). Which hat to wear? The relative salience of multiple identities in organizational contexts. In M. A. Hogg & D. J. Terry (Eds.), *Social identity processes in organizational contexts* (pp. 31-48). Philadelphia: Psychology Press.
- Ashforth, B. E. & Mael, F. (1989). Social identity theory and the organization. *Academy of Management Review*, *14*, 20-39.
- Baker, R. W. & Siryk, B. (1984). Measuring adjustment to college. *Journal of Counseling Psychology*, *31*, 179-189.
- Bargh, J. A., Gollwitzer, P. M., Lee-Chai, A., Barndollar, K., & Troetschel, R. (2001). The automated will: Nonconscious activation and pursuit of behavioral goals. *Journal of Personality and Social Psychology*, *81*, 1014-1027.
- Bateman, T. S. & Strasser, S. (1984). A longitudinal analysis of the antecedents of organizational commitment. *Academy of Management Journal*, *27*, 95-112.
- Baumeister, R. F. & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*, 497-529.
- Baumgardner, A. H. (1990). To know oneself is to like oneself: Self-certainty and self-affect. *Journal of Personality and Social Psychology*, *58*, 1062-1072.
- Becker, T. E. & Billings, R. S. (1993). Profiles of commitment: An empirical test. *Journal of Organizational Behavior*, *14*, 177-190.
- Becker, T. E., Billings, R. S., Eveleth, D. M., & Gilbert, N. L. (1996). Foci and bases of employee commitment: Implications for job performance. *Academy of Management Journal*, *39*, 464-482.

- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*, 238-246.
- Bentler, P. M. (2000). Rites, wrongs, and gold in model testing. *Structural Equation Modeling*, *7*, 82-91.
- Bentler, P. M. & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*, *88*, 588-606.
- Bettencourt, A. B., Charlton, K., Eubanks, J., Kernahan, C., & Fuller, B. (1999). Development of collective self-esteem among students: Predicting adjustment to college. *Basic and Applied Social Psychology*, *21*, 213-222.
- Blanz, M., Mummendey, A., & Otten, S. (1995). Perceptions of relative group size and group status: effects on intergroup discrimination in negative evaluations. *European Journal of Social Psychology*, *25*, 231-247.
- Blau, G. J. (1985). The measurement and prediction of career commitment. *Journal of Occupational Psychology*, *58*, 277-288.
- Bollen, K. A. (1989). *Structural equations with latent variables*. Oxford: John Wiley & Sons.
- Bollen, K. A. (1990). Overall fit in covariance structure models: Two types of sample size effects. *Psychological Bulletin*, *107*, 256-259.
- Boomsma, A. (2000). Reporting analyses of covariance structures. *Structural Equation Modeling*, *7*, 461-483.
- Branscombe, N. & Ellemers, N. (1998). Coping with group-based discrimination: Individualistic versus group-level strategies. In J. K. Swim & C. Stangor (Eds.), *Prejudice: The target's perspective*. (pp. 243-266). San Diego, CA, US: Academic Press.
- Branscombe, N. R., Schmitt, M. T., & Harvey, R. D. (1999). Perceiving pervasive discrimination among African Americans: Implications for group identification and well-being. *Journal of Personality and Social Psychology*, *77*, 135-149.

- Branscombe, N. R. & Wann, D. L. (1994). Collective self-esteem consequences of outgroup derogation when a valued social identity is on trial. *European Journal of Social Psychology, 24*, 641-658.
- Brewer, M. B. (1991). The social self: On being the same and different at the same time. *Personality and Social Psychology Bulletin, 17*, 475-482.
- Brewer, M. B. (1993). The role of distinctiveness in social identity and group behavior. In M. A. Hogg & D. Abrams (Eds.), *Group motivation: Social psychological perspectives* (pp. 1-16). Hertfordshire, England: Harvester Wheatsheaf.
- Brewer, M. B. & Brown, R. J. (1998). Intergroup relations. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology*, (Vol. 2, 4th ed., pp. 554-594). New York, US: McGraw-Hill.
- Brewer, M. B. & Pickett, C. L. (1999). Distinctiveness motives as a source of the social self. In T. R. Tyler, R. M. Kramer, & O. P. John (Eds.), *The psychology of the social self* (pp. 71-87). Mahwah, NJ: Lawrence Erlbaum.
- Brewer, M. B. & Weber, J. G. (1994). Self-evaluation effects of interpersonal versus intergroup social comparison. *Journal of Personality and Social Psychology, 66*, 268-275.
- Brown, R. J. (2000). Social identity theory: Past achievements, current problems and future challenges. *European Journal of Social Psychology, 30*, 745-778.
- Brown, R. J., Condor, S., Matthews, A., & Wade, G. (1986). Explaining intergroup differentiation in an industrial organization. *Journal of Occupational Psychology, 59*, 273-286.
- Brown, R. J., Hinkle, S., Ely, P. G., Fox-Cardamone, L., Maras, P., & Taylor, L. A. (1992). Recognizing group diversity: Individualist-collectivist and autonomous-relational social orientations and their implications for intergroup processes. *British Journal of Social Psychology, 31*, 327-342.

- Brown, R. J. & Williams, J. (1984). Group identification: The same thing to all people? *Human Relations*, 37, 547-564.
- Browne, M. W. (1982). Covariance structures. In D. M. Hawkins (Ed.), *Topics in applied multivariate analysis* (pp. 72-141). New York: Cambridge University Press.
- Browne, M. W. & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). Newbury Park, CA: Sage Publications.
- Byrne, B. M. (1989). *A primer of LISREL: Basic applications and programming for confirmatory factor analytic models*. New York: Springer Verlag.
- Byrne, B. M., Shavelson, R. J., & Muthen, B. (1989). Testing for the equivalence of factor covariance and mean structures: The issue of partial measurement invariance. *Psychological Bulletin*, 105, 456-466.
- Byrne, D. (1961). Interpersonal attraction and attitude similarity. *Journal of Abnormal and Social Psychology*, 62, 713-715.
- Cassidy, C. & Trew, K. (2001). Assessing identity change: A longitudinal study of the transition from school to college. *Group Processes and Intergroup Relations*, 4, 49-60.
- Chatman, J. A. (1989). Improving interactional organizational research: A model of person-organization fit. *Academy of Management Review*, 14, 333-349.
- Chatman, J. A. (1991). Matching people and organizations: Selection and socialization in public accounting firms. *Administrative Science Quarterly*, 36, 459-484.
- Condor, S. (1996). Social identity and time. In W. P. Robinson (Ed.), *Social groups and identities. Developing the legacy of Henri Tajfel*. (pp. 285-315). Oxford: Butterworth Heinemann.
- Crowne, D. P. & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology*, 24, 349-354.

- Cudeck, R. & Browne, M. W. (1983). Cross-validation of covariance structures. *Multivariate Behavioral Research, 18*, 147-167.
- Dalessio, A. & Imada, A. S. (1984). Relationships between interview selection decisions and perceptions of applicant similarity to an ideal employee and self: A field study. *Human Relations, 37*, 67-80.
- Deaux, K. (1991). Social identities: Thoughts on structure and change. In R. C. Curtis (Ed.), *The relational self: Theoretical convergences in psychoanalysis and social psychology*. (pp. 77-93). New York, US: Guilford Press.
- Deaux, K. (1993). Reconstructing social identity. *Personality and Social Psychology Bulletin, 19*, 4-12.
- Deaux, K. (1996). Social identification. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 777-798). New York, US: The Guilford Press.
- Deaux, K. (2000). Models, meanings and motivations. In D. Capozza & R. J. Brown (Eds.), *Social identity processes. Trends in theory and research* (pp. 1-14). London: Sage.
- Deaux, K., Reid, A., Mizrahi, K., & Cotting, D. (1999). Connecting the person to the social: The functions of identification. In T. R. Tyler & R. Kramer (Eds.), *The psychology of the social self* (pp. 91-113). Mahwah, NJ: Lawrence Erlbaum Associates.
- Deaux, K., Reid, A., Mizrahi, K., & Ethier, K. A. (1995). Parameters of Social Identity. *Journal of Personality and Social Psychology, 68*, 280-291.
- Deschamps, J.-C. & Brown, R. J. (1983). Superordinate goals and intergroup conflict. *British Journal of Social Psychology, 22*, 189-195.
- Doosje, B., Branscombe, N. R., Spears, R., & Manstead, A. S. R. (1998). Guilty by association: When one's group has a negative history. *Journal of Personality and Social Psychology, 75*, 872-886.

- Doosje, B. & Ellemers, N. (1997). Stereotyping under threat: The role of group identification. In R. Spears, P. J. Oakes, N. Ellemers, & S. A. Haslam (Eds.), *The social psychology of stereotyping and group life* (pp. 257-272). Malden: Blackwell.
- Doosje, B., Ellemers, N., & Spears, R. (1995). Perceived intragroup variability as a function of group status and identification. *Journal of Experimental Social Psychology, 31*, 410-436.
- Doosje, B., Spears, R., & Ellemers, N. (2002). Social identity as both cause and effect: The development of group identification in response to anticipated and actual changes in the intergroup status hierarchy. *British Journal of Social Psychology, 41*, 57-76.
- Dutton, J. E., Dukerich, J. M., & Harquail, C. V. (1994). Organizational images and member identification. *Administrative Science Quarterly, 39*, 239-263.
- Eisenbeiss, K. K. & Otten, S. (2004). *When do employees identify? An analysis of cross-sectional and longitudinal predictors of training group and organizational identification*. Manuscript submitted for publication.
- Eisenbeiss, K. K. & Wodzicki, K. (2004). Unpublished data. University of Jena.
- Ellemers, N. (1993). The influence of socio-structural variables on identity management strategies. In W. Stroebe & M. Hewstone, (Eds.) *European Review of Social Psychology* (pp. 27-57). Chichester: John Wiley and Sons.
- Ellemers, N., de Gilder, D., & van den Heuvel, H. (1998). Career-oriented versus team-oriented commitment and behavior at work. *Journal of Applied Psychology, 83*, 717-730.
- Ellemers, N., Kortekaas, P., & Ouwerkerk, J. W. (1999). Self-categorisation, commitment to the group and group self-esteem as related but distinct aspects of social identity. *European Journal of Social Psychology, 29*, 371-389.
- Ellemers, N., Spears, R., & Doosje, B. (1997). Sticking together or falling apart: Ingroup identification as a psychological determinant of group commitment versus individual mobility. *Journal of Personality and Social Psychology, 72*, 617-626.

- Ellemers, N., Spears, R., & Doosje, B. (2002). Self and social identity. *Annual Review of Psychology, 53*, 161-186.
- Ellemers, N., Wilke, H., & Van Knippenberg, A. (1993). Effects of the legitimacy of low group or individual status on individual and collective identity enhancement strategies. *Journal of Personality and Social Psychology, 64*, 766-778.
- Feldman, D. C. (1976). A contingency theory of socialization. *Administrative Science Quarterly, 21*, 433-452.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*, 117-140.
- Festinger, L., Schachter, S., & Back, K. (1950). *Social pressures in informal groups*. New York: Harper and Row.
- Fiske, S. T. & Taylor, S. E. (1991). *Social cognition*. (2 ed.) New York: McGraw-Hill.
- Forsyth, D. R., Elliott, T. R., & Welsh, J. A. (1991, June). *Multidimensional model of the functions of groups*. Paper presented at the third annual meeting of the American Psychological Society, Washington, DC.
- George, J. M. & Jones, G. R. (2002). *Understanding and managing organizational behavior*. (3rd ed.) Upper Saddle River, NJ: Prentice Hall.
- Gerbing, D. W. & Anderson, J. C. (1993). Monte Carlo evaluations of goodness-of-fit indices for structural equation models. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 40-65). Newbury Park, CA.: Sage Publications.
- Gorenflo, D. W. & Crano, W. D. (1989). Judgmental subjectivity/objectivity and locus of choice in social comparison. *Journal of Personality and Social Psychology, 57*, 605-614.
- Grace, J. B. (2003). Comparing groups using structural equations. In B. H. Pugesek, A. Tomer, & A. van Eye (Eds.), *Structural Equation Modeling. Applications in ecological and evolutionary biology* (pp. 281-296). Cambridge: University Press.

- Greenwald, A. G., Pratkanis, A. R., Leippe, M. R., & Baumgardner, M. H. (1986). Under what conditions does theory obstruct research progress? *Psychological Review*, *93*, 216-229.
- Grieve, P. G. & Hogg, M. A. (1999). Subjective uncertainty and intergroup discrimination in the minimal group situation. *Personality and Social Psychology Bulletin*, *25*, 926-940.
- Hackett, R. D., Lapierre, L. M., & Hausdorf, P. A. (2001). Understanding the links between work commitment constructs. *Journal of Vocational Behavior*, *58*, 392-413.
- Hackman, R. J. & Oldham, G. R. (1975). Development of the Job Diagnostic Survey. *Journal of Applied Psychology*, *60*, 159-170.
- Haslam, A., Oakes, P. J., Turner, J. C., & McGarty, C. (1995). Social categorization and group homogeneity: Changes in the perceived applicability of stereotype content as a function of comparative context and trait favourableness. *British Journal of Social Psychology*, *34*, 139-160.
- Hawk, E. J. & Sheridan, G. J. (1999). The right staff. *Management Review*, *88*, 43-48.
- Hewstone, M., Rubin, M., & Willis, H. (2002). Intergroup Bias. *Annual Review of Psychology*, *53*, 575-604.
- Hinkle, S. & Brown, R. J. (1990). Intergroup comparisons and social identity: Some links and lacunae. In D. Abrams & M. A. Hogg (Eds.), *Social identity theory: Constructive and critical advances* (pp. 48-70). New York: Harvester Wheatsheaf.
- Hinkle, S., Taylor, L. A., Fox-Cardamone, D. L., & Crook, K. F. (1989). Intragroup identification and intergroup differentiation: A multicomponent approach. *British Journal of Social Psychology*, *28*, 305-317.
- Hogg, M. A. (1987). Social identity and group cohesiveness. In J. C. Turner, M. A. Hogg, P. J. Oakes, S. D. Reicher, & M. S. Wetherell (Eds.), *Rediscovering the social group: A Self-categorization theory* (pp. 89-116). Oxford & New York: Blackwell.

- Hogg, M. A. (1992). *The social psychology of group cohesiveness: From attraction to social identity*. London: Harvester Wheatsheaf.
- Hogg, M. A. (2000). Subjective uncertainty reduction through self-categorization: A motivational theory of social identity processes. In W. Stroebe & M. Hewstone (Eds.), *European Review of Social Psychology* (pp. 223-255). Chichester: John Wiley & Sons.
- Hogg, M. A. & Abrams, D. (1990). Social motivation, self-esteem and social identity. In D. Abrams & M. A. Hogg (Eds.), *Social identity theory: Constructive and critical advances* (pp. 28-47). New York: Springer Verlag.
- Hogg, M. A. & Abrams, D. (1993). Towards a single-process uncertainty-reduction model of social motivation in groups. In M. A. Hogg & D. Abrams (Eds.), *Group motivation: Social psychological perspectives* (pp. 173-190). New York: Harvester-Wheatsheaf.
- Hogg, M. A., Cooper-Shaw, L., & Holzworth, D. W. (1993). Group prototypicality and depersonalized attraction in small interactive groups. *Personality and Social Psychology Bulletin*, 19, 452-465.
- Hogg, M. A. & Grieve, P. G. (1999). Social identity theory and the crisis of confidence in social psychology: A commentary, and some research on uncertainty reduction. *Asian Journal of Social Psychology*, 2, 79-93.
- Hogg, M. A. & Hains, S. C. (1996). Intergroup relations and group solidarity: Effects of group identification and social beliefs on depersonalized attraction. *Journal of Personality and Social Psychology*, 70, 295-309.
- Hogg, M. A. & Hains, S. C. (1998). Friendship and group identification: A new look at the role of cohesiveness in groupthink. *European Journal of Social Psychology*, 28, 323-341.
- Hogg, M. A., Hains, S. C., & Mason, I. (1998). Identification and leadership in small groups: Salience, frame of reference, and leader stereotypicality effects on leader evaluations. *Journal of Personality and Social Psychology*, 75, 1248-1263.

- Hogg, M. A. & Hardie, E. A. (1991). Social attraction, personal attraction, and self-categorization: A field study. *Personality and Social Psychology Bulletin*, 17, 175-180.
- Hogg, M. A. & Hardie, E. A. (1992). Prototypicality, conformity and depersonalized attraction: A self-categorization analysis of group cohesiveness. *British Journal of Social Psychology*, 31, 41-56.
- Hogg, M. A. & Mullin, B.-A. (1999). Joining groups to reduce uncertainty: Subjective uncertainty reduction and group identification. In D. Abrams & M. A. Hogg (Eds.), *Social identity and social cognition* (pp. 249-279). Oxford: Blackwell.
- Hogg, M. A. & Terry, D. J. (2000). Social identity and self-categorization processes in organizational contexts. *Academy of Management Review*, 25, 121-140.
- Hogg, M. A. & Terry, D. J. (2001). *Social identity processes in organizational contexts*. Philadelphia: Psychology Press.
- Hogg, M. A. & Turner, J. C. (1985). Interpersonal attraction, social identification and psychological group formation. *European Journal of Social Psychology*, 15, 51-66.
- Hogg, M. A. & Turner, J. C. (1987). Intergroup behavior, self-stereotyping and the salience of social categories. *British Journal of Social Psychology*, 26, 325-340.
- Hornsey, M. J. & Hogg, M. A. (1999). Subgroup differentiation as a response to an overly-inclusive group: A test of optimal distinctiveness theory. *European Journal of Social Psychology*, 29, 543-550.
- Howell, D. C. (1997). *Statistical methods for psychology*. (4th ed.) Belmont, CA: Wadsworth Publishing Company.
- Hu, L.-T. & Bentler, P. M. (1995). Evaluating model fit. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 76-99). Thousand Oaks, CA: Sage Publications.
- Hu, L.-T. & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods*, 3, 424-453.

- Hu, L.-T. & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55.
- Jackson, J. W. (2002). Intergroup attitudes as a function of different dimensions of group identification and perceived intergroup conflict. *Self and Identity, 11-33*.
- Jackson, J. W. & Smith, E. R. (1999). Conceptualizing social identity: A new framework and evidence for the impact of different dimensions. *Personality and Social Psychology Bulletin, 25*, 120-135.
- Jetten, J., Branscombe, N. R., Schmitt, M. T., & Spears, R. (2001). Rebels with a cause: Group identification as a response to perceived discrimination from the mainstream. *Personality and Social Psychology Bulletin, 27*, 1204-1213.
- Jetten, J., Branscombe, N. R., & Spears, R. (2002). On being peripheral: Effects of identity insecurity on personal and collective self-esteem. *European Journal of Social Psychology, 32*, 105-123.
- Jetten, J., O'Brien, A., & Trindall, N. (2002). Changing identity: Predicting adjustment to organizational restructure as a function of subgroup and superordinate identification. *British Journal of Social Psychology, 41*, 281-297.
- Jetten, J., Spears, R., & Manstead, A. S. R. (1996). Intergroup norms and intergroup discrimination: Distinctive self-categorization and social identity effects. *Journal of Personality and Social Psychology, 71*, 1222-1233.
- Jetten, J., Spears, R., & Manstead, A. S. R. (1997). Distinctiveness threat and prototypicality: Combined effects on intergroup discrimination and collective self-esteem. *European Journal of Social Psychology, 27*, 635-657.
- Joinson, A. (1999). Social desirability, anonymity, and internet-based questionnaires. *Behavior Research Methods, Instruments & Computers, 31*, 433-438.

- Jöreskog, K. G. (1982). Analysis of covariance structures. In C. Fornell (Ed.), *A second generation of multivariate analysis: Vol. 1. Methods* (pp. 200-242). New York: Praeger.
- Jöreskog, K. G. (1993). Testing structural equation models. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 294-316). Newbury Park: Sage Publications.
- Jöreskog, K. G. & Sörbom, D. (1984). *LISREL-VI user's guide*. (3 ed.) Mooresville, IN: Scientific Software.
- Karasawa, M. (1991). Toward an assessment of social identity: The structure of group identification and its effects on ingroup evaluations. *British Journal of Social Psychology*, *30*, 293-307.
- Kashima, E. S., Kashima, Y., & Hardie, E. A. (2000). Self-typicality and group identification: Evidence for their separateness. *Group Processes and Intergroup Relations*, *3*, 97-110.
- Kelly, C. & Breinlinger, S. (1996). *The social psychology of collective action: Identity, injustice and gender*. London: Taylor and Francis.
- Kessler, T. & Mummendey, A. (2001). Is there any scapegoat around? Determinants of intergroup conflicts at different categorization levels. *Journal of Personality and Social Psychology*, *81*, 1090-1102.
- Kline, R. B. (1998). *Principles and practice of structural equation modeling*. New York: Guilford Press.
- Kramer, R. M. (1998). Paranoid cognition in social systems: Thinking and acting in the shadow of doubt. *Personality and Social Psychology Review*, *2*, 251-275.
- Kreiner, G. E. & Ashforth, B. E. (2004). Evidence toward an expanded model of organizational identification. *Journal of Organizational Behavior*, *25*, 1-27.
- Kruglanski, A. W. & Webster, D. M. (1996). Motivated closing of the mind: "Seizing" and "freezing". *Psychological Review*, *103*, 263-283.

- Lee, S. & Hershberger, S. (1990). A simple rule for generating equivalent models in covariance structure modeling. *Multivariate Behavioral Research*, 25, 313-334.
- Levine, J. M. & Moreland, R. L. (1994). Group socialization: Theory and research. In W. Stroebe & M. Hewstone (Eds.), *European Review of Social Psychology* (pp. 305-336). Chichester: John Wiley & Sons.
- Lewin, K. (1948). *Resolving social conflicts*. New York: Harper & Row.
- Lickel, B., Hamilton, D. L., Wierzchowska, G., Lewis, A., Sherman, S. J., & Uhles, A. N. (2000). Varieties of groups and the perception of group entitativity. *Journal of Personality and Social Psychology*, 78, 223-246.
- Little, T. D., Lindenberger, U., & Maier, H. (2000). Selectivity and generalizability in longitudinal research: On the effects of continuers and dropouts. In T. D. Little, K. U. Schnabel, & J. Baumert (Eds.), *Modeling longitudinal and multilevel data* (pp. 187-200). Mahwah: Lawrence Erlbaum.
- Loehlin, J. C. (1992). *Latent variable models: An introduction to factor, path, and structural analysis*. Hillsdale, NJ: Erlbaum.
- Long, J. S. (1983). *Covariance structure models: An introduction to LISREL*. Beverly Hills, CA: Sage Publications.
- Lott, A. J. & Lott, B. E. (1965). Group cohesiveness as interpersonal attraction: A review of relationships with antecedent and consequent variables. *Psychological Bulletin*, 64, 259-309.
- Louis, M. R. (1980). Surprise and sense making: What newcomers experience in entering unfamiliar organizational settings. *Administrative Science Quarterly*, 25, 226-251.
- MacCallum, R. C. (1986). Specification searches in covariance structure modeling. *Psychological Bulletin*, 100, 107-120.
- MacCallum, R. C. (1990). The need for alternative measures of fit in covariance structure modeling. *Multivariate Behavioral Research*, 25, 157-162.

- MacCallum, R. C. & Austin, J. T. (2000). Applications of structural equation modeling in psychological research. *Annual Review of Psychology, 51*, 201-226.
- Mael, F. A. & Ashforth, B. E. (1992). Alumni and their alma mater: A partial test of the reformulated model of organizational identification. *Journal of Organizational Behavior, 13*, 103-123.
- Mael, F. A. & Ashforth, B. E. (1995). Loyal from day one: Biodata, organizational identification, and turnover among newcomers. *Personnel Psychology, 48*, 309-333.
- Mael, F. A. & Ashforth, B. E. (2001). Identification in work, war, sports, and religion: Contrasting the benefits and risks. *Journal for the Theory of Social Behavior, 31*, 197-222.
- Mael, F. A. & Tetrick, L. E. (1992). Identifying organizational identification. *Educational and Psychological Measurement, 52*, 813-824.
- Maruyama, G. M. (1998). *Basics of structural equation modeling*. Thousand Oaks, CA: Sage Publications.
- Marsh, H. W., Balla, J. R., & McDonald, R. P. (1988). Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size. *Psychological Bulletin, 103*, 391-410.
- Marsh, H. W. & Hocevar, D. (1985). Application of confirmatory factor analysis to the study of self-concept: First- and higher order factor models and their invariance across groups. *Psychological Bulletin, 97*, 562-582.
- Mathieu, J. E. & Zajac, D. M. (1990). A review and meta-analysis of the antecedents, correlates, and the consequences of organizational commitment. *Psychological Bulletin, 108*, 171-194.
- McClelland, D. C. (1987). *Human motivation*. New York, US: Cambridge University Press.
- McDonald, R. P. & Marsh, H. W. (1990). Choosing a multivariate model: Noncentrality and goodness of fit. *Psychological Bulletin, 107*, 247-255.

- McGarty, C. (1999). *Categorization in social psychology*. London: Sage.
- Meyer, J. P. & Allen, N. J. (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review, 1*, 61-89.
- Meyer, J. P. & Allen, N. J. (1997). *Commitment in the workplace: Theory, research, and application*. Thousand Oaks, CA: Sage.
- Meyer, J. P., Bobocel, D. R., & Allen, N. J. (1991). Development of organizational commitment during the first year of employment: A longitudinal study of pre- and post-entry influences. *Journal of Management, 17*, 717-733.
- Meyer, J. P., Stanley, D. J., Herscovitch, L., & Topolnytsky, L. (2002). Affective, continuance, and normative commitment to the organization: A meta-analysis of antecedents, correlates and consequences. *Journal of Vocational Behavior, 61*, 20-52.
- Moreland, R. L. (1985). Social categorization and the assimilation of "new" group members. *Journal of Personality and Social Psychology, 48*, 1173-1190.
- Morrow, P. C. & Wirth, R. E. (1989). Work commitment among salaried professionals. *Journal of Vocational Behavior, 34*, 40-56.
- Mowday, R. T., Steers, R. M., & Porter, L. W. (1979). The measurement of organizational commitment. *Journal of Vocational Behavior, 14*, 224-247.
- Mowday, R. T., Porter, L. W., & Steers, R. M. (1982). *Employee-organization linkages. The psychology of commitment, absenteeism, and turnover*. New York: Academic Press.
- Mueller, C. W. & Lawler, E. J. (1999). Commitment to nested organizational units: Some basic principles and preliminary findings. *Social Psychology Quarterly, 62*, 325-346.
- Mulaik, S. A., James, L. R., Van Alstine, J., Bennett, N., Lind, S., & Stilwell, C. D. (1989). Evaluation of Goodness-of-Fit indices for structural equation models. *Psychological Bulletin, 105*, 430-445.

- Mulaik, S. A. & Millsap, R. E. (2000). Doing the four-step right. *Structural Equation Modeling, 7*, 36-73.
- Mulder, M., Veen, P., Hartsuiker, D., & Westerduin, T. (1971). Cognitive processes in power equalisation. *European Journal of Social Psychology, 1*, 107-130.
- Mullen, B., Brown, R., & Smith, C. (1992). Ingroup bias as a function of salience, relevance, and status: An integration. *European Journal of Social Psychology, 22*, 103-122.
- Mullin, B.-A. & Hogg, M. A. (1998). Dimensions of subjective uncertainty in social identification and minimal intergroup discrimination. *British Journal of Social Psychology, 37*, 345-365.
- Mummendey, A. (1995). Positive distinctiveness and social discrimination: An old couple living in divorce. *European Journal of Social Psychology, 25*, 657-670.
- Mummendey, A., Klink, A., & Brown, R. (2001). Nationalism and patriotism: National identification and outgroup rejection. *British Journal of Social Psychology, 40*, 159-172.
- Mummendey, A. & Otten, S. (1998). Positive-negative asymmetry in social discrimination. In W. Stroebe & M. Hewstone (Eds.), *European Review of Social Psychology*, (pp. 107-143). Chichester: Wiley.
- Nesselroade, J. R. (1991). Interindividual differences in intraindividual change. In L. M. Collins & J. L. Horn (Eds.), *Best methods for the analysis of change: Recent advances, unanswered questions, future directions* (pp. 92-105). Washington, DC: American Psychological Association.
- Newcomb, T. M. (1956). The prediction of interpersonal attraction. *American Psychologist, 11*, 575-586.
- Noel, J. G., Wann, D. L., & Branscombe, N. R. (1995). Peripheral ingroup membership status and public negativity toward outgroups. *Journal of Personality and Social Psychology, 68*, 127-137.

- Ouwerkerk, J. W. & Ellemers, N. (2002). The benefits of being disadvantaged: Performance-related circumstances and consequences of intergroup comparisons. *European Journal of Social Psychology*, 32, 73-91.
- Ouwerkerk, J. W., Ellemers, N., & de Gilder, D. (1999). Group commitment and individual effort in experimental and organizational contexts. In N. Ellemers & R. Spears (Eds.), *Social identity: Context, commitment, content* (pp. 184-204). Oxford: Blackwell.
- Park, B., Kraus, S., & Ryan C.S. (1997). Longitudinal changes in consensus as a function of acquaintance and agreement in liking. *Journal of Personality and Social Psychology*, 72, 604-616.
- Phinney, J. S. (2003). Ethnic identity and acculturation. In K. M. Chun, P. B. Organista, & G. Marin (Eds.), *Acculturation: Advances in theory, measurement, and applied research* (pp. 63-81). Washington, DC: American Psychological Association.
- Postmes, T. & Spears, R. (2000). Redefining the cognitive redefinition of the group: Deindividuation effects in common bond vs. common identity groups. In T. Postmes, R. Spears, M. Lea, & S. D. Reicher (Eds.), *SIDE issues centre stage: recent developments in studies of de-individuation in groups* (pp. 63-77). Amsterdam: Koninklijke Nederlandse Akademie van Wetenschappen.
- Pratt, M. G. (1998). To be or not to be? Central questions in organizational identification. In D. A. Whetten & P. C. Godfrey (Eds.), *Identity in organizations: Building theory through conversations* (pp. 171-207). Thousand Oaks, CA: Sage.
- Prentice, D. A., Miller, D. T., & Lightdale, J. R. (1994). Asymmetries in attachments to groups and to their members: Distinguishing between common-identity and common-bond groups. *Personality and Social Psychology Bulletin*, 20, 484-493.
- Reade, C. (2001). Antecedents of organizational identification in multinational corporations: fostering psychological attachment to the local subsidiary and the global organization. *International Journal of Human Resource Management*, 12, 1269-1291.

- Reichers, A. E. (1985). A review and reconceptualization of organizational commitment. *Academy of Management Review, 10*, 465-476.
- Rousseau, D. M. (1998). Why workers still identify with organizations. *Journal of Organizational Behavior, 19*, 217-233.
- Rubin, M. & Hewstone, M. (1998). Social identity theory's self-esteem hypothesis: A review and some suggestions for clarification. *Personality and Social Psychology Review, 2*, 40-62.
- Ryan, C. S. & Bogart, L. M. (2001). Longitudinal changes in the accuracy of new group members' ingroup and outgroup stereotypes. *Journal of Experimental Social Psychology, 37*, 118-133.
- Schachter, S. Ellertson, N., McBride, D., & Gregory, D. (1951). An experimental study of cohesiveness and productivity. *Human Relations, 4*, 229-238.
- Schmitt, M. T. & Branscombe, N. R. (2001). The good, the bad, and the manly: Threats to one's prototypicality and evaluations of fellow ingroup members. *Journal of Experimental Social Psychology, 37*, 510-517.
- Schmitt, M. T. & Branscombe, N. R. (2002). The meaning and consequences of perceived discrimination in disadvantaged and privileged social groups. In W. Stroebe & M. Hewstone (Eds.), *European Review of Social Psychology* (pp. 167-199). Chichester: John Wiley & Sons.
- Schneider, B., Kristof-Brown, A., Goldstein, H. W., & Smith, D. B. (1997). What is this thing called fit? In N. Anderson & P. Herriot (Eds.), *International Handbook of Selection and Assessment* (pp. 393-412). Chichester: John Wiley and Sons.
- Schultheiss, O. C. & Brunstein, J. C. (1999). Goal imagery: Bridging the gap between implicit motives and explicit goals. *Journal of Personality, 67*, 1-38.
- Schultz, D. P. & Schultz, S. E. (1998). *Psychology and work today: An introduction to industrial and organizational psychology* (7th ed.). Upper Saddle River, NJ: Prentice Hall.

- Schumacker, R. E. & Lomax, R. G. (1996). *A beginner's guide to structural equation modeling*. Mahwah, NJ: Erlbaum.
- Sedikides, C. & Strube, M. J. (1995). The multiply motivated self. *Personality and Social Psychology Bulletin*, 21, 1330-1335.
- Sheldon, K. M. & Bettencourt, B. A. (2002). Psychological need-satisfaction and subjective well-being within social groups. *British Journal of Social Psychology*, 41, 25-38.
- Simon, B., Loewy, M., Stuermer, S., Weber, U., Freytag, P., Habig, C., Kampmeier, C., & Spahlinger, P. (1998). Collective identification and social movement participation. *Journal of Personality and Social Psychology*, 74, 646-658.
- Simon, B. & Massau, C. (1991). Soziale Identifikation, Eigengruppen-Favorisierung und Selbst-Stereotypisierung: Der Fall Oskar Lafontaine und die Saarländer. / Social identification, ingroup favoritism, and self-stereotyping: The case of Oskar Lafontaine and the people of the Saarland. *Zeitschrift fuer Sozialpsychologie*, 22, 193-207.
- Simon, B., Pantaleo, G., & Mummendey, A. (1995). Unique individual or interchangeable group member? The accentuation of intragroup differences versus similarities as an indicator of the individual self versus the collective self. *Journal of Personality and Social Psychology*, 69, 106-119.
- Spears, R. (2001). The interaction between the individual and the collective self: Self-categorization in context. In C. Sedikides & M. B. Brewer (Eds.), *Individual self, relational self, collective self* (pp. 171-198). Philadelphia, PA, US: Psychology Press.
- Spears, R., Doosje, B., & Ellemers, N. (1997). Self-stereotyping in the face of threats to group status and distinctiveness: The role of group identification. *Personality and Social Psychology Bulletin*, 23, 538-553.
- Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research*, 25, 173-180.

- Steiger, J. H., Shapiro, A., & Browne, M. W. (1985). On the multivariate asymptotic distribution of sequential chi-square statistics. *Psychometrika*, *50*, 253-264.
- Tabachnick, B. G. & Fidell, L. S. (1996). *Using multivariate statistics* (3rd ed.) New York: HarperCollins Publishers.
- Tajfel, H. (1978). *Differentiation between social groups*. London: Academic Press.
- Tajfel, H. (1981). *Human groups and social categories*. Cambridge, UK: Cambridge University Press.
- Tajfel, H., Billig, M. G., Bundy, R. P., & Flament, C. (1971). Social categorization and intergroup behavior. *European Journal of Social Psychology*, *1*, 149-178.
- Tajfel, H. & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 33-47). Monterey, CA: Brooks-Cole.
- Tajfel, H. & Turner, J. C. (1986). The social identity theory of intergroup behavior. In S. Worchel & W. G. Austin (Eds.), *Psychology of intergroup relations* (pp. 7-24). Chicago: Nelson-Hall.
- Taylor, D. M. & Doria, J. R. (1981). Self-serving and group-serving bias in attribution. *Journal of Social Psychology*, *113*, 201-211.
- Taylor, D. M. & McKirnan, D. J. (1984). A five-stage model of intergroup relations. *British Journal of Social Psychology*, *23*, 291-300.
- Terry, D. J., Carey, C. J., & Callan, V. J. (2001). Employee adjustment to an organizational merger: An intergroup perspective. *Personality and Social Psychology Bulletin*, *27*, 267-280.
- Terry, D. J. & Hogg, M. A. (1996). Group norms and the attitude-behavior relationship: A role for group identification. *Personality and Social Psychology Bulletin*, *22*, 776-793.

- Tucker, L. R. & Lewis, C. (1973). A reliability coefficient for maximum likelihood analysis. *Psychometrika*, 38, 1-10.
- Tuckman, B. W. (1965). Developmental sequence in small groups. *Psychological Bulletin*, 63, 384-399.
- Turner, J. C. (1991). *Social influence*. Pacific Grove, CA: Brooks/ Cole
- Turner, J. C. (1999). Some current issues in research on social identity and self-categorization theories. In N. Ellemers, R. Spears, & B. Doosje (Eds.), *Social identity: Context, commitment, content*. (pp. 6-34). Oxford, UK: Blackwell.
- Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Wetherell, M. S. (1987). *Rediscovering the social group: A self-categorization theory*. Oxford, UK: Basil Blackwell.
- Turner, J. C., Oakes, P. J., Haslam, S. A., & McGarty, C. (1994). Self and collective: Cognition and social context. *Personality and Social Psychology Bulletin*, 20, 454-463.
- Turner, J. C. & Reynolds, K. J. (2001). The social identity perspective in intergroup relations: Theories, themes, and controversies. In R. J. Brown & S. Gaertner (Eds.), *Blackwell Handbook of Social Psychology* (pp. 133-152). Malden, MA, USA: Blackwell.
- Tyler, T. R. (1999). Why people cooperate with organizations: An identity-based perspective. *Research in Organizational Behavior*, 21, 201-246.
- Ullrich-de-Muynck, R. & Ullrich, R. (1977). *Der Unsicherheitsfragebogen*. München: Pfeiffer.
- Vandenberg, R. J. & Scarpello, V. (1994). A longitudinal assessment of the determinant relationship between employee commitments to the occupation and the organization. *Journal of Organizational Behavior*, 15, 535-547.
- Van Knippenberg, D. (2000). Work motivation and performance: A social identity perspective. *Applied Psychology: An international perspective*, 49, 357-371.

- Van Knippenberg, D. & Sleebos, E. (1999). *Further explorations of the organizational identification concept: Identification versus commitment*. Unpublished manuscript, University of Amsterdam.
- Van Knippenberg, D. & Van Schie, E. C. M. (2000). Foci and correlates of organizational identification. *Journal of Occupational and Organizational Psychology*, 73, 137-147.
- Veenstra, K. & Haslam, S. A. (2000). Willingness to participate in industrial protest: Exploring social identification in context. *British Journal of Social Psychology*, 39, 153-172.
- Wann, D. L., Peterson, R. R., Cothran, C., & Dykes, M. (1999). Sport fan aggression and anonymity: The importance of team identification. *Social Behavior and Personality*, 27, 597-602.
- Wanous, J. P. (1992). *Organizational entry: Recruitment, selection, orientation and socialization of newcomers*. MA: Addison-Wesley.
- Wanous, J. P., Poland, T. D., Premack, S. L., & Davis, K. S. (1992). The effect of met expectations on newcomer attitudes and behaviors: A review and meta-analysis. *Journal of Applied Psychology*, 77, 288-297.
- Weber, U., Mummendey, A., & Waldzus, S. (2002). Perceived legitimacy of intergroup status differences: Its prediction by relative ingroup prototypicality. *European Journal of Social Psychology*, 32, 449-470.
- Wheaton, B., Muthen, B., Alwin, D. F., & Summers, G. F. (1977). Assessing reliability and stability in panel models. In D. R. Heise (Ed.), *Sociological methodology* (pp. 84-136). San Francisco: Jossey-Bass.
- Wheelan, S. A. (1994). *Group processes: A developmental perspective*. Needham Heights, MA: Allyn and Bacon.
- Worchel, S. (1996). Emphasizing the social nature of groups in a developmental framework. In J. L. Nye & A. M. Brower (Eds.), *What's social about social cognition? Research*

on socially shared cognition in small groups (pp. 261-282). Thousand Oaks, CA, US: Sage Publications.

Worchel, S. (1998). Establishing group identity: A developmental view of the search for group identity. In S. Worchel, F. J. Morales, D. Paez, & J.-C. Deschamps (Eds.), *Social identity: International perspectives* (pp. 53-74). London: Sage Publications.

Worchel, S., Coutant-Sassic, D., & Grossman, M. (1992). A developmental approach to group dynamics: A model and illustrative research. In S. Worchel & W. Wood (Eds.), *Group process and productivity* (pp. 181-202). Thousand Oaks, CA, US: Sage Publications; Thousand Oaks, CA, US: Sage Publications.

Zaccaro, S. J. & Dobbins, G. H. (1989). Contrasting group and organizational commitment: Evidence for differences among multilevel attachments. *Journal of Organizational Behavior*, 10, 267-273.

APPENDIX

Table 2. Cross-sectional correlations between identification and the other variables at T1
($N = 135$)

| Variables | 1. | 2. | 3. | 4. |
|-----------------------------|--------|------|-----|------|
| 1. Identification | | | | |
| 2. Uncertainty | -.29** | | | |
| 3. Self-prototypicality | .23** | .07 | | |
| 4. Interpersonal attraction | .24** | -.13 | .08 | |
| 5. Ingroup favoritism | -.15 | .01 | .01 | -.17 |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3. Cross-sectional correlations between identification and the other variables at T2
($N = 135$)

| Variables | 1. | 2. | 3. | 4. |
|-----------------------------|--------|-------|-------|------|
| 1. Identification | | | | |
| 2. Uncertainty | -.27** | | | |
| 3. Self-prototypicality | .43*** | -.11 | | |
| 4. Interpersonal attraction | .39*** | -.19* | .26** | |
| 5. Ingroup favoritism | .01 | .08 | .05 | -.16 |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4. Cross-sectional correlations between identification and the other variables at T3
($N = 135$)

| Variables | 1. | 2. | 3. | 4. |
|-----------------------------|--------|-------|--------|------|
| 1. Identification | | | | |
| 2. Uncertainty | -.25** | | | |
| 3. Self-prototypicality | .52*** | -.10 | | |
| 4. Interpersonal attraction | .39*** | -.19* | .40*** | |
| 5. Ingroup favoritism | .18* | .12 | .20* | -.14 |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 6. Comparison of nested models

| Model ^a | χ^2 | df | p | χ^2/df | RMR | AIC | CFI | GFI | RMSEA | $\Delta\chi^2$ |
|--------------------|--------------|-----------|------------|-------------|------------|---------------|------------|------------|------------|--------------------|
| A0 | 1015.55 | 105 | .00 | 9.67 | .21 | 1045.55 | .00 | .44 | .25 | |
| A1 | 107.89 | 58 | .00 | 1.86 | .07 | 231.89 | .95 | .91 | .08 | A1-A0 907.66*** |
| A2 | 107.68 | 56 | .00 | 1.92 | .07 | 235.68 | .94 | .91 | .08 | A1-A2 .21 |
| A3 | 107.39 | 57 | .00 | 1.88 | .07 | 233.39 | .95 | .91 | .08 | A1-A3 .50 |
| A4 | 83.29 | 55 | .01 | 1.51 | .05 | 213.29 | .97 | .93 | .06 | |
| B1 | 71.80 | 33 | .00 | 2.18 | .07 | 161.80 | .95 | .93 | .09 | |
| B2 | 47.19 | 30 | .02 | 1.57 | .04 | 143.19 | .98 | .95 | .065 | B1-B2 24.61** |
| B3 | 46.79 | 29 | .02 | 1.61 | .04 | 144.79 | .98 | .95 | .07 | B2-B3 .40 |
| B4 | 57.32 | 31 | .00 | 1.85 | .04 | 151.32 | .97 | .94 | .08 | B4-B2 10.13** |
| B5 | 48.64 | 33 | .04 | 1.47 | .04 | 138.65 | .98 | .95 | .06 | B5-B2 1.45 |
| C1 | 45.74 | 28 | .02 | 1.63 | .04 | 145.74 | .98 | .95 | .07 | B2-C1 1.45 |
| C2 | 29.32 | 15 | .02 | 1.96 | .02 | 155.32 | .98 | .97 | .08 | B2-C2 17.87 |
| C3 | 94.73 | 39 | .00 | 2.43 | .09 | 172.73 | .93 | .90 | .10 | C3-B2 47.54*** |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

^a Model A0: Independence Model

Model A1: Hypothesized model with cross-lagged paths from uncertainty to identification and from int. attraction to identification (T2-T3) constrained to 0

Model A2: Model with cross-lagged paths from uncertainty to identification freed

Model A3: Model with cross-lagged paths from int. attraction to identification (T2-T3) freed

Model A4: Revised model

Model B1: Model with uncertainty excluded

Model B2: Revised model

Model B3: Model B2 with cross-lagged paths from int. attraction to identification (T2-T3) freed

Model B4: Model B2 with equality constraint on cross-lagged paths between identification and ingroup favoritism over time

Model B5: Model B2 with equality constraints on cross-lagged paths

Model C1: Alternative theoretical model

Model C2: Model including all time-adjacent cross-lagged paths

Model C3: Model excluding all cross-lagged paths

Table 10. Cross-sectional correlations between identification and the other variables at T1
($N = 103$, two-tailed testing)

| Variables | 1. | 2. | 3. | 4. |
|-----------------------------|--------|------|------|------|
| 1. Identification | | | | |
| 2. Uncertainty | -.20* | | | |
| 3. Self-prototypicality | .39*** | .11 | | |
| 4. Interpersonal attraction | .19 | -.09 | .09 | |
| 5. Ingroup favoritism | -.14 | -.07 | -.10 | -.06 |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 11. Cross-sectional correlations between identification and the other variables at T2
($N = 103$, two-tailed testing)

| Variables | 1. | 2. | 3. | 4. |
|-----------------------------|--------|-------|------|-----|
| 1. Identification | | | | |
| 2. Uncertainty | -.28** | | | |
| 3. Self-prototypicality | .54*** | -.21* | | |
| 4. Interpersonal attraction | .32** | -.20* | .23* | |
| 5. Ingroup favoritism | .10 | -.05 | .19 | .06 |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 12. Cross-sectional correlations between identification and the other variables at T3
($N = 103$, two-tailed testing)

| Variables | 1. | 2. | 3. | 4. |
|-----------------------------|---------|--------|-------|-----|
| 1. Identification | | | | |
| 2. Uncertainty | -.36*** | | | |
| 3. Self-prototypicality | .57*** | -.21* | | |
| 4. Interpersonal attraction | .40*** | -.26** | .30** | |
| 5. Ingroup favoritism | .07 | -.07 | .12 | .05 |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 14. Multi-sample analysis

| Model ^a | χ^2 | df | p | χ^2/df | RMR | AIC | CFI | GFI | RMSEA | $\Delta\chi^2$ |
|--------------------|----------|-----|-----|-------------|-----|---------|-----|-----|-------|---------------------|
| D0 | 1750.45 | 210 | .00 | 8.34 | .21 | 1810.45 | .00 | .44 | .18 | |
| D1 | 172.72 | 110 | .00 | 1.57 | .06 | 432.72 | .96 | .92 | .05 | D1-D0 1577.73*** |
| D2 | 172.29 | 106 | .00 | 1.63 | .06 | 440.29 | .96 | .92 | .05 | D2-D1 .43 |
| D3 | 171.71 | 104 | .00 | 1.65 | .06 | 443.71 | .96 | .92 | .05 | D3-D2 .58 |
| E1 | 120.08 | 60 | .00 | 2.00 | .06 | 312.08 | .96 | .93 | .065 | |
| E2 | 119.23 | 58 | .00 | 2.06 | .06 | 315.23 | .95 | .93 | .07 | E1-E2 .85 |
| E3 | 130.21 | 62 | .00 | 2.10 | .06 | 318.21 | .95 | .92 | .07 | E3-E1 10.13** |
| E4 | 130.88 | 69 | .00 | 1.90 | .06 | 304.88 | .95 | .92 | .06 | E4-E1 10.80 |
| E5 | 133.67 | 72 | .00 | 1.86 | .06 | 301.67 | .95 | .92 | .06 | E5-E4 2.79 |
| F1 | 113.73 | 56 | .00 | 2.03 | .05 | 313.73 | .96 | .93 | .07 | E1-F1 6.35 |
| F2 | 79.38 | 30 | .00 | 2.65 | .03 | 331.38 | .96 | .95 | .08 | E1-F2 40.70 |
| F3 | 181.45 | 78 | .00 | 2.33 | .09 | 337.45 | .92 | .89 | .075 | F3-E1 61.37*** |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

^a Model D0: Independence Model

Model D1: Hypothesized model with cross-lagged paths from uncertainty to identification and from int. attraction to identification (T2-T3) constrained to 0

Model D2: Model D1 with cross-lagged paths from uncertainty to identification freed

Model D3: Model D2 with cross-lagged paths from int. attraction to identification (T2-T3) freed

Model E1: Model D1 with uncertainty excluded

Model E2: Model E1 with cross-lagged paths from int. attraction to identification (T2-T3) freed

Model E3: Model E1 with equality constraints on cross-lagged paths between identification and ingroup favoritism over time in both samples

Model E4: Model E1 with equality constraints on the cross-lagged paths across samples

Model E5: Model E4 with cross-lagged constraints across time

Model F1: Alternative theoretical model

Model F2: Model including all time-adjacent cross-lagged paths

Model F3: Model without cross-lagged paths

Table 18. Cross-sectional correlations at T1 (N = 58, two-tailed testing)

| Correlations | 1. | 2. | 3. | 4. | 5. | 6. |
|------------------------------------|------|------|-------|--------|------|------|
| 1. Uncertainty | | | | | | |
| 2. Interpersonal attraction | -.17 | | | | | |
| 3. Expectations | -.02 | -.11 | | | | |
| 4. Professional motivation | -.16 | .18 | .14 | | | |
| 5. Identification (training group) | -.16 | -.02 | .34** | .50*** | | |
| 6. Identification (organization) | .02 | .31* | .28* | .26* | .27* | |
| 7. Ingroup favoritism | .03 | -.09 | .04 | .07 | .17 | -.17 |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 19. Cross-sectional correlations at T2 (N = 58, two-tailed testing)

| Correlations | 1. | 2. | 3. | 4. | 5. | 6. |
|------------------------------------|------|------|-------|--------|-----|-----|
| 1. Uncertainty | | | | | | |
| 2. Interpersonal attraction | .02 | | | | | |
| 3. Expectations | -.10 | .15 | | | | |
| 4. Professional motivation | -.23 | .31* | .21 | | | |
| 5. Identification (training group) | -.24 | .10 | .35** | .61*** | | |
| 6. Identification (organization) | -.05 | .60* | .28* | .23 | .22 | |
| 7. Ingroup favoritism | -.17 | .19 | -.04 | -.04 | .09 | .18 |

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

SUMMARY

Within the theoretical framework of social identity theory, identification has been argued to play a substantial role in intra- and intergroup processes (e.g. Deaux, 1996; Ellemers et al., 2002). Up to date, however, both the theoretical and methodological approaches to identification and its related variables have only taken a static perspective. Therefore, the dynamic aspects of identification *over a longer time period* and the role of identification *as both a cause and an effect* have been neglected.

This thesis adopted a *dynamic perspective* and presented a model capturing the *development of identification* with groups. A dynamic understanding of identification required to integrate the social identity perspective with assumptions about the change process in groups derived from models of group development (Tuckman, 1965; Worchel et al., 1992). The proposed model in this thesis referred to the group formation context and included relevant predictors and consequences of identification. The model was based on two central assumptions. *First*, cross-sectional processes were postulated to be different from longitudinal processes. *Secondly*, longitudinal effects were assumed to differ concerning their stability of influence over time. This means that depending on the change processes in groups, some longitudinal predictors should exert a stable influence on identification whereas the impact of other predictors should vary over time. More specifically, the model postulated that interpersonal attraction was expected to influence identification at the beginning of the group membership as the group provided a means to satisfy the need for affiliation. After having established interpersonal bonds with other group members, interpersonal concerns should lose their impact on identification. At this point in time, intergroup concerns, reflected in an emerging positive relationship between identification and *ingroup favoritism*, were expected to gain relevance for identification. Throughout the group formation process, *self-prototypicality* indicating the need to be safely included within the group was proposed to be consistently related to identification, both as a predictor and a consequence. Thus, *interpersonal attraction, uncertainty, and self-prototypicality* as predictors of identification and self-prototypicality and ingroup favoritism as consequences of identification were hypothesized to be *differentially related* to identification over time.

The empirical evidence presented in this thesis was based on the findings of three longitudinal studies in different contexts and one additional follow-up study. Studies 1 to 3 were conducted in student samples and Study 4 investigated the model assumptions in an organizational setting. Study 2 was planned to cross-validate the findings from Study 1 and thus, both studies were based on the same design with three measurement points. The results from both studies including the correlation patterns over time, the changes in the mean levels and most importantly, the longitudinal model were highly consistent. The findings supported the central model assumption that identification was differentially related to its predictors and consequences over time. As expected, self-prototypicality was related longitudinally to identification as a predictor and consequence. Most importantly, interpersonal attraction proved to be a longitudinal predictor of identification only at the beginning of the group membership. At that time, the link between identification and ingroup favoritism emerged illustrating the importance of intergroup differentiation. Thus, the data suggest that identification fulfils different functions during different stages of group membership.

Study 3 investigated the further development of identification in the sample of psychology students (Study 1) after one year. The results confirmed that the correlation pattern between the model variables was comparable to the previous measurement point indicating that the group structure remained stabilized over time. Moreover, only self-prototypicality showed a strong trend to predict identification longitudinally between T3 and T4.

Study 4 explored the development of identification during a flight attendant training at the beginning of organizational group membership. The study provided an integration of social psychological and organizational research. More specifically, predictors of identification discussed in the literature on organizational entry (i.e., expectations and professional motivation) were included. Moreover, the importance to study identification at different levels in organizational groups led to the development of different predictions for training group and organizational identification. The study was conducted with a two-measurement-point design (i.e., at the beginning and the end of the training). The findings supported the notion that both foci of identification were predicted by a different pattern of variables. Concerning the *cross-sectional analyses* at T1, training group identification was

related to interpersonal attraction and expectations, but not to professional motivation. Organizational identification, however, was predicted by expectations and professional motivation, but not by interpersonal attraction. Concerning the *longitudinal analyses*, training group identification at T2 was influenced only by expectations at T1. In contrast, organizational identification at T2 was predicted longitudinally by professional motivation at T1. Taken together, the findings illustrate that in nested identities, different foci of identification were predicted by different variables over time.

The reported results were discussed with regard to their theoretical and practical implications. *From a theoretical perspective*, this thesis closes a major gap in the present literature on social identification in different contexts. So far, a dynamic perspective on social identification and group processes has not been taken. This research provides a theoretical framework for the dynamic understanding of identification. The present findings strongly emphasize the necessity to understand and investigate group processes in general with a dynamic perspective. *From a practical perspective*, the reported findings obtained in the organizational context can contribute to the successful management of human resources. Given the tremendous impact that employee identification has on economic outcome variables (e.g., job performance, turnover) organizations need to know about the factors influencing identification at the beginning of organizational membership.

ZUSAMMENFASSUNG

Die Identifikation mit der eigenen Gruppe spielt in der Theorie der Sozialen Identität (Tajfel & Turner, 1986) eine wichtige Rolle bei Prozessen innerhalb der Gruppe und zwischen Gruppen. Die bisherige Forschung zu dem Thema hat jedoch sowohl auf theoretischer als auch auf methodologischer Ebene das Identifikationskonstrukt nur mit einer statischen Perspektive betrachtet. Dementsprechend wurden die *dynamischen Aspekte* der Entwicklung von Identifikation mit der eigenen Gruppe über einen längeren Zeitraum und das Zusammenspiel der Prädiktoren und Konsequenzen von Identifikation bisher nicht betrachtet.

In der vorliegenden Arbeit wurde ein Modell vorgestellt, das sich mit der Entwicklung von Identifikation im Kontext von Gruppenbildungsprozessen beschäftigt. Auf der theoretischen Ebene wurde die Forschung zur Theorie der Sozialen Identität und zu Modellen der Gruppenentwicklung (Tuckman, 1965; Worchel et al., 1992) integriert. Auf der Basis von Modellen der Gruppenentwicklung wurden allgemeine Annahmen über die Veränderungsprozesse in Gruppen formuliert. Diese Veränderungsprozesse spiegeln sich in den Prädiktoren und Konsequenzen von Identifikation wider. Das vorgestellte Modell basiert auf zwei zentralen Annahmen. Die eine bezieht sich auf die Notwendigkeit der Unterscheidung von *querschnittlichen und längsschnittlichen* Prozessen. Die andere geht davon aus, dass die längsschnittlichen Vorhersagen sich hinsichtlich ihrer Stabilität des Einflusses über die Zeit unterscheiden. In Abhängigkeit von den Veränderungsprozessen während der Gruppenentwicklung wird angenommen, dass einige längsschnittliche Prädiktoren einen stabilen Einfluss auf die Entwicklung der Identifikation ausüben. Andere Prädiktoren hingegen sind nur zu bestimmten Zeitpunkten für die längsschnittliche Vorhersage der Identifikation relevant.

Das Modell geht davon aus, dass interpersonale Attraktion nur zu Beginn des Gruppenbildungsprozesses Identifikation beeinflusst, da die Gruppe die Möglichkeit bietet, das bestehende Bedürfnis nach Affiliation zu erfüllen. Wenn dieses Bedürfnis durch Bildung von Freundschaften innerhalb der Gruppe erfüllt wurde, sollte der Einfluss von interpersonaler Attraktion auf Identifikation schwinden. Wenn sich die Struktur innerhalb der Gruppe gefestigt hat, rückt das Bedürfnis nach Abgrenzung zwischen den Gruppen in

den Vordergrund. Dementsprechend sollte eine längsschnittliche positive Verbindung zwischen Identifikation und Eigengruppenfavorisierung entstehen. Eine weitere wichtige Variable ist die Prototypikalität des Selbst für die Gruppe, die das Bedürfnis nach einer sicheren Position innerhalb der Gruppe widerspiegelt. Das Modell postuliert, dass die Selbstprototypikalität während des ganzen Gruppenprozesses sowohl als Prädiktor als auch als Konsequenz mit Identifikation verknüpft ist. Die Kernaussage des Modells beinhaltet, dass die relevanten Prädiktoren (*d.h. interpersonale Attraktion, Unsicherheit und Selbstprototypikalität*) und Konsequenzen (*d.h. Selbstprototypikalität und Eigengruppenfavorisierung*) unterschiedlich im Verlauf der Gruppenentwicklung mit Identifikation verbunden sind.

Die im Rahmen dieser Dissertation vorgestellte empirische Forschung umfasst insgesamt drei Längsschnittstudien und eine Nachfolgestudie (Studie 3). Die erste bis dritte Studie wurde mit Studenten und die vierte Studie mit Mitarbeitern einer deutschen Luftfahrtgesellschaft durchgeführt. Mit der zweiten Studie sollten die Befunde der ersten Studie validiert werden und daher basierten beide Studien auf demselben Design mit jeweils drei Messzeitpunkten (T1, T2 und T3). Die Ergebnisse beider Studien im Hinblick auf die querschnittliche und längsschnittliche Auswertung waren äußerst konsistent. Die querschnittliche Analyse zeigte, dass in beiden Studien interpersonale Attraktion, Selbstprototypikalität und Unsicherheit signifikant mit Identifikation korreliert waren. Die positive Korrelation zwischen Identifikation und Eigengruppenfavorisierung entwickelte sich entsprechend der Hypothesen erst über die Zeit. Der längsschnittliche Modelltest ergab, dass Selbstprototypikalität längsschnittlich als Prädiktor *und* Konsequenz von Identifikation eine Rolle spielte. Im Gegensatz dazu war die interpersonale Attraktion nur zu Beginn der Gruppenmitgliedschaft (zwischen T1 und T2) für die Vorhersage von Identifikation von Bedeutung. Im weiteren Verlauf (zwischen T2 und T3) verdeutlichte die entstehende Verknüpfung zwischen Identifikation und Eigengruppenfavorisierung die zunehmende Bedeutung der Differenzierung zwischen Gruppen. Zusammenfassend lässt sich folgern, dass die Ergebnisse die zentrale Modellannahme bestätigen, dass die Prädiktoren und Konsequenzen im Verlauf der Gruppenentwicklung *unterschiedlich* mit Identifikation verbunden sind.

Die dritte Studie verfolgte die weitere Entwicklung der Identifikation nach einem

Jahr in der bei Studie 1 untersuchten Stichprobe von Psychologiestudenten. Die querschnittlichen Ergebnisse belegen, dass sich die Gruppenstruktur weiter über die Zeit stabilisiert hat. Darüber hinaus weisen die Ergebnisse der längsschnittlichen Regression (zwischen T3 und T4) in die erwartete Richtung. Denn nur die Selbstprototypikalität zeigte eine starke Tendenz, Identifikation längsschnittlich vorherzusagen.

Studie 4 ging der Fragestellung nach, wie sich die Identifikation bei neuen Mitarbeitern einer großen deutschen Fluggesellschaft während eines Flugbegleitertrainings entwickelt. Die Studie integrierte Forschung aus der Sozialpsychologie und der Organisationspsychologie. Zum einen wurden Prädiktoren der Identifikation (d.h. Erwartungen und berufliche Motivation) aus der Organisationspsychologie mit in die Studie aufgenommen. Zum anderen wurde die Relevanz der Unterscheidung von verschiedenen Identifikationsebenen im Unternehmen berücksichtigt. Dementsprechend wurden verschiedene Prädiktoren für die Entwicklung der Identifikation mit der Trainingsgruppe und dem Unternehmen spezifiziert. Die Studie wurde mit zwei Meßzeitpunkten zu Beginn und zum Ende des Trainings durchgeführt. Die Ergebnisse belegen die zentrale Annahme, dass beide Identifikationsebenen von verschiedenen Prädiktoren vorhergesagt wurden. Die Identifikation mit der Trainingsgruppe hing querschnittlich nur mit (positiven) Erwartungen und der interpersonalen Attraktion, aber nicht mit der beruflichen Motivation zusammen. Im Gegenzug war die Identifikation mit dem Unternehmen querschnittlich nur mit den (positiven) Erwartungen und der beruflichen Motivation, aber nicht mit der interpersonalen Attraktion verbunden. Längsschnittlich betrachtet wurde die Identifikation mit der Trainingsgruppe zum zweiten Messzeitpunkt (T2) nur von den (positiven) Erwartungen (T1) beeinflusst. Die Identifikation mit dem Unternehmen (T2) hingegen wurde nur von der beruflichen Motivation (T1) beeinflusst. Zusammenfassend zeigen die Ergebnisse der vierten Studie, dass verschiedene Identifikationsebenen im Unternehmen von verschiedenen Prädiktoren über die Zeit vorhergesagt wurden.

Die erläuterten Studien wurden im Hinblick auf ihre theoretische und praktische Relevanz diskutiert. Diese Arbeit verfolgte das Ziel, ein dynamisches Verständnis von Identifikation aufzubauen. *Aus theoretischer Sicht* belegen die Befunde die Notwendigkeit, Identifikation dynamisch zu betrachten. Außerdem wurde die Bereicherung für bestehende Theorien diskutiert. Dementsprechend trägt die dargestellte Forschung zu einer Erweiterung

der Theorie der Sozialen Identität, der motivationalen und funktionalen Identifikationsansätze und der angewandten Forschung in Organisationen bei. *Aus angewandter Sicht* ermöglichen die im organisationalen Kontext gewonnenen Erkenntnisse eine erfolgreiche Entwicklung der Identifikation bei Mitarbeitern eines Unternehmens. Angesichts der ökonomisch relevanten Auswirkung der Identifikation (z.B. im Hinblick auf Leistung und Fluktuation) sind Organisationen darauf angewiesen, die Faktoren erfolgreich zu steuern, die einen Einfluss auf die Entwicklung der Identifikation bei Neueinsteigern im Unternehmen haben. Aus den dargestellten Ergebnissen wurden erfolgskritische Handlungsempfehlungen für Unternehmen abgeleitet.

CURRICULUM VITAE

| | |
|-------------------------|---|
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EHRENWÖRTLICHE ERKLÄRUNG

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

Ferner erkläre ich, dass ich die vorliegende Arbeit selbst und ohne unzulässige Hilfe Dritter angefertigt habe. Ich habe auch nicht die Hilfe eines Promotionsberaters in Anspruch genommen und Dritte haben weder unmittelbar noch mittelbar geldwerte Leistungen von mir erhalten, die im Zusammenhang mit dem Inhalt der vorgelegten Dissertation stehen. Alle von mir benutzten Hilfsmittel und Quellen sind in der Arbeit angegeben.

Bei der Auswahl und Auswertung des Materials sowie bei der Herstellung des Manuskripts haben mir die nachstehend aufgeführten Personen in der jeweils beschriebenen Weise geholfen:

- 1) Bei der Erstellung der Untersuchungsmaterialien und der Durchführung der Studie 3 half Katrin Wodzicki unentgeltlich mit. Sie wurde zu diesem Zeitpunkt von der DFG als Forschungsstudentin im Internationalen Graduiertenkolleg an der Universität Jena gefördert.
- 2) Hanna Zagefka korrigierte unentgeltlich die englische Ausdrucksweise in Teilen dieser Arbeit.

Weitere Personen waren an der inhaltlich-materiellen Erstellung der Arbeit nicht beteiligt.

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

Ich versichere, dass ich nach besten Gewissen die reine Wahrheit gesagt habe und nichts verschwiegen habe.

(Ort, Datum)

(Unterschrift)