In this paper, we examined the impact of the numerical representation and the intrusiveness of immigrants on feelings of group threat voiced by the majority. The present evaluation of group threat differs from previous studies in its inclusion of temporal comparisons. The relationship between feelings of threat and attitudes toward immigration was also evaluated. In all, 221 college students completed a questionnaire. As predicted, results obtained show that numerical representation was positively associated with feelings of group threat resulting from invidious social comparisons. Intrusiveness was positively related to feelings of group threat resulting from temporal comparisons. Contrary to hypotheses, the final model confirms that only feelings of temporal group threat were associated with negative attitudes toward immigration. Practical implications and the important role of temporal comparisons are discussed.

Research has demonstrated clearly that numbers matter in reactions to minority groups (Coenders & Scheepers, 1998; Floge & Merrill, 1986; Longoria, 1996; Ott, 1989; Quillian, 1995; Rinfret & Lortie-Lussier, 1993; South, Bonjean, Markham, & Corder, 1982; South, Markham, Bonjean, & Corder, 1987; Taylor, 1998; Yoder, Adams, Grove, & Priest, 1985; Yoder, Adams, & Prince, 1983). What is not clear is the impact of high versus low minority numbers on majority group attitudes. On the one hand, it has been suggested that feelings of threat, and their ensuing discriminatory attitudes and behaviors, are more important when minorities are fewer than greater in number (Kanter, 1977). Blalock (1967), on the other hand, predicted an increase in negative reactions in the case of strong representations of minorities. Studies support both Kanter’s (Floge & Merrill, 1986; Ott, 1989; Yoder et al., 1983, 1985) and Blalock’s (Longoria, 1996; South et al., 1982, 1987) positions.

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Yoder (1991) attributed these conflicting results to the fact that the study of numbers has been confounded with the effect of intrusiveness. Feelings of threat by the majority group are sensitive not only to numerical representation of minorities, but also to the surge in the number. According to Yoder, a high rate of augmentation, not just a large relative number of minority group members, yields negative majority attitudes.

Yoder’s (1991) position was first tested in a study evaluating the effects of the numerical representation and intrusiveness of women managers on the reactions of their male counterparts (Beaton, Tougas, & Joly, 1996). This study produced mixed results in the sense that only numbers were associated with feelings of group threat reported by male managers. In support of Blalock’s (1967) position, feelings of group threat voiced by male managers increased with the augmentation in the representation of women managers. Contrary to Yoder’s position and to hypotheses, intrusiveness was not associated with feelings of group threat. These results cannot be accepted too hastily as a clear demonstration that only numbers, and not intrusiveness, matter in inducing feelings of threat in members of the majority group. Further assessment of intrusiveness is contingent on a comprehensive examination of feelings of group threat.

In the study conducted by Beaton et al. (1996), feelings of threat to one’s group interest were measured via the concept of collective relative deprivation. This concept refers to the feeling of discontent that individuals experience following invidious comparisons (Crosby, 1976; Runciman, 1966, 1968). In line with the majority of past studies (Guimond & Tougas, 1994), collective relative deprivation referred to social comparisons involving, in this case, both men and women. In short, men were asked to compare their situation to that of their female colleagues and to express feelings triggered by the comparisons. Social comparisons, however, account for only a part of feelings of threat that emerge as a result of changes in the composition of a group through the presence and sharp augmentation of the number of minorities.

According to Albert (1977), individuals favor temporal over social comparisons in situations of change and adjustments, such as those triggered by an increased influx of minorities. By comparing their present conditions to those experienced in the past, individuals draw on their life history and, consequently, reach conclusions concerning their present situation. It is through an awareness of their life history that individuals achieve a better understanding of their personal and social identities. Temporal comparisons not only allow individuals to position themselves in terms of the past, but also in terms of the future. Feelings concerning expectations beyond the present situation can serve as a gauge, a sense of satisfaction with their present situation.

Albert’s (1977) work focuses on the self, but other analysts assert that temporal comparisons are important to both groups and individuals (Mummendey, Mielke, Wenzel, & Kanning, 1992). The position of the in-group on various
issues is established, at least in part, by comparing its current status to its past status (Hinkle & Brown, 1990). Comparisons of the group’s present and estimated future conditions are also believed to be helpful in establishing the position of one’s group (Hinkle & Brown, 1990).

The suggestion that temporal comparisons play a significant role in the evaluation of the status of the in-group was confirmed by Brown and Middendorf (1996). In fact, it was shown that temporal comparison was the predominant mode of evaluation of one’s group. These findings led to the conclusion that “researchers may have underestimated the role of temporal comparison” (Brown & Middendorf, 1996, p. 330).

The inclusion of both temporal (often called intragroup) and social comparisons allows for an exhaustive evaluation of group threat experienced by members of a majority group. First, it is expected, based on previous findings (Beaton et al., 1996), that the level of representation of minorities will be associated with perceived group threat resulting from invidious social comparisons. Second, a positive link between intrusiveness and perceived group threat experienced as a result of disadvantageous temporal comparisons is predicted. This hypothesis is based on Beaton et al.’s study, which showed no link between intrusiveness and perceived group threat resulting from invidious social comparisons, and the argument according to which people favor temporal over social comparisons in situations of change and adjustments (Albert, 1977). Intrusiveness is about change triggered by an increased influx of minorities.

The present study also differs from previous research in the area of perceived group threat by opting to select immigrants as the target minority group, rather than women or African Americans. Focusing on this group is rather timely in light of social changes resulting from surges in immigration in Western countries and the negative opinions voiced against this group. In the following brief description, the recent changes in immigration flow, composition, and attitudes are presented.

Many Western countries, including Canada and the United States, have recently witnessed important changes in immigration trends (McBride, 1999). Waves of immigrants have been larger and more diversified in terms of countries of origin (Farley, 1997; Lapinski, Peltola, Shaw, & Yang, 1997; McBride, 1999). For example, the number of people immigrating to Canada has increased significantly over the last decade (Ley, 1999). Moreover, the percentage of non-Europeans immigrating to Canada has increased significantly (Statistics Canada, 1993a, 1993b) to the point that half of the immigrants were members of visible minorities in the early 1990s (Mercer, 1995).

The increased influx of people of differing cultures and backgrounds has produced changes in the way of life of nationals. For some individuals, these changes are not welcome, and in some countries this resistance translates into manifestations of intolerance toward immigrants and immigration (Drbohlav, 1997;
McBride, 1999; Simon & Lynch, 1999). Recent polls show that many North Americans have negative views toward immigration (Gallup, 1999; Simon & Lynch, 1999). A 5-year freeze on immigration is favored by 39% of Americans (Gallup, 1999). In Canada, the proportions are similar. For example, the percentage of Canadians supporting the view that too many immigrants are admitted into their country (Les Associés de recherche Ekos Inc., 1992, 1994) and that immigration policies should be more restrictive (Edwards & Hughes, 1996) reached 40% in the 1990s. In short, important segments, but not the majority, of the North American population have expressed negative opinions regarding immigration.

In this context, it seems appropriate to take into account social, and more importantly, temporal comparisons to evaluate the extent of group threat felt by majority group members. Analysts (Bobo, 1983, 1988; Jones, 1997) and polls (Les Associés de recherche Ekos Inc., 1992, 1994) have suggested that immigrants can be perceived as a threat to both resources and accepted practices. Therefore, in addition to threats to employment, examined by Beaton et al. (1996), alternative manifestations of competition for resources (e.g., feelings of threat related to economic prosperity, social rights, way of life, and job opportunities) are also examined.

Hypotheses derived from previous studies are included in a predictive model. According to this model, numerical representation is predicted to be related to feelings of group threat emerging from invidious social comparisons (social group threat). In other words, it is postulated that as the estimations of the numerical representation of immigrants increase, feelings of group threat triggered by disadvantageous intergroup comparisons become stronger. It is also predicted that intrusiveness will be linked positively to feelings of threat based on temporal comparisons (temporal group threat). According to this hypothesis, a strong perceived surge in the number of immigrants is accompanied by increased feelings of threat experienced as a result of negative comparisons between the past, present, and estimated future situation of the group.

Finally, it is posited that the more individuals experience feelings of temporal and social group threat, the more negative become their attitudes toward immigrants and immigration. Past studies have supported the link between several types of perceived threat and negative attitudes toward immigrants and immigration (Esses, Jackson, & Armstrong, 1998; Quillian, 1995; Stephan, Ybarra, Martinez, Schwarzwald, & Tur-Kaspa, 1998).

Method

Participants

This study was conducted in a Francophone college located in the province of Québec. In all, the coordinator of the psychology program distributed 300
questionnaires during the first hour of classes. Participants voluntarily filled out the questionnaires during regular class time. A total of 233 questionnaires were returned, yielding a 78% participation rate. In all, 12 questionnaires were eliminated: seven completed by participants who had at least one parent born abroad, and the remaining five with fewer than 90% of the questions completed. Of the remaining 221 participants, 159 were females and 56 were males (6 participants did not specify their gender). The average age of participants was 18.8 years, ranging from 17 to 43 years.

**Questionnaire**

Questions were grouped according to the variable under assessment. Participants were asked to rate the extent to which they agreed or disagreed with a series of statements on a 7-point Likert-type scale ranging from 1 to 7. As has been done in previous research (Beaton et al., 1996), numerical representation and intrusiveness were assessed using self-reports. As such, they refer to perceived numerical representation and intrusiveness. In this study, they were measured on a scale ranging from 0% to 100%.

**Numerical representation.** Participants were asked to indicate the proportion of immigrants in Canada (nCan) and in the province of Québec (nQué) by providing the percentage that best corresponded to their estimates. Cronbach’s alpha for the scores was .81.

**Intrusiveness.** Participants were asked to think about the increase of immigrants in the same geographical areas as specified in the preceding numerical representation question: “Within the last 5 years, estimate the percentage of increase of immigrants to Canada (iCan) and to Québec (iQué).” Cronbach’s alpha for the scores was .91.

**Feelings of group threat.** Feelings of group threat were evaluated in terms of both temporal and social comparisons. The series of questions referring to temporal comparisons asked participants to compare the present and past situations of the Québécois (people living in the province of Québec) as well as the present and anticipated conditions of this group. Participants were asked to determine whether the situation of the Québécois had deteriorated (present/past comparisons) since the arrival of immigrants in terms of job opportunities (job), social rights (right), economic situation (econ), and quality of life (life). Examples of questions are as follows: “Since the arrival of immigrants, job opportunities for the Québécois have worsened” (job); “Since the arrival of immigrants, the Québécois have lost many of their social rights” (right); and “Since the arrival of immigrants, the quality of life of the Québécois has deteriorated” (life). These questions were adapted to account for comparisons involving the present and estimated future conditions of the Québécois. For example, participants were asked to respond to the following statement, “Because of immigrants, the
economic situation of the Québécois will deteriorate in the long term” (econ). Each of the four temporal comparisons (cognitive questions) was followed by an evaluative question asking participants whether they were satisfied with the situation. Four composite scores of temporal group threat were computed by averaging the cognitive and evaluative questions (past/present and present/future) on each of the themes. These values were labeled $t_{job}$, $t_{right}$, $t_{econ}$, and $t_{life}$. Cronbach’s alpha for all of the scores was .96.

The second series of questions evaluating feelings of group threat included social comparisons involving the Québécois and immigrants. Four items referred to the cognitive component: “In comparison with immigrants, the Québécois are disadvantaged in terms of job opportunities”; “Immigrants have more social rights than the Québécois”; “The economic situation of immigrants is better than the one of the Québécois”; and “The quality of life of the Québécois is lower than the one of immigrants.” Each social comparison (cognitive items) was followed by the same evaluative question as was asked following each temporal comparison. The four averaged cognitive and evaluative scores of social group threat were labeled as follows: $s_{job}$, $s_{right}$, $s_{econ}$, and $s_{life}$. Cronbach’s alpha for all of the social comparison scores was .89.

**Attitudes toward immigrants and immigration.** This scale included nine questions. It was created to evaluate the attitudes of openness toward immigrants and immigration. This measure was informed by anti-immigration measures and by opinion polls (Clark & Legge, 1997; Echabe & Gonzales Castro, 1996; Edwards & Hughes, 1996; Lapinski et al., 1997; Les Associés de recherche Ekos Inc., 1992, 1994; Pettigrew & Meertens, 1995; Quillian, 1995). The items are as follows: “I am in favor of opening the borders to immigrants”\(^3\) (open); “I would favor a policy whereby borders would be closed” (close); “I would favor a policy stopping immigration for as long as unemployment is reduced” (out); “I would sign a petition demanding the return of criminal immigrants to their country of origin” (return); “I would sign a petition demanding that the government be more strict in the selection of immigrants” (strict); “I would favor a policy forcing immigrants to assimilate to our culture” (assim); “I would sign a petition demanding very strict laws in terms of immigration” (laws); “I would favor a political party denying immigrants the right to vote” (vote); and “I would participate in a campaign against political rights of immigrants” (pol). Cronbach’s alpha for this scale was .80.

**Results**

Data for this study were analyzed in three steps. Preliminary analyses were first conducted to test the assumption of normality. Exploratory analysis was conducted employing the maximum likelihood (ML) technique to determine whether

\(^3\)Responses to this item were reverse scored.
the temporal group threat scales based on comparisons with the past and the future loaded on one factor (Tabachnik & Fidell, 1996). This was done in order to improve the parsimony of the model by reducing the number of estimated parameters in the full model. Finally, structural equation modeling (EQS program; Bentler & Wu, 1995) tested the theoretical and empirical aspects of the proposed model. With this procedure, the relationship between the observed variables and the theoretical constructs, as well as the relationship between the theoretical constructs were tested and specified.

**Preliminary Analyses**

The present data were not completely normal. In fact, kurtosis values ranged between -0.93 and 3.03 ($M = 0.22$), and skewness values were situated between -0.47 and 1.60 ($M = 0.56$). To account for departures from normality, robust statistics were used to assess the adequacy of the proposed model.

**Exploratory Factor Analysis**

An exploratory factor analysis involving the temporal group threat scales (past/present and present/future) was conducted to determine whether the questionnaire items were represented effectively by one factor. The analyses were conducted using the ML technique. The chi square was significant, $\chi^2(20, N = 221) = 308.28$, $p < .001$, implying covariance in the residual matrices. An examination of other indexes, such as factor loading (all larger than .82), proportion of variance explained (77.02%), and one acceptable eigenvalue (6.2), indicates that both scales represent one factor. These results support the composite score computed on the basis of the two types of comparisons.

**Estimate of the Proposed Model**

In the final step, the structural equation analysis was performed. As suggested by many analysts (e.g., Bollen & Long, 1993; Hoyle & Panter, 1995), the adequacy of the model was assessed by examining several fit indexes. In all, four were used. The Satorra-Bentler (Satorra-Bentler, 1988a, 1988b) chi square ($S-B\chi^2$) is appropriate for this study since it is an adjustment of the chi square for non-normal data. The robust comparative fit index (RCFI; Bentler, 1990; Bentler & Chou, 1987) compares the evaluated model chi square to the independence model chi square. The independence model represents a model in which all correlations between variables are equal to 0 (Byrne, 1994). Values from the RCFI range from 0 to 1.00, with values over .90 considered for an adequate model (Bentler, 1990). The root mean square error of approximation (RMSEA; Browne & Cudeck, 1993) indicates the difference between the proposed model and the covariance matrix of the
population if accessible (Browne & Cudeck, 1993). A value of .08 or less is expected and indicates a reasonable error of approximation. An index of parsimony is also used (PCFI; Mulaik et al., 1989) and is calculated from the RCFI in taking into account the degrees of freedom of the independence model and the proposed model. A model yielding a PCFI value greater than .80 is considered parsimonious.

The proposed model was evaluated from the variance/covariance matrix. A summary of fit statistics is presented in Table 1; and the correlation matrix, means, and standard deviations for all variables in the model are provided in Table 2. An examination of the chosen indexes indicates that the initial solution to the proposed model was not ideal (Table 1). Indeed, the RCFI and PCFI were too low, and the RMSEA was too high. Since the model was misspecified, we examined the Lagrange multiplier (LM) test provided by EQS for adding parameters. The LM test indicates that some modifications to the model were necessary. This index suggests adding a link between intrusiveness and numerical representation. This link is justifiable in the sense that the probabilities that perceptions of a high numerical representation of immigrants would be associated with a high perceived intrusiveness are strong. The following variable errors pertaining to the “Attitudes towards immigrants and immigrants” scale were related: return and strict; strict and laws; vote and pol; and return and laws. Since these variables concern the same themes, it seems plausible that they be related. Also, the Wald test suggests the removal of the nonsignificant link between social group threat and attitudes toward immigrants and immigration.

After changes were made, the model was assessed. The final model was an improvement over the initial model and indicated a good fit (Figure 1). Consequently, this model was retained since it reflected a good correspondence between the data and the theoretical perspective proposed. In fact, the Satorra-Bentler (Satorra & Bentler, 1988a, 1988b) chi square was significantly different in the final model in comparison to the initial model, $\Delta S-B\chi^2(4) = 194.20, p < .001$. 

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*Note. S-B$\chi^2$ = Sarorra-Bentler chi square; $\chi^2$ = chi-square difference; df = degrees of freedom; $df$ = difference in degrees of freedom; RCFI = robust comparative fix index; RMSEA = root main square error of approximation; PCFI = index of parsimony based on the RCFI.*
According to the final model, perceptions concerning the numerical representation of immigrants were related to social group threat, and perceived intrusiveness of immigrants was associated with temporal group threat. In turn, only feelings of group threat based on temporal comparisons had an impact on
negative attitudes toward immigrants and immigration such that high temporal group threat was associated with more negative attitudes.

Discussion

In the present study, a predictive model linking numbers and reactions of the majority group toward immigration was tested. As this study is based on correlational data, the results must be interpreted cautiously. As posited by Yoder (1991), it was shown that both perceived numerical representation and
Intrusiveness are associated with the development of feelings of group threat experienced by the majority group. According to the final model, increases in the estimated representation of immigrants were associated with an intensification of feelings of social group threat. These results support the position of Blalock (1967), who contended that members of the majority group feel their prerogatives threatened by an expanding minority group. For many analysts, this view seems more plausible than the opposite in which feelings of threat are more important when minorities are fewer rather than greater in number (e.g., Quillian, 1995; Taylor, 1998; Yoder, 1991). The present study goes beyond the intuitively plausible by confirming the position taken by Yoder, according to whom intrusiveness

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intrusiveness are associated with the development of feelings of group threat experienced by the majority group. According to the final model, increases in the estimated representation of immigrants were associated with an intensification of feelings of social group threat. These results support the position of Blalock (1967), who contended that members of the majority group feel their prerogatives threatened by an expanding minority group. For many analysts, this view seems more plausible than the opposite in which feelings of threat are more important when minorities are fewer rather than greater in number (e.g., Quillian, 1995; Taylor, 1998; Yoder, 1991). The present study goes beyond the intuitively plausible by confirming the position taken by Yoder, according to whom intrusiveness
(i.e., a sharp augmentation of the number of minorities) plays a role in the reactions of the majority.

In addition to confirming past findings, this study broadens our understanding of the relationship between numerical representation, intrusiveness, and feelings of group threat in two ways. First, the study promotes the view that feelings of group threat are multidimensional and, as such, go beyond employment issues. Competition was assessed in terms of job opportunities, social rights, economic situation, and quality of life. As the final model shows, all facets evaluated were found to contribute significantly to feelings of group threat expressed by participants. Second, this study confirms the relevance of evaluating group threats both in terms of intergroup competition and intragroup evolution: the past, the present, and the future. But most importantly, this study allows more specificity about the relationship between numerical representation, intrusiveness, and social and temporal group threats. Analyses, as reproduced in the final obtained model, show that perceived numerical representation is related exclusively to social group threat, and perceived intrusiveness is only associated with temporal group threat. This finding supports the view that intragroup comparisons are important in assessing the position of one’s group and that their role should not be overlooked (Brown & Middendorf, 1996).

According to the final model, perceived temporal group threats act as a mediating variable between intrusiveness and negative attitudes toward immigrants and immigration. As estimations of the intrusiveness of immigrants increase, feelings of temporal group threat become more intense, which, in turn, lead individuals to become more intolerant of immigration. As such, this study contributes to a better understanding of the reasons why numbers matter in the reactions of the majority group by specifying that feelings of group threat emerge as a result of perceived intrusiveness and not numerical representation per se. While the results confirm the anticipated (but never tested) mediating role of group threat (Coenders & Scheepers, 1998; Quillian, 1995), they also provide information as to the specific type of group threat related to negative reactions on the part of the majority group. Analysts have long stressed the importance of group threat in determining why individuals become more negative toward immigrants and immigration as the numerical size of the immigrant population increases; yet, the relationship was never directly measured.

As the final obtained model indicates, attitudes toward immigration policies are formulated in response to group threat based on temporal comparisons. The present study suggests that intolerance vis-à-vis immigration is largely a function of group position. When people feel that their group is losing ground, their willingness to accept people of different social and cultural backgrounds diminishes as expressed through the support of a fortification of immigration policies. Contrary to hypotheses and past research (Beaton et al., 1996), social group threat is not related to attitudes toward policies regarding the minority group. It could be
concluded then that this study supports the argument that the relative position of one’s group is not crucial in the development of attitudes toward immigrants and immigration. However, it is believed that a more definite conclusion could be reached only once comparisons with better-off groups are considered. In this study, perceived social group threat involved comparisons with immigrants that include a large proportion of underprivileged minorities.

In spite of negative attitudes toward immigration expressed by citizens of Western countries, waves of individuals seeking better living conditions will continue to flow. Since closing the doors is not an option, it is imperative to find ways to improve the reception of people of different backgrounds. This is particularly important in the present social context in which the rejection of ethnic immigrants has even constituted the basic platform of some political parties. This study has provided some information in terms of the social psychological effects of changes in population composition, although the application of this model outside a North American context would provide an assessment of its universal applicability. By evaluating both temporal and social feelings of group threats, some of the fears leading members of the majority group to resist further change have been identified. New avenues of study have yet to be explored. Indeed, it is important to evaluate the inferred role of the economic climate on the emergence of group threat (Quillian, 1995). Feelings of group threat are expected to intensify as a result of deteriorating economic conditions. It is believed that evaluating this link via temporal (past/present and present/future) and social comparisons will provide some useful information and also will allow for an expansion of the predictive model tested in the present study. This expansion could also provide a more precise analysis of the resultant discriminatory behaviors that are costly to both the majority and minority groups.

References


