

# **Advancing Group Threat Theory**

Contributions of panel-, experimental- and  
multilevel analyses

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**Chapter 1      Introduction**

## Introduction

In recent decades, social science research yielded a plethora of studies aiming to understand and explain anti-outgroup attitudes – a theoretical concept consonant with Crandall and Eshelman’s (2003) definition of prejudice as “a negative evaluation of a social group or a negative evaluation of an individual that is significantly based on the individual’s group membership” (Crandall and Eshelman 2003, p. 414).

In this context, the point of departure for the present study is the notion that few theoretical frameworks guiding such research proved to be of comparable scientific fruitfulness as group threat theory. The term ‘group threat theory’, introduced by two influential studies of Quillian (1995, 1996), represents a generic term relating to a variety of eclectic theoretical frameworks of sociological and social-psychological provenience. The common characteristic underlying these frameworks is the implicitly or explicitly stated core proposition that greater perceived group threat goes along with greater anti-outgroup attitudes. By definition, perceived group threat or – synonymously – perceptions of threatened group interests occur when ingroup members see an outgroup as posing negative consequences to the interests of their ingroup (Stephan and Renfro 2002, Riek, Mania and Gaertner 2006, see also Blumer 1958).

Well-known theoretical approaches positing that perceived group threat relates to anti-outgroup attitudes are, to enumerate just a few examples, the ‘group position’ model (Blumer 1958, see Bobo 1999, Quillian 1995, 1996), the ‘power/economic threat’ approach (Blalock 1967), ‘realistic group conflict theory’ (Bobo 1988, Bobo and Hutchings 1996, Jackson 1993, LeVine and Campbell 1972, Sherif 1966), ‘ethnic competition theory’ (Barth 1969, Coenders 2001, Scheepers, Gijsberts and



Coenders 2002, Nagel and Olzak 1982, Olzak 1992), ‘split labor market theory’ (Bonacich 1972, Boswell 1986), the ‘instrumental model of group conflict’ (Esses, Jackson and Armstrong 1998), the ‘integrated threat theory’ (Stephan and Stephan 2000) or the ‘revised threat theory’ (Stephan and Renfro 2002). The general explanatory scheme applying to these approaches is that perceived threats to the interests of the ingroup are expected to lead group members to express greater anti-outgroup attitudes. More precisely, the reasoning underlying this proposition proceeds in two steps.

In the first step, actual and/or perceived intergroup competition for scarce resources is assumed to increase perceptions of the outgroup as posing a threat to the ingroup (Blalock 1967, Blumer 1958, Bobo 1983). Issues at stake in such intergroup competition can comprise of tangible as well as non-tangible goods, a taxonomy which is synonymous with the differentiation between perceived realistic- and symbolic group threats. Specifically, the term realistic threat, as it is commonly defined, refers to negative consequences posed by an outgroup due to intergroup competition for scarce, yet tangible resources such as economic or political power (Stephan and Stephan 2000). Examples for such realistic threats include competition in the domains of the labour- or housing market as well as competition for political influence, e.g. by supplying representatives to legislative – and hence political – bodies (Blalock 1967). Thus, the concept of realistic threat serves to explain how intergroup competition for scarce resources can give rise to perceptions of threatened group interests.

Perceived threats related to symbolic matters have been constitutive for a similar line of research. Symbolic threats relate to perceived negative consequences due to conflicting intergroup interests for non-tangible goods and are seen to be of central

importance for evoking outgroup derogation as well. Examples for symbolic threats include issues such as conflicting group interests in regard to language, religion, cultural values or the general social order of the group (Allport 1954, Coser 1958). As these examples illustrate, the concept of symbolic threats explains perceptions of negative consequences posed by an outgroup in settings where intergroup competition for scarce resources is absent or of minor importance.

Importantly, it must be noted that the concepts of perceived realistic and symbolic group threat initially have long been considered to be mutually exclusive rather than complimentary for explaining manifestations of outgroup derogation (e.g. Kinder and Sears 1981, see Riek, Mania and Gaertner 2006). Yet even though the corresponding research traditions differ in their assumptions regarding the specific causes underlying perceived group threat, researchers nowadays commonly accept the notion that both lines of reasoning converge in respect to the assumption that perceived threats give rise to anti-outgroup attitudes. Consequently, Stephan and Stephan (2000) synthesised the assumptions from earlier research on realistic and symbolic threats by formulating an integrated threat theory which rests on the central tenet that realistic and symbolic threats alike explain anti-outgroup attitudes.

Against this backdrop, the second step underlying the group threat–approach is that ingroup members are hypothesised to respond to perceived group threats with greater anti-outgroup attitudes for protecting their group interests vis-à-vis such threats (Blumer 1958, p. 5, see Blalock 1967, Bobo 1999, Quillian 1995). To date, many empirical investigations of group threat theory have been carried out in order to explain anti-immigrant attitudes. In this field, group threat theory turned out to be of consistent explanatory value for various forms of such negative attitudes, while it must be noted that these contributions ground in large parts on the empirical progress

yielded by studies providing empirical support to the conceptual underpinnings of perceived group threat. For example, consistent with Allport's (1954) classic conclusion that "clashes of interest and values do occur, and that these conflicts are not in themselves instances of prejudice" (Allport 1954: 229) Stephan and Stephan (2000) emphasise that perceived group threat and outgroup derogation are closely related but theoretically and empirically distinct concepts (see also Stephan and Renfro 2002). According to these authors, perceived threats represent a cognitive appraisal of external conditions. This underlines that perceiving an outgroup as threatening is qualitatively still very different from substantive manifestations of outgroup derogation – be it in form of exclusionary attitudes, intended or actual discriminatory behaviors or other forms of outgroup derogation (Stephan and Renfro 2002: 202f.).

Subsequent studies have shown firm empirical support regarding the conceptual differentiation between perceived threats and various forms of anti-outgroup attitudes. For instance, investigating two cross-national samples from Germany and Israel by means of confirmatory factor analyses, Raijman, Semyonov and Schmidt (2003) show that a set of indicators conceptually identified with the constructs 'perceived group threat' and 'anti-foreigner attitudes' – a construct which can arguably be seen to correspond to the more general definition of anti-outgroup attitudes provided at the outset of this chapter – load on two moderately correlated latent factors which clearly correspond to the researcher's conceptualisation of perceived group threat and anti-foreigner attitudes. In a similar analysis based on cross-national data from 17 European nation-states, also Scheepers et al. (2002) show that 'perceived group threat' and 'ethnic exclusionary attitudes' load on two clearly distinguishable factors.

Based on these and related findings, perceived group threat has been shown to be positively related to prejudice (Stephan and Stephan 2000), ethnic distance (Hello and Scheepers 2006), opposition to immigration (Wilson 2001), denial of citizenship rights to ethnic minorities (Scheepers et al. 2002, Raijma, Semyonov and Schmidt 2004) as well as resistance against policy measures benefiting ethnic minority groups (Stephan, Ybarra, Martinez Schwarzwald and Tur-Kaspa 1998), to provide just a few examples.

Arguably, this evidence implies that the positive relation between perceived group threat and anti-outgroup attitudes represents a robust empirical regularity in social science research. Accordingly, elaborating upon the present state of group threat theory appears to be of great promise to further social science understanding of the sources giving rise to tense intergroup relations.

## **Scientific Aims**

Within this thematic context, the central purpose of this study is to further current understanding of group threat theory in order to explain anti-outgroup attitudes. As elaborated upon below, the substantive scientific gains we intend to bring about with this study are threefold. Each of these efforts addresses a central issue of group threat theory left unattended by previous research. In brief, first we will set out to examine the direction of causality between perceived group threat and anti-outgroup attitudes. Second, we will address the discussion for potential moderators of the relation between group threat and anti-outgroup attitudes. Third, we will investigate in which manner the objective size of an outgroup affects perceived group threats and anti-outgroup attitudes. In addition to these substantive scientific gains, fourth, this study also sets out to make methodological contributions. In this respect, we will provide a comparative assessment of, on the one side, latent autoregressive cross-lagged structural equation models and, on the other side, second order latent growth curve structural equation models. More specifically, our efforts to achieve these substantive and methodological aims are guided by four research questions.

## **Research questions**

### First research question

The first research question of this study focuses on the task to disentangle the causal structure between perceived group threat and anti-outgroup attitudes. Irrespective of the abundance of studies showing positive associations between perceived group threat and prejudice, previous research provided only limited empirical evidence according to which perceived group threat occurs causally prior to anti-outgroup

attitudes. To date, few experimental studies showed that eliciting group threat gives rise to greater prejudice (Esses, Dovidio, Jackson and Armstrong 2001). However, experimental studies are commonly restricted to examine unidirectional flows of causality only. By contrast, previous theorising and research concerning the causal relations between perceived group threat and anti-outgroup attitudes has yielded three rival perspectives. According to the predominating view, perceived group threat represents a causal antecedent of anti-outgroup attitudes. A second theoretical perspective directly opposes this view and conceptualises perceived group threat as a consequence of prior levels of anti-outgroup attitudes. Alternatively, a third theoretical perspective suggests the causal relations between perceived group threat and anti-outgroup attitudes to be reciprocal. Thus, to evaluate the empirical accuracy of these differing perspectives, we formulate the first research question as follows:

*A. Is perceived group threat causally prior to anti-outgroup attitudes? Are anti-outgroup attitudes causally prior to perceived group threat? Or are perceived group threat and anti-outgroup attitudes linked by reciprocal causal relations?*

#### Second research question

The second research question of this study further elaborates existing knowledge about the relation between perceived group threat and anti-outgroup attitudes. The point of departure for this analysis is the notion that perceived group threat occupies a central role in the study of prejudice, yet that research has only begun to explore potential moderators of the relation between threat and anti-outgroup attitudes. Importantly, by specifying the conditions under which threat effects can be expected to change in their magnitude, moderators function as independent antecedents of threat-prejudice relations (Baron and Kenny 1986, p. 1174). Thus, investigating

potential moderators of the relation between perceived group threat and anti-outgroup attitudes clearly bears the potential to further theoretical understanding in this field.

Specifically, in this part of the study we focus on the role of social identification as theoretical construct of great promise to further understanding of the threat-prejudice relationship. More precisely, building upon previous research (Hornsey and Hogg 2000, Mummendey and Wenzel 1999) we develop and examine two competing theoretical assumptions concerning the mutual effect of subgroup and superordinate identities on threat effects. The theoretical backdrop for this approach is provided by the widely accepted notion from self-categorisation theory (Turner 1985) that any ingroup-outgroup distinction requires at least one higher order identity yielding the norms and values against which members of the in- and outgroup are evaluated. Given this assumption, the present study investigated ingroup-outgroup distinctions within the social context of the EU's expansion, commonly labelled 'East enlargement'. Here, the ingroup has been determined by respondents' self-categorisation as 'German', while - depending on the specific study - the outgroup was constituted either by the category 'East-Europeans' or 'Turks'. For both studies, the higher-order category including in- and outgroup alike was constituted by respondents' self-categorisation as 'European'. Moreover, for explaining the interplay of social identification and perceived group threat, we also scrutinise the role of 'ingroup projection' - a genuine social-psychological term describing that group members are likely to perceive their own group as more prototypical for the higher-order category than the outgroup (Mummendey and Wenzel 1999). We formulate the second research question as follows:

*B. To what extent is the effect of perceived group threat on anti-outgroup attitudes moderated by subgroup- and superordinate group identification, and what role does ingroup projection play for the interplay of these constructs?*

### Third research question

The third research question of this study examines contextual- and individual-level propositions from group threat theory by means of an empirical theory comparison. More precisely, previous social science research devoted considerable efforts to uncover the meaning of contextual-level factors for explaining perceived group threat and anti-outgroup attitudes. Several studies in this domain focus on the objective size of an outgroup (e.g. Quillian 1995, Coenders 2001). Yet to date, research has only partially understood in which manner the objective size of an outgroup affects perceptions of threatened group interests and negative attitudes towards an outgroup. Studies examining this issue from the perspective of group threat theory suggest that a greater objective size of an outgroup increases perceptions of threatened group interests which are expected to heighten anti-outgroup attitudes. More recently, this line of research has been challenged by intergroup contact theory (Pettigrew 1998, Wagner, Christ, Pettigrew, Stellmacher and Wolf 2006). According to this approach, a greater objective size of an outgroup enhances opportunities for intergroup contact. In reverse, intergroup contact is assumed to ameliorate anti-outgroup attitudes by reducing perceived threats. However, to date, empirical studies putting these propositions to a systematic empirical comparison are very scant. Moreover, to date prior research has yet not been able to provide a comprehensive examination of perceived threat as central



mediating factor in this framework. This research sets out to address these gaps in the literature. Hence, our third research question reads as follows:

- C. To what extent does the objective size of an outgroup increase perceived group threat and anti-outgroup attitudes? To what extent does the objective size of an outgroup increase intergroup contact and thereby decrease perceived group threat and anti-outgroup attitudes?*

#### Fourth research question

The fourth research question of this study complements the preceding investigations by making methodological and substantive contributions alike. Point of departure for this research is the notion that in recent years, methodological developments yielded a number of powerful and flexible statistical approaches for social science data analysis. However, many of these approaches seem to diffuse rather slowly towards substantive applications. Moreover, according to our view this notion holds particularly true in respect to the pace of new methodological developments for the analysis of panel data. To counteract such gaps, we demonstrate and compare the application of latent autoregressive cross-lagged structural equation models and second-order latent growth curve models – two modern methods for analysing how systems of causal variables independently and interactively influence outcomes over time. Doing so rests on our intention to further the interest and understanding of substantive researchers in respect to such methods. Consistent with this intention, we chose to examine the dynamic relations between authoritarianism and anomia as the substantial research problem motivating this contribution. Authoritarianism and anomia have both been utilised by previous research on anti-outgroup attitudes, and

both constructs have been discussed to be related to perceived group threat (Feldman 2000, Quillian 1995). Hence, our fourth research question reads:

*D. How do latent autoregressive cross-lagged structural equation models and second-order latent growth curve models perform regarding the longitudinal relations of authoritarianism and anomia?*

### **Structure of this study**

Having summarised the scientific aims and research questions of this study, we conclude this introduction by outlining the structure of the remaining chapters. Subsequently, each chapter deals with one of the research questions described above. Specifically, as introduced in the previous section chapters two, three and four serve to answer the substantial research questions motivating this study. Chapter five investigates a research question which, besides its substantive contributions, also sets out to deliver methodological progress. We like to note that each chapter has been written as a separate article, which implies both advantages and disadvantages. On the one hand, the advantage is that each chapter represents an independent contribution to further understanding of the corresponding research problem explicated beforehand. On the other hand, the potential disadvantage following from this organisation is that there might be some overlap between the different chapters. Yet we contend that all chapters share the characteristic to address important gaps in the social science literature on group threat theory and refer to current debates of both theoretical and applied relevance. Table 1 provides an overview of the structure of this study.

Table 1. Overview of research questions and major theoretical constructs chapter 2 to chapter 5.

| <i>Chapter (abbreviated)</i>   | <i>Research Questions</i>  | <i>Major Theoretical Constructs</i>  |
|--|--|--|
| 2 Causal Relations between Group Threat and Outgroup Derogation                | Is perceived group threat causally prior to anti-outgroup attitudes?<br>Are anti-outgroup attitudes causally prior to perceived group threat?<br>Or are perceived group threat and anti-outgroup attitudes linked by reciprocal causal relations?                                | Perceived group threat, Anti-immigrant behavioral intentions- and Dislike, Ethnic Distance                   |
| 3 Subgroup and Superordinate Group Identification                              | To what extent is the effect of perceived group threat on anti-outgroup attitudes moderated by subgroup- and superordinate group identification?<br>What role does ingroup projection play for the interplay of these constructs?  | Group threat, Social Identification, Ingroup Projection, Prejudice   |
| 4 The role of Group Size of Immigrants for Explaining Anti-Immigrant Attitudes | To what extent does the objective size of an outgroup increase perceived group threat and anti-outgroup attitudes?<br>To what extent does the objective size of an outgroup increase intergroup contact and thereby decrease perceived group threat and anti-outgroup attitudes? | Group size, Perceived group size, Perceived group threat, Anti-immigrant attitudes and behavioral Intentions |
| 5 Applying Autoregressive Cross-Lagged and Growth Curve Models                 | How do latent autoregressive cross-lagged structural equation models and second-order latent growth curve models perform regarding the longitudinal relations of authoritarianism and anomia?  | Authoritarianism, Anomia   |

Chapter two, “*Disentangling the Causal Relations between Group Threat and Outgroup Derogation*”, is a secondary analysis of two independent multiwave panel studies from Germany and Russia. These panel studies are based upon general population data from the Group-Focused Enmity (GFE) project (Heitmeyer 2005) and the Russian Socioeconomic Study on Social Transitions (RUSSET) (van der Veld 2002). In this chapter, we use latent autoregressive cross-lagged structural

equation models to gain longitudinal evidence on the flow of causality between perceived group threat and various forms of anti-outgroup attitudes. In doing so, this research responds to recent calls to devote increased attention to dynamic assessments of anti-outgroup attitudes (Hunt, Seifert, Armenta and Snowden 2006) and, in particular, for longitudinal investigations of the relation between perceived group threat and negative intergroup attitudes (Riek et al. 2006). The empirical results of this chapter provide the backdrop for the subsequent substantial analyses presented in chapters three and four.

Chapter three, *“Merging on Mayday: Subgroup and Superordinate Group Identification in the Context of the European Union’s Expansion”*, relates to a set of experimental studies drawing upon data from both general population and student samples. These data were collected specifically for the present purposes. In this chapter, we provide an experimental investigation of the moderating effects of different types of social identification (Hornsey and Hogg 1999, Mummendey and Wenzel 1999) regarding the effect from perceived threat to anti-outgroup attitudes. As noted above, in this chapter we also explore the significance of ingroup projection to further understanding of the complex interplay of perceived threat and different types of social identification for explaining anti-outgroup attitudes.

Chapter four, *“The role of Group Size of Immigrants for Explaining Anti-Immigrant Attitudes: An Empirical Comparison of Group Threat and Intergroup Contact Theory”* is a secondary analysis of cross-sectional general population data from the Dutch Religion-in-the-Netherlands (SOCON) Survey Series (Eisinga et al. 2002). This study draws upon a multilevel design with individuals (lower-level units) situated in municipalities (higher-level units). In this chapter, we explicate and test two lines of argumentation derived from group threat (Blalock 1967, Scheepers et al.

2002)- and intergroup contact theory (Pettigrew 1998, Wagner et al. 2006) regarding the ways a greater outgroup size affects anti-outgroup attitudes.

Chapter five “*Applying Autoregressive Cross-lagged and Latent Growth Curve models*” provides a detailed demonstration on how to apply latent autoregressive cross-lagged structural equation models as used e.g. in chapter 2, but, more than that, also compare the advantages yielded by this method with the alternative statistical approach of second-order latent growth curve models. Substantively, this chapter is motivated by the longstanding discussion regarding the longitudinal relations between authoritarianism and anomia. Both of these theoretical constructs have been discussed to be of potentially great value as predictors of perceived threats. For instance, inherent to the concept of anomia is the perception of societal turmoil and breakdown of longstanding social norms, and proponents of group threat theory have long acknowledged that such states of mind are likely to function as antecedents of perceived group threat (Quillian 1995) just as authoritarianism (Stephan and Renfro 2002).

## Research designs, data and methods of data analysis

Before turning to our substantial analyses, few words are due regarding the various research designs, data and methods of data analysis used in this study. As summarised in table 2, in order to answer the specific research questions this study applies panel-, experimental- and multilevel designs.

Table 2. Overview of research designs, data and methods of data analysis chapter 2 to chapter 5.

| <i>Chapter</i> | <i>Research Design</i>                        | <i>Data</i>   | <i>Method</i>  |
|----------------|---|---|--|
| (2)            | <i>Multiwave Panel Design, Cross-national</i> | <i>Cross-national, multiwave panel data,<br/>Large-scale general population samples</i> | <i>Confirmatory Factor analyses,<br/>Latent autoregressive cross-lagged structural equation modeling</i> |
| (3)            | <i>Experimental Design</i>                    | <i>General population sample (Study 1)<br/>Student sample (Study 2)</i>                 | <i>OLS-Regression analyses with higher-order interaction effects</i>                                     |
| (4)            | <i>Multilevel Design</i>                      | <i>Cross-sectional, nationally representative general population sample</i>             | <i>Confirmatory factor analyses<br/>Structural equation modeling for complex survey data</i>             |
| (5)            | <i>Multiwave Panel Design</i>                 | <i>Large-scale general population samples</i>   | <i>Confirmatory factor analyses<br/>Structural equation modeling for complex survey data</i>             |

As will be described in more detail in the respective chapters of this study, the analyses conducted in chapters 2 and 5 both utilise multiwave panel designs. Chapter 3 is based upon a set of two experimental studies, while chapter 4 proceeds within the framework of a multilevel design.

While responding to different research objectives and using different, though complimentary research designs, a common characteristic underlying all analyses of the present research is the motivation to increase the level of confidence for generalising the respective empirical findings. To achieve this goal besides using high-quality data-sets and advanced methods of data analysis several additional strategies have been employed. Specifically, the analyses reported in chapters two and three both draw upon two independently collected datasets to examine the respective research problems. Consistent with the advice of Rosenthal (1991), proceeding in this way clearly increases the amount of information by means of replications. Similarly, the research designs underlying chapters two and four permitted to employ multiple criterion variables. Also this procedure furthers knowledge whether empirical results supported under one set of conditions hold under other conditions as well, with conceptually different criterion variables constituting such alternative conditions.

Further, in accordance with the description of Lakatos' (1970) conceptualisation of research programmes as described by Schmidt, Bandilla, Glöckner-Rist and Heyder (1970), all analyses of this research are guided by a general methodological scheme.

As Schmidt et al. (1997) point out, current research projects oftentimes neglect to account for the constitutive, original theoretical assumptions related to a research problem. Instead, it has become a frequent practice that researchers notice secondary sources only. However, a disadvantage of the strategy to rely exclusively on secondary literature is an increased risk of arbitrarily truncated or mistakable interpretations of the original assumptions underlying theory-orientated research projects. Therefore, all analyses presented in the remainder of this study are based on, first, a selection and reception of the *original* literature referring to the research

problem under study. Explicating and interpreting the theoretical propositions the theoretical propositions provided by the literature formed the next logical step for all analyses presented in this study. Doing so grounds on the well-known notion that the theoretical literature does by no means always present unambiguously formulated, clear-cut theoretical propositions. Therefore, this second step provides the background for formalising the theoretical propositions by means of research hypotheses. Then, in a third step, these hypotheses are linked with appropriate statistical assumptions. In a fourth step, these assumptions are confronted with the data using specific statistical methods such as structural equation modeling (chapters 2, 4 and 5) or OLS-Regression analyses (chapter 3). Last, in a fifth step the findings from these empirical tests are integrated with the existing research literature.



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## **Chapter 2      Disentangling the causal relations of group threat and outgroup derogation: cross-national evidence from German and Russian panel surveys**

(co-authored by Peter Schmidt and Ulrich Wagner)

### **Abstract**

Despite the resurgence of interest in group threat theory for explaining negative interethnic relations, adequate empirical evidence on the causal ordering of group threat and outgroup derogation is still missing. In the literature, three theoretical perspectives concerning this issue have been raised. The predominating view assumes that group threat is a causal antecedent to outgroup derogation. Contrary to this perspective, a second theoretical model conceptualises group threat to be a consequence of prior levels of outgroup derogation. Alternatively, a third theoretical perspective suggests to consider the causal relations between group threat and outgroup derogation to be reciprocal. In this paper, we conduct a longitudinal test of these competing theoretical models drawing upon cross-national multiwave panel surveys from Germany and Russia. Using latent autoregressive cross-lagged models, we find that group threat is causally antecedent to Germans' dislike and negative behavioral intentions against foreigners as well as to Russian's ethnic distance toward minorities. The data provide no support for the alternative models. Findings are discussed with regard to its meaning for group threat theory.

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## **Introduction**

Current research on sources of outgroup derogation alludes an increased interest in group threat theory (Raijman, Semyonov and Schmidt 2003, Scheepers, Gijbbers and Coenders 2002, Stephan and Renfro 2002). While this literature has yielded important insights, the question on the direction of causal flow between group threat and outgroup derogation remains unanswered. As a result, various interpretations have evolved regarding the causal structure of group threat theory. Specifically, three different conceptualisations regarding the way group threat and outgroup derogation operate have been proposed. We label the first conceptualisation *conventional model* of group threat theory. According to this perspective, group threat is causally antecedent to outgroup derogation. A second conceptualisation which we label *reverse model* of group threat theory considers group threat to be a consequence of preexisting states of outgroup derogation. A third approach postulates that prior levels of group threat are causally antecedent to later levels of outgroup derogation and vice versa. We label this version *reciprocal model* of group threat theory.

In this study, we seek to improve current knowledge on the causal connection between group threat and outgroup derogation by simultaneously testing the empirical adequacy of the three different conceptualisations named above. Doing so is not only critical for an improved understanding of the microsocial mechanisms underlying intergroup conflict (Bobo and Fox 2003: 319). Such an investigation could also generate important knowledge for applied programs aiming to alter perceptions of group threat in order to prevent or improve negative intergroup relations (Stephan and Stephan 2000).

Our study makes the following new contributions to the existing literature on group threat theory. Unlike previous research using cross-sectional data from a single time point only, we adopt a longitudinal research strategy. More precisely, to test the rival propositions of the *conventional*-, *reverse*- and *reciprocal model* of group threat theory we perform secondary analyses of two multiwave panel surveys of the German and Russian population. Two reasons support this research design. First, multiwave panel data permit simultaneous empirical testing of different causal flows between the theoretical constructs of interest. And second, while using slightly different operationalisations, the German and Russian data represent considerably different social contexts of analysis (Kohn 1989). Thus, our analyses examine the cross-national generalisability of the dynamic microsocial processes underlying outgroup derogation – an important issue only seldom addressed in previous studies (Pettigrew 1998, Taylor and Moghaddam 1994).

### **Group Threat Theory**

Social scientists have been hypothesising for more than fifty years that perceiving an outgroup as a threat to one's ingroup gives rise to anti-outgroup reactions. For instance, for the case of race relations in the U.S. Blalock (1967) argued that 'whites' would perceive increasing numbers of 'blacks' as a threat to their political or economic power. As a consequence of such threats, Blalock expected negative intergroup reactions of 'Whites' toward 'Blacks' to increase (Blalock 1967). Similarly, Blumer (1939, 1958) considered prejudice to be a response to threats to interests of the ingroup (see also Bobo 1999, Coenders 2001, Quillian 1995, Scheepers, Gijsberts and Coenders 2002). Subsequent research expanded upon these initial studies in several ways. A first enhancement concerns the forms of threat

considered to be related to outgroup derogation. Recent theorising and research distinguished between two general types of group threat which are both considered to be related to outgroup derogation. According to realistic group conflict theory (Blalock 1967, Jackson 1993, Sherif et al. 1961, Stephan and Stephan 2000) it is realistic threats which are of central importance for fostering outgroup derogation. Realistic threats are commonly defined as threats to tangible issues such as the ingroup's economic or political power. Another line of research considers group threats related to symbolic matters to be of central importance for evoking outgroup derogation (Allport 1954, Coser 1956, Stephan and Stephan 2000, Wimmer 1997). Such symbolic threats refer to non-tangible issues of intergroup relations such as language, religion or values. Following prior studies which proved that both realistic and symbolic threats are important for explaining intergroup conflict, Stephan and Stephan (2000) and Stephan and Renfro (2002) integrated these types of group threat into a common theoretical framework. This work also provides substantial progress regarding the conceptual underpinnings of perceived threat. In line with Allport's (1954) classic conclusion that that "clashes of interest and values do occur, and that these conflicts are not in themselves instances of prejudice" (Allport 1954: 229; see also Scheepers, Gijssberts and Coenders 2002). Stephan and Stephan (2000) start from the basic premise that perceived threat and outgroup derogation are closely related but theoretically and empirically distinct concepts (see also Stephan and Renfro 2002). Specifically, these authors consider perceived threat to arise "because of the anticipation of negative consequences" (Stephan and Renfro 2002: 197) regarding the presence of some outgroup. This view not only emphasises the function of perceived threat as "cognitive appraisal" (ibd.) of external conditions. It also underlines that merely perceiving an outgroup as threat is qualitatively different from

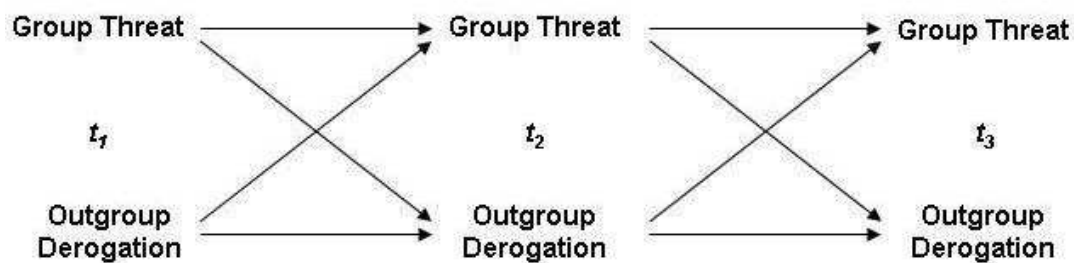


substantive manifestations of outgroup derogation – be it in form of exclusionary attitudes, intended or actual discriminatory behaviors or other forms of outgroup derogation (Stephan and Renfro 2002: 202f.). Still, a key challenge for research in this area that has not been addressed in the past is providing empirical evidence for the assumed direction of causal flow between group threat and outgroup derogation.

*The issue of causal flow in group threat theory:  
three rival conceptualisations*

For facilitated initial understanding of the three theoretical models examined in this study, consider *diagram 1*. This structural diagram illustrates the potential directions of causal flow between group threat and outgroup derogation. Specifically, the arrows pointing from ‘group threat’ to ‘outgroup derogation’ portray the *conventional model* of group threat theory. In turn, the arrows pointing from ‘outgroup derogation’ to ‘group threat’ refer to the *reverse model* of group threat theory. When considered in conjunction, the arrows from group threat to outgroup derogation and, respectively, from outgroup derogation to group threat depict the *reciprocal model* of group threat theory. The remaining arrows between earlier and later measures of the same constructs illustrate autoregressive relations.

Diagram 1. Potential causal relations between group threat and outgroup derogation.



*Conventional model.* In previous research the view predominates that group threat is causally antecedent to outgroup derogation. This *conventional model* of group threat

theory has evoked an enormous amount of correlational studies examining a broad range of dependent variables. For instance, this line of research provided evidence that group threat covaries with prejudice (Stephan and Stephan 2000), denial of citizenship rights of ethnic minorities (Raijman, Semyonov and Schmidt 2004, Scheepers, Gijsberts and Coenders 2002), resistance against policy measures benefiting ethnic minority groups (Stephan, Ybarra, Martinez, Schwarzwald, and Tur-kaspa 1998) and opposition to immigration (Wilson 2001). The common social mechanism assumed to underlie these findings is that if an outgroup is seen as posing a threat to one's ingroup, negative reactions toward the outgroup often serve to maintain or restore a favourable position of one's ingroup.

*Reverse model.* The *reverse model* of group threat theory posits that group threat must be seen a consequence of preexisting levels of anti-outgroup attitudes or behaviors (Kinder and Sanders 1996, Wilson 2001). Following this perspective, the causal chain of the conventional model is reversed and group threat becomes the dependent variable. The idea that preexisting levels of outgroup derogation cause people to perceive an outgroup as posing a threat is consistent with cognitive dissonance theory (Festinger 1957, Harmon-Jones and Mills 1999). Following such reasoning, existing hostile attitudes or negative behavior toward members of an outgroup heighten perceptions of group threat because of people's motivation to avoid inconsistent information (Esses et al. 2001). For instance, in a cross-sectional analysis Wilson (2001) finds support that perceived threats from immigrants covary with US Americans' policy attitudes towards immigration. However, he cautions that "the opposite causal ordering is not implausible. For example, antagonism toward immigrants may find expression in negative policy views, which are then rationalized by threat perceptions." (Wilson 2001: 495). Similarly, Kinder and

Sanders (1996) state for the case of White US-Americans' racial resentment and perceived threats from Blacks: “[..] The perception of threat has a systematic foundation, but the foundation is provided not by actual conditions of conflict and competition but by feelings of racial resentment. [...] Whites feel racially threatened because they are predisposed to look at the world that way; they see danger and risk when others, more sympathetic in their racial sentiments, do not” (Kinder and Sanders 1996: 90).

*Reciprocal model.* A third line of argumentation explicitly points to the potentiality of mutual causal relations between group threat and outgroup derogation (Stephan and Renfro 2002, see also Wilson 2001). This *reciprocal model* of group threat theory posits that at subsequent points in time group threat increases outgroup derogation, while in turn outgroup derogation leads to heightened levels of group threat. Thus, hypothesising reciprocal causal relations between group threat and outgroup derogation integrates the assumptions underlying the *conventional* and the *reverse* causal models. In addition, controlling for mutual relations between group threat and outgroup derogation is important as it accounts for potential overestimation of unidirectional causal relations between both theoretical constructs.

As noted earlier, research on group threat theory generally lacks dynamic analyses of individual change processes over time. Findings from earlier work typically rest on examinations of data cross-sectionally collected at a single point in time. However, it is well known that cross-sectional analyses of this kind provide only very little information about the flow of causality between two (or more) constructs (Finkel 1995). This shortcoming is also inherent to experimental studies documenting that increasing the salience of group threat heightens negative attitudes toward outgroups

(e.g. Esses, Jackson and Armstrong 1998; Ullrich, Christ and Schlueter 2006). A reason for this, as Wagner, Christ and Schmidt (2005) point out, is that adequate experimental designs for simultaneous testing of opposing flows of causality are virtually intractable.

In the subsequent analyses we seek to address the empirical limitations of previous studies. Specifically, to further understanding of group threat theory we take advantage of individual-level repeated measures data which were collected by means of three-wave panel designs. Although data collected by panel studies are usually non-random in nature, such panel data allow at least for the specification of the time ordering between constructs which is necessary to draw causal inferences (Winship and Morgan 1999). We also seek to improve earlier work by using latent autoregressive cross-lagged models (Finkel 1995) in order to segregate the causal effects of group threat and outgroup derogation. In addition, our analyses are based on data from Germany and Russia, two different nation-states. Thus, our investigation is inherently cross-national and thereby examines the generalisability of the causal relations between group threat and outgroup derogation (van de Vijver and Leung 1997).

## **Examining Group Threat Theory in Germany**

### *The German context*

Our empirical investigation begins with the analysis of Germans' perceived group threat and negative attitudes toward foreign workers and their descendants living in Germany. This group poses the largest ethnic minority group in Germany. Historically, the presence of foreign workers in Germany is rooted in the period of

labor shortage during the 1960's. At that time, the German government actively encouraged the migration of workers from countries with an abundance of labor to Germany. The government originally expected these foreign workers to remigrate to their home countries after two or three years. However, many of these so-called guest workers in fact decided to stay in Germany. Moreover, this development was oftentimes accompanied by family reunification (Thränhardt 1992). Thus, the share of foreigners living in Germany continued to increase. But despite the actual status of Germany as immigrant-receiving country, political debates often favoured nonsupportive actions concerning foreign workers and their descendants. One consequence of this policy is that many of the foreign workers and their families do not possess German citizenship, even if they have been living in Germany for decades or were born in the country. Along with worsening economic conditions and demographic change, such debates are considered to have facilitated the spread of anti-minority sentiments in the German public (Pettigrew 1998) as well as the violent outbursts against foreigners and refugees in Germany during the early 90's (Koopmans and Olzak 2004, Zick, Wagner, van Dick and Petzel 2001). Currently, interethnic relations between Germans and foreigners living in Germany continue to be characterised by considerable tensions (Heitmeyer 2005).

## **Data and Measures**

### *Data*

Data for examining group threat theory in Germany are drawn from the longitudinal Group-Focused Enmity (GFE) survey, a three-wave panel study of the German general population aged 16 years and older. Data were collected by means of computer-assisted telephone interviews in 2002, 2003 and 2004. Respondents were randomly selected from a two-stage probability sample (for details, see Heitmeyer

2005). We limit our analytical sample to respondents with German citizenship and without migration background in the past three generations who participated in all three waves. The final sample size was  $N = 825$  (58% of the wave 1 sample)<sup>1</sup>.

### *Measures*

#### *Dislike toward foreigners*

To assess dislike toward foreigners living in Germany, a single item is used. Respondents were asked to reply on a four point Likert-type scale to the following question: “How likable do you consider the foreigners living in Germany to be?” Response options ranged from “very likable” (1) to “very dislikable” (4), thus higher values indicate greater dislike. The advantage of this measure is that it covers emotional manifestations of negative intergroup attitudes. It has long been acknowledged that “a feeling of dislike or an impulse of rejection” is key to prejudice (Blumer 1939: 14, see also Blumer 1958). However, this issue has often been neglected in previous research (Krysan 2000, Pettigrew 1998). A lack of positive emotions toward out-groups as expressed in the above item is also seen to be a measure of negative interethnic attitudes which is less prone to social desirability bias (Krysan 2000, Pettigrew and Meertens 1995).

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<sup>1</sup> We recalculated all subsequent statistical models using raw data with imputed missing cases as well as covariance matrices with pairwise exclusion of missing data (Maximum Likelihood-estimates). As the substantial conclusions do not change, we conclude that our subsequent findings are not distorted by missing data.

*Negative behavioral intentions toward foreigners<sup>2</sup>*

To assess negative behavioral intentions toward foreigners living in Germany, a single-item is employed. Respondents were asked to rate on a four point Likert-type scale the following statement: “I would never buy a car from a foreigner living in Germany”. As Jackson and Esses (2000) point out, even the absence of positive behavioral intentions contributes to intergroup tensions. Clearly, the above item goes beyond simple avoidance and comes close to open discriminatory behavioral intentions. Possible responses ranged from “absolutely agree” (1) to “absolutely disagree” (4). These values were recoded so that higher values indicate greater negative behavioral intentions toward foreigners.

*Group threat*

To measure group threat, we employ three items commonly used in previous research (see Coenders 2001, Rajman, Semjonov and Schmidt 2003, Scheepers, Gijssberts and Coenders 2002). Respondents were asked to rate on four point Likert-

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<sup>2</sup> In additional analyses, we also assessed the relations between perceived group threat and a further measure of outgroup derogation we label ‘anti-foreigner discriminatory attitudes’. This construct was measured as latent variable using what arguably constitutes the two modal indicators for assessing outgroup derogation in the German context, reading “When jobs get scarce, the foreigners living in Germany should be sent home” and “The foreigners living in Germany should choose their marriage partners among their own compatriots” (Porst and Jerst 2005). According to Schmidt, Bandilla, Glöckner-Rist and Heyder (1997), these items express normative preferences for a discriminating treatment of foreigners as underlined by the auxiliary verb “*should*”. Thus, from a conceptual perspective, these indicators tap into a rather different dimension than the perceived negative consequences we assign to the construct of perceived threat. Consistent with this conceptual differentiation, in confirmatory factor analyses anti-foreigner discriminatory attitudes and perceived group threat turned out clearly to be differentiated. Moreover, when examining the direction of causality between these constructs, in line with the previous analyses the data provided support to the conventional model of group threat theory only. Yet to circumvent potential criticism regarding the obvious semantic similarities between the wording of the indicators measuring ‘anti-foreigner discriminatory attitudes’ and ‘perceived group threat’, we refrain from presenting these findings here, which are available on request.

type scales the following statements: (a) “The foreigners living in Germany enrich our culture” (recoded); (b) “Foreigners living in Germany are a burden to our social security system”(c) “The foreign children in schools damage the quality of education of the German children.” These indicators clearly refer to the definition of group threat discussed above: each of these statements refers to some negative consequence attributed to the outgroup. More specifically, while the first item is concerned with the domain of symbolic threat, the second and the third items refer to issues of realistic threat. But notably, none of these measures represents in itself calls specifically for a derogation of the outgroup. Answer possibilities ranged from “absolutely agree” (1) to “absolutely disagree” (4). After recoding, higher values indicate greater group threat.

### *Control Variables*

To isolate the effects of group threat on dislike and negative behavioral intentions against potentially biasing influences of further variables, a series of demographic and sociostructural control variables is included in the analyses. *Place of residence* is measured as a dichotomous category, indicating whether the respondents were living in the western or eastern part of Germany (1 = east). *Gender* was measured with males as reference category (1 = female). *Age* was coded into four categories: 1 = 16-21 years; 2 = 22-34 years; 3 = 35-49 years and 4 = 50-64 years. *Education* is measured with an indicator comprising eight categories, ranging from 1 (“no graduation”) to 8 (“university degree”). *Unemployment* is assessed using a dichotomous measure indicating whether the respondent was unemployed or not (1 = unemployed).

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*Statistical analyses*

A particularly well-suited statistical approach for the longitudinal analysis of alternative causal models is the autoregressive cross-lagged model (Finkel 1995). A key advantage of this method is that for two constructs of interest measured at time  $t-1$  and time  $t1$ , each construct is regressed on both its own lagged score as well as the other construct's lagged score at time  $t-1$ . By doing so, autoregression of each construct with its lagged measurement at time  $t-1$  is taken into account, whereby the corresponding autoregressive coefficients inform about the stability of the rank ordering of individuals for the same construct over time (Berrington, Smith and Sturgis 2006: 22). Thus, the variance left to explain at time  $t1$  is any change that occurred in the constructs between time  $t-1$  and time  $t1$ . Therefore, the cross-lagged coefficients indicate how much change across time in the one construct is caused by the other construct. In the subsequent analyses we extend the autoregressive cross-lagged model to employ latent variables (Finkel 1995). This enables us to account for measurement error known to be quite common in survey data. Following the advice of Anderson and Gerbing (1988), we began our analyses by estimating measurement models. Then, to test for the suggested causal relations we calculated a series of nested structural models (Farrell 1994, Boomsma 2000). Comparison of parameter estimates and overall model fit makes it possible to conclude which predictions on the causal flow of group threat and outgroup derogation correspond best to the data at hand. Specifically, to assess model fit we refer to four widely accepted fit measures: the chi-square-to-degree-of-freedom-ratio ( $\chi^2/df$ , Marsh and Hocevar 1985), the comparative-goodness-of-fit-index (CFI, Bentler 1990) the root-mean-square-of-error (RMSEA, Steiger and Lind 1980) and the  $p$ -value of close fit index (Browne and Cudeck 1993). As a general guideline, we consider a model to be

acceptable if  $\chi^2/df < 5.0$ , CFI  $> .9$ , RMSEA  $< .08$  and if  $p$ -value of close fit index  $> .5$  (Hu and Bentler 1999, Schermelleh-Engel and Moosbrugger 2003). All calculations are based on raw data employing the FIML-procedure implemented in the Amos 5 software (Arbuckle 2003).

## Results

### *Measurement models*

First, we established measurement models for the longitudinal measure of the latent group threat variables<sup>3</sup>. We incorporated autocorrelated error terms for the observed indicators into these models as recommended by Joereskog (1979). Results show that the initial measurement model (1) provided a good fit to the data ( $\chi^2 = 15.41$ ;  $df = 15$ ;  $\chi^2/df = 1.03$ ; CFI = .99; RMSEA = .006;  $p$ -value of close fit = .99). However, an important prerequisite for such kinds of longitudinal analyses is that the observed indicators of the latent group threat variable measure the same properties across time (Meredith and Horn 2001). To examine this issue, we conducted a series of invariance tests. Results show that the factor loadings for all observed variables except item (b) “Foreigners living in Germany are a burden to our social security system” did not significantly change across time. We therefore conclude that our measures are consistent with the criterion of partial measurement invariance (Byrne, Shavelson and Muthén 1989). Thus, we retain equality constraints for all invariant factor loadings throughout the subsequent analyses.

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<sup>3</sup> To give the latent variables a scale, the factor loading of each first indicator was fixed to 1.

*Cross-lagged models*

For the comparative testing of the *conventional*-, the *reverse*- and the *reciprocal* model of group threat theory, we estimated a sequence of nested cross-lagged models (Farrell 1994). We began by establishing a structural model which comprised cross-lagged relations for group threat and outgroup derogation, respectively. This specification corresponded to the theoretical assumptions of the *reciprocal model* of group threat theory. From a statistical point of view, starting with the reciprocal variant is convenient because both the conventional- and the reverse models are restricted variants of the reciprocal conceptualisation. We continued with a structural model where only the paths leading from group threat to the measure of outgroup derogation – e.g. dislike toward foreigners living in Germany – were estimated. By doing so, we subjected to test the idea of group threat as causal antecedent of outgroup derogation as suggested by the *conventional model*. The third and final structural model comprised solely the paths from the measure of ‘outgroup derogation’ to ‘group threat’. This specification follows the theoretical argument of the *reverse model* of group threat theory which views group threat as a consequence of prior levels of outgroup derogation. To compare the relative empirical adequacy from tests of these models, we used chi-square difference ( $\Delta\chi^2$ )-tests. We allowed all control variables to correlate and freed all paths from the controls to group threat as well as the measure of outgroup derogation. Following the advice of Becker (2005), we repeated each model with and without controls. As the results were essentially identical, we only report the analyses without the control variables.

*Group threat and Dislike toward foreigners*

We begin our empirical analyses by examining the causal structure between group threat and dislike toward foreigners living in Germany. Results from the subsequent model tests are shown in table 3.

Table 3. Results from nested model comparisons: Group threat and Dislike.

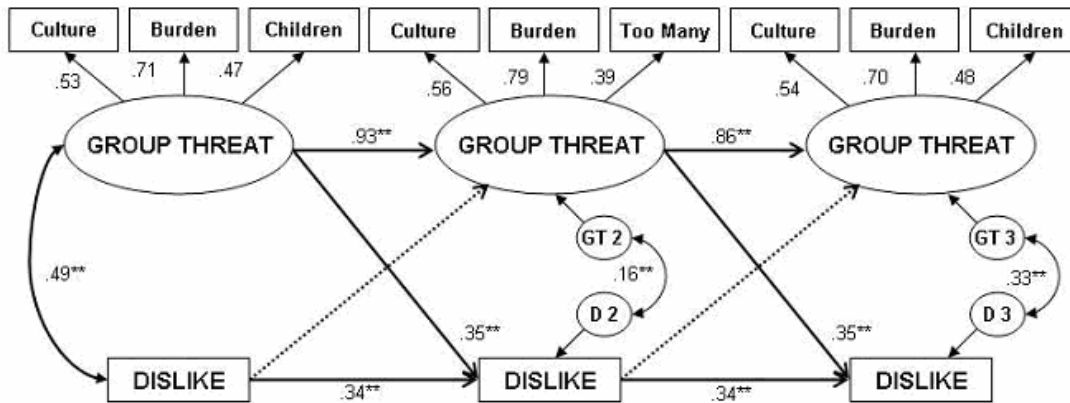
| Nr. | Model Description  | $\chi^2$ | df | $\chi^2/df$ | CFI  | RMSEA | <i>p</i> -close | $\Delta\chi^2$  |
|-----|--|----------|----|-------------|------|-------|-----------------|-----------------|
| 2a  | <i>Reciprocal model</i><br>Group threat on Dislike<br>and Dislike on Group<br>threat | 186.33   | 64 | 2.91        | .969 | .048  | .633            | ---             |
| 2b  | <i>Conventional model</i><br>Group threat on Dislike                                 | 186.61   | 66 | 2.83        | .969 | .047  | .715            | .282, <i>ns</i> |
| 2c  | <i>Reverse model</i><br>Dislike on Group threat                                      | 288.28   | 66 | 4.4         | .943 | .064  | .001            | 101.95**        |

Note: \*  $p < .05$ , \*\*  $p < .01$ , *ns* = not significant

The first row of table 3 describes the performance of the initial structural model (2a). Following the *reciprocal model* of group threat theory, this specification allows for cross-lagged effects for both group threat and dislike. In short, model (2a) shows a good fit to the data ( $\chi^2 = 186.33$ ;  $df = 64$ ;  $\chi^2/df = 2.91$ ; CFI = .969; RMSEA = .048; *p*-value of close fit = .633). Next, we consider the stability coefficients. Specifically, the rather high stability coefficients for group threat with  $\beta = .95$  ( $p < .001$ ) from time 1 to time 2 and  $\beta = .87$  from time 2 to time 3 ( $p < .001$ ) indicate a low amount of aggregate change in Germans' perception of foreigners as threatening. Contrary to that, the stabilities of the measure for dislike were  $\beta = .34$  ( $p < .001$ ) from time 1 to time 2 and  $\beta = .33$  ( $p < .001$ ) from time 2 to time 3. Thus, the amount of change for Germans' dislike towards foreigners was considerably higher. For examining the causal relations between group threat and dislike the cross-lagged coefficients are of central importance. They show that group threat leads to greater dislike from time 1 to time 2 ( $\beta = .35$ ;  $p < .001$ ) as well as from time 2 to time 3 ( $\beta = .36$ ;  $p < .001$ ). In

contrast, the data provide no support for the reverse assumption that dislike leads to greater threat: none of the cross-lagged paths leading from dislike to group threat reached statistical significance.

Figure 1. Estimated model (2b) Group threat and Dislike



Note: Rectangles = observed indicators, ellipses = latent variables, circles = residual disturbance terms. Dotted arrows are constrained to zero. Measurement errors of the observed indicators are not shown. All coefficients are standardized estimates.  $N = 825$ ;  $\chi^2 = 186.61$ ;  $df = 66$ ;  $\chi^2/df = 2.83$ ; CFI = .969; RMSEA = .047;  $p$ -close = .715; \* $p < .05$ ; \*\* $p < .01$ .

To provide further evidence on these findings, in model (2b) we constrained the cross-lagged effects from dislike on group threat to zero as suggested by the *conventional model* of group theory. As shown in the second row of table 2, the non-significant chi-square difference test indicates that model (2b) does match the data equally well as model (2a) ( $\Delta\chi^2 = .282, ns$ ).

Alternatively, following the *reverse model* of group threat theory in structural model (2c) we constrained the cross-lagged effects from group threat on dislike to zero. Thus, in structural model (2c) only cross-lagged effects from dislike on group threat were estimated. However, as presented in the third row of table 2, the chi-square difference test shows that this model fits to the data significantly worse than the foregoing one ( $\Delta\chi^2 = 101.95, p < .001$ ). These findings lead us to conclude that group

threat increases dislike against foreigners living in Germany. Moreover, neither does dislike increase group threat nor do we find evidence for reciprocal causal relations between both constructs. Thus, these results clearly support the assumption that group threat is causally antecedent to outgroup derogation as deduced from the *conventional model* of group threat theory.

*Group threat and negative behavioral intentions*

We continue our analyses by testing the causal relations of group threat and negative behavioral intentions toward foreigners. Retaining our previous methodological approach, we begin with the structural model (3a). Following the *reciprocal model* of group threat theory, model (3a) comprises cross-lagged effects leading both from group threat to negative behavioral intentions and from negative behavioral intentions to group threat. Results of this model are shown in the first row of table 4.

Table 4. Results from nested model comparisons: Group threat and negative behavioral intentions

| Nr. | Model Description  | $\chi^2$ | df | $\chi^2/df$ | CFI  | RMSEA | <i>p</i> -close | $\Delta\chi^2$  |
|-----|--|----------|----|-------------|------|-------|-----------------|-----------------|
| 3a  | <i>Reciprocal model</i><br>Group threat on negative behavioural intentions and negative behavioural intentions on Group threat | 183.64   | 64 | 2.87        | .967 | .048  | .673            | ---             |
| 3b  | <i>Conventional model</i><br>Group threat on negative behavioural intentions   | 189.13   | 66 | 2.87        | .966 | .048  | .679            | 5.49, <i>ns</i> |
| 3c  | <i>Reverse model</i><br>Negative behavioural intentions on Group threat  | 238.72   | 66 | 3.62        | .952 | .056  | .083            | 55.08**         |

Note: \* *p* < .05, \*\* *p* < .01, *ns* = not significant

The fit measures for model (3a) reveal a good fit to the data ( $\chi^2 = 183.64$ ; *df* = 64;  $\chi^2/df = 2.87$ ; RMSEA = .048; *p* value of close fit = .673). While the stabilities of the latent threat variable were virtually identical to the stabilities of the prior analyses, the stability coefficients for the indicator assessing negative behavioural intentions

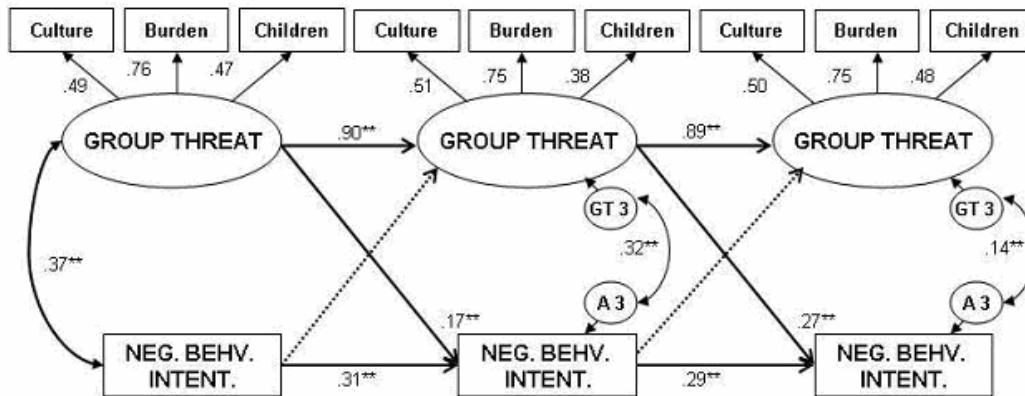
were  $\beta = .30$  ( $p < .001$ ) from time 1 to time 2, and  $\beta = .30$  ( $p < .001$ ) from time 2 to time 3. Regarding the cross-lagged effects, the data reveal that group threat increases negative behavioral intentions both from time 1 to time 2 ( $\beta = .19$ ;  $p < .001$ ) as well as from time 2 to time 3 ( $\beta = .27$ ;  $p < .001$ ). However, the reverse effects leading from negative behavioral intentions to group threat gain no empirical support.

Next, we set out to examine the assumptions of the *conventional model* of group threat theory. Accordingly, in model (3b) we constrained the (insignificant) cross-lagged effects from negative behavioral intentions to group threat to zero. Compared with the preceding model (3a), these restrictions did not significantly alter the model fit ( $\Delta\chi^2 = 5.49$ , *ns*).

Last, in model (3c) we examined the performance of the *reverse model* of group threat theory. Here, constraining the cross-lagged effects of group threat on negative behavioral intentions to zero resulted in a considerably worse model fit ( $\Delta\chi^2 = 55.08$ ,  $p < .001$ ).

Taken together, we conclude that group threat increases negative behavioral intentions toward foreigners, however negative behavioral intentions do not increase perceived threat. Thus, in line with the foregoing results, group threat turns out to be causally antecedent for intended negative behavior toward foreigners. No empirical evidence was found for the alternative theoretical assumptions posited by the *reciprocal* or the *reverse model* of group threat theory. In sum, the findings reported in this section provide unequivocal support for the assumption that group threat is causal antecedent of outgroup derogation.

Figure 2. Estimated model (5a) for Group threat and Ethnic distance



Note: Rectangles = observed indicators, ellipses = latent variables, circles = residual disturbance terms. Dotted arrows are constrained to zero. Measurement errors of the observed indicators are not shown. All coefficients are standardized estimates.  $N = 825$ ;  $\chi^2 = 189.13$ ;  $df = 66$ ;  $\chi^2/df = 2.87$ ;  $CFI = .966$ ;  $RMSEA = .048$ ;  $p\text{-close} = .679$ ; \* $p < .05$ ; \*\* $p < .01$ .

Notwithstanding these results, one might argue that our conclusion is to a large extent contingent on the high amount of stability found for the latent group threat variable. To be sure, this an important finding for itself. However, seen from the statistical angle, the large stability coefficients imply that only relatively small amounts of variance in the latent group threat variable are left to be explained for the measures of outgroup derogation. Thereby, the potentiality to observe reverse or reciprocal causal effects is remarkably confined. However, in the following section we show that our data focusing on Russian interethnic relations overcome this limitation.

## Examining Group Threat Theory in Russia

### *The Russian context*

In order to understand Russian's distance toward ethnic minorities it is useful to consider the ethnic structure of the former Soviet Union. A critical fact was that the Soviet Union was a multinational political system characterised by a large ethnic



heterogeneity. According to Hraba, Dunham, Tumanov and Hagendoorn (1997), the population of the Soviet Union comprised no less than 200 distinct ethnic groups. Regarding this diversified ethnic structure, the official political position of the Soviet Union followed an egalitarian and assimilationist ideology. The ultimate aim of this policy was to “[...] erase distinct national feelings among the Non-Russian peoples and to install a ‘Homo Sovieticus’ (Knippenberg 1991). The political ideal was that [...] the Soviet people would draw together (*slbizhenie*) and eventually fuse (*slyanie*) into one Soviet people. However, since Russian culture and language had to be the uniting force, sovietization became *de facto* russification” (Hagendoorn, Drogendijk, Tumanov and Hraba 1998). Thus, the ethnic group of the Russian people dominated the central sociocultural, economic and political positions in the Soviet Union (Dixon 1990; Hagendoorn, Linssen and Tumanov 2001). This configuration provided the background not only for the deterioration of interethnic relations succeeding the dissolution of the Soviet Union in 1991, but also for the state of these relations in Russia as they are today. Several sources indicate that in Russia (like in other societies), prejudice and intolerance against ethnic minorities are an urgent social problem (Gibson and Duch 1993; Hagendoorn, Linssen and Tumanov 2001, Hagendoorn, Drogendijk, Tumanov and Hraba 1998).

## **Data and Measures**

### *Data*

Data for testing group threat theory in Russia were drawn from the Russian Socio-Economic Transition (RUSSET) panel study (van der Veld 2005). In this multiwave panel survey of the Russian general population aged 18 years and older, suitable indicators for measuring our construct of interest were contained in waves 3, 4 and 7.

Data collection for these waves took place in 1993, 1994 and 1997 by means of face-to-face interviews. Respondents were randomly selected using a multistage area sampling procedure (for details, see van der Veld 2006a). For the purposes of this study, only data from people who identified themselves as belonging to the ethnic group of Russians are employed. Again, all models were estimated based on a full-case design, yielding a sufficient sample size of  $N = 953$  (48,3% of the initial wave 3 sample)<sup>4</sup>.

### *Measures*

#### *Ethnic distance*

To measure Russian's ethnic distance we employ two items<sup>5</sup>. Respondents were asked to indicate their level of agreement to the following statements: (a) "I would not mind to have a member of an ethnic minority group as a neighbour" (recoded) and (b) "When you get to know the minorities better, they generally turn out to be more friendly" (recoded). Response options were given on a 5-point Likert-type scale ranging from "completely disagree" (1) to "completely agree" (5). Prior to data

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<sup>4</sup> As in the previous section for the German panel data, we repeated calculations of the subsequent statistical models referring to the Russian data using raw data with EM-imputed missing cases as well as covariance matrices with pairwise exclusion of missing data (Maximum Likelihood-estimates). We conclude that our findings are not biased by missing data as the substantial conclusions did not change.

<sup>5</sup> According to Bogardus (1925) and Park (1924), Hello (2003: 6) conceptualises ethnic distance as behavioural intention towards ethnic minorities given increasing degrees of closeness towards such minority groups. Consistent with this conceptualisation, item (a) refers to the hypothetical situation of accepting ethnic minorities as neighbours. However, item (b) refers only indirectly to a behavioral issue (i.e. getting to know ethnic minorities). Despite this slight deviance in the wording of the latter indicator, the measurement model described in the next section provides unequivocal support that both indicators load on a single underlying dimension. We therefore consider our classification of these items as measures of ethnic distance to be theoretically and empirically justified.

analyses, both items were recoded so that higher values indicate greater ethnic distance.

### *Group threat*

To measure group threat, we selected three items. Respondents were asked to use a five-point Likert-type scale to rate the following statements: (a) “The integration of culture of the ethnic minorities will be an enrichment of the Russian culture” (recoded); (b) “Ethnic minorities increase the crime rates in Russia” and (c) “Ethnic minorities threaten the political system in Russia”. Response options ranged from “completely disagree” to “completely agree”. Prior to data analyses, the first item was recoded. After that, higher values of each indicator indicate greater perceived group threat. Note that while the first item taps into the domain of symbolic threat, the remaining items refer to issues of realistic threat.

### *Control variables*

We included a number of demographic and sociostructural control variables parallel to the ones used in the German study. *Gender* was measured with males as reference category (1 = female). *Age* was coded into 11 categories ranging from 18-25 years (min.) to above 70 years (max.). *Education* is assessed with an indicator consisting of 9 substantive categories ranging from 1 (“primary education”) to 9 (“scientific degree”). *Unemployment* was assessed using a dichotomous measure indicating whether the respondent was unemployed or not (1 = unemployed) at the time of the interview.

## Results

### *Measurement models*

In line with the preceding analyses, we initially estimated measurement models including autocorrelated error terms (Jöreskog 1979) for the observed indicators of the latent group threat and ethnic distance variables<sup>6</sup>. According to the results, measurement model (4a) showed a good fit to the data ( $\chi^2 = 152.1$ ;  $df = 60$ ;  $\chi^2/df = 2.53$ ; CFI = .977; RMSEA = .04;  $p$  value of close fit = .98). Constraining all factor loadings of the latent group threat variable (model 4b) revealed a slight, though significant difference regarding the longitudinal factor loadings of the group threat indicator ( $c$ ) from time 2 to time 3. Still, the factor structure of the latent group threat variable corresponds to the requirement of partial invariance (Byrne, Shavelson and Muthén 1989, Meredith and Horn 2001). Likewise, in regard to the latent ethnic distance variable equality constraints did not result in significantly altered model fit ( $\Delta\chi^2 = 8.05$ , *ns*).

### *Cross-lagged models*

To examine the causal structure of group threat and ethnic distance in Russia, we estimated three subsequent cross-lagged models. We used chi-square difference tests to compare relative model fit just as in the foregoing analyses. Repeating analyses with and without the control variables left parameter estimates virtually unaffected. As the conclusions remain unaltered, we only report the analyses without the controls (Becker 2005).

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<sup>6</sup> cf. Endnote 2.

Table 5. Results from nested model comparisons Group threat and Ethnic distance

| Nr. | Description  | $\chi^2$ | df  | $\chi^2/df$ | CFI  | RMSEA | $p$ -close | $\Delta\chi^2$  |
|-----|--|----------|-----|-------------|------|-------|------------|-----------------|
| 5a  | <i>Reciprocal model</i><br>Group threat on Ethnic distance and Social distance on Group threat | 219.4    | 106 | 2.07        | .973 | .034  | 1.0        | ---             |
| 5b  | <i>Conventional model</i><br>Group threat on Ethnic distance                                   | 220.31   | 108 | 2.04        | .973 | .033  | 1.0        | .905, <i>ns</i> |
| 5c  | <i>Reverse model</i><br>Ethnic distance on Group threat  | 229.61   | 108 | 2.12        | .971 | .034  | 1.0        | 10.21**         |

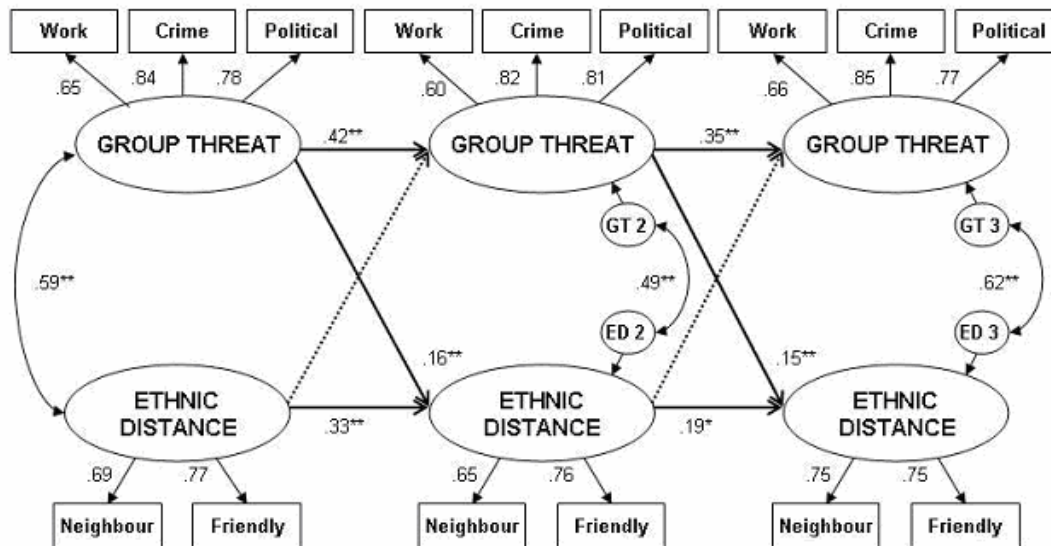
Note: \*  $p < .05$ , \*\*  $p < .01$ , *ns* = not significant

Following the *reciprocal model* of group threat theory, the initial model (5a) comprised cross-lagged relations between group threat and ethnic distance. According to the fit statistics this model showed a good fit to the data ( $\chi^2 = 219.4$ ;  $df = 106$ ;  $\chi^2/df = 2.07$ ; CFI = .973; RMSEA = .034;  $p$  value of close fit = 1.0)<sup>7</sup>. For the latent group threat variables, the stability coefficients add up to  $\beta = .40$  ( $p < .001$ ) from time 1 to time 2 and  $\beta = .33$  ( $p < .001$ ) from time 2 to time 3. The stability coefficients for the latent ethnic distance variable show comparable magnitudes ( $\beta = .35$  from time 1 to time 2 and  $\beta = .20$  from time 2 to time 3, both  $p < .001$ ). Thus, both group threat and ethnic distance comprise of a considerable amount of explainable variance. Turning to the cross-lagged coefficients of model (5a), we find that group threat exerts positive effects on ethnic distance for both the one-year interval ('93-'94) between time 1 and time 2 ( $\beta = .16$ ,  $p < .001$ ) and for the three-year

<sup>7</sup> It is well-known that correlated residual disturbances as between the latent group threat and ethnic distance variables can be evoked by various reasons (Berrington, Smith and Sturgis 2006). For instance, to examine the potential influence of unobserved variable bias (Andersons and Williams 1992) we estimated several additional models incorporating further 'control'-variables. Unfortunately, this strategy didn't provide any substantial insights. It should therefore be noted that in the questionnaires the items measuring group threat and social distance were presented to the respondents in very close succession. Given this imperfection in the questionnaire design, we think that there is good reason to expect that response effects (Green and Citrin 1994) between the items are at least partly responsible for the size of the correlations between the disturbances.

interval ('94-'97) between time 2 and time 3 ( $\beta = .14, p < .001$ ). However, model (5a) reveals no significant reverse effects from ethnic distance on group threat. Again, our next step was to examine the *conventional model* of group threat theory. Accordingly, in model (5b) we only allowed for cross-lagged effects from group threat on ethnic distance. The non-significant  $\chi^2$ -difference test ( $\Delta\chi^2 = .905, ns$ ) indicates that this restrictions did not lead to a significant worse fit than the prior model (5a).

Figure 3. Estimated model (5a) for Group threat and Ethnic distance



Note: Rectangles = observed indicators, ellipses = latent variables, circles = residual disturbance terms. Dotted arrows are constrained to zero. Measurement errors of the observed indicators are not shown. All coefficients are standardized estimates.  $N = 953, \chi^2 = 220.3, df = 108, \chi^2/df = 2.04, CFI = .973, RMSEA = .033, p\text{-close} = 1, *p < .05, **p < .01$ .

Finally, following the *reverse model* of group threat theory in model (5c) we constrained the effects from group threat on ethnic distance to equal zero. Results show that this model fitted the data significantly worse than the baseline model 5a ( $\Delta\chi^2 = 10.21, p < .01$ ). To conclude, these findings provide further evidence to consider group threat as an antecedent of outgroup derogation.

## Discussion

Drawing upon cross-national multiwave panel data from Germany and Russia, the purpose of this study was to investigate the causal structure of group threat theory from a longitudinal perspective. To accomplish this, we examined the empirical adequacy of three rival theoretical models. These models proposed either that group threat covaries with outgroup derogation (*conventional model*), that outgroup derogation covaries with group threat (*reverse model*) or that reciprocal causal relations between group threat and outgroup derogation exist (*reciprocal model*). To the best of our knowledge, this is the first study which provides a dynamic test of these competing theoretical perspectives. What this study adds to the research literature is longitudinal evidence that group threat is causally antecedent to outgroup derogation as suggested by the *conventional model* of group threat theory. Withstanding long-standing criticism towards this conceptualisation, support was neither found for the assumptions of the *reverse-* nor of the *reciprocal model*. Specifically, according to the German data heightened levels of group threat lead to heightened levels of dislike and intended negative behavior toward foreigners. Consistent with these findings, in the Russian data group threat turned out to be causally prior to ethnic distance toward ethnic minorities. Rejecting long-standing criticism, neither the propositions of the *reverse-* nor of the *reciprocal model* of group threat theory gained empirical support. The consistency of these findings across two different national contexts clearly supports the generalisability of these results. Therefore, this study also sets the stage for further longitudinal research investigating whether external conditions such as actual economic or political competition between groups (Blalock 1967) or negative political propaganda (Blumer 1958) are perceived as group threat. Further, with regard to applied

initiatives our findings suggest that improving negative interethnic attitudes via reducing perceptions of group threat (Stephan and Vogt 2004) is indeed a reasonable strategy. Besides these contributions, examining the question in how far our findings apply to other spatiotemporal contexts remains as a promising avenue for future research, as well. A further limitation of this study is that the panel data we used cover fairly short time spans. Although this fact does not necessarily challenge our empirical findings, including more measurement points would have provided a better picture of the dynamic relations of group threat and outgroup derogation. Notwithstanding these limitations, this study provided insights in the causal order of group threat and outgroup derogation from a cross-national longitudinal perspective. Thus, for more conclusive support, future research is needed, replicating these results for more people, more places and more periods of time.



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**Tables Appendix**

Table A1. Means (M) and Standard deviations (SD) Variables GFE-Study

| Variables                      | 2002 |     | 2003 |     | 2004 |     |
|--------------------------------|------|-----|------|-----|------|-----|
|                                | M    | SD  | M    | SD  | M    | SD  |
| Group threat                   | 2.18 | .71 | 2.27 | .65 | 2.34 | .64 |
| Dislike                        | 2.19 | .53 | 2.2  | .49 | 2.22 | .51 |
| Negative behavioral Intentions | 1.82 | .97 | 1.91 | .98 | 1.98 | .99 |

Table A2. Means (M) and Standard deviations (SD) Variables RUSSET-Study

| Variables       | 1993 |      | 1994 |      | 1997 |      |
|-----------------|------|------|------|------|------|------|
|                 | M    | SD   | M    | SD   | M    | SD   |
| Group threat    | 2.76 | 1.12 | 3.03 | 1.03 | 3.1  | 1.06 |
| Ethnic distance | 2.14 | .88  | 2.27 | .97  | 2.49 | .93  |

## **Chapter 3      Merging on Mayday: Subgroup and superordinate identification as joint moderators of threat effects in the context of the European Union's expansion<sup>8</sup>**

(co-authored by Johannes Ullrich and Oliver Christ)

### **Abstract**

Threat has been proposed as an important cause of prejudice with social identification moderating its effects. In the context of the expansion of the European Union, two studies ( $N = 216$  students and  $N = 107$  non-students) examined how people with different levels of subgroup and superordinate identification respond to threats from an outgroup nested within the same superordinate category. Across experiments, a consistent finding was that participants who strongly identified with the subgroup (Germany) and the superordinate group (Europe) at the same time were most susceptible to a subtle manipulation of threat. Among these participants, threat increased prejudice (Studies 1 and 2) and ingroup projection (Study 2). Findings are discussed with regard to theoretical models of subgroup relations, especially the ingroup projection model, as well as the European integration process.

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## **Introduction**

The psychological experience of threat occupies a prominent role among the putative causes of prejudice<sup>1</sup>. In fact the social psychological literature abounds with a variety of partly overlapping conceptualisations of threat as a determinant of negative attitudes and actions directed toward outgroup members. For instance, threat is a central component of theories of authoritarianism (e.g. Adorno, Frenkel-Brunswik, Levinson, and Sanford, 1950; Altemeyer, 1988), realistic group conflict (e.g. Esses, Jackson, and Armstrong, 1998; LeVine and Campbell, 1972; Sherif, 1966), and social identity (e.g. Tajfel and Turner, 1979, see also Branscombe, Ellemers, Spears, and Doosje, 1999). To disentangle these (and other) different aspects of threat, W.G. Stephan and C.W. Stephan (2000; see also W.G. Stephan and Renfro, 2002) proposed a theoretical framework that has been successfully applied to explain a wide range of prejudices against different groups. Viewed together, this body of research suggests that almost any kind of threat to the ingroup, whether realistic or symbolic, deteriorates relations between ingroup and outgroup.

Potential moderators of this path from threat to prejudice, however, are only beginning to be explored empirically. In this paper, we focus on social identification as one particularly promising moderator variable that may help to explain variance in the size of intergroup threat effects on prejudice. In the following, we first review previous examinations of the role of identification in threatening intergroup contexts. Then we introduce two theoretical approaches derived from self-categorization theory (Turner, 1985; Turner, Hogg, Oakes, Reicher, and Wetherell, 1987), which have contradictory implications for managing subgroup and superordinate identities in the interest of harmonious subgroup relations. These approaches inspired the research design of two empirical studies described thereafter.



*Social Identifications as Moderators of Threat Effects*

To date, only few studies (Bizman and Yinon, 2001a, 2001b; Struch and Schwartz, 1989) have tested the hypothesis that social identification would strengthen the association between perceived threats against the ingroup and hostile reactions toward an outgroup (Stephan and Renfro, 2002). For instance, in one sample of Israeli respondents it was found that the more people identified with the category of Israelis, the stronger was the association between perceived (realistic) threat and prejudice expressed toward Russian immigrants (Bizman and Yinon, 2001a).

However, none of these studies has examined how subgroup and superordinate group identification combine to moderate threat effects. As noted by Hornsey and Hogg (2000a), social identity analyses often run the risk of blurring the hierarchical nature of intergroup relations. Any ingroup-outgroup distinction presupposes, at a minimum, one higher order identity (cf. SCT, e.g. Turner, 1985). There are numerous examples of ingroups and outgroups embedded in larger social categories which are able to generate strong feelings of attachment and pride. Think of blacks and whites in the United States of America or East and West Germans after the reunification of both states, for instance. There are two major theoretical models that explicitly acknowledge the role that this hierarchicality of social structure plays for intergroup relations. In the next section, we describe Hornsey and Hogg's (2000a) and Mummendey and Wenzel's (1999) models of subgroup relations and explore how their scope may be expanded to account for differences in threat effects on prejudice.

**Theoretical Models of Sub- and Superordinate Group Identifications**

We first turn to Hornsey and Hogg's (2000a) integrative model of subgroup relations. Available space does not allow us to do justice to valuable earlier works in

the tradition of the contact hypothesis, on which the authors build (the reader is referred to the original source, see also Brown and Hewstone, 2005; Pettigrew, 1998). Let it suffice to say that as social identity theorists became aware of the power of social categorizations to create conflict (e.g. Tajfel, Billig, Bundy, and Flament, 1971) many of them have argued for de- or recategorization as an effective means to reduce ingroup bias and conflict (e.g. Brewer and Miller, 1984; Gaertner, Mann, Murrell, and Dovidio, 1989). That is, contact between groups was hypothesised to be most harmonious when members of different groups would interact under conditions of low category salience, either because a common superordinate identity would be salient in lieu of the ingroup identity or because members of different groups would interact on a purely interpersonal level.

In contrast, Hornsey and Hogg's model (drawing on Gaertner, Rust, Dovidio, and Bachman, 1994; Hewstone and Brown, 1986) suggests that these strategies may be flawed because more often than not subgroup identities are highly important to people's self-concepts and, therefore, difficult to abandon. As the de- and recategorization strategies are aimed at deemphasizing the subgroup's identity, they threaten the subgroup's distinctiveness and should, according to Hornsey and Hogg's analysis, create rather than reduce intergroup conflict (see also Gaertner and Dovidio, 2000). In support of their point, Hornsey and Hogg cite empirical evidence from Canada and the United States which shows that minority as well as majority members prefer to maintain their culture and language. As an alternative to the traditional American "melting-pot" model of assimilation, Hornsey and Hogg suggest that "the most effective way to improve subgroup relations is to nourish subgroup identities and to manage the nature of their relations to one another within the superordinate group context, that is, to strive for dual identification or subgroup

identification contextualized by superordinate identification.” (Hornsey and Hogg, 2000a, p.154). Hence, the normative implication of this model is to create multicultural societies which acknowledge the existence of diverse social groups, thus minimizing the identity threat associated with de- or recategorization, and encourage their members to identify with their group (e.g. ethnic groups within nations) as well as with more inclusive categories (e.g. nations).

This position can be contrasted with the normative implications of the ingroup projection model put forward by Mummendey and Wenzel (1999). Their model begins with the question of how people deal with intergroup difference. The basic idea of this approach is that intergroup differences lead to negative evaluations of an outgroup only to the extent that these differences violate a more inclusive category’s prototype. If the prototype of the superordinate category is construed in such a way as to include characteristics of the outgroup, intergroup differences will be judged positively. The authors explain the ubiquity of prejudices with a general tendency of people to project attributes of their ingroup onto a higher order category. Consequently, ingroup attributes become the normative frame of reference for judging the outgroup. Mummendey and Wenzel assume that this tendency is most pronounced among people who simultaneously identify with their subgroup and the superordinate category. Thus, with regard to intergroup attitudes, this approach comes to a conclusion diametrically opposed to what is implied by Hornsey and Hogg’s (2000a) model. According to the ingroup projection model, dual identification leads to comparably negative outgroup attitudes and problematic intergroup relations because it is related to ingroup projection.

In comparing the Hornsey-Hogg and Mummendey-Wenzel models, it is important to note that, although one approach would advocate a dual identity strategy for

improving intergroup relations and the other would not, there is, strictly speaking, no theoretical contradiction, because both models postulate different mechanisms (decreased distinctiveness threat and increased ingroup projection) by which dual identification should decrease or increase prejudice. This is reflected in the fact that the two models are both grounded in empirical evidence: The ingroup projection approach, postulating a positive effect of dual identification on prejudice via ingroup projection, has withstood empirical tests (e.g. Waldzus, Mummendey, Wenzel, and Weber, 2003; Wenzel, Mummendey, Weber, and Waldzus, 2003) just like the hypothesis that dual identities are associated with reduced prejudice (e.g. Gonzalez and Brown, 2003; Hornsey and Hogg, 2000b). Thus it is conceivable that these apparent inconsistencies are due not only to methodological differences (e.g., experimental vs. correlational approaches) but also to the fact that the presumed mediators, distinctiveness threat and ingroup projection, may be impacted by yet other (uncontrolled) factors. In this regard, Waldzus, Mummendey and Wenzel (2005) conjectured that intergroup threat might be a trigger of ingroup projection. Interestingly, some indirect evidence for this hypothesis can be found in a social identity complexity experiment reported by Roccas and Brewer (2002). Following a threat manipulation, participants in this study viewed their multiple ingroups (among them Israelis and Jews) as more similar to each other than did participants in a control condition, which arguably constitutes a similar effect to ingroup projection.

In sum, the Hornsey-Hogg and the Mummendey-Wenzel models both relate subgroup and superordinate identifications to prejudice, but, owing to their different origins, focus on different mediating variables. Whereas the Hornsey-Hogg model, emphasizing the dangers of assimilationist acculturation, focuses on being categorized by others (thus the mediator identity threat), the Mummendey-Wenzel

model, being strongly rooted in Turner and colleagues' (1987) social cognitive theory of group behavior, focuses on the process of self-categorization (thus the mediator ingroup projection). These differences provide clues as to how subgroup and superordinate identification combined may moderate effects of threat. If threat triggers ingroup projection as suggested by Waldzus and colleagues (2005) and the related findings of Roccas and Brewer (2002), then ingroup projection may for two reasons be most pronounced among people strongly identifying with their subgroup *and* a superordinate group ( i.e., dual identifiers, Waldzus et al., 2003; Wenzel et al., 2003). Either dual identifiers are exposed to intergroup threats more than other people, which is unlikely, or dual identifiers may perceive an intergroup threat as more threatening than others. Regardless of which of these options is true, however, this analysis suggests that intergroup threats may have stronger effects on prejudice among dual identifiers.

### **Superordinate and Subgroup Identification in the Context of the European Union**

A test of these assumptions requires an experimental approach which separates exposure to threat from threat perceptions. Serendipitously, current historic developments in Europe provided a realistic context for our purposes. Some background information seems in order here before we proceed to describing the setup of our studies. According to the so-called “Maastricht Treaty” of 1992, any European state may apply to become a member of the European Union (EU). On May 1st, 2004, the EU officially welcomed ten successful applicant states as new members, eight of which are located to the East of Germany and the other older member states (e.g. Poland, Czech Republic, Hungary, Slovakia) – hence the term “East enlargement” often used to refer to this historic event. In Germany, the

eastward expansion had been heavily advertised in the media as creating a Europe of greater political and – in the long run – economic power as well as providing a number of benefits to the citizens (e.g. a greater ease of traveling). Nevertheless, the so-called “Euroskeptics” among German politicians had not failed to stir distrust and fear in the public by linking the eastward expansion to economic risks and a higher crime rate (that allegedly would result from the opening of the borders to the East). According to a 2004 Eurobarometer survey (fieldwork between February and March), Germans’ attitudes toward the expansion were significantly below the EU average, with only 28 percent being in favor of it (56 percent against, 16 undecided, cf. European Opinion Research Group EEIG, 2004). Thus, when May 1st was approaching, it seemed that public opinion in Germany was alive with hopes and fears that lent themselves to being activated in the course of a social psychological experiment. More than that, the particular constellation of Germany and the new Eastern member states becoming subgroups embedded in a common superordinate category (the EU) invited an empirical assessment of the effects of subgroup and superordinate identifications.

#### *Overview of the Present Research*

To summarize so far, the following main hypotheses guided our research: (1) Based on a host of previous studies on intergroup threat, we expected that the threat posed by the EU’s eastward expansion to German participants would produce more negative attitudes toward citizens of the new East European member states. (2) We further assumed that this threat effect would be jointly moderated by subgroup identification and identification with the superordinate category such that this effect would be most pronounced among dual identifiers. (3) Finally, we expected that dual

identifiers would perceive the threat effected by our experimental manipulation as more threatening than others.

We assessed these hypotheses in two studies. Study 1 was to provide the first empirical evidence for the moderating role of subgroup and superordinate identification combined. Study 2 was done to replicate the results of Study 1, and to probe further into the underlying mechanisms.

Although not the focus of our research, our design also allows for an exploration of the interactive effects of subgroup and superordinate identification on outgroup attitude. In the light of our arguments presented above, such exploratory analyses might reveal that, disregarding the threat factor, dual identification produces comparably positive outgroup attitudes in line with the Hornsey-Hogg model.

## **Study 1**

### *Method*

#### *Overview*

To maximize the salience of the eastward expansion of the EU, all data for study 1 were collected at symbolically meaningful dates. The first subsample was recruited and tested on May 1<sup>st</sup>, 2004, the official date of EU's expansion. The second subsample was recruited and tested four days prior to the election of the expanded European Parliament (June 13<sup>th</sup>, 2004).

#### *Participants and Design*

Subsample 1 was a convenience sample of  $N = 144$  volunteers, which was obtained by asking train and air travellers at train stations and a large German airport to participate in a survey about the East-Enlargement. Subsample 2 was a student

sample ( $N = 119$ ) tested at the end of a lecture in a large lecture hall. After dropping participants of non-German origin and those who did not complete the free response procedure used as manipulation (see below), the final samples consisted of  $N = 107$  general population participants (Subsample 1;  $N = 45$  women and  $N = 62$  men, median age = 34) and  $N = 95$  first-year psychology students of the University of Marburg, Germany, (Subsample 2;  $N = 78$  women and  $N = 17$  men, median age = 20) with complete data for all variables. Participants were randomly assigned to either the high threat or the low threat condition.

In order to account for the differences in subsample composition and slightly different measurement instruments (see below), we used an indicator variable to distinguish Subsample 1 from Subsample 2. Preliminary analyses revealed that for all hypothesis tests presented below, this indicator variable did not interact with any of our research factors. In the following, we thus treat both subsamples as one sample.

### *Procedure*

The experimental manipulation was effected by varying the instructions for a free response section included in a questionnaire. In the high threat condition ( $N = 90$ ), participants were informed that EU's expansion would entail not only advantages and benefits, but also disadvantages and risks. In this survey, participants were further told, researchers were interested in finding out about the "disadvantages and risks associated with the inclusion of the new Eastern European countries within the EU". Participants were asked to list up to four disadvantages and risks. In the low threat condition ( $N = 112$ ), the opposite instructions were given, that is, participants were asked to come up with "advantages and benefits of the East enlargement". In contrast to previous manipulations of intergroup threat which made specific aspects



of an outgroup salient (e.g. Jackson and Esses, 2000; Sniderman, Hagendoorn, and Prior, 2004), we used an idiosyncratic procedure to elicit threat perceptions. This was justified by the fact that our sole goal was to make threatening aspects of EU's expansion salient in the high threat condition, and non-threatening aspects in the low threat condition, regardless of the specific content.

Measures of national and European identification were obtained prior to the experimental manipulation; manipulation checks and attitude toward people from the new Eastern European EU member countries were measured afterwards. For all measures, six-point-scales were used. Descriptive statistics and intercorrelations are presented in Appendix A.

Special care was taken that participants filled out their questionnaires individually. Upon completion of the questionnaire, Subsample 1 participants were given the opportunity to write down their names and addresses if they wished to receive feedback about the study. Participants in Subsample 2 were debriefed during a lecture one week later as part of an experimental demonstration.

### *Instruments*

*Manipulation check.* Two items were used as a manipulation check (“All in all, I feel threatened by the East enlargement of the EU”; “All in all, I see Germany threatened by the East enlargement of the EU”). Because both threat indicators were strongly correlated<sup>2</sup> ( $r = .85, p < .001$ ), an index of perceived threat was computed by averaging the scores obtained on each item. Higher values indicate higher perceived threat.

*Identification.* In Subsample 1, we measured National identification and European identification each with two items (“I identify with Germany / Europe”, “I am proud

to be German / European”). Item-intercorrelations were sufficiently high (national identification:  $r = .65, p < .001$ ; European identification:  $r = .52, p < .001$ ) to justify averaging them. For Subsample 2, we adapted the item content to the student population. That is, we replaced the item “I am proud to be German / European” with the item “In general, I am glad to be German / European” which we know from our own previous research falls more in the medium range of item difficulty than the former. Additionally, we used the items “My belonging to Germany / Europe is important to me” and “The international reputation of Germany / Europe is important to me”. Item wording was based on existing identification scales reported in Haslam (2001). Internal consistencies of the scales were good (for national identification,  $\alpha = .87$ ; for European identification,  $\alpha = .84$ ). Thus we averaged the items for each construct.

*Outgroup attitude.* Attitude toward people from the new Eastern European EU member countries was measured with eight items based on an intergroup attitude scale from Wenzel et al. (2003). The items form four subconcepts, namely, sympathy (e.g. “I think Eastern Europeans are very likeable.”), willingness for intergroup contact (e.g. “I would like to get to know more Eastern Europeans.”), behavioral intentions (e.g. “I can well imagine to go on vacation in one of the Eastern European countries.”), and tolerance (e.g. “It doesn’t bother me that Eastern Europeans have other customs and traditions.”). Principal component analyses revealed a clear one-factorial structure. Thus, it seemed appropriate to use all items as indicators of a unitary attitude toward Eastern Europeans. Reliability of this scale was good (Subsample 1:  $\alpha = .90$ ; Subsample 2:  $\alpha = .87$ , after deleting one item). Higher values indicate more positive intergroup attitudes.

## Results

### *Manipulation Check*

Perceived threat scores were subjected to an independent samples t-test comparing the low and high threat conditions. This analysis confirmed that our threat manipulation was successful: Perceived threat was significantly higher in the high threat ( $M = 2.37$ ,  $SD = 1.31$ ) than in the low threat condition ( $M = 2.02$ ,  $SD = 1.04$ ;  $t[167.05] = 2.09$ , Hedges'  $d = .30$ ,  $p < .05$ ).

### *Test of Hypotheses<sup>9</sup>*

In Hypotheses 1 and 2, we expected to find an effect of the threat manipulation on outgroup attitude, as well as a three-way interaction of threat, national and European identification. The validity of these hypotheses could be assessed by estimating a full three-way regression model including threat, both types of identification, all two-way interactions, and the three-way interaction. The threat manipulation was effect-coded (-1 for low and 1 for high threat), and the identification variables were standardized.

In the first step ( $R^2_{adj} = .12$ ,  $F [3,197] = 10.0$ ,  $p < .001$ ), all three main effects received significant regression weights. As expected, participants in the high threat condition indicated significantly more negative outgroup attitudes than those in the low threat condition ( $\beta = -.18$ ,  $t[198] = 2.68$ ,  $p < .01$ ), supporting H1. National identification ( $\beta = -.27$ ,  $t[198] = 3.23$ ,  $p < .001$ ) and European identification ( $\beta = .36$ ,  $t[198] = 4.32$ ,  $p < .001$ ) were significantly and in expectable directions related to outgroup attitude. In the second step of regression analyses, the full set of two-way interactions was entered, without any change in explained variance ( $R^2_{adj} = .12$ ,

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<sup>9</sup> Note that  $\beta$  refers to standardized regression coefficients, while the tables provide unstandardized regression coefficients.

$F\Delta[3, 195] = .85, n.s.$ ). Hypothesis 2 stated that the size of the threat effect on outgroup attitude would depend on the specific combination of national and European identification and was appropriately tested by the three-way interaction entered in the third step of regression analyses. In line with our hypothesis, this increased the explained variance by a significant amount ( $R^2_{adj} = .14, F\Delta[1, 194] = 6.26, p < .05; \beta$  of the interaction =  $-.20$ ). To elucidate the meaning of this interaction, we estimated the simple slopes (Aiken and West, 1991) of the regression of outgroup attitude on threat at all four combinations of low (one *SD* below the mean) or high (one *SD* above the mean) national and European identification, respectively. For exploratory purposes, we also estimated the simple intercepts of outgroup attitude at the same conditional values. The simple intercept and simple slope analyses are based on a tool provided by Preacher, Curran and Bauer (2003) and a test of slope differences proposed by Dawson and Richter (in press). Results of these analyses are shown in Table 6.

As can be seen on the right hand side of Table 6, the simple slope analyses revealed that only the slope for participants high both in national and European identification (i.e., dual identifiers) was significantly different from zero ( $\beta = -.33, t[194] = 3.07, p < .01$ ). This qualifies the previously obtained main effect of the threat manipulation in line with Hypothesis 2: Only dual identifiers showed a significant decrease in outgroup attitude in response to the threat manipulation. The left hand side of Table 6 shows that outgroup attitude was comparably positive at the conditional values representing dual identification. However, as is also indicated by the absence of a two-way interaction of national and European identification, dual identification was not associated with the most positive outgroup attitude as would have been predicted on the basis of the Hornsey-Hogg model.

Hypothesis 3 predicted that dual identifiers would perceive our threat manipulation as more threatening than other participants. Thus, we repeated the hierarchical regression analyses we conducted for outgroup attitude with threat perceptions as dependent variable. Disconfirming our hypothesis, the three-way interaction ( $F\Delta < 0.2$ ) did not improve our model significantly.

## **Discussion**

Study 1 replicated the known negative effect of intergroup threat on outgroup attitudes, and yielded support for our novel prediction that national and European identification would moderate this effect. Indeed, it turned out that only dual identifiers were vulnerable to the threat manipulation. We have argued that this type of moderation pattern would be compatible with Mummendey and Wenzel's (1999) ingroup projection model on the grounds of Waldzus and colleagues' (2005) conjecture that threat may trigger ingroup projection. However, our auxiliary assumption that dual identifiers should perceive an intergroup threat as more threatening than others was disconfirmed. It does not seem to be the case that dual identifiers are equipped with a special threat *sensitivity*. Since we adopted an experimental approach, we can also rule out that dual identifiers were exposed to higher levels of threat than other participants. A third alternative explanation, which could not be tested in the present study, may be that the effect of threat on the mediating variable ingroup projection is particularly strong among dual identifiers, that is, dual identification might make for an enhanced threat *reactivity*. Therefore, we decided to incorporate a measure of ingroup projection in our second study.

The overall positive attitude exhibited by dual identifiers is consistent with Hornsey and Hogg's (2000a) model. However, this positivity is entirely due to the main effect of European identification, which disagrees with previous studies commenting on the

beneficial effects unique to dual identification (Gonzalez and Brown, 2003; Hornsey and Hogg, 2000b). One possible explanation for this divergence might be the fact that these studies manipulated dual identity salience instead of measuring the relative identifications. In a set of studies reported by Stone and Crisp (2005), who measured national identification (in this case, identification with British people) and European identification, additive effects of both types of identification emerged in much the same way as in our study. These independent findings increase our confidence in the conclusion that, disregarding the threat factor, dual identification is neither particularly problematic nor beneficial.

A weakness of Study 1 was that the target of threat was left unspecified in the manipulation and our manipulation check items only assessed perceived personal threat and threat to Germany. Although, theoretically, it should be threats to the ingroup which are responsible for the more negative outgroup attitudes in the high threat condition (Stephan and Stephan, 2000), we do not know which group our participants had in mind when thinking about the threats associated with the expansion of the EU. After all, both Europe and Germany constitute ingroups for our participants. Thus, we chose to manipulate the target of threat in the second study to determine if it matters which category is threatened. On the basis of construal level theory (Trope and Liberman, 2003), it can be argued that because the subgroup is psychologically closer to participants than the superordinate group, threats to the subgroup should be construed in more concrete ways, and should therefore have a greater impact on people than threats to the superordinate group.

In the study presented below, we also chose another context for the threat manipulation to rule out the possibility that the dynamics we observed are bound to the specific context of the EU's East enlargement. In December 2004, the Brussels

European Council decided that the European Union would open accession negotiations with Turkey in October 2005. This allowed us to frame our threat manipulation in terms of the positive and negative consequences of Turkey's entry into the European Union.

To sum up, our research questions underlying Study 2 were as follows. First, we assumed that the moderator effect of national and European identification would replicate with a different outgroup (Hypothesis 1). Second, we wanted to test if the pronounced threat effect among dual identifiers in Study 1 emerged because threat triggers ingroup projection. We therefore expected that national and European identification would moderate a threat effect on ingroup projection in the same way as on outgroup attitude (H2), and that ingroup projection would have a negative effect on outgroup attitude (H3) mediating the effect of threat (H4). Third, we assumed that threat effects (and moderation of these) would be stronger when the target of threat would be the subgroup rather than the superordinate group, which should be true both for outgroup attitude (H5a) and ingroup projection (H5b).

## **Study 2**

### *Method*

#### *Participants and Design*

One-hundred and fifty-five first-year psychology students of the University of Marburg participated in the study in partial fulfillment of a research requirement. We excluded participants of non-German origin ( $N = 5$ ), those who did not complete the free response procedure used as manipulation ( $N = 22$ ), and participants with otherwise incomplete data ( $N = 7$ ), which left us with a sample of  $N = 121$  (70%

female, median age = 21). Participants were randomly assigned to the cells of a 2 (threat: low vs. high) x 2 (target: Germany vs. Europe) between-subjects design.

### *Procedure*

The study was computer-based and conducted in the laboratory (January to February, 2005). Participants were recruited for a study on “Knowledge and Attitudes about the European Union”. Upon their arrival in the laboratory, participants were seated in front of computers set up in separate cubicles. The experiment started with the measurement of participants’ National and European identification.

Based on the finding that the threat manipulation produced only a small effect size ( $d = .30$ ) in Study 1, we decided to modify it somewhat. To enhance its effectiveness, first, we gave examples of disadvantages and risks (Turkey’s different cultural background, Human Rights violations) that participants might come up with. Second, instead of asking for “three to four” disadvantages and risks, we asked participants to think about Turkey’s entry into the EU for 30 seconds and then tell us the *biggest* risk or disadvantage associated with this event. After the instruction pages, the computer paused for 30 seconds to ensure that participants would not skip this part. In the low threat condition, instructions were identical except that participants were asked for the biggest advantage or benefit instead of disadvantage and risk. The target of the threat was varied independently of the threat factor by asking for the biggest disadvantage or risk (or advantage or benefit) *for Germany* or *for Europe*, respectively.

After the combined threat/target manipulation, we included a manipulation check, measured participants’ ingroup projection tendencies, and, after some filler items, their outgroup attitude. Afterwards, the perceived inclusion of Turkey within the



superordinate category was measured in order to ascertain if the theoretical requirements for our assumptions about subgroup and superordinate identification effects were met (see below). Finally, participants were thanked and preliminarily debriefed. They were asked for their e-mail address, so that a full debriefing could be sent to them when the study would be completed.

### *Measures*

*Manipulation check.* In two separate questions, participants were asked to indicate their agreement with the statement “All considered, I see Germany (Europe) threatened by a possible entry of Turkey into the EU” on 7-point Likert-scales.

*Identification.* National and European identification were each measured with two 7-point Likert-items (“I identify with Germany / Europe”, “I feel like a German/European”). Responses to both items were highly correlated (national identification:  $r = .78, p < .001$ ; European identification:  $r = .73, p < .001$ ) and thus averaged.

*Ingroup projection.* A pretest was done to select a set of stereotypical attributes of Germans and Turks that could be used for the measurement of ingroup projection. A list of 66 preselected words was presented to participants of a web-survey ( $N = 153$ ) who rated the words as to their valence and typicality for Germans and Turks. The final set of stereotypical attributes of Germans and Turks was obtained by selecting those that were significantly positive (above the mid-point of a bipolar valence scale), significantly above the midpoint of the typicality scale, and significantly more typical for one group compared with the other (an  $\alpha$  of .001 was applied). These criteria narrowed the attributes list down to the following words, for Germans: KORREKT (correct), FUßBALL (soccer), DISZIPLIN (discipline), BIER (beer),

PÜNKTLICH (punctual) ORDNUNG (order); for Turks: GASTFREUNDLICH (hospitable), TEE (tea), FAMILIÄR (familial), HERZLICH (affectionate), KINDERLIEB (fond of children), GESELLIG (sociable).

In the present study, participants rated on 7-point scales how typical each of these attributes was of Germans, Turks, and Europeans in general (the order of the ratings for Germans and Turks was balanced across participants, the ratings for Europeans always came last). In keeping with previous ingroup projection research (e.g. Wenzel et al., 2003), ingroup projection was operationalized as *relative ingroup prototypicality* for the superordinate category. This variable was calculated as the sum of the absolute typicality differences between Europeans and Turks minus the sum of the absolute typicality differences between Europeans and Germans, summing up over all attributes<sup>3</sup> (e.g. Wenzel et al., 2003). Thus, higher relative ingroup prototypicality scores reflect participants' perceptions of a greater dissimilarity (similarity) between the outgroup (ingroup) prototype and the prototype of the superordinate category.

*Outgroup attitude.* We used the same 8-item outgroup attitude scale as in Study 1, substituting the target group “Turks” for “Eastern Europeans”. Ratings were obtained on 7-point Likert-scales ( $\alpha = .79$ ).

*Perceived inclusion.* Participants were asked to indicate their agreement with the following two items on 7-point Likert-scales: “Independently of its membership in the EU, Turkey belongs to Europe” and “Calling people from Turkey Europeans makes sense”. An index of perceived inclusion was obtained by averaging the responses to these two items ( $r = .72, p < .001$ ).

The descriptive statistics for all Study 2 measures can be found in Appendix B.

## *Results and Discussion*

### *Preliminary Analyses*

Our theoretical assumptions about the effects of identification with a superordinate category are restricted to situations in which the outgroup under consideration is (subjectively) included within the same superordinate category as the ingroup (Hornsey and Hogg, 2000a; Mummendey and Wenzel, 1999). In legal terms, the outgroup used in Study 1 (Eastern Europeans) was included in the category of the European Union, and probably it was also subjectively included by our participants in the more fuzzy category of “Europeans”. The situation of Turkey was different at the time of the study. Accession negotiations had just been scheduled for October 2005, and, with regard to perceived inclusion, the fact that some politicians would constantly emphasize Turkey’s geographical rootedness in Asia cautioned us against taking the perceived inclusion of Turkey within the category of Europeans as a given. Therefore, we tested whether our participants perceived the Turks – irrespective of a possible EU-membership – as Europeans to a sufficient extent. A one-sample t-test indicated that the mean of perceived inclusion ( $M = 4.45$ ) was significantly above the theoretical midpoint of the scale ( $t[120] = 3.45, p < .01$ ). Thus, we conclude that perceived inclusion of Turks within the category of Europeans was sufficient.

### *Manipulation Check*

To check the success of the threat and target manipulations we conducted a 2 (threat: low vs. high) x 2 (target: Germany vs. Europe) x 2 (type of perceived threat measure: Germany vs. Europe) ANOVA with repeated measurement on the last factor. Success of the threat manipulation was confirmed by a significant main effect of

threat on the averaged perceived threat variables ( $F[1, 117] = 4.93, p < .05$ ). In the high threat condition ( $N = 60$ ), perceived threat was higher ( $M = 3.28, SD = 1.42$ ) than in the low threat condition ( $N = 61, M = 2.68, SD = 1.46$ ), which represents a (slight) increase in effect size (Hedges'  $d = .41$ ) as intended.

A successful manipulation of the target of threat would be indicated by high threat/German (European) target participants perceiving Germany (Europe) as more threatened than Europe (Germany). Statistically, this would require a significant interaction of type of perceived threat measure, threat and target. However, apart from the main effect of threat already mentioned, no other significant effects emerged from this ANOVA. Thus, the threat manipulation led participants to perceive Germany *and* Europe as more threatened irrespective of whether threats to Germany or to Europe were made salient.

However, although the three-way interaction would be the most stringent test of the construct validity of the target manipulation, the main purpose of introducing the target factor in our design was to not leave it up to participants' spontaneous associations in which context they would generate possible risks or benefits as in Study 1. Thus, although the two targets were indistinguishable with regard to the manipulation check items, this does not foreclose subsequent analyses of the effects of the target factor on the main dependent variables.

### *Tests of Hypotheses*

*Overview.* As in Study 1, we took a stepwise hierarchical regression approach to test our hypotheses. In four separate steps, we entered the main effects, the two-way interactions, the three-way interactions, and the four-way interaction of threat (effect-coded -1 for low threat and 1 for high threat), target (effect-coded -1 for Germany

and 1 for Europe), and the standardized national and European identification variables. Support for our hypotheses would flow from a significant four-way interaction and simple slope analyses revealing the strongest threat effects for dual identifiers, especially in the German target condition. Results of these analyses will be presented for outgroup attitude first, and then for ingroup projection.

*Outgroup attitude.* The main effects model was marginally significant ( $R^2_{adj} = .04$ ,  $F[4,116] = 2.35$ ,  $p = .06$ ). As expected, national identification related negatively to outgroup attitude ( $\beta = -.28$ ,  $p < .01$ ) and European identification related positively to outgroup attitude ( $\beta = .23$ ,  $p < .05$ ). There were no main effects of threat ( $\beta = -.02$ , n.s.) or target ( $\beta = .02$ , n.s.). The two-way interactions model tested next increased the explained variance by a significant amount ( $R^2_{adj} = .11$ ,  $F\Delta[6, 110] = 2.48$ ,  $p < .05$ ), which was due to significant interactions of European identification with threat ( $\beta = -.23$ ,  $p < .05$ ) and target ( $\beta = -.22$ ,  $p < .05$ ). No other two-way interactions were significant. The set of three-way interactions did not explain a significant additional amount of variance in outgroup attitudes ( $R^2_{adj} = .08$ ,  $F\Delta = .07$ , n.s.). Finally, a significant four-way interaction ( $\beta = .40$ ) satisfied the requirement for testing our specific hypotheses ( $R^2_{adj} = .12$ ,  $F\Delta[1, 105] = 6.37$ ,  $p < .05$ ).

Hypothesis 1 predicted that the negative effect of threat on outgroup attitude would be larger at high levels of both national and European identification. According to Hypothesis 5a, this should be especially true when the subgroup was the target of threat. Thus we compared the simple slopes of threat across the four combinations of low and high (one *SD* below and above the mean, respectively) German and European identification in both target conditions (see right hand side of Table 7). In the German target condition, the only significant effect of threat on outgroup attitude was obtained for dual identification participants ( $\beta = -.52$ ,  $t[105] = 2.69$ ,  $p < .01$ ),

supporting H1. In the Europe target condition, the slope for dual identification participants was in the opposite direction and non-significant ( $\beta = .17, t[105] = .56$ ), supporting Hypothesis 5a. Interestingly, the only significant slope in the Europe target condition was obtained for participants low both in national and European identification ( $\beta = .86, t[105] = 3.08, p < .01$ ), indicating that among these participants, threat led to more *positive* attitudes towards the outgroup.

For exploratory purposes, we estimated the simple intercepts of outgroup attitude at all combinations of low and high national and European identification in both target conditions. As can be seen on the left hand side of Table 7, the outgroup attitude intercept associated with dual identification was not significantly different from any of those associated with the other identification combinations in the Europe target condition, and was significantly different only from the (more positive) intercept associated with high European and low national identification in the German target condition. Thus, there was no support for the idea implied by the Hornsey-Hogg model that dual identification would be the most beneficial for subgroup relations.

*Ingroup projection.* Relative ingroup prototypicality was regressed on our research factors in the same fashion as in the preceding analyses. As one might expect, the main effects model was non-significant ( $R^2_{adj} = .01, F[4,116] = 1.20$ ). Entering the two-way interactions in the next step yielded a significant increment in explained variance ( $R^2_{adj} = .14, F\Delta[6, 110] = 3.96, p < .01$ ). All but one two-way interaction were significant or near a significant level of  $\alpha = .05$ , the meaning of which will become clearer after the last step of regression analyses. The three-way interactions model did not contribute a significant amount of explained variance ( $R^2_{adj} = .14, F\Delta[4, 106] = 1.01$ ). However, in line with our hypotheses, the four-way interaction

entered in the last step increased the explained variance by a significant amount ( $R^2_{adj} = .17$ ,  $\beta = -.32$ ,  $F\Delta[1, 105] = 4.28$ ,  $p < .05$ ).

To facilitate interpretation of this complex pattern, we calculated the simple slopes of threat at low and high values of national and European identification, respectively (see right hand side of Table 8). Two things stand out from these analyses: First, the slope for dual identification participants was in the right direction and significant in the German target condition ( $\beta = .33$ ,  $t[105] = 1.77$ ,  $p = .08$ ) and in the opposite direction and non-significant in the Europe target condition. This means that threat increased ingroup projection among dual identification participants (supporting H2), but only in the German target condition (supporting H5b). Unexpectedly, however, three other simple slopes were at least marginally significant. Threat also increased perceived relative ingroup prototypicality among participants high in superordinate identification and low in subgroup identification both in the subgroup target ( $\beta = .84$ ,  $t[105] = 2.93$ ,  $p < .01$ ) and the superordinate target conditions ( $\beta = .56$ ,  $t[105] = 1.76$ ,  $p = .08$ ). Moreover, threat decreased ingroup projection among double-low participants in the Europe target condition ( $\beta = -.85$ ,  $t[105] = 3.13$ ,  $p < .01$ ).

#### *Does Ingroup Projection Explain the Threat Effect among Dual Identifiers?*

To recapitulate, we found symmetric effects of threat on outgroup attitude and ingroup projection. Among dual identifiers in the German target condition, threat decreased outgroup attitudes and increased ingroup projection. Viewed in conjunction with the finding that ingroup projection was negatively related to outgroup attitude ( $r = -.20$ ,  $p < .05$ , supporting H3), these results suggest the possibility of a further causal ordering of the dependent variables as stated in our fourth hypothesis (Baron and Kenny, 1986). Does threat increase prejudice among

dual identifiers *because* it increases ingroup projection? Evidence for this causal ordering would flow from a mediational analysis revealing a significant indirect effect of threat, mediated by relative ingroup prototypicality, on outgroup attitude, at high values of subgroup and superordinate identification. Because the commonly used test of this indirect effect, Sobel's (1982) product of coefficients test, relies on the assumption of normality, which may be seriously violated in small to moderate samples (Bollen and Stine, 1990; MacKinnon and Dwyer, 1993), we also used a bootstrap approach as recommended by Shrout and Bolger (2002). Neither of these tests revealed a significant indirect effect. Thus, there was no evidence for mediation of the threat effect by ingroup projection.

## **General Discussion**

A plethora of research – mainly conducted outside Europe – has demonstrated that perceived threats of various types are associated with higher levels of prejudice and discrimination against outgroup members. With the present studies we were intentionally zooming out from the conceptual distinctions between different threats that this literature provides. Instead, we considered it most relevant, particularly from an applied perspective, to put the seeming generality of intergroup threat effects to a test. Does threat negatively affect outgroup attitudes across the board, or are there important exceptions? We think our studies contribute to the extant literature on intergroup threat by providing a twofold answer to this question.

Firstly, we replicated the previously observed negative effects of threat on outgroup attitudes in a European intergroup context using a new experimental manipulation of threat. Specifically, we found that by asking participants to list disadvantages (advantages) or risks (benefits) associated with the EU east enlargement (Study 1) or Turkey's entry into the EU (Study 2) it is possible to elicit perceptions of high (low)



threat and change their attitudes toward the respective outgroups for the worse (the better). Thus, it seems that threat effects are not bound by the cultural background or specifics of the research design of previous studies conducted in Canada or the United States (e.g. Esses et al., 1998; Stephan and Stephan, 2000).

Secondly, a major contribution of the present studies is to qualify the generality of threat effects by providing insights into the moderating influence of social identification. Based on Hornsey and Hogg's (2000a) and Mummendey and Wenzel's (1999) models of subgroup relations, which emphasize the hierarchical multiplicity of identifications, we tested if social identification on the subgroup and the superordinate level would moderate the effects of threat on outgroup attitudes. Indeed, in line with our assumptions, threat effects were most pronounced for individuals who identified strongly with Germany and Europe at the same time (i.e., dual identifiers).

#### *What Is So Special About Dual Identifiers?*

Our results raise the interesting question of *how* dual identification alters the path from threat to prejudice. A preliminary answer to this question suggests itself when we look at our results from the perspective of the two models of subgroup relations that inspired our research. On the one hand, Hornsey and Hogg's (2000a) model maintains that dual identification would be beneficial to intergroup relations because superordinate identification would lead to perceptions of outgroup members as belonging to a common ingroup while subgroup identification would protect the ingroup's distinctiveness. On the other hand, Mummendey and Wenzel's (1999) ingroup projection model assumes that dual identification increases the likelihood of ingroup projection and thereby leads to more negative responses to outgroups.

Taking stock of research examining the direct effects of subgroup and superordinate identification on outgroup attitudes, we noted that support could be found for predictions derived from both models. We argued that this could be possible because the models postulate different mediating mechanisms for the effects of nested identifications on outgroup attitudes, namely reduced identity threat (Hornsey and Hogg, 2000a) and increased ingroup projection (Mummendey and Wenzel, 1999). On the basis of Waldzus and colleagues' (2005) suggestion that threat may trigger ingroup projection, we argued that the ingroup projection approach would be better equipped to predict how nested identifications combine to moderate intergroup threat effects. Thus, to be perfectly consistent with our reasoning, our results would ideally have shown that dual identifiers were most vulnerable to threat effects (which they were in both studies), but that disregarding the threat factor, dual identifiers endorsed particularly positive outgroup attitudes (which they did not in either study). As the latter prediction was upheld only for exploratory purposes, we discuss possible reasons for disconfirming results only briefly before proceeding to the moderator effect of dual identification. One possible reason for the lack of an interactive effect of subgroup and superordinate identification on outgroup attitudes lies in our correlational approach, which differs from the experimental approach used in previous research (Gonzalez and Brown, 2003; Hornsey and Hogg, 2000b). Theoretically, however, identity salience manipulations and measured identifications are but different sides of the same coin. Another reason might be that the beneficial effects of dual identification are restricted to minority groups (cf. Brown and Hewstone, 2005), so that our studies, using majority members as participants, would not qualify as disconfirming evidence. Future research will certainly benefit from making a distinction between minority and majority.

Regarding the main focus of the present research, the moderation of threat effects by subgroup and superordinate identification, our results are largely consistent with our theoretical arguments. Dual identification was associated with the most pronounced threat effects on outgroup attitude across two different samples involving general population as well as student participants. The fact that this pattern could be replicated with the subgroup but not with the superordinate category as target of threat is consistent with our assumption that threats on the subgroup level should be more immediate and therefore entail stronger effects on outgroup attitudes. We discussed three mechanisms as potentially carrying the joint moderator effects of national and European identification. Having dismissed the possibilities that dual identification is associated either with experiencing more threats or experiencing threats as more threatening, we found partial support for the idea that dual identification is associated with a special threat reactivity. Although threat did increase relative ingroup prototypicality among dual identifiers as hypothesised, this effect was not unique to dual identification. Moreover, relative ingroup prototypicality could not be shown to mediate the threat effect on outgroup attitude. Thus, while subgroup and superordinate identification appear to be robust joint moderators of threat effects, evidence for the mediating mechanism of ingroup projection should be regarded as preliminary.

#### *Possible Limitations*

Increased vulnerability to threat was found among dual identifiers across two different samples (including non-students) and two different sources of threat (Eastern Europeans and Turks). Nevertheless, the generalisability of our results may be limited for several reasons. First, our threat manipulation was very subtle and

produced only mild levels of perceived threat even in the high threat condition. It is very likely that political leaders continue to categorize outgroups as threats to the ingroup so as to solidify their political power (Turner, 2005), and they doubtlessly have more effective means at their disposal than are ethical to use in social psychological research. Stronger threat manipulations may affect not only dual identifiers but rather have main effects that would not have been predicted on the basis of our findings.

Second, Europe was held constant as the superordinate category across both studies. As noted in the introduction, the European Union is undergoing a rapid transformation in terms of its members as well as political and economical scope. Therefore, European identification may be an exceptional type of superordinate identification and confounded with other political (e.g. political conservatism or system justification) or personality variables (e.g. openness to experience). Furthermore, these correlates may differ across European countries (Huici, Ros, Cano, and Hopkins, 1997). We therefore encourage replications of our research not only with different superordinate categories, but also in other European countries than Germany to shed further light on the role of superordinate identifications in contexts of threat.

#### *Theoretical Implications*

It should be emphasized that our research was not meant to competitively test between the Hornsey-Hogg and Mummendey-Wenzel models. As noted in passing by Wenzel et al. (2003), these models need not be mutually exclusive. Under certain circumstances dual identification may not lead to increased ingroup projection (e.g. when the prototype of the superordinate category is complex or undefinable, cf.

Waldzus et al., 2003), but rather have the benefits that Hornsey and Hogg (2000a) argue it does. Nevertheless, on the basis of the present research it can be speculated that a salient intergroup threat may be a situational constraint on the benefits of dual identities, making it more likely for ingroup projection to occur. Conversely, the present research demonstrates that the concept of hierarchically structured identifications is of high relevance for threat theories of prejudice (e.g. Stephan and Stephan, 2000). More research attention to this complex interplay of social identifications and threat is clearly warranted.

#### *Practical Implications*

Having acknowledged the limits of generalisability of our findings, we conclude by pointing out one important practical implication of our research. We believe that attitudes toward people from the new or future member countries of the EU are an important indicator of the success of European integration on the level of citizens. In this regard, our findings suggest that national identification may be an obstacle to smooth integration of European nations. High national / low European identifiers exhibited the most negative attitudes towards new or future EU members. Moreover, in combination with high European identification, high national identification made participants respond more negatively to an ingroup threat. On the basis of these findings it may be made a more explicit goal of the European unification process to shift social identification from the parts to the whole.

## Footnotes

### *Footnote 1*

In this paper, we conform to Crandall and Eshleman's (Crandall and Eshleman, 2003) broad definition of prejudice as "a negative evaluation of a social group or a negative evaluation of an individual that is significantly based on the individual's group membership." (p. 414)

### *Footnote 2*

Throughout this paper the *p* values we report are based on two-tailed significance tests.

### *Footnote 3*

Dissimilarities of the typicality profiles of superordinate category and subgroup were calculated as  $\sqrt{\sum_i^n [(typicality_{Europeans_i} - typicality_{subgroup_i})^2]}$ , summing up over the set of  $N = 12$  attributes. The index of relative ingroup prototypicality was calculated by subtracting the ingroup dissimilarity scores from the outgroup dissimilarity scores.

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## Appendix

### Appendix A

#### Descriptive Statistics and Intercorrelations of Study 1 Variables (N = 202)

| Variable                                    | 2          | 3          | 4          | 5          |
|---|------------|------------|------------|------------|
| 1. Manipulation (-1 = low, 1 = high threat) | .15*       | .07        | -.05       | -.22**     |
| 2. Manipulation check                       |            | .15*       | -.09       | -.49***    |
| 3. National identification                  |            |            | .60***     | -.07       |
| 4. European identification                  |            |            |            | .21**      |
| 5. Outgroup attitude                        |            |            |            |            |
| Means (Standard deviations)                 | 2.18(1.18) | 3.69(1.28) | 4.28(1.19) | 4.39(0.96) |

Note.

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

### Appendix B

#### Descriptive Statistics and Intercorrelations of Study 2 Variables (N = 121)

| Variable   | 3    | 4      | 5     | 6      | 7     | 8       | 9     |
|--|------|--------|-------|--------|-------|---------|-------|
| 1. Threat manipulation (-1 = low, 1 = high threat) | .07  | .16    | .21*  | .18*   | .02   | -.00    | .11   |
| 2. Target manipulation (-1 = Germany, 1 = Europe)  | .03  | -.14   | .17   | .14    | .07   | -.03    | .00   |
| 3. National identification                         |      | .42*** | .27** | .31*** | -.04  | -.18*   | .13   |
| 4. European identification                         |      |        | -.01  | .07    | .09   | .11     | .16   |
| 5. Perceived threats to Germany                    |      |        |       | .84*** | -.19* | -.45*** | .21*  |
| 6. Perceived threats to Europe                     |      |        |       |        | -.22* | -.40*** | .14   |
| 7. Perceived inclusion of Turkey within EU         |      |        |       |        |       | .32***  | .07   |
| 8. Outgroup attitude                               |      |        |       |        |       |         | -.20* |
| 9. Relative ingroup prototypicality                |      |        |       |        |       |         |       |
| Means  | 4.52 | 5.17   | 2.97  | 2.99   | 4.45  | 4.62    | 0.51  |
| Standard deviations                                | 1.41 | 1.17   | 1.57  | 1.49   | 1.44  | 0.80    | 2.25  |

Note.

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

## Tables

Table 6. Simple Intercepts of Outgroup Attitude and Slopes of the Threat Manipulation (Study 1)

|                         |      | Simple intercepts of outgroup attitude <sup>x</sup> |                      | Simple slopes of the threat manipulation <sup>y</sup> |                      |
|-------------------------|------|---|----------------------|---|----------------------|
|                         |      | European identification                             |                      |   |                      |
|                         |      | Low   | High                 | Low   | High                 |
| National identification | Low  | 4.32*** <sub>a</sub>                                | 4.89*** <sub>b</sub> | -0.16 <sub>a</sub>                                    | 0.02 <sub>a</sub>    |
|                         | High | 3.63*** <sub>c</sub>                                | 4.49*** <sub>a</sub> | 0.10 <sub>a</sub>                                     | -0.31** <sub>a</sub> |

Note. Asterisks indicate that a parameter is significantly different from zero at the given probability level. Parameters that do not share the same subscript are significantly different from one another ( $p < .05$ ).

<sup>x</sup>Simple intercepts correspond to the unweighted mean of the low and high threat conditions.

<sup>y</sup>Simple slopes correspond to the unstandardized effect of being in the low (-1) or high (+1) threat condition at the given conditional values of the moderators.

\*\*\*  $p < .001$ , \*\*  $p < .01$

Table 7. Simple Intercepts of Outgroup Attitude and Slopes of the Threat Manipulation (Study 2)

|                |      | Simple intercepts of outgroup attitude <sup>x</sup> |                      |                       |                      | Simple slopes of the threat manipulation <sup>y</sup> |                       |                      |                     |
|----------------|------|---|----------------------|-----------------------|----------------------|---|-----------------------|----------------------|---------------------|
|                |      | Target of threat                                    |                      |                       |                      |   |                       |                      |                     |
|                |      | Germany   |                      | Europe                |                      | Germany   |                       | Europe               |                     |
|                |      | European identification                             |                      |                       |                      |   |                       |                      |                     |
|                |      | Low   | High                 | Low                   | High                 | Low   | High                  | Low                  | High                |
| National       | Low  | 4.56*** <sub>a</sub>                                | 5.34*** <sub>b</sub> | 5.12*** <sub>ab</sub> | 4.55*** <sub>a</sub> | 0.12 <sub>ab</sub>                                    | -0.06 <sub>a</sub>    | 0.69** <sub>ab</sub> | -0.23 <sub>ac</sub> |
| identification | High | 4.03*** <sub>a</sub>                                | 4.57*** <sub>a</sub> | 4.10*** <sub>ac</sub> | 4.66*** <sub>a</sub> | 0.35 <sub>ab</sub>                                    | -0.41** <sub>ac</sub> | -0.35 <sub>ac</sub>  | 0.13 <sub>a</sub>   |

*Note.* Asterisks indicate that a parameter is significantly different from zero at the given probability level. Parameters within target conditions that do not share the same subscript letter are significantly different from one another ( $p < .05$ ). When two subscript letters are used, the first (second) letter should be applied in comparisons with parameters that have one (two) subscript letter(s).

<sup>x</sup>Simple intercepts correspond to the unweighted mean of the low and high threat conditions.

<sup>y</sup>Simple slopes correspond to the unstandardized effect of being in the low (-1) or high (+1) threat condition at the given conditional values of the moderators.

\*\*\*  $p < .001$ , \*\*  $p < .01$

Table 8. Simple Intercepts of Relative Ingroup Prototypicality and Slopes of the Threat Manipulation (Study 2)

|                            |      | Simple intercepts of ingroup prototypicality <sup>x</sup> |                    |                     |                                   | Simple slopes of the threat manipulation <sup>y</sup> |                                  |                                  |                     |
|----------------------------|------|---|--------------------|---------------------|-----------------------------------|---|----------------------------------|----------------------------------|---------------------|
|                            |      | Target of threat  |                    |                     |                                   |   |                                  |                                  |                     |
|                            |      | Germany   |                    | Europe              |                                   | Germany   |                                  | Europe                           |                     |
|                            |      | European identification                                   |                    |                     |                                   |   |                                  |                                  |                     |
|                            |      | Low   | High               | Low                 | High                              | Low   | High                             | Low                              | High                |
| National<br>identification | Low  | 0.17 <sub>a</sub>   | 0.28 <sub>a</sub>  | -1.11 <sub>†a</sub> | 2.49 <sup>***</sup> <sub>bd</sub> | 0.45 <sub>a</sub>                                     | 1.88 <sup>**</sup> <sub>ab</sub> | -1.91 <sup>**</sup> <sub>a</sub> | 1.24 <sub>†bd</sub> |
|                            | High | 1.86 <sup>*</sup> <sub>a</sub>                            | 0.80 <sub>†a</sub> | 1.25 <sub>bc</sub>  | -0.10 <sub>ac</sub>               | -0.53 <sub>ac</sub>                                   | 0.75 <sub>†a</sub>               | 0.54 <sub>bc</sub>               | -0.89 <sub>ac</sub> |

*Note.* Asterisks indicate that a parameter is significantly different from zero at the given probability level. Parameters within target conditions that do not share the same subscript letter are significantly different from one another ( $p < .05$ ). When two subscript letters are used, the first (second) letter should be applied in comparisons with parameters that have one (two) subscript letter(s).

<sup>x</sup>Simple intercepts correspond to the unweighted mean of the low and high threat conditions.

<sup>y</sup>Simple slopes correspond to the unstandardized effect of being in the low (-1) or high (+1) threat condition at the given conditional values of the moderators.

\*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ , †  $p < .10$

## **Chapter 4      The role of group size of immigrants for explaining anti-immigrant attitudes and discriminatory intentions: An empirical comparison of group threat- and intergroup contact theory in the Netherlands<sup>10</sup>**

### **Abstract**

Anti-immigrant attitudes represent a widespread social problem in many European societies, yet research has only partially understood the role of demographic size of the immigrant population plays for the prevalence of such attitudes. To date, most studies examining this issue build on a group threat framework, suggesting that a larger group size of immigrants leads to greater perceptions of threatened group interest which, in turn, give rise to greater anti-immigrant attitudes. However, this line of reasoning has been challenged by intergroup contact theory. Following this approach, a larger immigrant population enhances opportunities for positive intergroup contact which ameliorates anti-immigrant attitudes. In this study, we put these alternative theoretical approaches to a joint test for explaining Dutch citizens' negative attitudes towards immigrants. In doing so, we apply structural equation modeling with robust standard errors on nationally representative individual-level survey data linked with official municipality-level statistics. We find empirical evidence both for group threat- and for intergroup contact theory. Objectively measured larger group size of immigrant corresponds with subjective perceptions of larger immigrant size. In reverse, subjective perceptions of larger immigrant size trigger perceptions of threatened group interests and subsequent anti-immigrant attitudes. At the same time, we find that larger group size immigrants facilitate intergroup contact which reduces perceived threat and subsequent anti-immigrant attitudes. We discuss implications of these findings for synthesising propositions from group threat- and contact theory.

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9 This chapter has been submitted for publication as Schlüter, E. (2007). "The Role of Group Size of Immigrants for Explaining Anti-immigrant Attitudes and Discriminatory Intentions: An Empirical Comparison of Group Threat- and Intergroup Contact Theory in the Netherlands" to the peer-reviewed edited book by Zick, A. (Ed.) (in prep.) "Prejudice, Group-Focused Enmity and Discrimination: Constructive and Critical Advances".

## **Introduction**

Understanding the sources of tense intergroup relations represents an important goal of social science research, and scholars nowadays widely agree that achieving this goal necessitates to account for contextual- and individual-level explanatory factors alike (Bobo and Fox 2003, Pettigrew 2006). A central issue researchers following this perspective deal with concerns the role of outgroup size for explaining anti-outgroup attitudes. Arguably the prevalent theoretical framework for relating outgroup size as contextual-level factor to individual-level anti-outgroup attitudes is group threat theory (Blumer 1958, Blalock 1967, see also Bobo 1999, Quillian 1995, 1996).

In brief, the group threat approach posits that a larger outgroup size leads to increased perceptions of threatened group interests and thereby heightens anti-outgroup attitudes. This general theoretical framework inspired a vast body of studies, and there can be no doubt that this research tradition furthered scholarly understanding on the role of outgroup size for anti-outgroup attitudes in significant ways. However, this literature also came up with new puzzling questions of which many remain only partially understood. One of these issues we consider to be of crucial importance is that, when viewed as a whole, the empirical evidence that greater outgroup size gives rise to anti-outgroup attitudes has repeatedly been judged as inconclusive (Semyonov et al. 2004, p. 684, Wagner et al. 2006, p. 381f.). More specifically, on the one side we find a considerable number of studies lending firm support to the presumed positive effect of larger outgroup size on attitudinal manifestations of outgroup derogation (e.g. Fossett and Kiecolt 1989, Pettigrew 1967, Quillian 1995, 1996, Coenders 2001, Scheepers et al. 2002, Semyonov et al.

2006<sup>11</sup>). On the other side, we likewise observe that several studies – albeit oftentimes using highly similar samples and instruments – fail to find evidence that greater outgroup size enhances negative intergroup attitudes (e.g. Coenders et al. 2005a, 2005b, Evans and Need 2003, Semyonov et al. 2004).

At first sight, it seems reasonable to attribute such disparities to methodological restrictions. In fact, proponents of group threat theory have for quite some time been pointing out that attempts to deliver comprehensive examinations of the theory's central propositions have been complicated by crude operationalisations due to limited data sources (Quillian 1996, Semyonov et al. 2004). However, what is even more surprising is that earlier work even documents a *negative* effect of greater outgroup size to anti-outgroup attitudes (Hood and Morris 1997, Listhaug and Strabac 2007, see also Lubbers et al. 2006). In other words, this finding demonstrates that greater outgroup size can actually reduce negative attitudes towards outgroups. Moreover, given that these studies included a host of control variables, the evidence showing negative relations between outgroup size and anti-outgroup attitudes can hardly be considered as methodological artefact. Instead, to explain this anomaly of group threat theory researchers need to explicate – and test – alternative theoretical propositions. One theoretical framework we believe to be particularly useful for such an endeavour is intergroup contact theory (Allport 1954, Pettigrew 1998, Wagner et al. 2006).

In short, intergroup contact theory considers larger outgroup size to enhance opportunities for positive intergroup contact and thereby to ameliorate anti-outgroup

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<sup>11</sup> We like to note that much of the literature finding positive effects of greater outgroup size to anti-outgroup attitudes relate to the case of Whites' negative attitudes towards Blacks in the U.S. (e.g. Black 1976, Fossett and Kiecolt 1989, Giles 1977, Giles and Evans 1985, Giles and Hertz 1994, Glaser 1994, 1986, Matthews and Prothro 1966, Taylor 1998, Wriugh 1977).



attitudes. Yet studies examining the empirical adequacy of group threat- and intergroup contact theory as outlined above are largely missing. Consequently, to date the empirical status of outgroup size as contextual factor assumed to affect anti-outgroup attitudes remains open to various interpretations and thus hinders theoretical and empirical progress.

In the present study, we attempt to improve this state of research in three complimentary ways. First, building on earlier work, we employ both group threat- and intergroup contact theory to specify alternative hypotheses on the effect of outgroup size on anti-outgroup attitudes and subject these hypotheses to a simultaneous empirical test. As noted above, doing so is a challenge that has rarely been taken up in the past but is likely to further understanding of the role of outgroup size for explaining anti-outgroup attitudes.

Second, we set out to deliver a comprehensive examination of the micro-social processes linking outgroup size to anti-outgroup attitudes. Specifically, in modeling the causal sequence from objectively measured group size, perceived group threat, intergroup contact and different measures of anti-outgroup attitudes, we also include a measure of perceived group size. This is advantageous as recent research discussed below suggests perceived group size to be of special relevance for explaining perceptions of threatened group interests (Semyonov et al. 2004), but the performance of this construct in concert with intergroup contact theory has not been examined.

Third, we attempt to make methodological contributions by employing structural equation modeling adequate for cluster-sampled survey data (Muthén and Satorra 1995) used in the empirical part of this study. This flexible statistical approach not only allows for the effective treatment of measurement error for constructs measured

by multiple indicators. Moreover, consistent with our aim to shed new light on the linkage between contextual- and individual-level sources of anti-outgroup attitudes structural equation modeling is convenient as it allows for particularly rigorous tests of direct and indirect empirical relations between the theoretical constructs under study.

The focus of our study were the Netherlands with Dutch citizen's anti-immigrant attitudes as our test case. Like several other Western European countries, due to actively supported labour migration and migration flows from inhabitants of former colonies the Netherlands became a host country for a substantial immigrant population. For instance, in 2000 the total number of immigrants living in the Netherlands added up to approximately 1.3 million immigrants as compared to 15.8 million Dutch citizens (SCP 2006). Moreover, the population density of the Netherlands ranks among the highest in the World. Against this background, the arrival and residing of immigrants as reflected by the size of the immigrant population in the Netherlands has been shown to be accompanied by ongoing controversial public discussion and substantial amounts of negative attitudes towards immigrants (e.g. Coenders and Scheepers 1998). Thus, examining whether and in what ways the prevalence of anti-immigrant attitudes is affected by the size of the immigrant population is of great applied and theoretical interest.

### **Two Conceptualisations of Outgroup Size for Explaining Anti-Outgroup Attitudes**

*Group Threat Theory and Outgroup Size.* Group threat theory has proven a key approach for social science research seeking to explain anti-outgroup attitudes. The theory rests on the general proposition that perceived threats to the interests of the ingroup lead group members to express greater anti-outgroup attitudes. More

specifically, the reasoning underlying this proposition proceeds in two steps. First, perceived intergroup competition for scarce resources is assumed to increase perceptions of the outgroup as posing a threat to the ingroup (Blalock 1967). Issues at stake in such intergroup competition can refer to tangible (e.g. housing- or labor-market issues) as well as non-tangible goods (e.g. religious or language issues) (Allport 1954, Blalock 1967, Coser 1958). In the second step, ingroup members are hypothesised to respond to such perceived group threats with greater anti-outgroup attitudes for protecting their groups interests vis-à-vis such threats (Blumer 1958, p. 5, see Blalock 1967, Bobo 1999, Quillian 1995).

Empirical evidence generally supports positive effects of perceived group threat on negative intergroup attitudes as suggested in the second step (Stephan and Renfro 2003, Riek et al. 2006). Concerning the first assumption, proponents of group threat theory specified several antecedential conditions for perceiving an outgroup as threatening (e.g. Coenders 2001, Stephan and Renfro 2003). For example, on the individual-level research has shown that those with e.g. fewer socioeconomic resources (as indicated by lower education or unemployment) as well as those with e.g. stronger religious attachment (as indicated by belonging to a religious group) are relatively more prone to perceive an outgroup as threatening the interests of the ingroup (e.g. Scheepers et al. 2002). Still, according to the logic embodied in the theory even when ingroup members perceive their personal self-interests to be unaffected by intergroup competition, they might still perceive the interests of their group to be threatened and – consequently – show greater anti-outgroup attitudes (Blumer 1958, p. 5, Bobo 1983, 1999). As Riek et al. (2006) emphasise: “[...] a White male may perceive affirmative action as threatening the overall interests of his ingroup even when he is not personally affected” (Riek et al. 2006: 337).

Thus, to understand which sources other than individual self-interests gives rise to greater perceived group threat and negative intergroup attitudes requires to take contextual-level factors into account. Given the purpose of the present study, we confine ourselves to focus on what is doubtlessly one of the most prominent contextual-level factor within the group threat approach – outgroup size (Blalock 1967, Coenders 2001, Quillian 1995, 1996, Scheepers et al. 2002). Outgroup size is commonly defined as percentage of outgroup members relative to the total population in a given geographic context. Generally, group threat theory hypothesises greater outgroup size to heighten perceived intergroup competition for scarce resources<sup>12</sup> (Blalock 1967, Bobo 1983). Accordingly, in contexts “where the size of a minority group is large or increasing” (Allport 1954: 221) hostile intergroup attitudes are expected to rise (Blalock 1967: 187, Hawley 1944). But to date, research has rarely investigated whether the effect of outgroup size on anti-outgroup attitudes is indeed mediated by perceived group threat (but see Scheepers et al. 2002). Moreover, researchers also proposed that the effect of outgroup size on perceived group threat is itself mediated by an additional construct – perceived outgroup size (Semyonov et al. 2004). This suggestion, first, rests upon the general idea that people reflect objective environmental characteristics – e.g. the size of some outgroup – by their subjective perceptions and, second, elaborates the notion that a greater outgroup size arouses heightened perceptions of threatened group interests. But despite the plausibility of this reasoning, the only study we are aware of which examined this linkage found objective- and perceived outgroup size to be unrelated,

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<sup>12</sup> Some authors hypothesize non-linear effects from outgroup size to perceived threat and negative intergroup attitudes. The backdrop of such specifications seems to root in Blalock’s (1967) theorising on White’s reactions towards political and economic competition seen to be posed by Blacks. While we generally endorse the investigation of more specific forms of intergroup competition, given the purpose of this study we follow

while the presumed sequence that greater perceived outgroup size increases perceived group threat and greater perceived group threat subsequently leads to greater anti-outgroup attitudes received firm support (Semyonov et al. 2004). Therefore, re-examining the micro-social mechanisms presumed to link the effects of outgroup size on anti-outgroup attitudes clearly is an important task. However, we suspect such efforts to be only of limited value for understanding the negative relation between outgroup size and anti-outgroup attitudes. Instead, we next turn to intergroup contact theory.

*Intergroup Contact Theory and Outgroup Size.* Social scientists invented contact theory to further understanding how intergroup tension and negative intergroup attitudes might be alleviated (Allport 1954, Hawley 1944). With intergroup contact considered as “face-to-face interaction between members of clearly defined groups” (Pettigrew and Tropp 2006: 754), contact theory posits at its core that bringing together members of different groups results in more favourable intergroup attitudes. Initial studies hypothesised intergroup contact to exert its ameliorative effects on tense intergroup relations only under optimal conditions – such as common goals, intergroup cooperation, equal status and authority support (Allport 1954, see Pettigrew 1998). By contrast, scholars nowadays commonly agree that even in the absence of supportive conditions intergroup contact more often improves intergroup attitudes than not (Pettigrew and Tropp 2007, Stein et al. 2000). Indeed, it must be noted that recent meta-analytical evidence supports the notion that even casual everyday contact between members of different groups in neighbourhood-, school- or workplace settings lead to more positive intergroup attitudes (Pettigrew and Tropp 2000, 2006, see also Dixon and Rosenbaum 2004). For the sake of completeness, it

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the lead and examine linear relations between outgroup size, perceived threats and anti-

should be acknowledged that part of such contact effects might be due to self-selection. This means that ingroup members with highly negative attitudes might tend to avoid intergroup contact while those ingroup members with relatively positive attitudes remain. However, research has shown that the causal effect from contact to negative intergroup attitudes is typically stronger than the reverse relation from negative intergroup attitudes to contact (Pettigrew and Tropp 2006, Powers and Ellison 1995).

To date, studies on intergroup contact typically focus on the individual-level of analysis, and much of this research tradition sets out to uncover the social-psychological mechanisms explaining why intergroup contact reduces negative intergroup attitudes. While this literature shows that contact commonly operates via multiple ways (Pettigrew 1998, Pettigrew and Tropp 2007, in press), for the present study of special concern is the partial finding that substantive amounts of intergroup contact's beneficial effects on negative intergroup attitudes are due to a reduction of perceived threats (Stephan and Renfro 2003, Pettigrew and Tropp 2006, Voci and Hewstone 2003). That is, ingroup members with intergroup contact have consistently been found to report lower levels of perceived threats related to some outgroup and, subsequently, lower levels of anti-outgroup attitudes. Accordingly, intergroup contact appears as antecedent condition of perceived group threat which, in turn, mediates the effect of intergroup contact on negative intergroup attitudes (Stephan and Renfro 2003). Given this causal sequence as individual-level theoretical backdrop, recent extensions of intergroup contact theory consider greater outgroup size to increase opportunities for intergroup contact (Wagner et al. 2003, Wagner et

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outgroup attitudes only.

al. 2006<sup>13</sup>). Following this approach, outgroup size – which arguably goes along with perceived outgroup size – increases intergroup contact, which reduces perceived threats and ultimately improves negative intergroup attitudes. Note the pivotal implications of this reasoning: by conceptualising outgroup size as contextual-level factor which alleviates individual-level perceived group threats and hostile intergroup attitudes due to increasing intergroup contact, intergroup contact theory opposes group threat theory's proposition that greater outgroup size gives rise to greater threats and anti-outgroup attitudes.

Yet empirical studies examining the status of outgroup size for explaining anti-outgroup attitudes following the version of intergroup contact theory discussed above are extremely scant. As far as we are aware, to date only one set of studies carried out in the German context provides direct evidence for the outlined mediating structure between outgroup size, intergroup contact and its subsequent impact on negative intergroup attitudes (Wagner et al. 2003, Wagner et al. 2006). Examining how Germans' intergroup contact and prejudice differ along varying percentages of foreigners across 440 districts in Germany, Wagner et al. (2006) conclude that “an increase in the percentage of ethnic minority members affords the majority greater opportunity for intergroup contact and thus reduces the majority's prejudice” (Wagner et al. 2006: 380). However, whether these findings generalise to other situational settings has not yet been established. Even more importantly, neither perceived group size nor perceived group threat have been incorporated by the studies cited above.

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<sup>13</sup> For a similar reasoning from a macrostructural perspective, see Blau and Schwartz (1984).

## Hypotheses

The previous discussion implies that researchers must examine the alternative propositions deriving from group threat- and intergroup contact theory to improve the current understanding of the role of outgroup size for anti-outgroup attitudes. In this study, we attempt to contribute to this task by examining two sets of hypotheses. Based on the literature reviewed above, in regard to group threat theory we propose to test the following hypotheses:

*Hypothesis (1): The greater the objective size of the outgroup, the greater perceived outgroup size.*

*Hypothesis (2): The greater the objective outgroup size of the outgroup, the greater perceived group threat.*

*Hypothesis (3): The greater the perceived size of the outgroup, the greater perceived group threat.*

*Hypothesis (4): The greater perceived group threat, the greater anti-outgroup attitudes.*

Next, in regard to intergroup contact theory we suggest to test the following hypotheses:

*Hypothesis (5a): The greater the objective size of the outgroup, the more intergroup contact.*

*Hypothesis (5b): There will be a positive association between greater perceived outgroup size and intergroup contact.*

*Hypothesis (6): The more intergroup contact, the less perceived group threat.*

To safeguard our results for these major hypotheses against potentially biasing influences of further individual-level variables varying across the municipalities under study (Snijders and Bosker 1998), we follow prior work by controlling whether being female, being older, lower educational level, and greater religiosity



lead to both greater perceived group threat, negative intergroup attitudes (e.g. Scheepers et al. 2002) and greater perceived group size and intergroup contact<sup>14</sup>.

## Data and Measures

### *Data*

For our empirical analyses we use individual-level data from the “Religion in Dutch Society”-Survey 2000 (Eisinga et al. 2002). This nationally representative survey was collected by means of face-to-face interviewing using a two-stage random probability sample of the non-institutionalised population living in the Netherlands. In the first stage, 92 municipalities were sampled. In the second stage, based on the municipalities registers random samples of individuals aged between 18 and 70 years were drawn. The response rate from this sample was 43.7%, yielding data of N = 1008 individuals. Given that we are only interested in explaining Dutch citizens’ attitudes towards immigrants, we excluded all persons without Dutch citizenship or with at least one parent being born outside the Netherlands from the dataset. After this, the final sample size was N = 893. We then used an identifier-variable available in the data to match the individual-level survey data with official municipality-level statistics on the percentage of non-western immigrants present in the municipalities at the year of the interview.

### *Measures*

*Anti-immigrant discriminatory intentions.* To assess anti-immigrant attitudes we employ two measurement instruments. Our first measure comprises of three items

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<sup>14</sup> Unexpectedly, our review of the research literature yielded that prior studies largely neglected to examine individual-level causes of intergroup contact (for a related observation, see Quillian 2003). Thus, with regard to intergroup contact we proceed in

using three-point Likert-type scales assessing discriminatory intentions toward immigrants in the fields of the housing- and the labour market. Respondents were asked to evaluate e.g. whether they would prefer a Dutch citizen or an immigrant when it comes to a job promotion. All items were recoded so that higher values reflect a preference for a favourable treatment of Dutch citizens as compared to immigrants. Initial evidence that these indicators fall into a common dimension is given by the size of the item intercorrelations (Spearman's  $\rho$ ), ranging from .36 to .38. An advantage of these indicators is their face-validity given that labour-market and housing issues with regard to immigrants gained much attention on the Dutch political and public agenda during the past decade (Guiraudin et al. 2005).

On the other side, authors acknowledged that due to their rather harsh formulation these measures might be relatively prone to social desirability bias (Coenders and Scheepers 1998). Therefore, we chose a second measure which assesses anti-immigrant attitudes as a much more general issue. For this single indicator respondents were asked on a four-point Likert-type scale to what extent they are in favour or against the presence of ethnic minorities in the Netherlands. Response options comprised of four categories ranging from “strongly in favour of” (1) to “strongly against” (4).

*Perceived group threat.* To measure perceived group threat, we use two indicators. Respondents were asked on five-point Likert-type scales to evaluate the following statements: (a) “Ethnic minorities are too much in charge” and (b) “The coming of ethnic minorities to the Netherlands is a threat to our own culture”. Consistent with our conceptualisations of perceived group threat as negative consequences seen to be

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an exploratory fashion by regressing our measure of intergroup contact on the same set of control variables as for perceived group threat and negative intergroup attitudes.

posed by an outgroup, these indicators reflect experienced threats to group interests in the domains of political power and culture<sup>15</sup>. Possible responses ranged from “agree entirely” (1) to “don’t agree at all” (5). After recoding, higher values indicate greater perceived group threat. Inter-item correlation (Pearson’s  $r$ ) was .66.

*Perceived outgroup size.* To measure perceived outgroup size, we use a single indicator. Respondents were asked to indicate the percentage of ethnic minority members in their neighbourhood on a scale ranging from 0 to 100%. Response options were given in categories of 5%, e.g. “between 0 and 5%”.

*Intergroup contact.* For assessing intergroup contact, we use two items. As for the measure of perceived outgroup size, respondents were asked to indicate the percentage of ethnic minority members (*a*) among their friends and (*b*) among their colleagues. Again, response options ranged from 0 to 100% and were given in categories of 10%. Higher values represent greater perceived percentage of ethnic minority members in the neighbourhood or among the respondents’ friends and colleagues, respectively.

*Background variables.* We include the following background variables in our structural models: *Gender* is measured with males as references category (1 = female). *Age* was measured in years. *Educational level* was assessed by an indicator asking for respondents’ highest school completed after basic school. Response options ranged from 0 = “no school finished after basic school” to 7 = “University”.

*Unemployment* was measured using a dichotomous measure indicating whether the respondent was unemployed at the time of the interview or not (1 = unemployed). To

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<sup>15</sup> Respondents were also asked to what extent they agree with the statement “They day will come that a Dutch person will be fired because of an ethnic minority member”. We acknowledge that this indicator could be considered to be a straightforward measure of

measure *political orientation*, we used a single indicator asking respondents whether they consider themselves as “being left-wing” (1) or “being right-wing” (10). To assess respondents’ *religiosity*, we used a single-indicator measuring frequency of attendance of religious service. Answer options ranged from “about once a week” (1) to “hardly ever/never” (4). After recoding, greater values reflect greater level of religiosity.

*Municipality-level measures.* To operationalise outgroup size, we use official statistics on the percentage of non-western immigrant present in each municipality as derived from the SCP’s statline facilities (SCP 2007). Non-western immigrants, officially defined as all persons with or at least with one parent with Turkish, Moroccan, Surinamese or Antillean background represent the largest share of all immigrants living in the Netherlands (SCP 2007, see also Guiraudon et al. 2005). In addition, earlier work has shown that Dutch citizen’s anti-immigrant attitudes are particularly pronounced with regard to non-western immigrants (Hagendoorn 1995). Initial inspections of the data showed that the corresponding data were highly skewed. For the subsequent hypotheses tests, we therefore use the logarithm of the variables’ original scores (see Alba 2005).

## **Method**

We test our hypotheses by means of structural equation modeling (SEM) for complex sample designs (Múthen and Satorra 1995). As noted earlier, this approach also yields adjusted standard errors and goodness-of-fit statistic as oftentimes

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group threat in the economic domain. Yet we decided to refrain from utilising this item due to its semantic closeness to some of our dependent constructs discussed below.

required by hierarchically ordered data from complex sample designs<sup>16</sup>. To evaluate model fit, we use the  $\chi^2$ -to-df-ratio ( $\chi^2/df$ , Marsh and Hocevar 1985), the CFI (comparative fit index, Bentler 1990), the TLI (Tucker-Lewis-Index, Tucker and Lewis 1973) and the RMSEA (root mean square error of approximation, Steiger and Lind 1980). Models are generally considered to fit adequately to the data if  $\chi^2/df$ -ratio  $< 3$ , CFI  $> .9$ , and RMSEA  $\leq .05$ . All models are estimated based on raw data using the Complex-procedure as embodied in the statistical software *Mplus* 3.14 (Muthén and Muthén 1994-2006) with maximum likelihood (ML)-estimates. Item-nonresponse for the survey data was generally on a very low level (no item exceeding 4% missingness). We used the Missing-procedure providing maximum likelihood-estimates as implemented in *Mplus* 3.14 to account for the missing data structure resulting thereof.

## Results

*Measurement models.* Prior to hypotheses testing, we established measurement models to examine whether the indicators available in the survey load on the latent constructs we conceptually identified them with or not. We consider these preliminary analyses to be a necessary prerequisite for our structural models given that in the past some authors doubted the conceptual and, consequently, empirical, distinctiveness of perceived group threat and anti-outgroup attitudes (for a brief discussion, see Scheepers et al. 2002). We thus checked whether a one-factor model assuming the indicators of perceived group threat and discriminatory intentions

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<sup>16</sup> Initially, we sought to model the covariance structure in our data according to the within- and between matrices following from the data structure as individuals (within-matrices) being nested in municipalities (between-matrices). Yet these models did not converge, potentially due to the generally quite demanding data requirements for multilevel covariance structure modeling. We hence opted for the less computationally intensive, but equally applicable complex-procedure (see Múthen and Satorra 1995).

towards immigrants to load on a single latent variable gained more support from the data than the correlated two-factor model we deduced from the literature. Results showed that the one-factor model did not correspond adequately to the data (one-factor model:  $\chi^2 = 59.508$ ;  $df = 5$ ;  $\chi^2/df = 11.90$ ; CFI = .893; TLI = .785; RMSEA = .111), while the two-factor model with perceived group threat and discriminatory intentions towards immigrants as correlating, but distinctive factors showed a good fit (two-factor model:  $\chi^2 = 3.32$ ;  $df = 4$ ;  $\chi^2/df = 0.83$ ; CFI = 1; TLI = 1; RMSEA = .000). We then estimated a comprehensive measurement model also including the two indicators measuring intergroup contact as latent variable. As supported by the fit measures ( $\chi^2 = 12.212$ ;  $df = 11$ ;  $\chi^2/df = 1.11$ ; CFI = .998; TLI = .997; RMSEA = .011), this model corresponded well to the data. Having confirmed the conceptual and empirical distinctiveness of or individual-level latent constructs, we next turn to our major findings from the structural models<sup>17</sup>.

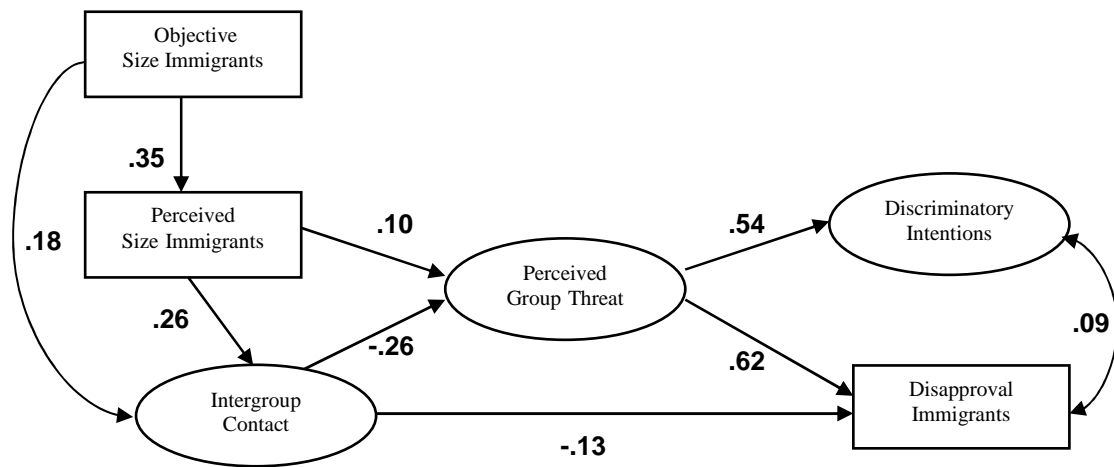
### *Hypotheses testing*

*Figure 1* summarises our major findings by means of a reduced path diagram. To simplify matters, we refrain from showing the observed indicators of the latent variables, its errors and insignificant structural paths. To begin with, we note that the structural model is consistent with the underlying data  $\chi^2 = 43.449$ ;  $df = 19$ ;  $\chi^2/df = 2.28$ ; CFI = .984; TLI = .951; RMSEA = 0.038. Next, we consider the results for hypothesis (1) to hypothesis (4) as seen from the perspective of group threat theory.

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<sup>17</sup> For all structural models, we allow all control variables to correlate among each other and to affect all individual-level theoretical constructs, that is perceived outgroup size, perceived group threat, intergroup contact, discriminatory intentions towards immigrants and attitude towards immigration restriction.

Figure 4. Structural model testing the role of objective size immigrants according to group threat- and intergroup contact theory.



*Note.* Non-significant paths and observed indicators for the latent variables are not shown. One-headed arrows indicate regression coefficients, the double-headed arrow indicates a correlation. Model Fit:  $\chi^2 = 43.449$ ;  $df = 19$ ;  $\chi^2/df = 2.28$ ; CFI = .984; TLI = .951; RMSEA = 0.038.

We find that the effect of objective group size immigrants on perceived group size immigrants is significantly positive ( $\beta = .35$ ). This result supports hypothesis (1), stating that a greater outgroup size in people's environment corresponds to greater subjective perceptions thereof. By contrast, the effect of objective group size immigrants on perceived group threat neither reaches statistical significance nor is its negative sign consistent with the theoretical expectations ( $\beta = -.004$ , *ns*) (not displayed). These outcomes lead us to refuse hypothesis (2). The effect of perceived outgroup size on perceived group threat turns out to be significant and in the expected direction ( $\beta = .10$ ). This result supports hypothesis (3) suggesting that perceptions of greater outgroup size give rise to greater perceptions of threatened group interests. Next, we note significantly positive effects running from perceived group threat to both anti-immigrant discriminatory intentions ( $\beta = .54$ ) and to disapproval of immigrants ( $\beta = .62$ ). This evidence is in agreement with hypothesis (4) according to which greater perceptions of threatened group interests cause greater

anti-outgroup attitudes. We also note a significantly positive correlation between the two measures of anti-immigrant attitudes ( $r = .09$ ).

To scrutinise the outcomes of these separate hypotheses tests, we examined the indirect effect leading from objective group size immigrants to anti-immigrant discriminatory intentions and immigrant disapproval via both perceived outgroup size and perceived group threat<sup>18</sup>. Consistent with the results reported above, these indirect effects proved to be significantly positive with  $p < .05$  for both anti-immigrant discriminatory intentions ( $\beta = .02$ ) and disapproval of immigrants ( $\beta = .023$ ) (not displayed).

Next, we turn to the findings for hypotheses (5a) to (6) as developed from intergroup contact theory. The data show a significantly positive effect from objective group size immigrants to intergroup contact ( $\beta = .18$ ). This result is consistent with hypotheses (5a) whereby greater outgroup size increases the opportunities for intergroup contact. Likewise, the significant and positive effect of perceived group size immigrants on intergroup contact ( $\beta = .26$ ) lends evidence to hypotheses (5b). In regard to hypotheses (6), we expected a negative impact of intergroup contact on perceptions of threatened group interests. As indicated by the corresponding effect of intergroup contact ( $\beta = -.26$ ), this suggestion gains firm empirical support. We further note a significantly negative direct effect of intergroup contact on disapproval of immigrants ( $\beta = -.13$ ), while no such effect exists for anti-immigrant discriminatory intentions ( $\beta = -.12, ns$ ) (not displayed).

Last, to approve the accuracy of these findings we estimated the indirect effects leading from objective group size immigrants via intergroup contact to the two

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<sup>18</sup> For doing so, we utilised the 'MODEL INDIRECT' command available in *Mplus* 3.14.



measures of anti-immigrant attitudes (not shown). In doing so, we accounted for both the impact of objective group size of immigrants on intergroup contact via perceived group size and for the effects of intergroup contact on the two measures of anti-immigrant attitudes via perceived group threat. In line with the prior findings, these indirect effects reached statistical significance with  $p < .05$  and signs in the expected direction for anti-immigrant discriminatory intentions ( $\beta = -.014$ ) and disapproval of immigrants ( $\beta = -.016$ ). Before turning to the discussion of these results, we briefly review the results following from the background variables as documented in rows 1 to 6 of *table 9*.

Table 9. Unstandardised regression coefficients (standard errors) and standardised regression coefficients.

| Exogenous Variables | Endogenous Variables           |          |                        |          |                    |          |                           |         |                        |         |
|---------------------|--------------------------------|----------|------------------------|----------|--------------------|----------|---------------------------|---------|------------------------|---------|
|                     | Perceived Size (Neighbourhood) |          | Perceived Group threat |          | Intergroup Contact |          | Discriminatory Intentions |         | Disapproval Immigrants |         |
|                     | <i>b</i> (s.e.)                | $\beta$  | <i>b</i> (s.e.)        | $\beta$  | <i>b</i> (s.e.)    | $\beta$  | <i>b</i> (s.e.)           | $\beta$ | <i>b</i> (s.e.)        | $\beta$ |
| Age                 | -0.252<br>(0.040)              | -.20***  | 0.001<br>(0.002)       | .008     | -0.093<br>(0.024)  | -.167*** | -0.001<br>(0.002)         | -.05    | 0.001<br>(0.002)       | .013    |
| Gender              | -7.49<br>(0.943)               | -.203*** | -0.020<br>(0.069)      | -.011    | -1.856<br>(0.779)  | -.127*   | -0.038<br>(0.031)         | -.059   | -0.012<br>(0.041)      | -.008   |
| Education           | -0.173<br>(0.279)              | -.023    | -0.131<br>(0.016)      | -.33***  | 0.145<br>(0.138)   | .043     | -0.010<br>(0.006)         | -.33    | -0.009<br>(0.010)      | -.027   |
| Unemp.              | 1.616<br>(3.222)               | .018     | 0.030<br>(0.181)       | .006     | -1.824<br>(2.179)  | .045     | 0.161<br>(0.082)          | .09*    | 0.142<br>(0.109)       | .035    |
| Relig.              | 0.031<br>(0.463)               | .002     | 0.035<br>(0.038)       | .042     | 0.059<br>(0.225)   | .009     | 0.023<br>(0.012)          | .07*    | -0.043<br>(0.463)      | -.061   |
| Left-right          | -0.617<br>(0.298)              | -.078*   | 0.096<br>(0.018)       | .228***  | -0.819<br>(0.173)  | -.231*** | 0.006<br>(0.009)          | .228    | 0.011<br>(0.01)        | .032    |
| Object. Size        | 5.941<br>(0.582)               | .352***  | -0.004<br>(0.029)      | -.004    | 1.420<br>(0.398)   | .187     | 0.005<br>(0.014)          | -.004   | 0.005<br>(0.019)       | .006    |
| Percvd. Size        | ---                            | ---      | 0.006<br>(0.002)       | .104**   | 0.120<br>(0.034)   | .268***  | 0.000<br>(0.001)          | .104    | 0.000<br>(0.001)       | -.001   |
| Intergroup Contact  | ---                            | ---      | -0.032<br>(0.008)      | -.268*** | ---                | ---      | -0.004<br>(0.003)         | -.10    | -0.013<br>(0.006)      | -.127*  |
| Percvd. threat      | ---                            | ---      | ---                    | ---      | ---                | ---      | 0.202<br>(0.030)          | .548*** | 0.532<br>(0.047)       | .626*** |
| $R^2$               | .167                           |          | .324                   |          | .29                |          | .396                      |         | .492                   |         |

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

We observe that *age* is negatively related to perceived neighbourhood size ( $\beta = -.20$ ) and intergroup contact ( $\beta = -.16$ ). For *gender*, we find that women perceive the percentage of immigrants in their neighbourhood as lower ( $\beta = -.20$ ) and report less intergroup contact ( $\beta = -.12$ ) than men. *Education* significantly decreases perceived group threat ( $\beta = -.33$ ). We further note that being unemployed exerts a small, but significantly positive effect on anti-immigrant discriminatory intentions ( $\beta = .09$ ) as

does *Religiosity* ( $\beta = .07$ ). Last, we find that greater right-wing orientation goes long with a lower perceived size of immigrants ( $\beta = -.07$ ) increased perceptions of group threat ( $\beta = .22$ ) and less intergroup contact ( $\beta = -.23$ ). All other effects of the background variables turned out not to reach any level of statistically convincing significance.

## **Discussion**

In this study, we set out to advance current understanding regarding the role of outgroup size for explaining anti-outgroup attitudes. In order to do so, we subjected several hypotheses developed from group threat- and intergroup contact theory to a simultaneous empirical test. The major findings resulting from this research read as follows:

First, in regard to group threat theory we found that greater outgroup size as measured by percentage immigrants on the municipality-level corresponded to greater perceived percentage immigrants in one's neighbourhood which, in turn, proved to increase perceived group threat. Subsequently, we found greater perceived group threat to give rise to both anti-immigrant discriminatory intentions and to immigrant disapproval.

These findings clearly support group threat theory, with one partial outcome calling for particular attention. While our observation that greater objective group size immigrants corresponded to greater subjective perceptions thereof is in line with the theoretical expectations derived from group threat theory, it differs from related results observed by Semyonov et al. (2004). Specifically, in their study based on German Survey data Semyonov et al. (2004) (correctly) observed no consistent

relation between objective- and perceived size foreigners (see Wagner et al. 2006, p. 382). Yet the differences between our and Semyonov et al.'s (2004) findings might result at least in part from the different operationalisations used in the two independent studies. As alluded to earlier, we regressed subjective perceptions of group size immigrants as perceived in the neighborhood on objectively measured group size immigrants in the municipality. Analytically, neighbourhoods represent lower-level units nested within municipalities as higher-level units. Semyonov et al. (2004) regressed subjective perceptions of group size immigrants corresponding to the old and new federal German States on objectively measured group size immigrants for the district level, whereby districts represent lower-level units nested within the old respectively the new federal German States as higher level units. Hence, perhaps group size foreigners as measured on the district-level has simply been a too imprecise proxy-measure to predict Germans' perceptions of group size foreigners on the higher-level units of the former Federal States. Clearly, further research on the issue how actual group size immigrants relates to subjective perceptions and in what ways such perceptions relate to perceived threats and anti-immigrant attitudes (see also Alba et al. 2005) will be an important task for subsequent studies.

Second, in regard to intergroup contact theory we found that greater percentage immigrants on the municipality-level leads to increased intergroup contact. In turn, intergroup contact proved to counter anti-immigrant discriminatory intentions as well as immigrant disapproval mainly by reducing perceptions of group threat. Moreover, the data showed a further negative effect leading from intergroup contact directly to disapproval of immigrants; it seems reasonable to take this additional relation as a clue for mediating processes unobserved in the current study (Pettigrew and Tropp

2007). Viewing the major findings from examining group threat- and intergroup contact theory in consideration, we conclude that for the contexts under study outgroup size operates in dual ways: greater objective outgroup size goes along with greater perceived outgroup size, which increases perceived group threat and thereby leads to greater anti-outgroup attitudes. Likewise, both greater objective and perceived outgroup size increase intergroup contact, which reduces anti-immigrant attitudes in great parts by reducing perceived group threat.

We believe these results to deliver new and potentially important insights, but wish to acknowledge the following limitations of the present study. For instance, it must be noted that the generalisability of our results might be limited by a ‘natural’ ceiling effect present in the data. Recall that the maximum group size of immigrants per municipality reached 30%. However, as illustrated by earlier studies from the U.S., in other contextual units the size of the outgroup might well exceed this rate. Moreover, if demographic forecasting holds then the proportion of the immigrant population in the Netherlands is likely to continue rising in the future<sup>19</sup>. Hence, we consider it a primary task for subsequent research to reexamine the role of outgroup size from the perspectives of group threat- and contact theory in alternative spatiotemporal settings. Ideally, these settings should provide a greater range of percentage outgroup size than this research.

Ultimately, we believe our findings yield promising avenues for further research. For instance, while we utilised what we consider to be the most appropriate attitudinal measures available in the survey, these measures did not enable to distinguish respondents’ threat perceptions and anti-immigrant sentiment in regard to specific

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<sup>19</sup> In fact, according to official statistics from the SCP on average the percentage of non-western minorities in the Netherlands increased from the time of the survey (2000) until the latest figure available (2005).

immigrant groups. Likewise, we could not examine whether respondents' intergroup contact patterns vary in regard to members of different immigrant groups. We acknowledge that more differentiated analyses in this vein would be likely to further understanding of host societies member's negative reactions towards specific immigrant groups, but such research requires more comprehensive survey data than available for this study. A second issue relates to the potential impact of a variable unobserved in this study – outgroup residential segregation. On the one side, outgroup residential segregation has been considered to decrease the outgroup's visibility and salience. Thereby, negative outgroup attitudes might be lowered (Taylor 1998). Yet on the other side, outgroup residential segregation has also been assumed to minimise opportunities for intergroup contact – with greater anti-outgroup attitudes as consequence (Allport 1954). Thus, a logical next step is to subject these contrasting propositions to a systematic empirical study.

Finally, we consider the following theoretical question: Can conditions be specified under which each of the two pathways outgroup size operates by might dominate? Following earlier studies (Blumer 1958, p. 6, Oliver and Mendelberg 2000, Oliver and Wong 2003, p. 579f., Wagner et al. 2006, p. 387), we suggest that for contexts smaller than used in the present study the primary impact of greater minority group size will be the enhancement of opportunities for intergroup contact, with reduced threat perceptions and improved attitudes towards the outgroup as consequence. Contrary to that, for relatively large contexts such as exemplified by nation-states or variations within such macro-contexts across time, we consider outgroup size likely to be associated with an enhancement of threat perceptions and greater anti-outgroup attitudes. The reason for our latter expectation is that for relatively largely contexts, outgroup size oftentimes becomes a topic for negative political propaganda targeted

against the outgroup (Blumer 1958, see Wagner et al. 2006). From this perspective, not objective outgroup size per se, but the negative political propaganda transmitting information about the outgroup via the mass media appears as underlying source of perceived threats and negative intergroup attitudes. Augmenting these theoretical arguments and putting them to systematic empirical study is now the challenge.

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**Chapter 5      The dynamics of authoritarianism and anomia: applying autoregressive cross-lagged and latent growth models to a three-wave panel study<sup>20</sup>**

(co-authored by Eldad Davidov and Peter Schmidt)

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## **Introduction**

Current theoretical and empirical initiatives show a renewed interest in authoritarianism and anomia (Herrmann 2001, Herrmann and Schmidt 1995, Kühnel and Schmidt 2002). This interest is the most recent variant of a longstanding literature which dates back to the classic contributions of Adorno and colleagues (1950) and Srole (1956). However, systematic attempts to investigate the measurement models underlying these constructs and their suggested causal relationships are still largely missing.

In this contribution, we address these issues drawing upon data from a representative three-wave panel study of the German general population. In our model, we measure the latent constructs of authoritarianism and anomia constructs via multiple indicators. Using latent autoregressive cross-lagged (henceforth abbreviated as AR-CL) and latent growth curve (henceforth abbreviated as LGC) models, the purpose of this chapter is to apply two methods of longitudinal data analysis that can be used to test different propositions and to gain new insights for substantive research. Whereas for some areas of research autoregressive cross-lagged or latent growth curve models appear to be commonly used, other areas of research seem just to begin to realize the potentials of such methods (Halaby 2004, Christ, Schmidt, Schlüter and Wagner 2004). Thus, with the present substantial research we intend to contribute to the reader's interest and understanding of AR-CL and LGC for further practical applications.

This chapter is structured as follows. In the following second section, we introduce the specifications of authoritarianism and anomia and explicate two alternative causal models for these constructs. In the third section, we present the key characteristics of AR-CL and LGC. In the fourth section, we present our research

questions and discuss how autoregressive cross-lagged and latent growth curve models can be used to investigate these questions. In the fifth section, we describe the sample and indicators of the latent constructs. Subsequently, in the sixth part, we present the empirical findings from the AR-CL including latent means and intercepts and LGC. In the seventh and last section, this contribution concludes with a summary of the substantial findings and an outlook on recent developments on the integration of complementary methods for the analysis of panel data.

### **Theoretical background**

Ever since their invention in the 1950s authoritarianism and anomia played an important role in many studies on prejudice and intolerance. Regarding authoritarianism, most researchers agree that this construct reflects in equal measures (a) an individual preference for submission under authorities (authoritarian submission), (b) a strict orientation along the perceived conventions of the ingroup (authoritarian conventionalism) and (c) aggressive stances towards outgroups (authoritarian aggression, see Altemeyer 1996, Stenner 1997). However, notwithstanding the consensus on the manifestation of this construct, the question ‘what authoritarianism really is’ is still open (Stenner 1997). Particularly two key approaches regarding the concept specification of authoritarianism need to be distinguished. A first perspective dates back to Adorno et al.’s (1950) seminal work on “The Authoritarian Personality”. According to this view, authoritarianism is conceptualised as a relatively stable intrapersonal characteristic which results from enduring intrapersonal conflicts rooted in childhood experiences of harsh education. A second perspective derives from the social learning approach as introduced by Altemeyer (Altemeyer 1996). Neglecting the idea of authoritarianism as intrapersonal characteristic, Altemeyer conceptualises authoritarianism as a set of

coherent attitudes which is learned from peer groups and similar socializing agents (Altemeyer 1988, 1996).

Anomia was considered by Srole (1956) as subjective ‘feeling’ responding to acute societal dysfunctions (Scheepers, Felling and Peters 1992, Srole 1956). More specifically, Srole (1956) defined anomia as consisting of five subdimensions labelled (a) political powerlessness, (b) social powerlessness, (c) generalised socioeconomic retrogression (d) normlessness and meaninglessness and (e) social isolation (Srole 1956). Usually, these aspects are measured on an attitudinal level. To explain the causal order of authoritarianism and anomia, previous research has focused on two opposing theoretical models (Scheepers, Felling and Peters 1992). According to a first model, the expectation is that anomia leads to authoritarianism (Scheepers et al. 1992, Srole 1956). This line of argumentation suggests that individuals who feel normless and meaningless adopt authoritarian attitudes in order to regain orientation in an environment perceived as increasingly complex and irritating. Thus, according to this perspective authoritarianism serves as a coping-mechanism for individuals who are anomic. This view is challenged by an alternative model proposed by McClosky and Schaar (1965). These authors suggest that it is in fact authoritarianism that causes anomia. According to these authors, certain personality characteristics as reflected by authoritarianism lead to anomia as the narrow-mindedness of authoritarian people confines their opportunities for social interactions with others. Consequently, authoritarian people are assumed to possess fewer opportunities for receiving social support by which they could prevent or reduce social isolation. Therefore, authoritarian people are thought to be particularly vulnerable for anomia (McClosky and Schaar, 1965). To date, empirical evidence for these causal assumptions is largely missing. To the best of our knowledge, only



Scheepers, Felling and Peters (1992) have set out for an explicit test of the causal order of authoritarianism and anomia. Based on a cross-sectional representative Dutch survey dated 1987, these authors estimated a nonrecursive regression model and found a significant positive path with a substantial effect size leading from anomia to authoritarianism (Scheepers et al. 1992). Although this finding supports the suggestion that anomia leads to authoritarianism, the methodological assumptions underlying the nonrecursive model used by Scheepers et al. (1992) are by no means always given (see Kaplan 2001, Harik and Hotchkiss 2001). As a consequence, the conclusion that anomia causes authoritarianism can easily be called into question. Clearly, for investigating the dynamic relations of authoritarianism and anomia panel data are much more desirable. Specifically, there are three reasons why panel data appear particularly adequate for such an investigation. First, regarding the construct specifications of authoritarianism and anomia, panel data offer the opportunity to test the measurement invariance of the measurement model underlying these constructs by comparing individual responses to the indicator variables across different measurement points. Second, panel data are particularly appropriate for testing causal assumptions such as for the relations of authoritarianism and anomia (Finkel 1995) as the observations are collected over two or more points in time. Third, panel data offer informative explorative insights on the dynamics of the theoretical constructs over time using different methods of longitudinal data analysis.

## **Methods**

*Autoregressive cross-lagged models.* A major approach for the analysis of panel data is the autoregressive model (Finkel 1995, Hertzog and Nesselroade 2003, Jöreskog 1979). Dating back to the Markov simplex model (Guttman 1954) which used observed variables only, subsequent developments soon allowed for the

incorporation of latent variables into the autoregressive framework (Jöreskog 1979). Autoregressive models are based on the assumption that each latent construct  $\eta_i$  measured at Time 1 is a function of its former value at Time-1 plus random error. In addition, a measurement model is needed to relate the latent variables to their respective indicators and the random measurement errors. The autoregressive process is described by stability coefficients which reflect the amount of change in the relative rank order of individuals between two or more points in time (Finkel 1995, Jagodzinski, Kühnel and Schmidt 1987).

Importantly, the stability coefficients do not bear information about individual change in absolute scores across different points in time. For instance, although individuals may maintain their relative standing among group members, their individual scores might indeed be subject to an increase or decrease in the period under study (Conroy, Metzler and Hofer 2003). Using the notation of the generalised structural equation model (Bollen and Curran 2006, Graf and Schmidt 1982), the equation for the latent autoregressive model in the univariate case is as follows:

$$\eta_{it} = \alpha_i + \beta_{t,t-1}\eta_{i,t-1} + \zeta_{it} \quad (1)$$

$\alpha_i$  represents the intercept for the estimate of time point  $t$  and  $\beta_{t,t-1}$  indicates prior influences of  $\eta_{i,t-1}$  on  $\eta_{i,t}$ . Index  $i$  denotes the individual case and  $t$  the point in time. Further, this model assumes that the random errors are not correlated with the explanatory variables and have an expected mean of zero. For causal analyses of panel data structural relationships between two or more latent constructs as an extension of the autoregressive model are often of special interest. Consider for the bivariate case two latent constructs  $\eta_i$  measured at two or more points at Time 1 and Time-1.

Within the framework of the bivariate autoregressive cross-lagged model, each of the two latent constructs is regressed at Time 1 on its lagged score plus the lagged score of the other latent construct at Time-1 (Finkel 1995, Hertzog and Nesselroade 2003). The resulting cross-lagged coefficients inform about the structural relationships between both constructs. Specifically, the magnitude of the cross-lagged coefficients indicates how much variation in  $\eta_{i,t-1}$  predicts aggregate change in  $\eta_{i,t}$  or vice versa. Due to the control of autocorrelation for each latent construct via the stability coefficients, the cross-lagged effects indicate the ‘pure’ influence of each construct of interest. The equations for the autoregressive cross-lagged model in the bivariate case for two measuring points are:

$$\eta_3 = \alpha_3 + \beta_{31}\eta_1 + \beta_{32}\eta_2 + \zeta_3 \quad (2)$$

$$\eta_4 = \alpha_4 + \beta_{41}\eta_1 + \beta_{42}\eta_2 + \zeta_4 \quad (3)$$

$\alpha_3$  and  $\alpha_4$  represent the intercepts for the estimates at each Time point  $t$ .  $\beta_{31}$  and  $\beta_{42}$  are autoregressive parameters, while  $\beta_{32}$  and  $\beta_{41}$  represent the cross-lagged coefficients. Random errors are represented by  $\zeta_3$  and  $\zeta_4$ , while the prior assumptions of uncorrelated random errors and explanatory variables with expected value of zero for the random errors are retained. The measurement model can be expressed as follows:

$$y_{ikt} = \mu_{ikt} + \lambda_{kt} + \eta_{ikt} + \varepsilon_{ik} \quad (4)$$

$y_{ikt}$  is the observed value for a specific ( $j = 1, 2, \dots, N$ ) indicator  $y$  for each individual  $i$  at Time  $t$ .  $\mu_{ikt}$  denotes the intercept term and the factor loadings that relate a specific ( $j = 1, 2, \dots, N$ ) indicator to a latent factor  $\eta_{ikt}$ .  $\varepsilon_{ik}$  indicates the random error. AR-CL models can be extended in several ways. For instance, the bivariate AR-CL can be extended toward larger SEM’s with more than two latent constructs (Burkholder and

Harlow 2003). Likewise, additional observed or latent exogenous variables can be introduced to the model to predict the constructs of interest. Given this flexibility, it is no surprise that AR-CL's are popular methods for the analysis of change in latent constructs. Also, researchers can investigate possible moderating effects by referring to multigroup comparisons using categorical grouping variables. Notwithstanding these opportunities, the statistical assumptions underlying the autoregressive models have been subject to criticism (Rogosa 1995, Rogosa and Willet 1985, see also Stoolmiller and Bank 1995). Specifically, the fixed effects approach of the autoregressive model by assuming its coefficients to be the same for all individual units under study has been criticized to reflect group changes only. Also, the previously discussed aspect that the autoregressive model does not account for absolute changes in individual scores for a construct of interest has been mentioned. Alternatively, to account for such individual differences in processes of change researchers suggest the use of latent growth curve models for the analysis of panel data.

*Latent growth curve models.* Latent growth curve models (LGC) are another useful statistical approach for the analysis of panel data. LGC inform about individual growth in a given construct over time by estimating a single underlying trajectory for each individual unit. Expanding upon the seminal work of Tucker (1958) and Rao (1958), LGC was firstly proposed by McArdle and Epstein (1987) and Meredith and Tisak (1990). The idea underlying LGC's is that individual growth for a given construct is a function of a latent intercept and a latent slope plus random error. Whereas the latent intercept indicates the average initial starting values of the longitudinal change process, the latent slope reflects the average individual change

rate over time. The equation for a LGC with observed indicators can be described as follows (Bollen and Curran 2006: 27):

$$y_{it} = \alpha_i + \lambda_t \beta_i + \varepsilon_{it} \quad (5)$$

$y_{it}$  are the observed values for each person  $i$  at time  $t$  in an indicator variable  $y$ .  $\alpha_i$  denotes the latent intercept and  $\beta_i$  the latent slope factor. As indicated by subscript  $i$ , these factors are assumed to vary across individuals. To assess the individual's initial values of the growth process, the factor loading of the latent intercept term  $\alpha_i$  are commonly constrained to 1. Because this value is constant for all  $t$ , the equation does not contain a specific coefficient for the factor loadings of the latent intercept.  $\lambda_t$  indicates the factor loadings for the latent slope factor  $\beta_i$ . For instance, for a minimum of three time points fixing these loadings to values of 0, 1 and 2 specifies a linear growth process, with the random error assumed to have a mean of zero and to be uncorrelated with the exogenous variables. The individual latent intercept and slope factors are each constituted by a group mean and a disturbance term capturing the deviations from this group mean. In an unconditional LGC with no further explanatory variables, these deviations indicate the amount of individual variability for the estimated latent intercepts and slopes. This is described by equations (6) and (7):

$$\alpha_i = \mu_\alpha + \zeta_{\alpha i} \quad (6)$$

$$\beta_i = \mu_\beta + \zeta_{\beta i} \quad (7)$$

With  $\alpha_i$  and  $\beta_i$  representing the latent intercept and the latent slope factor,  $\mu_\alpha$  and  $\mu_\beta$  denote the means for these latent factors whereas  $\zeta_{\alpha i}$  and  $\zeta_{\beta i}$  denote the variability for these means. These disturbances are assumed to have means of zero and to be uncorrelated with the random error.

When combining Equations 5, 6 and 7, the following Equation 8 results:

$$y_{it} = [\mu_{\alpha} + \lambda_t \mu_{\beta}] + [\zeta_{\alpha i} + \lambda_t \zeta_{\beta i} + \varepsilon_{it}] \quad (8)$$

LGC can also be applied to latent constructs with multiple indicators and higher order factors. For instance, detailed applications of such a so-called second order growth curve model are given by Hancock, Kuo and Lawrence (2001) and Bollen and Curran (2006). Following Bollen and Curran (2006), the second order LGC can be expressed as follows:

$$\eta_{it} = \eta_{it} + \alpha_i + \lambda_t \beta_i + \zeta_{it} \quad (9)$$

$\eta_{it}$  is the repeated latent variable for individual  $i$  and time  $t$ . As for the LGC with observed indicators,  $\alpha_i$  and  $\beta_i$  denote the latent intercept and slope factor, with  $\lambda_t$  indicating the factor loadings for the latent slope.  $\zeta_{it}$  is the random error assumed to have a mean of zero and to be uncorrelated with the exogenous variables. The latent intercept ( $\alpha_i$ ) and latent slope factors ( $\beta_i$ ) in such an unconditional model are defined as before:

$$\alpha_i = \mu_{\alpha} + \zeta_{\alpha i} \quad (10)$$

$$\beta_i = \mu_{\beta} + \zeta_{\beta i} \quad (11)$$

Again, the disturbance terms  $\zeta_{\alpha i}$  and  $\zeta_{\beta i}$  are assumed to have means of zero and to be uncorrelated with  $\zeta_{it}$  and  $\lambda_t$ . The measurement model for the second order LGC is expressed by the following equation:

$$y_{jit} = v_{jt} + A_{jt} \eta_{it} + \varepsilon_{jit} \quad (12)$$

$y_{jit}$  denotes the observed value for a specific ( $j = 1, 2, \dots, N$ ) indicator for each individual  $i$  at time  $t$ .  $v_{jt}$  is the intercept for indicator at time  $t$ .  $A_{jt}$  is the factor loading for indicator  $j$  at time  $t$  on a latent factor  $\eta_{it}$ .  $\varepsilon_{jit}$  is the random error. Univariate LGC as described earlier are often extended toward bi- or multivariate LGC. Such LGC

are capable to simultaneously estimate individual change in two or more observed or latent constructs of interest. In the context of such models, researchers can also investigate possible correlations between the latent intercept and slope factors of different constructs. Likewise, unconditional LGC are often extended to include further observed or latent exogenous variables. Such variables can then be used to explain the variance in the latent intercept or slope factors. Another opportunity in the context of LGC is to conduct multigroup analyses based on a categorical grouping variable of interest. By doing so, researchers can examine possibly variant growth processes between subgroups (e.g. gender, ethnicity). Further, it should be acknowledged that LGC offer considerable flexibility in modeling individual change as it is not limited to linear growth processes, but also capable of modeling nonlinear (e.g. quadratic) forms of individual change (Hancock et al. 2001).

### **Research Questions**

By investigating the subsequent four research questions on the dynamics of authoritarianism and anomia, we compare use of latent autoregressive cross-lagged and latent growth curve models. Specifically, to examine research questions one and two, we use latent autoregressive cross-lagged models:

- 1. Which amount of aggregate change do we find for authoritarianism and anomia over the three measurement points?*

Examining aggregate change of authoritarianism and anomia provides important information about the concept specifications of these constructs. Regarding authoritarianism, on the one hand high stability coefficients together with constant mean values would support the idea of authoritarianism as a stable intrapersonal characteristic. On the other hand, low stability coefficients would speak in favour of

authoritarianism as more flexible attitude cluster. Likewise, for anomia conceptualised as a more situation specific construct, we expect lower stability coefficients for the period under study. To investigate these issues, we refer to the stability coefficients of authoritarianism and anomia as provided by the autoregressive model plus the latent means of these constructs.

2. *Which evidence do we find for cross-lagged effects (a) from authoritarianism on anomia respectively (b) from anomia on authoritarianism over the three measurement points?*

Current knowledge on the causal relations between authoritarianism and anomia will be advanced by investigating the cross-lagged effects these constructs. Specifically, positive cross-lagged effects from authoritarianism on anomia would support the view of authoritarianism as antecedent of anomia. In turn, positive cross-lagged effects from anomia on authoritarianism would be consistent with the idea of anomia as antecedent of authoritarianism. To investigate research questions three and four, we will refer to latent growth curve models:

3. *Which evidence do we find for individual (a) growth and (b) variability in growth for authoritarianism or anomia over the three measurement points?*

An alternative approach for investigating the conceptual underpinnings of authoritarianism and anomia using panel data is to explore possible growth processes in these constructs. According to the idea of authoritarianism as stable intrapersonal characteristic, we would expect short-time growth processes to be rather unlikely to occur. In turn, evidence for such growth processes as indicated by a significant mean of the latent slope factor would support the view of authoritarianism as coherent attitude cluster affected by situational circumstances. Likewise, empirical evidence



for growth processes in anomia would support the idea of anomia as individual response to specific situations.

4. *Which evidence do we find for structural relations between the latent intercept and latent slope factors of authoritarianism and anomia over the three measurement points?*

Examining possible growth processes in authoritarianism and anomia offers additional opportunities to explore the dynamic relations of these constructs. Specifically, such an analysis could reveal if and how the possible latent intercepts and latent slopes of authoritarianism and anomia are statistically interrelated. For instance, it seems interesting to explore whether the initial values of one construct as measured by the latent intercept factors affects growth processes in another construct as measured by the latent slope factors.

### **Data and Indicators**

Data for the subsequent analyses were drawn from a panel study of the German general population aged sixteen years and over (Heitmeyer 2004). Data collection was done by computer-assisted telephone interviews, conducted at three measuring points each one year apart. Starting in 2002, the initial sample of the panel consisted of  $N = 2722$  German respondents. One year later at Time 2, of those  $N = 2364$  respondents who agreed at Time 1 to participate in the panel  $N = 2029$  respondents could be recontacted. From this sample,  $N = 1175$  interviews were successfully completed. Again one year later at Time 3, of those  $N = 1142$  respondents who gave their consent at Time 2 to be reinterviewed  $N = 875$  respondents could be recontacted. Here,  $N = 875$  interviews were successfully completed. Using the realized sample of Time 1 as baseline, response rates were 49% for the second time point respectively 37% for the third time point. For measuring authoritarianism, two

items were selected from an authoritarianism scale shown to be a valid measure of authoritarianism in previous studies in the German context (Schmidt, Stephan and Herrmann 1995). Respondents were asked to rate on a four-point Likert-type scale the followings statements: “The most important qualities someone can have are obedience and respect to superiors” (SUBMIS1) and “We should be grateful for leaders who tell us what to do” (SUBMIS2). These indicators reflect the partial aspects of authoritarian submission. Response options ranged from “absolutely agree” (1) to “absolutely disagree” (4). These values were recoded so that higher values indicate greater authoritarianism. For measuring anomia, respondents were asked to rate on a four point Likert-type scale the following two statements: “Things have become so difficult today that you don’t know what’s up” (NORMLES1) and “In former times people were better off because one knew what to do” (NORMLES2). These items reflect the subdimension of anomic normlessness. Response options ranged from "absolutely agree" (1) to "absolutely disagree" (4). Again, the original responses recoded so that higher values indicate greater anomia. Regarding unit non-response (Engel and Reinecke 1994), separate analyses not shown here confirm that neither those participants who gave their consent at Time 1 for reinterviewing, but were not interviewed at Time 2, nor those participants who gave their consent at Time 2 for reinterviewing but were not interviewed at Time 3, differed substantially from the respondents used in the initial panel sample with regard to sex, education and place of living. Item non-response was on a very low level with a maximum of 1.5%.

## Results

*Descriptive results.* Table 10 displays means and standard deviations for the observed indicators of the latent constructs. For the first indicator measuring authoritarianism, the data reveal above-average scores at each measurement point, whereas the mean values for the second indicator remain slightly below the midpoint of the scale across the period under study. Further, the mean values for authoritarianism remain essentially constant for all measurement points. Regarding anomia, the results indicate above-average scores for both indicator variables. Further, the increasing mean values indicate a clear trend across the three measurement points.

*Measurement models.* Next, to test for the appropriate operationalisation of the latent constructs by the observed indicators measurement models were estimated (Anderson and Gerbin 1988). Using the AMOS 5.0 statistical software (Arbuckle 2003), all analyses reported are based on FIML-estimates including means and intercepts (Enders and Bandalos 2002, Raykov 2005). Given the crucial importance of measurement invariance for making inferences about changes in constructs over time (Pitts, West and Tein 1996), we subsequently tested our measurement model for configural and weak factorial invariance (Meredith and Tisak 1990). This step-by-step procedure helped to establish the adequacy of the measurement instruments for the whole period under study. For all analyses, the FIML-procedure as implemented in AMOS 5.0 (Arbuckle 2003) was used.

Table 10. Sample size (N), means (M) and standard deviations (SD) for the observed indicators of authoritarianism and anomia.

|                  | t1(2002) |      |       | t2(2003) |      |       | t3(2004) |      |       |
|------------------|----------|------|-------|----------|------|-------|----------|------|-------|
|                  | N        | M    | SD    | N        | M    | SD    | N        | M    | SD    |
| Authoritarianism |          |      |       |          |      |       |          |      |       |
| Subms1.....      | 2706     | 2.68 | (.93) | 1166     | 2.7  | (.91) | 817      | 2.69 | (.91) |
| Subms2.....      | 2698     | 2.13 | (.85) | 1168     | 2.21 | (.83) | 821      | 2.2  | (.84) |
| Anomia           |          |      |       |          |      |       |          |      |       |
| Normls1.....     | 2705     | 2.57 | (.91) | 1166     | 2.78 | (.9)  | 825      | 2.9  | (.88) |
| Normls2.....     | 2705     | 2.53 | (.89) | 1173     | 2.73 | (.9)  | 824      | 2.87 | (.87) |

Note. All values are based on raw data.

The initial measurement model (1) allowed the latent constructs to correlate and include autocorrelations for the measurement errors. Visual inspection of the initial measurement model (1) indicated that all factor loadings for authoritarianism and anomia were of sufficient size and approximately equal for each measurement point as shown in table 11.

Table 11. Standardised factor loadings of the latent factors for authoritarianism and anomia

|                  | t1(2002) | t2(2003) | t3(2004) |
|------------------|----------|----------|----------|
| Authoritarianism |          |          |          |
| Subms1.....      | .79      | .79      | .80      |
| Subms2.....      | .68      | .66      | .67      |
| Anomia           |          |          |          |
| Normls1.....     | .83      | .88      | .89      |
| Normls2.....     | .83      | .88      | .88      |

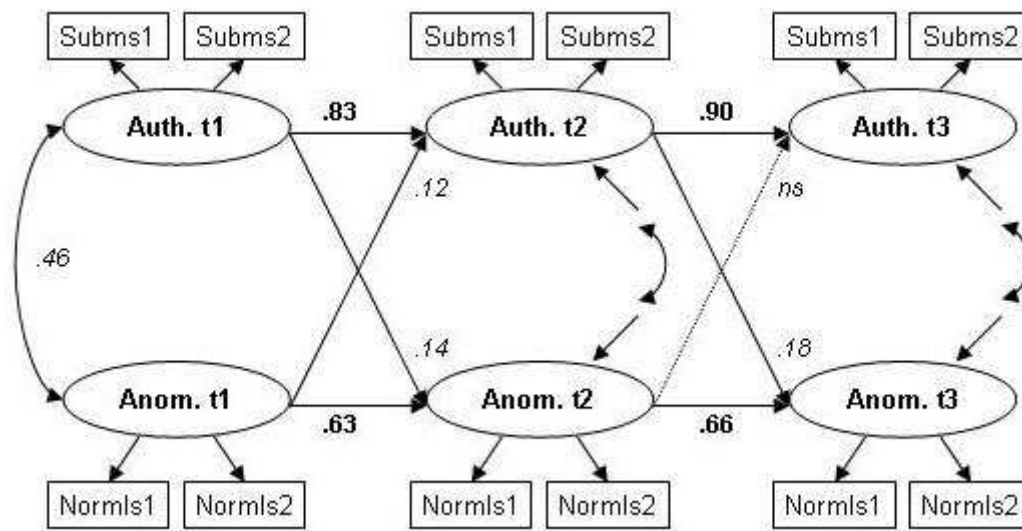
Note. Coefficients are based on FIML-estimates.

According to the fit statistics, model (1) matched well to the data ( $\chi^2 = 64.737$ ;  $df = 33$ ;  $\chi^2 / df = 1.96$ ; CFI = .996; RMSEA = .019;  $p$ -value of close fit = 1.0). Thus, configural invariance was given. In the subsequent measurement model (2) factor loadings for authoritarianism and anomia were constrained to be equal across the measurement points. Following the insignificant  $\chi^2$ -difference test, these constraints did not significantly reduce the fit of model (1) ( $\Delta\chi^2 = 4.984$ ;  $ns$ ). Thereby, weak factorial invariance of the measures was established. For all subsequent AR-CL and LGC, these constraints for weak factorial invariance as well as autocorrelated

measurement errors were retained. Further, model (2) also provides the implied latent means for authoritarianism and anomia that are discussed in the context of our first research question.

*Structural models.* Next, we turn to the substantial findings from the structural models. We start with model (3) depicted in figure 5.

Figure 5. Path diagram of a latent autoregressive cross-lagged model for authoritarianism and anomia.



This model comprises the stability coefficients for authoritarianism and anomia and the mutual cross-lagged coefficients from authoritarianism to anomia as well as from anomia to authoritarianism. Accordingly, this model showed a good fit to the data ( $\chi^2 = 127.199$ ;  $df = 43$ ;  $\chi^2 / df = 2.958$ ;  $CFI = .99$ ;  $RMSEA = .027$ ;  $p$ -value of close fit = 1.0). In our first research question, we hypothesised that low levels of change in authoritarianism would support the idea of authoritarianism as a relatively stable intrapersonal characteristic. In turn, considerable amounts of change would point to the alternative conception of authoritarianism as a situational adaptive attitude cluster. For evaluating the amount of change in authoritarianism, we consider the stability coefficients in conjunction with the latent means. The data reveal

considerably high stability coefficients (i.e. standardised regression coefficients) between the two time intervals ( $\beta = .83, p < .001; \beta = .90, p < .001$ ). Although the differences in the stabilities appears rather small, a  $\chi^2$ -difference test reveals that this difference is significant ( $\Delta\chi^2 = 5.31; p < .05$ ). These findings suggest that only very small amounts of change in authoritarianism took place over the period under study. Consistent with this conclusion, the latent means for authoritarianism as shown in table 12 revealed basically constant values for the three measurement points ( $\mu_{t1} = 2.67; \mu_{t2} = 2.71; \mu_{t3} = 2.72$ ). Taken together, we conclude that these findings support the conceptualisation of authoritarianism as stable intrapersonal characteristic.

For anomia, we hypothesised that considerable amounts of aggregate change would support its conceptualisation as individual reaction contingent on situational conditions. In fact, the considerably lower stability coefficients ( $\beta = .63, p < .001; \beta = .66, p < .001$ ) for anomia point to substantial amounts of change in the period under study. When these stabilities were constrained to be equal, the non-significant  $\chi^2$  - difference test showed that model fit was not altered ( $\Delta\chi^2 = .129; ns$ ). The finding of substantial amounts of aggregate change for anomia is also supported by the latent means for this construct as given in table 12.

Table 12. Implied latent means for authoritarianism and anomia.

|                  | <i>t1</i> (2002) | <i>t2</i> (2003) | <i>t3</i> (2004) |
|------------------|------------------|------------------|------------------|
| Authoritarianism | 2.67             | 2.71             | 2.72             |
| Anomia           | 2.56             | 2.76             | 2.91             |

*Note.* Coefficients are based on FIML-estimates.

The latent means for anomia denote an increase in anomia over the three measurement point ( $\mu_{t1} = 2.56; \mu_{t2} = 2.76; \mu_{t3} = 2.91$ ). For a further test of the apparent different longitudinal developments of authoritarianism and anomia, we

constrained the stabilities between both constructs to be equal for each time interval. Doing so resulted in a significantly altered model fit ( $\Delta\chi^2_{\text{Time 1-Time 2}} = 6.14, p < .05$ ;  $\Delta\chi^2_{\text{Time 2-Time 3}} = 25.46, p < .001$ ). Thus, we conclude that the stabilities of anomia are indeed substantially lower than the stabilities for authoritarianism. Stated differently, for anomia there is considerably greater amount of change than for authoritarianism. In sum, we reason that this result supports the conceptualisation of anomia as individual reaction to situational circumstances.

Next, following our second research question we examined the alternative causal models for authoritarianism and anomia. According to the suggestions of Srole (1956), the expectation was that heightened levels in anomia would lead to heightened levels in authoritarianism. Contrary to this view, McClosky and Schaar (1965) suggested that heightened levels of authoritarianism would lead to heightened levels of anomia. To get evidence on the empirical adequacy of these opposing predictions, we consider the cross-lagged effects (i.e. standardised regression coefficients) as incorporated in the present autoregressive model. As suggested by McClosky and Schaar (1965), the results show that authoritarianism exerts significant and positive effects on anomia for Time 1 to Time 2 ( $\beta = .14, p < .001$ ) as well as for Time 2 to Time 3 ( $\beta = .18, p < .001$ ). However, consistent with the assumptions of Srole (1958), the data also reveal a significant and positive cross-lagged effect from anomia at Time 1 to authoritarianism at Time 2 ( $\beta = .12, p < .001$ ), while no significant cross-lagged effect was found for anomia at Time 2 to authoritarianism at Time 3.

To scrutinise these findings, we compared the fit of the present model (3) that was comprised of cross-lagged effects for both authoritarianism and anomia to two alternative models: In model (3a), only cross-lagged effects from authoritarianism to

anomia were estimated, while the reverse effects leading from anomia to authoritarianism were constrained to zero. In turn, in model (3b) only cross-lagged effects from anomia to authoritarianism were incorporated, with the reverse effects leading from authoritarianism to anomia set to zero. Both model (3a) ( $\Delta\chi^2 = 47.836$ ,  $p < .001$ ) and model (3b) ( $\Delta\chi^2 = 16.642$ ,  $p < .001$ ) adjusted significantly worse to the sample than the initial model (3). Thus, we conclude that in this study McClosky and Schaar's suggestion (1965) that it is authoritarianism that causes anomia gains most support, albeit the data revealed some evidence for a reverse effect of anomia.

Keeping these findings from the autoregressive cross-lagged analyses in mind, we turn to our third research question. Here, our aim was to utilise latent growth curve models for an improved understanding of the conceptual nature of authoritarianism and anomia. For this purpose, we first estimated separate LGC models for authoritarianism and anomia, which were comprised of both a latent intercept and a latent slope factor. Under the assumption of linear growth, factor loadings for the latent slope factors were set to 0, 1 and 2 (Bollen and Curran 2004, 2006, Duncan et al. 19991). For authoritarianism, the initial growth curve model (4) showed a very good fit to the data ( $\chi^2 = 2.677$ ;  $df = 5$ ;  $\chi^2 / df = .535$ ; CFI = 1.0; RMSEA = .000;  $p$ -value of close fit = 1.0). Substantially, the significant latent intercept factor ( $\mu = 2.69$ ,  $p < .001$ ) indicates that the respondents display on average a significant group mean of authoritarian attitudes of 2.7. In addition, the significant variance found for the intercept ( $\varphi = .453$ ,  $p < .001$ ) indicates substantial individual variability around the group mean of authoritarianism.



However, as might have been expected from the basically invariant latent means, the latent slope factor for authoritarianism turned not out to be significantly different from zero ( $\mu = .005$ , *ns*). Also the variance of the slope was not significantly different from zero ( $=.003$ , *ns*). Hence, the subsequent LGC model (5) was estimated with a latent intercept only. Even this model matched the data very well ( $\chi^2 = 2.878$ ;  $df = 7$ ;  $\chi^2 / df = .411$ ; CFI = 1.0; RMSEA = .000; *p*-value of close fit = 1.0) and was thus retained for further analyses. Regarding anomia, the the initial latent growth model (6) revealed a good fit ( $\chi^2 = 29.682$ ;  $df = 11$ ;  $\chi^2 / df = 2.698$ ; CFI = .996; RMSEA = .025; *p*-value of close fit = 1.0). Both the latent intercept and the latent slope of anomia turned out to be significant. Specifically, for anomia the mean of the latent intercept factor was estimated as  $\mu = 2.56$ , ( $p < .001$ ), while the mean of the latent slope factor reached  $\mu = .204$ , ( $p < .001$ ). These findings suggest that on average the respondents displayed a significant group mean of 2.56 for anomia plus a linear increase in anomia of .204 for each time point, a finding consistent with the increasing latent means for each time-point discussed earlier. Further, the significant amounts of variance for both the latent intercept ( $\varphi = .41$ ,  $p < .001$ ) as well as for the latent slope ( $\varphi = .025$ ,  $p < .001$ ) indicate substantial interindividual differences in the growth process of anomia. In a final step, we estimated a dual LGC labelled model (7) that integrates the prior LGC-analyses shown for authoritarianism and anomia. This model is depicted by figure 6.



between the intercept and slope of anomia was not significantly different from zero, suggesting that the initial level of anomia and its change process are not related.

## **Discussion**

In this chapter, we examined the dynamics of authoritarianism and anomia using data from a national population three-wave panel survey. By investigating the measurement models and causal relations of these constructs, we sought to demonstrate the complimentary application of latent autoregressive cross-lagged and second-order latent growth curve models to substantial research problems. Below, we summarize findings and methodological aspects of these analyses.

Following our first research question, we aimed to shed new empirical light on the concept specifications of authoritarianism and anomia. For this task, we capitalized on the statistical assumptions of autoregressive models by examining the stabilities and latent means of the constructs. With regard to authoritarianism, the data revealed considerably high stabilities plus latent means with essentially constant values. Taken together, these findings indicate that respondent's authoritarianism almost did not change significantly between 2002, 2003 and 2004. Thereby, the conceptualisation of authoritarianism as relatively invariant intraindividual characteristic was supported. Contrary to the results for authoritarianism, the findings from the autoregressive models for anomia showed significantly lower stabilities. In line with this outcome, the data also revealed increasing latent means for anomia in the course of time. Thus, we consider these results to support the idea of anomia as individual reaction to certain situational circumstances.

According to our second research question, we examined the causal order of authoritarianism and anomia. Based on two alternative theoretical models, we investigated whether authoritarianism leads to anomia or anomia leads to authoritarianism. For this analysis, the cross-lagged effects as provided by the autoregressive model were of central importance. In short, the findings provided mixed support for the competing causal models. On the one hand, consistent with the idea that authoritarianism causes anomia the data revealed significant and positive cross-lagged effects from authoritarianism on anomia for each point in time. On the other hand, we also detected a significant cross-lagged effect from anomia at Time 1 to authoritarianism at Time 2, as suggested by the alternative view that it is anomia which causes authoritarianism. However, the cross-lagged path from anomia at Time 2 to authoritarianism at Time 3 turned not out to be significant. Subsequent model comparisons revealed that a model which incorporated all significant cross-lagged paths matches best with the data. From these findings, we concluded that McClosky and Schaar's (1965) suggestion that it is authoritarianism which leads to anomia gains most support from the present data, albeit somewhat weaker evidence points to the possibility that authoritarianism is also affected by anomia.

In our third research question, we focused on possible growth processes in authoritarianism and anomia for a further understanding of the concept specifications of these constructs. For authoritarianism the analyses showed that no growth process took part for the period under study, a finding consistent with the prior finding of high stabilities and essentially constant latent means of the authoritarianism-construct. However, evidence for a growth processes was found for anomia. More specifically, the data revealed a linear increase in anomia for the period under study, coupled with a significant amount of population variance. Again, these outcomes complement the

insights provided by the autoregressive model in that they are consistent with the lower stabilities and increasing latent means discussed earlier.

Continuing the use of latent growth models for exploring the dynamics of authoritarianism and anomia, in our fourth and last research question we set out to examine if the respondent's initial values for these constructs as measured by the latent intercept would affect possible growth processes as measured by a latent slope. The positive and significant correlation found for the latent intercepts of authoritarianism and anomia indicates that higher initial values in authoritarianism correspond with higher initial values in anomia and vice versa. However, no further significant correlations were detected for the latent intercept of authoritarianism and the latent slope and intercept of anomia.

Although not crucial for the purpose of this chapter, for future research it would seem promising to introduce further exogenous variables such as education, class or general economic conditions into the models. Likewise, a longitudinal analysis on the effects of authoritarianism and anomia on prejudice could contribute to an improved understanding of the dynamics of intolerance. Besides such substantial advancements, various methodological extensions seem advisable, too. In addition to the discussed extensions for autoregressive and cross-lagged and latent growth curve models, subsequent research could expand on our present methodological strategy by exploring the autoregressive latent trajectory (ALT) model proposed by Bollen and Curran (2001, Curran and Bollen 2004). By integrating the statistical assumptions underlying autoregressive cross-lagged and latent growth curve models, the ALT-model allows researchers a simultaneous analysis of possible autoregressive cross-lagged and growth curve relations. However, for three waves of data as in the present example, identification of the ALT requires non-linear constraints. Hamaker (2005)

showed that under the assumption of time-invariant autoregressive parameters, the ALT-model is equivalent to a latent growth curve model with autoregressive disturbances and thus non-linear constraints are not required. However, currently testing for cross-lagged relations between constructs remains is still problematic since yet it has not been specified which coefficients of such a model would correspond to the cross-lagged coefficients in the autoregressive cross-lagged model. Finally, particularly Oud's (in press) finding of several paradoxes for cross-lagged models because of different discrete time observation intervals within and between studies seems to bear major implications for longitudinal data analysis. As an alternative, Oud (2007) proposes the application of continuous time modeling. Consistent with this argument, we agree that future research in this direction is a necessary and promising task.

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## **Chapter 6          Summary and Discussion**

This study started off from the twofold notion that group threat theory has proven to be a key approach for social science efforts for explaining tense intergroup relations, but that up to this day, several basic questions concerning this approach up to this day remained unanswered. As a consequence, building upon the insights and findings of earlier research in this field, we set out to further understanding of group threat theory for explaining anti-outgroup attitudes. Specifically, rather than focusing on a single research problem solely, this study took up the challenge to address four different, though complimentary substantive research questions. This chapter serves to take stock of our efforts to answer these research questions. For doing so, we will first recapitulate the specific research problems motivating the pre sent research. Then, we will briefly discuss the scientific relevance of our achievements. Finally, we present a brief outlook on the societal relevance this study's results.

### **Summary**

#### **Disentangling the causal relations of perceived group threat and outgroup derogation (Chapter 2)**

The first research question addressed the problem to examine the flow of causality between perceived group threat and outgroup derogation as key constructs of group threat theory. It was formulated as follows:

##### *Research question 1*

*Is perceived group threat causally prior to outgroup derogation? Is outgroup derogation causally prior to perceived group threat? Or are perceived group threat and outgroup derogation linked by reciprocal causal relations?*

This research question was dealt with in chapter 2. In this chapter, we first reviewed and explicated the research literature on group threat theory. This initial step showed that earlier work has advanced three competing theoretical perspectives regarding the direction of causality between perceived group threat and outgroup derogation. The predominating view in the literature which we labelled the *conventional model* of group threat theory conceptualises perceived group threat as causal antecedent of outgroup derogation. A second theoretical perspective which we labelled the *reverse model* of group threat theory conceptualises perceived group threat as consequence of prior levels of outgroup derogation and thereby directly opposes the first model. Finally, our review showed that in the literature a third theoretical perspective has been raised which considers the causal relations between group threat and outgroup derogation to be reciprocal. Accordingly, we labelled this third perspective the *reciprocal model* of group threat theory.

The explication of these three rival theoretical models set the stage for their subsequent joint empirical test. In using cross-national multiwave panel surveys from Germany and Russia, we introduced the method of latent autoregressive cross-lagged models to the study of group threat theory. Consonant with the *conventional model* of group threat theory, we found perceived group threat to be causally antecedent to Germans' dislike and negative behavioural intentions toward foreigners as well as to Russians' ethnic distance toward minorities. By contrast, neither the *reverse-* nor the *reciprocal model* of group threat theory gained support by the data. From these findings we inferred that perceived group threat must be viewed as causal antecedent of outgroup derogation, and it was this conclusion which served as guiding principle throughout the remaining substantive analyses.

**Merging on Mayday: Subgroup and superordinate identification as joint moderators of threat effects in the context of European Union's expansion**  
(Chapter 3)

The second research question elaborated upon the task to specify in which manner salient intergroup threats affect anti-outgroup attitudes by linking propositions from group threat- with social identity theory. The accompanying research question read as follows:

Research question 2

*To what extent is the effect of perceived group threat on anti-outgroup attitudes moderated by subgroup- and superordinate group identification and what role does ingroup projection play for this development?*

This research question was answered in chapter 3. Point of departure for this chapter was the general notion that different strands of social identity theory offer promising insights for scrutinising the role of salient group threats play for predicting anti-outgroup attitudes. We then specified the joint effects of subgroup and superordinate group identification – the central theoretical concepts of these models – in respect to the path from perceived group threat on anti-outgroup attitudes.

Our major hypothesis was that subgroup- and superordinate group identification would mutually moderate the impact of group threat on anti-outgroup attitudes. Specifically, we expected threat effects to be strongest among dual identifiers, i.e. those ingroup-members who identify strongly with both the subgroup- and the superordinate category. We tested this major hypothesis by means of two experimental survey studies using both a general population- and a student sample. These studies were carried out during the European Union's eastward expansion.

Consistent with this situational setting, in this study national- and European identity served as subgroup- respectively superordinate group categories, while attitudes towards people from the new Eastern European Union's countries and attitudes towards Turks were used as measures of anti-outgroup attitudes. The results generally corroborated our major hypothesis: the effects of salient group threat on anti-outgroup attitudes were most pronounced among dual identifiers. Accounting for recent theorising, we also examined whether threat effects among dual identifiers are mediated by ingroup projection, but found only limited support for this assumption. We concluded that the simultaneous identification with both subgroup and superordinate group can be expected to intensify threat effects on anti-outgroup attitudes.

**The role of group size of immigrants for explaining anti-immigrant attitudes and discriminatory intentions in the Netherlands: An empirical comparison of group threat- and intergroup contact theory in the Netherlands (Chapter 4)**

The third research question used propositions from group threat- and intergroup contact theory to answer the problem whether and in what direction the objective size of an outgroup affects perceptions of group threat and outgroup derogation. Research question 3 was formulated as follows:

*Research question 3*

*To what extent does the objective size of an outgroup increase perceived group threat and anti-outgroup attitudes? To what extent does the objective size of an outgroup increase intergroup contact and thereby decrease perceived group threat and anti-outgroup attitudes?*

This research question was answered in chapter 4. In this chapter, we first explicated the two different ways outgroup size is supposed to affect anti-outgroup attitudes as seen from the perspectives of group threat- and intergroup contact theory. In brief, from group threat theory we derived the general hypothesis that a greater outgroup size leads to an increase of perceived group threat and anti-outgroup attitudes. Contrary to this prediction, intergroup contact theory led us to expect that a greater outgroup size enhances intergroup contact which, in turn, lowers anti-outgroup attitudes by reducing perceived group threat. We tested these alternative lines of reasoning by means of structural equation modeling for complex survey data applied to a nationally representative survey on anti-immigrant attitudes reported by Dutch citizens situated in 92 Dutch municipalities. For these contexts, our analyses lead us to conclude that outgroup size operates in dual ways. On the one hand, consonant with group threat theory we found, first, that greater outgroup size goes along with a greater perceived outgroup size and, second, that greater perceived outgroup size mediates the effect of greater outgroup size on greater perceived group threat and subsequent anti-outgroup attitudes. On the other hand, consistent with the assumptions derived from intergroup contact theory we also found support for the assumption that greater outgroup size increases intergroup contact, and intergroup contact reduces anti-outgroup attitudes by reducing perceptions of group threat.

**The dynamics of authoritarianism and anomia: applying autoregressive cross-lagged and latent growth models to a three-wave panel study (Chapter 5)**

The fourth research question accounted for our notion that recent years witnessed a rapid advancement of sophisticated methods for the dynamic analysis of panel data, yet researchers oftentimes refrain to capitalise upon the opportunities yielded by such

methods. As contribution to remedy this development, we demonstrated the fruitfulness of autoregressive cross-lagged structural equation models and second-order latent growth curve models in order to examine substantive research problems.

This intention was summarised in research question 4:

*Research question 4*

*How do latent autoregressive cross-lagged structural equation models and second-order latent growth curve models perform regarding the longitudinal relations of authoritarianism and anomia?*

This research question was answered in chapter 5. In the corresponding analyses we examined the dynamic relations between authoritarianism and anomia, two theoretical constructs proven to be of significant importance for the study of negative intergroup attitudes. Using rival theoretical propositions regarding the causal order of these constructs, we showed how the autoregressive cross-lagged approach can be used for examining the direction of causal flow between these two constructs. Likewise, we developed fresh analytical perspectives to the study of the conceptual nature of authoritarianism and anomia by examining the dynamic relations of these constructs using latent growth curve modeling. As for our results, the data provided mixed support: According to them, authoritarianism functions as causal antecedent of anomia, whereas at the same time, clear evidence was found for both authoritarianism being a stable intrapersonal construct and for anomia as construct reflecting dysfunctional social conditions.



## **Discussion**

### *Scientific Relevance*

In this section, we will consider the main conclusions following from the results summarised in the previous section. The central task to be accomplished here is to discuss the substantive scientific advancements delivered by the previous analyses. As indicators of this relevance, we will consider the theoretical, methodological and empirical progress following from the results of these studies.

As recapitulated in the previous section, three interrelated research questions served as point of departure for this study. These research questions implied, first, to examine the flow of causality between perceived group threat and anti-outgroup attitudes, second, to elaborate upon the relation between perceived group threat and anti-outgroup attitudes by specifying moderating conditions for this linkage and, third, to examine the role of the objective size of an outgroup for perceived group threat and anti-outgroup attitudes.

### *Disentangling the Causal Relations of Perceived Group Threat and Outgroup Derogation*

To begin with, we consider the progress following from examining the causal structure of group threat theory as guided by the first research question. The major improvement delivered by this research is the finding that perceived group threat must be conceptualised as causal antecedent of anti-outgroup attitudes. If one agrees to the imperative that at the heart of all social science efforts for explaining tense intergroup relations lies the challenge to distinguish between cause and effect – as we do – then showing evidence that perceived group threat stands causally before to manifestations of outgroup derogation can rightfully be seen to be of basic

importance for subsequent theorising and research. Moreover, this study potentially represents the most critical test of the causal relations between perceived group threat and outgroup derogation currently available. This assertion gains support on three levels.

On a theoretical level, this study overcame some of the weaknesses of earlier research by providing a comprehensive explication of the different theoretical models concerning the linkage between perceived group threat and anti-outgroup attitudes. The systematic compilation of these different models from the social science literature enabled us to conduct a simultaneous test of three competing linkages between perceived group threat and anti-outgroup attitudes. In reverse, if we would have failed to provide a comprehensive specification of these linkages, the finding of an unidirectional causal relation leading from perceived group threat to anti-outgroup attitudes could hardly have reached its actual theoretical and empirical significance.

Yet despite the unambiguous evidence for a unidirectional flow of causality from group threat to outgroup derogation shown by this study, we emphasize the need for future research on the causal relations between these key constructs of group threat theory. We believe that given certain conditions it would be reasonable to explicitly assume evidence for the reverse or the reciprocal model of group threat theory. To elaborate upon this suggestion, subsequent research might synthesize assumptions from group threat theory with various alternative theoretical approaches. For instance, in regard to the potentiality of reciprocal causal effects between group threat and outgroup derogation, researchers might take certain strands of research on authoritarianism into account (see chapter 5). Specifically, a core assumption of psychodynamic approaches to the study of authoritarianism is that early childhood experiences of harsh education not only result in a general preference for the

derogation of outgroups but, at the same time, also lead to a general perception of the social context as threatening and dangerous (Adorno et al. 1950). Presuming this reasoning to be valid, subgroup analyses of e.g. the GFE-Panel surveys (Heitmeyer 2005) by means of multigroup comparisons (Jöreskog 1971, Byrne 2004) or applications of mixture modeling (Muthén 1989) might prove useful to re-examine the causal relations between group threat and outgroup derogation for such more specific subpopulations.

Regarding the methodological level, our analyses broke new ground by employing a longitudinal research perspective. We like to acknowledge that this is the first study which utilises multiwave panel data from large-scale population surveys in order to examining group threat theory. As compared to the cross-sectional research designs characterising conventional research in this field, the panel design we employed offered the distinct analytical advantage to yield information of the same individuals over time. It was solely this flexible and powerful methodological approach which enabled us to draw firm conclusions about the longitudinal relations between perceived group threat and anti-outgroup attitudes. In fact, we are convinced that in the absence of multiwave panel data we hardly could have answered the research question guiding this study. However, it is well-known that the complex structure of multiwave panel data taxes the methodological skills of the researcher. In response to this challenge, we introduced the method of latent autoregressive cross-lagged structural equation modeling to the study of group threat theory. As shown by the analyses, latent autoregressive cross-lagged structural equation models enabled us to conduct particularly rigorous empirical tests in respect of the theoretical problems motivating this study.

Moreover, this study also showed progress on an empirical level. Three points support this claim. First, whenever possible, we set out to model observed variables as multiple indicators of underlying latent constructs. This strategy put us in the position to adequately account for measurement errors as one of the ever-present pitfalls in research based on survey data. Second, and contrary to most conventional research, instead of focusing on a single dependent variable only we opted to employ a diversified criterion structure when testing our empirical assumptions. Using different measures of anti-outgroup attitudes- and behavioural intentions is consistent with the idea of a multi-trait measurement and thereby enhances the empirical evidence. The third point to be acknowledged is that this study not only proceeded in a longitudinal, but also in a cross-national fashion. We believe that this strategy enhanced the ecological validity of our results in considerable ways.

*Subgroup and Superordinate Identification as Joint Moderators of Threat Effects in the Context of the European Union's Expansion*

Next, we consider the progress following from our study on the moderating influence of social identifications on threat effects. In brief, the major contribution of this study is to qualify the generality of threat effects by providing insights into the moderating influence of social identification. More precisely, we like to stress the following advances:

First, on a theoretical level, this study showed that the effect of salient threats on anti-outgroup attitudes becomes aggravated for ingroup-members who identify strongly with both the sub- and the superordinate category. Thus, in difference to most previous research which implicitly or explicitly assumes threat effects to be invariant across ingroup members, this study pointed out that dual identifiers

represent an important exception to this assumption and thereby furthered understanding on the relation between threat and anti-outgroup attitudes. Moreover, this study also showed that threats to the subordinate category yield stronger effects on anti-outgroup attitudes as compared to threats to the superordinate category. Further, in scrutinising the major finding that threat effects on anti-outgroup attitudes become aggravated by dual identification this study also provided theory-guided insights how the interplay of threat effects and social identification relates to ingroup projection. However, no robust evidence was found for the assumption that ingroup projection functions as mediator of threat effects on anti-outgroup attitudes for dual identifiers. Still, these analyses set the stage for subsequent research taking up the challenge to disentangle the complex relations between threats, social identification and ingroup projection in order to explain anti-outgroup attitudes.

Second, on a methodological level, a further contribution of this study must be noted. Specifically, this study advanced previous empirical examinations of group threat theory by developing and applying a new procedure to elicit perceptions of threat. While conventional research usually restricts itself to make specific aspects of an outgroup salient, we opted to assess respondent's idiosyncratic threat perceptions. Doing so is advantageous as eliciting idiosyncratic rather than general beliefs is more likely to tap into salient aspects of the object under study.

Third, particularly one empirical contribution of this study deserves special attention. That is, by showing that experimentally aroused threats in the context of the European Union's expansion increase anti-outgroup attitudes, this study replicated threat effects in a new, previously neglected setting. Thereby, this study added further evidence to the prevalence of threat effects in different contexts.

*The Role of Group Size Immigrants for Explaining Anti-Immigrant Attitudes in the Netherlands*

Next, we turn to our study of the role of outgroup size for explaining anti-outgroup attitudes as guided by the second research question.

From a theoretical perspective, this study advances earlier knowledge by showing that the objective size of an outgroup can affect anti-outgroup attitudes in two contrasting ways. On the one hand, the results showed that a greater size of an outgroup can enhance perceived group threat and anti-outgroup attitudes as suggested by group threat theory. On the other hand, consonant with intergroup contact theory the results showed evidence that a greater size of an outgroup also increases intergroup contact which, in turn, lowers perceived group threat and anti-outgroup attitudes. Given that such dual influences of outgroup size have not been documented before, this finding clearly advances our theoretical understanding about the alternative ways the size of an outgroup can affect anti-outgroup attitudes.

Two further theoretical aspects elaborated upon in this study should be acknowledged. The first aspect relates to the fact that greater outgroup size could only be shown to give rise to greater perceived group threat by accounting for an additional intervening construct – perceived outgroup size. Thus, in contrast to most previous research which commonly neglects to provide a comprehensive specification of the perceptual mechanisms giving rise to perceived group threat, this study shows that researchers taking up the challenge to specify ‘context-effects’ benefit greatly from providing more detailed specifications of the micro-social mechanisms linking contextual- and individual-level constructs. The second aspect relates to the general research design of this study. Previous research commonly neglected the systematic explication – and empirical test – of alternative theoretical approaches offering

differing answers to the question in which manner the size of an outgroup affects anti-outgroup attitudes. Other than this literature, the present study provided an empirical theory-comparison by juxtaposing and testing theoretical propositions from group threat- and intergroup contact theory theory alike. As the results show, doing so has proven advantageous as it allowed to ascertain the explanatory value of both group threat- and intergroup contact theory.

In addition to these theoretical contributions, this study also yielded methodological progress. Specifically, to date only very few studies examine contextual- and individual-level components of group threat theory by means of structural equation modeling. However, these studies typically could not account for the hierarchical structure of their data. Thereby, such studies run risk to achieve distorted results e.g. due to downward-biased standard errors. Other than this earlier work, the present study showed that adequate versions of structural equation modeling for the analysis of hierarchically structured data exist which can be applied in straightforward ways. The methodological approach used in this study could thus serve as example for future research aiming to disentangle the linkages between contextual- and individual-level components of group threat theory.

Moreover, even though restricted to quasi-experimental cross-sectional data, we like to note that this study has also yielded empirical progress. Two issues support this suggestion. The first issue mirrors our analytical strategy described in the second chapter by using conceptually different dependent variables to scrutinise the empirical test of our theoretical assumptions. That is, in proving the theoretical mechanism under study to hold for anti-immigrant behavioral intentions- and attitudes alike we clearly enhanced the validity of our conclusions. The second issue refers to the multilevel design we employed in this study. Most previous research examining the

interplay of contextual- and individual-level components of group threat theory has focused on contextual difference between countries, oftentimes in an European setting. Up to now this research tradition has not examined potentially important differences between within-country contexts. The present study responds to the challenge to address this gap in the literature by examining within-country contexts in the form of differences between individuals situated in distinct municipalities.

*The dynamics of authoritarianism and anomia: applying autoregressive cross-lagged and latent growth models to a three-wave panel study*

Finally, we consider the contributions of our study examining the longitudinal relations between authoritarianism and anomia motivated by our fourth research question. As alluded to earlier, the primary purpose guiding this research was to demonstrate the application of autoregressive cross-lagged and growth curve models as two flexible and powerful statistical approaches for the analysis of panel data. Specifically, given that researchers increasingly realise the genuine dynamic nature of anti-outgroup attitudes (Crandall and Eshleman 2003, Hunt, Seifert, Armenta and Snowden 2006), we like to note that repeated observations of the same individuals as collected by means of panel data are of potential great value for the study of such attitudes. Other than previous methodological demonstrations commonly arguing for the unconditional superiority of one approach above the other, we started from the conviction that is more appropriate to account for the complimentary opportunities offered by autoregressive cross-lagged and growth curve models. In support of this view, we believe our substantial findings bear possibly important implications for the study of anti-outgroup attitudes. More precisely, in regard to the theoretical contributions of this study, we like to note particularly two findings. Our study ranks



among the first which examined the conceptual nature of authoritarianism and anomia longitudinally. The results show ample longitudinal evidence for the theory-guided assumption that authoritarianism represents an intrapersonal characteristic being rather unlikely to show substantial change once it has been established. On the other hand, our efforts to investigate the flow of causality between authoritarianism and anomia yielded more mixed results. The data showed positive effects leading from authoritarianism to anomia across the whole period under study, while for the initial time period, we also observed a significantly positive effect leading from anomia to authoritarianism. This finding points to the presence of reverse causal processes in the dynamic relations of authoritarianism and anomia and bears interesting avenues for future research. Subsequent studies could scrutinise these findings by, for instance, investigating the presence of unobserved heterogeneity in the data (Kühnel 1999). The rationale underlying this idea is that the total sample as used in the present analysis might well contain unobserved subgroups which differ in regard to the flow of causality between authoritarianism and anomia. As for the statistical models applied in the present analysis, it is our hope that modern methods to examine the presence of unobserved heterogeneity in the data will be applied in subsequent studies. Regarding the methodological contributions of this study, we believe our strategy to demonstrate the fruitfulness of complex, but flexible and powerful methods of data analysis for conducting theory-guided analyses can rightfully be seen to have succeeded. Two reasons support this assertion. First, our analyses showed that autoregressive cross-lagged and growth curve methods can be applied in straightforward ways to real-life panel data which, in general, become increasingly common to the social science community. Second, as indicated by the discussion above, our investigation showed that modern methods of data analysis such as

autoregressive cross-lagged and growth curve models serve by no means a methodological end in itself. To the contrary: we hope to gain approval in concluding that such methods must rather be seen as appropriate tools for social science researchers in order to achieve substantial progress. -

### *Applied Relevance*

The central purpose of this study was to improve current understanding of group threat theory for explaining anti-outgroup attitudes. Consistent with this purpose, the substantive studies summarised above were conceptualised and carried out as basic research. Yet ever since social scientists investigated the sources underlying negative intergroup attitudes, they have been contributing to practical solutions for improving such attitudes (Allport 1954). We will thus close this work with a brief summary concerning important practical implications following from the substantive findings of our studies.

To begin with, we reconsider our study on *disentangling the causal relations of group threat and outgroup derogation* (chapter 2) from an applied perspective. We note two conclusions resulting from this study's main finding that perceived group threat stands causally prior to outgroup derogation. First, this finding brings direct support to the logic embodied in information- as well as interaction based intervention programs aiming to reduce perceived threats in order to improve negative intergroup attitudes (Stephan and Renfro 2002, see also Stephan and Stephan 2000, Stephan and Vogt 1998). Second, and closely related to this first point, having identified perceived threat as antecedent condition of anti-outgroup attitudes, this study also delivers indirect support for research investigating in which manner intergroup contact improves negative intergroup attitudes. Specifically, recent research in this field has

shown perceived threat to operate as a mediator of contact effects on negative intergroup attitudes (Pettigrew and Tropp 2007, Voci and Hewstone 2003). Yet most results concerning this causal sequence are restricted to rely on cross-sectional data only. Complementing this literature, the present study showed longitudinal support for causal effects of threat on prejudice. Thus, while examining the full causal sequence from contact via perceived threat on anti-outgroup attitudes awaits future research, the longitudinal evidence given by this study adds useful insights for research on the intervening mechanisms involved in contact effects.

Next, we note another significant practical implication following from our study on *subgroup and superordinate identification as joint moderators of threat effects in the context of the European Union's Expansion* (chapter 3). As alluded to earlier, irrespective of threat effects, in this study we found ingroup members who show high levels of national identification but only low levels of European identification to show most negative anti-outgroup attitudes. In addition, our study demonstrated that ingroup members with both high levels of national and European identification respond most negatively to perceived group threat. Thus, as for this study's substantive domain of the European Union's expansion, we note that it may be made a more explicit goal of the European unification process to shift social identification from the parts to the whole – if one agrees that avoiding the unintended, though harmful consequences of worsened intergroup attitudes is imperative.

Finally, in regard to the applied relevance of our study on *the role of outgroup size for anti-immigrant attitudes* (Chapter 4) we would like to acknowledge the following. In line with related studies on anti-immigrant attitudes, our results showed that intergroup contact presents powerful mean for improving negative attitudes towards immigrants by reducing perceptions of group threat. From a structural perspective,

this conclusion coincides with the finding that the presence of immigrants in everyday settings as exemplified by neighbourhood contexts goes along with increased intergroup contacts. Summing up, we infer that both continuing both and inventing, respectively, applied programmes for increasing intergroup contact in such settings represents an effective strategy for improving intergroup relations. Further, this conclusion implies that policymakers would be well-advised to prevent or reduce patterns of residential segregation between immigrants and members of the host population. In conjunction with applied programmes, doing so seems likely to increase intergroup contact as proven means to improve tense intergroup relations.

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## Specification of the contributions of the Co-authors:

*Chapter 2, “Disentangling the causal relations of group threat and outgroup derogation: cross-national evidence from German and Russian Panel Surveys”* has been co-authored by Prof. Dr. Peter Schmidt, Justus-Liebig-Universität Gießen, and Prof. Dr. Ulrich Wagner, Philipps-Universität Marburg. I am the first author of the article. The article has been submitted for publication to the journal *European Sociological Review*.

Elmar Schlüter:

1. Development and structuration of the article.
2. Development of the theoretical framework.
3. Compilation of the research literature.
4. Data preparation.
5. Empirical analyses.
6. Discussion of the results.

Peter Schmidt:

1. Discussion regarding the conceptualization and structuration of the article.
2. Revision regarding the first version of the article.
3. Suggestions for improving the empirical analyses of the first version of the article.

Ulrich Wagner:

1. Discussion regarding the conceptualization and structuration of the article, particularly in regard to socialpsychological assumptions related to the theoretical framework used.
2. Revision regarding the first version of the article.
3. Suggestions for improving the empirical analyses of the first version of the article.

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*Chapter 3, „Merging on Mayday: Subgroup and Superordinate Identification as Joint Moderators of Threat Effects in the Context of the European Union's Expansion“* is joint work with Dipl.-Psych. Johannes Ullrich, University of Frankfurt, und Dr. Oliver Christ, Marburg University. This article has been published under the same title in *European Journal of Social Psychology*, **36**, 857-876. All authors contributed equally to the article.

Joint work of Johannes Ullrich, Oliver Christ and Elmar Schlüter includes:

1. Conceptualization and structuring of the article.
2. Development of the theoretical frameworks.
3. Compilation of the research literature.
4. Data collection.
5. Data preparation.
6. Empirical analyses.
7. Discussion of the results.

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*Chapter 5*, „The dynamics of authoritarianism and anomia: applying autoregressive cross-lagged and latent growth curve models to a three-wave panel study“, has been co-authored by Dr. Eldad Davidov, Universität Köln, and Prof. Dr. Peter Schmidt, Justus-Liebig-Universität Gießen. I am the first author of the article. The article has been published as Schlüter, E., Davidov, E. and Schmidt, P. (2006). Applying Autoregressive Cross-lagged and Latent Growth Curve Models to a three-Wave Panel Study, pp. 315-316, in Van Montfor, K., Oud, J. and Satorra, A. (Eds.): Longitudinal Models in the Behavioral and Related Sciences. Mahwa, NJ: Erlbaum.

Elmar Schlüter:

1. Conceptualization and structuration of the article.
2. Development of the theoretical frameworks.
3. Compilation of the research literature.
4. Data collection.
5. Data preparation.
6. Empirical analyses.
7. Discussion of the results.

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Eldad Davidov:

1. Discussion of the methodological framework, particularly regarding the analysis of latent means.
2. General suggestions for improvement of the article.
3. Review and discussion of the results.

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Peter Schmidt:

1. Support in conceptualizing the methodological framework.
2. Support in deriving the relevant statistical formulas.
3. Review and discussion of the results.

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Marburg/Köln/Giessen, den: .....



## **Erklärung**

Hiermit erkläre ich, Elmar Schlüter, dass ich diese Dissertation – mit Ausnahme der in Koautorenschaft verfaßten und oben genauer spezifizierten Teile – selbstständig verfaßt, keine anderen als die angegebenen Quellen und Hilfsmittel verwendet und sämtliche Stellen, die den benutzten Werken im Wortlaut oder dem Sinne nach entnommen sind, mit Quellenangaben kenntlich gemacht habe

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