

**The Good, the Bad, and the Central of Group Identification:**

**Evidence of a U-shaped Quadratic Relation between Ingroup Affect and Identity**

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### Abstract

The present research investigates the inter-relation between two widely studied dimensions of social group identity—ingroup affect and centrality. Specifically, we test the validity of a quadratic curvilinear relation between ingroup affect and identity centrality. We propose that group members who feel either decidedly *positive* affect or decidedly *negative* affect towards their group are more likely to feel that their identity is a central component of their self-concept relative to group members with neutral affect. We find evidence for a quadratic relation between ingroup affect and identity centrality with respect to people's cultural identity (N=512), ethnic identity (N=462), religious identity (N=61, N=384), and racial identity (N=3,600, N=2,400). Theoretical and practical implications for the measurement and conceptualization of group identification are discussed.

(Words = 121)

*Key Words:* Group Identification, Ingroup Affect, Identity Centrality, Quadratic Relation.

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Imagine two Americans – one who feels neutral towards her American identity and another who feels strong positive emotions towards her American identity. It is the latter of the two Americans who would be most expected to hang an American flag on her porch and to think of herself in terms of being an American. Yet, what about a third American who feels strong negative emotions towards her American identity? She likely won't hang an American flag on her porch, but could her American identity still be a central, albeit negative, aspect of her self-concept? Or, will she attempt to de-identify from her group altogether?

Broadly defined, group identification refers to an individual's "knowledge of his [or her] membership of a social group (or groups) together with the value and emotional significance attached to that membership" (Tajfel, 1978, p.63). Research on the psychological structure of group identification has primarily focused on differentiating among the different dimensions of group identification (Ashmore, Deaux & McLaughlin-Volpe, 2004; Brown, Condor, Mathews, Wade & Williams, 1986; Cameron, 2004; Deux, 1996; Doosje, Ellemers & Spears, 1995; Ellemers, Kortekass, & Ouwerkerk, 1999; Hinkle, Taylor, Fox-Cardamone, & Cook, 1989; Jackson & Smith, 1999; Jackson, 2002; Karasawa, 1991; Leach et al., 2008; Luhtanen & Crocker, 1992; Phinney, 1990; Roccas, Sagiv, Halevy & Eidelson, 2008; Sellers, Smith, Shelton, Rowley, & Chavous, 1997). There has been less attention, however, on determining how these different dimensions of group identification inter-relate. The present research focuses on the relation between two key

dimensions of group identification that are found in almost all models of group identification: ingroup affect and identity centrality. We propose that group members who feel strong negative emotions towards their group membership may nevertheless feel that their group identity is a central aspect of their self-concept. We postulate that group members with decidedly positive affect *or* decidedly negative affect are more likely to feel that their group identity is a central aspect of their self-concept relative to group members who feel neutral affect towards their group identity. On this basis, we propose that a *curvilinear quadratic “U-shaped” relation* best characterizes the relation between the emotions that group members feel towards their group membership and the centrality of their group identity.

### **The Structure of Group Identification**

The present research focuses on the relation between two key dimensions that are found in almost all models of group identification: the cognitive dimension, which we label *ingroup centrality*, and the affective or emotional dimension, which we label *ingroup affect*. We refer to these two dimensions using terminology from Cameron (2004), however other labels have also been applied (summarized on Table 1).

*Ingroup affect* refers to the emotional valence that people feel towards their group, such as feeling satisfaction and positive or negative emotions towards their group membership (see, Cameron, 2004; Jackson, 2002; Luhtanen & Crocker, 1992). Group members with *positive* ingroup affect feel happy to be group members, while those with *negative* ingroup affect feel dissatisfied with their group membership and may regret being a member of their social group (see, Cameron, 2004; Jackson, 2002; Luhtanen & Crocker, 1992). Ingroup affect has been measured by having people rate statements such as: “I feel

good about my group” (e.g., Ellemers et al., 1999; Luhtanen & Crocker, 1992), and “Often I regret that I am a member of my group (*reverse coded*)” (Cameron, 2004).

*Identity centrality* assesses the extent to which people consider their group identity to be an important part of their self-concept, think often about their group membership, and view themselves as being members of their group (e.g., Cameron, 2004; Jackson, 2002; Leach et al., 2008). Identity centrality has been measured by having people rate statements such as: my group is “an important part of my identity” (Jackson, 2002), and my group is “an important reflection of who I am” (e.g., Ellemers et al., 1999; Luhtanen & Crocker, 1992).

There is extensive evidence that items designed to assess identity centrality and ingroup affect load on two distinct factors of group identification when analyzed with factor analytic techniques (e.g., Cameron, 2004; Jackson, 2002; Obst & White, 2005). Leach and colleagues (2008) found that while items assessing identity centrality and ingroup affect load on distinct factors, both factors in turn load on an overarching dimension of group identification that they describe as “self-investment”. Importantly, however, Leach and colleagues find that the two sub-dimensions of self-investment, centrality and affect, are differentially related to perceptions of ingroup threat, thus highlighting the importance of a multi-dimensional assessment of group identification. Furthermore, ingroup affect and identity centrality have differential correlates with outcomes including psychological well-being (Bombay, Matheson, & Anisman, 2010), perceptions and reactions to intergroup threat and conflict (Beiser & Hou, 2006; Bombay et al., 2010; Jackson, 2002; McCoy & Major, 2003; Operario & Fiske, 2001; Petta & Walker,

1992), outgroup attitudes (Jackson, 2002) and participation in collective action (Giguère, & Lalonde, 2010).

### **Negative Identities As Central Aspects of the Self-Concept**

Why would decidedly negative group identities be a central component of a person's self-concept? We propose that it is often difficult for group members to de-identify with their social group and that living with a negative social identity may actually promote that identity to become central to one's self-concept. Social groups have important psychological functions for group members, and are sometimes tied to externally distinguishing features or familial and communal bonds. For example, group membership impacts psychological processes including self-esteem (Jetten et al., 2015; Luhtanen & Crocker, 1992), behavioural self-regulation (e.g., Oyserman, 2007; Taylor, 2002; Terry & Hogg, 1996; Terry, Hogg & White, 1999), feeling connected to others (Baumeister & Leary, 1995; Bettencourt & Sheldon, 2001), feeling a sense of personal control (Greenaway et al., 2015; Tiessen, Taylor, & Kirmayer, 2009) and psychological well-being (e.g., Branscombe, Schmitt, & Harvey, 1999; Haslam, Jetten, Postmes & Jetten, 2009; Usborne & Taylor, 2010). Indeed, Jetten and colleagues have shown that "*mere identification*" with important social groups has positive implications for personal esteem and psychological well-being (Jetten et al., 2015, p.2). Given the psychological benefits associated with group identification and structural barriers that may prevent de-identification, group members may remain identified towards their social group despite the associated negative affect. For example, Mlicki and Ellemers (1996) have found that individuals who hold negative stereotypes towards their own group may still be highly identified group members.

Herein, we postulate that negative social identities may often become central aspects of the self. Indeed, a robust finding in the field of social cognition is that negative emotions and cognitions have a strong psychological impact on the individual and cannot be easily ignored (e.g., Baumeister et al., 2001; Rozin & Rozyman, 2001). As such, group members who feel decidedly negative affect towards their social identity may find it challenging to ignore their negative social identity and this negative identity may, in fact, become a salient, central and self-defining aspect of their self-concept.

### **The Inter-relation Between Ingroup Affect and Identity Centrality**

Primarily, the interrelation between ingroup affect and identity centrality has been assessed within the context of scale validation studies (e.g., Cameron, 2004; Obst & White, 2005). This previous work is limited, however, because only the linear inter-relation between ingroup affect and identity centrality was assessed. Moderate positive correlations between ingroup affect and identity centrality have been found for various group identities including gender identity, ethnic identity, national identity, and university identity (e.g., Cameron, 2004: Study 1, Study 3, Study 5; Leach et al., 2008: Study 1 and Study 2; Obst & White, 2005). However, small non-significant correlations between ingroup affect and identity centrality have also been found (e.g., Cameron, 2004, study 2 and study 4). The inconsistency of these findings may be indicative of a higher order quadratic relation between ingroup affect and identity centrality. Indeed, Aiken and West (1991) argue that the linear relation between two variables, X and Y, may be inconsistent if the relation between X and Y is characterized by a quadratic effect. This is because the linear relation between X on Y will be moderated by X. Thus, if there is a quadratic curvilinear relation between ingroup affect and identity centrality, then in any specific sample, the conditional

linear relation between ingroup affect and centrality would very depending on whether the majority or minority of participants sampled had negative, neutral, or positive affect.

A limitation with much of the previous research testing the relation between ingroup affect and identity centrality is that most of the participants sampled in these studies ranged from having neutral to positive ingroup affect. As a result, these studies may be most informative with regard to the perceptions of group members with a positive view of their social identity. We do not dispute that group members who have strong positive emotions towards their group also have a tendency to feel greater identity centrality relative to group members with neutral affect. Thus, a positive linear relation would be expected in samples comprised mostly of participants who have in-group affect scores ranging from neutral to positive. However, these studies may be less informative as to whether or not group members who have decidedly negative affect may have a tendency to feel that their group identity is central (or not) to their self-concept. Even if these previous studies involved *some* group members who had decidedly negative affect and who had strong identity centrality, it is likely that a positive correlation would still emerge between ingroup affect and identity centrality if the majority of participants reported neutral to positive affect. Furthermore, we argue that while a quadratic relation between ingroup affect and identity centrality may have been present in these studies, it would have only been detected if tested for directly with the appropriate statistical methods (Aiken & West, 1991; Miller, Stromeier, & Schwieterman, 2013).

### **Overview of Present Research**

The present research directly tests for a quadratic relation between ingroup affect and identity centrality across a diverse array of social groups and social contexts. We

focused on social groups that have important psychological functions for group members and/or which may be tied to externally distinguishing features: cultural groups (Study 1A, N=512), ethnic groups (Study 1B, N=462), religious groups (Study 1C, N=63 and Study 1D, N=384) and racial groups (Study 2A, N=3,600; Study 2B, N= 2,400). Studies 1A-1D used data sampled from Canadian universities and a Canadian community sample from the general population. To further test our research question beyond these populations, Study 2A-2B used data sampled from a post-Apartheid South African population.

We included data from a South African population as we expected a better representation of group members who experience negative ingroup affect in these samples. Although members of ethnic, racial, or religious minorities living in Canada may encounter prejudice towards their group, multiculturalism and pro-diversity is generally valued and is normative in Canadian society (Berry & Kalin, 1995; Bloemraad, 2015; Bloom, 1987; Guimond et al., 2013). For example, support for multiculturalism is found to be higher, and prejudiced attitudes are found to be lower, in Canada relative to other countries in which pro-diversity beliefs are less normative (Guimond et al., 2013). In contrast, there is a long and complex history of racial and cultural issues within South Africa associated with both the Apartheid and post-Apartheid regimes. To this day, the various racial and ethnic groups living in South Africa are still in the process of establishing equality among the different groups and maintaining peaceful intergroup contact (Dambrun, Taylor, McDonald, Crush, & Méot, 2006; de la Sablonnière et al., 2013). Given these disparities between the social contexts in Canada and South Africa, we expected that experiencing a negative social (racial) identity might be more common for group members living in South Africa in comparison to Canada.

In all studies, we utilized multiple linear regression and simple slope analysis recommended by Aiken and West (1991) and Miller and colleagues (2013) in order to test for the presence of a quadratic U-shaped curvilinear relation between ingroup affect and identity centrality, and to determine the shape of the quadratic function. These approaches have been used in previous psychological research for testing quadratic effects (e.g., Gignac & Powell, 2006; Girme, Overall, Simpson, & Fletcher, 2015; Klein, Licata & Pierucci, 2011).

To increase the simplicity of our statistical analyses, we have treated ingroup affect as the X variable and identity centrality as the Y variable. We expect group members with both decidedly negative ingroup affect and decidedly positive ingroup affect to have higher levels of identity centrality than those with less extreme ingroup affect scores. Therefore, should we have treated ingroup affect as the Y variable and identity centrality as the X variable, we would hypothesize *two* possible values of ingroup affect (Y) for any high value of identity centrality (X). This would be problematic given that standard statistical procedures assume that there can only be one possible value of Y for any given value of X. By treating ingroup affect as the independent (X) variable and identity centrality as the dependent (Y) variable, we *do not* mean to imply that ingroup affect has a causal relation with identity centrality. Nor do we deny the possibility that identity centrality may influence ingroup affect.

#### **Studies 1A-1D: Evidence for a Quadratic Relation with Canadian Samples**

In Studies 1A-1D we tested the presence of a quadratic relation between ingroup affect and identity centrality with respect to cultural, ethnic, and religious identities with undergraduate samples and community samples recruited in Canada. Cultural and ethnic

identities are thought to provide important psychological functions for group members by impacting how they understand and evaluate themselves and the world around them (Markus & Kitayama, 1991; Taylor, 2002). Furthermore, cultural and ethnic identities are often linked to external features (e.g., physical features and language). Similarly, like cultural and ethnic identities, religious identities are thought to have important psychological functions and are often associated with positive psychological outcomes (Putnam & Campbell, 2012; Ysseldyk, Haslam, & Haslam, 2013; Ysseldyk, Matheson & Anisman, 2010, for review). Because of the important psychological and social functions of these groups, we propose that these identities may remain a central component of one's self-concept even when people feel decidedly negative affect towards their group.

#### **Study 1A: Cultural Identity (Canadian University Sample)**

We merged 5 similar data sets (N=512) from our previous research in which participants responded to Cameron's (2004) 12-item tripartite scale of group identification with respect to a cultural identity ( $M_{age}=21.86$ ,  $SD=4.62$ ; 392 women, 116 men, 4 unspecified). Cameron's group identification scale was selected for this research, as it has been found to be reliable and valid (Cameron, 2004; Obst & White, 2005), and because the dimensions it assesses are representative of other commonly used measures of group identification (Doosje et al., 1995; Leach et al., 2008; Roccas et al., 2008; Spears et al., 1997). In all samples, items were rated with a 7-point Likert scale, ranging from 1 "strongly disagree" to 7 "strongly agree". Ingroup affect was assessed with 4 items, for example: "In general, I'm glad to be a member of my (*cultural*) group". Identity centrality was assessed with 4 items, for example: "In general, being a member of my (*cultural*) group is an important part of my self-image". In Samples 1 and 5, participants rated their group

identification with respect to a cultural group of their choice. Participants were instructed to pick the social group that was most important to them, which we described to them as being the group that they name when they state, “I am X”. Examples of groups named included Canadian, Canadian Jew, and Quebecois. In the remaining samples, participants rated their group identification with respect to a specified cultural group (Canadian in Samples 2 and 4, Japanese in Sample 3). Across all samples, there was good reliability for each sub-dimension of group identification ( $\alpha_{\text{ingroup affect}}=.81$ ,  $\alpha_{\text{centrality}}=.79$ ). Specific reliabilities pertaining to each sub-sample are presented in Table 2.

### Results and Discussion

Mean ratings of participants’ ingroup affect scores ( $M=6.14$ ,  $SD=.98$ ) and centrality scores ( $M=4.44$ ,  $SD=.137$ ) were all above the neutral point. Only 15 participants (2.9%) indicated having a negative view of their group identity ( $M_{\text{ingroup affect}} < 4$ ).

#### A Quadratic Relation between Ingroup Affect and Identity Centrality

Hierarchical linear regression revealed evidence for a curvilinear quadratic relation between ingroup affect and identity centrality with regards to individuals’ cultural identity. There was a significant linear relation between ingroup affect and identity centrality when ingroup affect was entered into the model alone,  $B=.35$ ,  $\beta=.25$ ,  $t(510)=5.76$ ,  $p<.001$ ,  $R^2=.06$ . Importantly, however, the squared value of ingroup affect also accounted for significant variance in identity centrality when it was included into the regression model,  $B=.18$ ,  $\beta=.31$ ,  $t(509)=5.11$ ,  $p<.001$ . Although the linear effect of ingroup affect remained significant,  $B=.66$ ,  $\beta=.47$ ,  $t(509)=7.77$ ,  $p<.001$ , the regression model including both ingroup affect and the squared value of ingroup affect best accounted for participants’ level of identity centrality,  $F(1,509)_{\text{change}}=26.07$ ,  $p<.001$ ,  $R^2_{\text{change}}=.05$ ,  $f^2=.05$ .

With respect to potential outliers no cases had a Cook's distance greater than 1, thus, no cases appeared to have an undue influence on the data (Field, 2013)<sup>1</sup>. Power analysis using G\*Power (Faul, Erdfelder, Buchner, & Lang, 2009), indicated that the achieved power of the quadratic effect of ingroup affect on identity centrality was high (power=1, assuming  $f^2=.05$ ,  $\alpha=.05$ ,  $N=512$ ). If the effect size found in the present sample is reflective of the population, a sample of 159 would be needed to have power of .80 (as recommended by Cohen, 1988). Figure 1 provides a visual depiction of the linear and quadratic relation between ingroup affect and identity centrality for cultural identification. We repeated our regression analyses with all sub-samples separately, with the exception of Sample 3 for which we had a limited sample size. We found a significant quadratic effect for ingroup affect on identity centrality for Sample 1, Sample 4, and Sample 5. The quadratic effect for ingroup affect on identity centrality was not significant in Sample 2. Detailed results are presented in Table 2.

Overall, Study 1A provides preliminary evidence for a quadratic relation between ingroup affect and identity centrality. These findings imply that if individuals feel decidedly positive affect *or* decidedly negative affect towards their cultural group membership, their social identity will more likely be central to their self-concept than if they felt relatively neutral affect.

### **Study 1B: Ethnic Identity (Canadian Community Sample)**

In Study 1B we aimed to replicate the results of Study 1A with a nation-wide Canadian community sample who rated their group identification with respect to an ethnic identity (e.g., Asian, Hispanic, Aboriginal, etc.). Participants<sup>2</sup> ( $N=462$ ) were recruited online as part of a larger study on ethnic and religious discrimination ( $M_{age}=32.92$ ,

SD=12.14; 98 men, 364 women). As in Study 1A, participants rated their group identification using Cameron's (2004) group identification scale, completing the ethnic identity scale before any other scales. Items were rated using a six-point scale from 0 to 5, ( $\alpha_{\text{ingroup affect}}=.75$ ,  $\alpha_{\text{centrality}}=.73$ ).

## Results and Discussion

Mean ratings of participants' ingroup affect scores ( $M=3.50$ ,  $SD=1.11$ ) were above the neutral point. Mean ratings of centrality were below the neutral point ( $M=2.08$ ,  $SD=1.33$ ). In contrast to Study 1A, a considerable proportion of the sample ( $N=85, 18.4\%$ ) indicated having a negative view ( $M_{\text{ingroup affect}} < 2.5$ ) of their ethnic group identity.

### A Quadratic Relation between Ingroup Affect and Identity Centrality

Replicating Study 1A, we found evidence for a curvilinear quadratic relation between ingroup affect and identity centrality with respect to individuals' ethnic identity. Hierarchical linear regression revealed a significant linear relation between ingroup affect and identity centrality when ingroup affect was entered into the model alone,  $B=.36$ ,  $\beta=.30$ ,  $t(460)=6.72$ ,  $p<.001$ ,  $R^2=.09$ . Importantly, once again, the squared value of ingroup affect also accounted for significant variance in identity centrality when it was included into the regression model,  $B=.10$ ,  $\beta=.12$ ,  $t(459)=2.41$ ,  $p<.05$ . The linear effect of ingroup affect remained significant,  $B=.43$ ,  $\beta=.35$ ,  $t(459)=7.10$ ,  $p<.001$ . However, overall, the regression model including both ingroup affect and the squared value of ingroup affect best accounted for participants' level of identity centrality,  $F(1,459)_{\text{change}}=5.80$ ,  $p<.01$ ,  $R^2_{\text{change}}=.01$ ,  $f^2=.01$ .

Statistical power was low in the present study (power=.57, assuming  $f^2=.01$ ,  $\alpha=.05$ ,  $N=462$ ). Given the observed effect size a sample of 787 would be needed to have power of .80. Figure 2 provides a visual depiction of the relation between ingroup affect and

identity centrality.

In summary, the results of Study 1B replicate the results of Study 1A with a large Canadian community sample. Again, we find evidence of a significant quadratic relation between ingroup affect and identity centrality.

### **Study 1C: Religious Identity (Canadian University Sample)**

Study 1C aimed to once again replicate the first two studies, by exploring whether a quadratic function characterized the relation between ingroup affect and identity centrality for religious identity. Sixty-three undergraduate students, who identified as Catholic, Protestant, Jewish or Muslim, were recruited for a study on identity threat ( $M_{\text{age}}=21.97$ ;  $SD=6.13$ ; 20 men, 43 women). Prior to any experimental manipulations, participants rated their level of religious group identification using Cameron's 12-item scale of group identification. Items were rated using a six-point scale ranging from 0 to 5 ( $\alpha_{\text{ingroup affect}}=.73$ ,  $\alpha_{\text{centrality}}=.79$ ).

### **Results and Discussion**

Mean ratings of participants' ingroup affect ( $M=3.67$ ,  $SD=1.08$ ) were above the neutral point. Mean ratings of centrality ( $M=2.08$ ,  $SD=1.35$ ) were below the neutral point. Five participants ( $N=5$ , 7.9%) indicated having a negative view of their religious identity ( $M_{\text{ingroup affect}} < 2.5$ ).

#### **A Quadratic Relation between Ingroup Affect and Identity Centrality**

As in the previous studies, we found evidence of a quadratic relation between ingroup affect and identity centrality with regard to religious identification. Hierarchical linear regression revealed a significant linear relation between ingroup affect and identity centrality when ingroup affect was entered into the model alone,  $B=.72$ ,  $\beta=.58$ ,  $t(61)=5.50$ ,

$p < .001$ ,  $R^2 = .33$ . The squared value of ingroup affect also accounted for significant variance in identity centrality when it was included into the regression model,  $B = .35$ ,  $\beta = .44$ ,  $t(60) = 4.03$ ,  $p < .001$ . Although the linear effect of ingroup affect remained significant,  $B = 1.01$ ,  $\beta = .81$ ,  $t(60) = 7.34$ ,  $p = .001$ , our findings indicated that the regression model including both ingroup affect and the squared value of ingroup affect best accounted for participants' level of identity centrality,  $F(1,60)_{\text{change}} = 16.22$ ,  $p < .001$ ,  $R^2_{\text{change}} = .14$ ,  $f^2 = .27$ .

The achieved power of the quadratic effect of ingroup affect on identity centrality was high in the present study (power = .98, assuming  $f^2 = .27$ ,  $\alpha = .05$ ,  $N = 63$ ). Given the observed effect size, a sample size of 32 would be needed to have power of .80. Figure 3 provides a visual depiction of the relation between ingroup affect and identity centrality.

Expanding on Studies 1A-B, Study 1C provides evidence for a quadratic relation between ingroup affect and identity centrality with respect to an individual's religious identification. One limitation of this study however, was the relatively small sample size in comparison to our studies focusing on cultural and ethnic identification.

### **Study 1D: Religious Identity (Canadian Community Sample)**

In Study 1D we aimed to replicate Study 1C using a larger sample of individuals who reported on their religious group identification. A Canadian community sample was recruited online for a study on ethnic and religious discrimination ( $N = 384$ ;  $M_{\text{age}} = 33.11$ ,  $SD = 12.34$ , 79 males, 305 females). At the outset of the study, participants reported on their religious identity using the Cameron's (2004) group identification scale. Items were rated using a six-point scale from 0 to 5 ( $\alpha_{\text{ingroup affect}} = .75$ ,  $\alpha_{\text{centrality}} = .75$ ).

## Results and Discussion

Mean ratings of participants' ingroup affect ( $M=3.57$ ,  $SD=1.20$ ) were above the neutral point. Mean ratings of centrality ( $M=2.43$ ,  $SD=1.43$ ) were below the neutral point. Seventy-seven participants (20.1%) indicated having a negative view of their religious identity ( $M_{\text{ingroup affect}} < 2.5$ ).

### A Quadratic Relation between Ingroup Affect and Identity Centrality

Replicating Study 1C, we again found evidence for a curvilinear quadratic relation between ingroup affect and identity centrality with regards to religious identification. Hierarchical linear regression revealed a significant linear relation between ingroup affect and identity centrality when ingroup affect was entered into the model alone,  $B=.67$ ,  $\beta=.56$ ,  $t(382)=13.15$ ,  $p<.001$ ,  $R^2=.31$ . The squared value of ingroup affect also accounted for significant variance in identity centrality when it was included into the regression model,  $B=.10$ ,  $\beta=.14$ ,  $t(381)=2.77$ ,  $p<.01$ . Although, the linear effect of ingroup affect remained significant when the squared value of ingroup affect was entered into the model,  $B=.76$ ,  $\beta=.63$ ,  $t(381)=12.57$ ,  $p<.001$ , the regression model including both ingroup affect and the squared value of ingroup affect best accounted for participants' level of identity centrality,  $F(1,381)_{\text{change}}=7.65$ ,  $p<.001$ ,  $R^2_{\text{change}}=.01$ ,  $f^2=.02$ .

The achieved power of the quadratic effect of ingroup affect on identity centrality was moderate in the present study (power=.79, assuming  $f^2=.02$ ,  $\alpha=.05$ ,  $N=384$ ). Given the observed effect size, a sample size of 395 would be needed to have power of .80. Figure 4 provides a visual depiction of the relation between ingroup affect and identity centrality.

Study 1D replicated Study 1C, and provided further evidence of a quadratic relation between ingroup affect and identity centrality for religious identification. Taken together,

Studies 1A-1D provide consistent evidence that in samples much like those commonly used in Western social psychological research, even in which only a minority of participants experience negative ingroup affect, there was a significant quadratic relation between ingroup affect and identity centrality. These results imply that even in a social (Canadian) context in which multiculturalism and diversity is generally celebrated, group members who do feel negative emotions towards their social identity may also tend to feel that their social identity is a central component of their self-concept.

### **Study 2: Evidence for a Quadratic Relation with South African Samples**

A limitation of studies 1A-1D was that the number of participants who reported having a negative view of their social identity was relatively small in both studies ( $N_{\text{study 1A}}=15$ ,  $N_{\text{study 1B}}=85$ ,  $N_{\text{study 1C}}=5$ ,  $N_{\text{study 1D}}=77$ ). Having a large number of participants with decidedly negative ingroup affect included in the data set is important to further probe the nature of the quadratic relation between ingroup affect and identity centrality. A quadratic relation between ingroup affect and identity centrality implies that centrality scores should *decrease* as ingroup affect scores increase from the negative extreme of the scale to the neutral point of the scale. Conversely, identity centrality scores should *increase* as ingroup affect scores increase from neutral to the positive extreme of the scale. As a result, the positive linear relation between ingroup affect and identity centrality may be overestimated because of an overrepresentation of participants with neutral to positive ingroup affect. Furthermore, the quadratic relation may be underestimated because of a lack of participants with negative ingroup affect.

The aim of Study 2A and Study 2B was to replicate the findings of Studies 1A-1D with a sample that included a relatively larger number of individuals who felt decidedly negative

affect towards their group. Study 2A utilized a nationwide representative sample of 3,600 South African citizens who were sampled in 2006 as part of the Southern African Migration Study (see, <http://imrc.ca/southern-african-migration-programme>; de la Sablonnière et al., 2013). Study 2B utilized a random and stratified cross-sectional data set of survey responses collected from 2,400 South Africans in 2010 in a continuation of the Southern African Migration Study. Because of the historical and ongoing racial tensions that exist in South Africa (Dambrun et al., 2006; de la Sablonnière et al., 2013), racial and cultural identities are highly salient and relevant to the day-to-day lives of South Africans. We expected that such a social context might influence some South Africans to experience negative affect towards their racial identity. Furthermore, by collecting representative and stratified community samples we ensured that members of all racial groups and socioeconomic classes within South African society were surveyed. This allowed us to assess group members who may be those most likely to face discrimination and prejudice and feel negative affect towards their racial group identity.

## **Study 2A**

### **Sample**

Participants were 3,600 South Africans who were surveyed in 2006. Included in the survey were items assessing people's affect towards their racial identity and the centrality of their racial identity to the self-concept. Participants responded to these racial identity questions after choosing from one of five possible options (White, Black, Coloured, and Asian/Indian and other). The racial category options provided to participants included the four racial categories that comprise the majority of the South African demographic. Importantly, these four groups were labeled in the manner in which South Africans refer to

themselves. Twenty participants were excluded from the analyses because they did not identify as one of the four main racial categories. Eight participants were excluded from the analyses because they refused to identify their race. Finally, one participant was excluded for not responding to the group identification questions.

### Measures

Ingroup affect<sup>3</sup> was assessed using two (reverse-coded) items taken from Jackson (2002): (1) "I feel that being (*race*) is not worthwhile" and (2) "My image of (*race*) is negative."  $r(3570) = .71, p < .001$ . The extent to which participants' racial identity was central to the self-concept was assessed using one item adapted from Luhtanen and Crocker (1992): "It is important for me to be (*race*)". Participants rated their agreement to each item on an 11-point scale, from 0 "totally disagree" to 10 "totally agree".

### Results and Discussion

Participants' mean ratings of ingroup affect and identity centrality are reported in Table 3. The frequency of participants from each racial group who reported a negative view of their own racial identity (i.e., their mean ingroup affect score ranged from 0 to 4.9) is also presented. Importantly, there were a large number of respondents in the present sample ( $N = 520, 14.60\%$ ) who held an overall negative view towards their racial identity ( $M_{\text{ingroup affect}} < 4.9$ ).

#### A Quadratic Relation between Ingroup Affect and Identity Centrality

Replicating Studies 1A-1D, there was a significant positive linear relation between ingroup affect and identity centrality when ingroup affect was entered into the model as a lone predictor variable,  $B = .13, \beta = .15, t(3569) = 8.81, p < .001, R^2 = .02$ . Importantly, however, the squared value of ingroup affect also accounted for significant variance in identity

centrality when it was included into the regression model,  $B=.05$ ,  $\beta=.24$ ,  $t(3568)=10.49$ ,  $p<.001$ . The linear effect of ingroup affect also remained significant,  $B=.27$ ,  $\beta=.31$ ,  $t(3568)=13.72$ ,  $p<.001$ . Nonetheless, the regression model which included both the non-squared value of ingroup affect and the squared value of ingroup affect best accounted for participants' level of identity centrality,  $F(1,3568)_{\text{change}}=110.12$ ,  $p<.001$ ,  $R^2_{\text{change}}=.03$ ,  $f^2=.03$ .

The achieved power of the quadratic effect of ingroup affect on identity centrality was high in the present study (power=1, assuming  $f^2=.03$ ,  $\alpha=.05$ ,  $N=3571$ ). Given the observed effect size, a sample size of 261 would be needed to have power of .80. Figure 5 provides a visual depiction of the relation between ingroup affect and identity centrality.

We repeated our regression analysis testing the quadratic relation between ingroup affect and identity centrality with each of the four racial subgroups. The quadratic effect of ingroup affect on identity centrality was significant for each of the four racial subgroups. Results of these regression analyses are reported in Table 4.

### **Correlational Analyses: Differentiating Between Group Members with Negative Ingroup Affect and Positive Ingroup Affect**

A quadratic relation between ingroup affect and identity centrality implies mathematically that centrality scores should *decrease* as affect scores increase from the negative extreme of the scale to the neutral point. Thus, we predicted that there would be a *negative correlation* between ingroup affect and identity centrality for group members with *below neutral* ingroup affect scores. Conversely, we would expect that centrality scores should *increase* as ingroup affect scores increase from the neutral point of the scale to the positive extreme of the scale. Therefore, we predicted that there would be a *positive correlation* between ingroup affect and identity centrality for group members with *above*

*neutral* ingroup affect scores. Given the large number of participants who had a negative view of their group identity in the present sample (N=520) we were able to statistically test these predictions.

We categorized the total sample into two subgroups: individuals with a negative view of the racial group identity (mean ingroup affect between 0 and 4.9) and individuals with a positive view of their group identity (mean ingroup affect between 5 and 10). As we anticipated, for individuals with a negative view of their racial group identity, there was a significant negative relation between ingroup affect and identity centrality,  $r(520) = -.17$ ,  $p < .001$ . Similarly, for individuals with a positive view of their racial group identity, there was a significant positive relation between ingroup affect and identity centrality,  $r(3051) = .22$ ,  $p < .001$ . These results confirm our mathematical assumption and provide further evidence of a curvilinear quadratic relation between ingroup affect and identity centrality.

In summary, providing further support for our hypothesis, we found evidence of a significant quadratic relation between ingroup affect and identity centrality with respect to racial identity, for a large South African community sample. Furthermore, we were able to show a clear reversal in the linear relation between ingroup affect and identity centrality for group members with negative as opposed to positive ingroup affect.

### **Study 2B**

Study 2B aimed to replicate all the results of Study 2A with respect to racial identity with a second large South African community sample. Confirmation of our findings was important given that Study 2A used different items to assess ingroup affect and identity

centrality relative to Studies 1A-1D. Furthermore, we aimed to replicate our results within a social context involving tense intergroup relations.

### **Sample and Measures**

Participants were a random sample of 2,400 South Africans who were surveyed in 2010. The questionnaire materials regarding group identification were identical to the materials included in Study 2A. As in Study 2A, ingroup affect was again assessed using two (reverse-coded) items: (1) "I feel that being (*race*) is not worthwhile" and (2) "My image of (*race*) is negative."  $r(2399)=.70$ . The extent to which participants' racial identity was central to the self-concept was assessed using one item "It is important for me to be (*race*)". Participants again rated their agreement to each item from 0 "totally disagree" to 10 "totally agree".

### **Results**

Participants' mean ratings of ingroup affect and identity centrality and the frequency of participants from each racial group who reported a negative view of their own racial identity are reported in Table 5. As in Study 2A there was a large number of respondents in the present sample ( $N=492$ , 20.5%) that held an overall negative view towards their racial identity ( $M_{\text{ingroup affect}} < 4.9$ ).

#### **A Quadratic Relation between Ingroup Affect and Identity Centrality**

Replicating Study 2A there was a significant positive linear relation between ingroup affect and identity centrality when ingroup affect was entered into the model as a lone predictor variable,  $B=.18$ ,  $\beta=.19$ ,  $t(2398)=9.31$ ,  $p<.001$ ,  $R^2=.04$ . However, the squared value of ingroup affect also accounted for significant variance in identity centrality when it was included into the regression model,  $B=.09$ ,  $\beta=.28$ ,  $t(2397)=12.99$ ,  $p<.001$ . The linear

effect of ingroup affect also remained significant,  $B=.30$ ,  $\beta=.31$ ,  $t(2397)=14.61$ ,  $p<.001$ . As in Study 2A, the regression model which included both the non-squared value of ingroup affect and the squared value of ingroup affect best accounted for participants' level of identity centrality,  $F(1,2397)_{\text{change}}=168.70$ ,  $p<.001$ ,  $R^2_{\text{change}}=.06$ ,  $f^2=.07$ .

The achieved power of the quadratic effect of ingroup affect on identity centrality was high (power=1, assuming  $f^2=.07$ ,  $\alpha=.05$ ,  $N=2400$ ). Given the observed effect size, a sample size of 115 would be needed to have power of .80. Figure 6 provides a visual depiction of the relation between ingroup affect and identity centrality.

We repeated our regression analysis testing the quadratic relation between ingroup affect and identity centrality with each of the four racial subgroups. The quadratic effect was significant for each of the four racial subgroups. Results of these regression analyses are reported in Table 6.

### **Correlational Analyses: Differentiating Between Group Members with Negative Ingroup Affect and Positive Ingroup Affect**

As in Study 2A we tested whether there would be a negative correlation between South Africans with a negative view of their racial group identity (mean ingroup affect between 0 and 4.9) and a positive correlation for those with a positive view of their racial group identity (mean ingroup affect between 5 and 10). Replicating Study 2A, for South Africans with a negative view of their racial group identity, there was a significant negative relation between ingroup affect and identity centrality,  $r(492)=-.24$ ,  $p<.001$ . Similarly, for individuals with a positive view of their racial group identity, there was a significant positive relation between ingroup affect and identity centrality,  $r(1908)=.34$ ,  $p<.001$ .

## Discussion

Hierarchical regression analysis with two large stratified samples of South Africans provided further evidence for a quadratic relation between ingroup affect and identity centrality. The quadratic relation between ingroup affect and identity centrality generalized to the total sample and to the four racial groups sampled (White, Black, Colored, Indian/Asian). Furthermore, in both studies, as group members' ingroup affect increased in positivity from negative to neutral, the importance of their racial identity to their self-concept *decreased*. Conversely, as group members' ingroup affect increased in positivity from neutral to positive, the importance of their racial identity for the self-concept *increased*. In effect, South Africans placed the greatest importance on their racial identity when they felt either especially negative affect or especially positive affect towards their racial identity. These results provide further support for our hypothesis that even group members with decidedly *negative* ingroup affect may feel that their group identity is an important—or central—part of their self-concept.

At a practical level, these findings could have important implications for the individual psychological well-being of South Africans. Within a social context in which discrimination is rampant and intergroup tensions are high, it appears that South Africans who feel negatively towards their own racial identity may find it difficult to simply ignore that identity as a central part of the self. In this regard, just as perceiving discrimination towards one's group may lead to psychological distress for group members who have high levels of identity centrality (e.g., depression; Bombay et al., 2010), harboring powerful negative emotions towards one's *own* centralized racial identity may also have dire effects for the psychological well-being of South Africans.

### **Probing the Nature of the Quadratic Effect: Evidence of a U-shaped Function**

Across all six studies we found consistent evidence for a significant quadratic relation between ingroup affect and identity centrality. However, for each study, further analyses are required to determine if the shape of the quadratic function is characterized by a non-monotonic and concave quadratic function, or “U-shaped” curve, as we hypothesized (Aiken & West, 1991; Miller et al., 2013). Table 7 provides a summary of these results and a detailed description of these analyses as well as graphical representations of the results are provided in supplementary materials.

**Concavity.** U-shaped functions are characterized by being concave as opposed to convex. A concave function is indicated when the beta-coefficient for the quadratic term is positive (Aiken & West, 1991). Indicative of a U-shaped function we found that in all six studies we found that the beta-coefficient for the quadratic term was positive.

**Non-Monotonicity.** U-shaped functions are non-monotonic because part of the function is increasing, while the other part of the function is decreasing. Following Aiken and West (1991) we assessed monotonicity by computing the value of “X” (ingroup affect) representing the minimum of the curve. Non-monotonicity is indicated when the minimum of the curve falls within the range of observable values of X from the data set. Indicative of a U-shaped function, the minimum of the curve fell within the range of observable values of ingroup affect for Study 1A, Study 1B, Study 1C, Study 2A and Study 2B. Only in Study 1D did the minimum of the curve not fall within the observable range of ingroup affect.

**Simple-Slope Analysis (Pick a Point Method).** Aiken and West (1991) suggest examining simple slopes at the *high* and *low* ends of the distribution of X (ingroup affect). A U-shaped function is indicated when at the *low* end of the distribution of X, the simple

slope is significant and negative, while at the *high* end of the distribution the simple slope is significant and positive. In both South African samples we found compelling evidence of a U-shaped curve. At the *low end* of the distribution, - 2 SD for Study 2A and 2B, and -1 SD for Study 2B, we found that the simple slope was significant and negative. Furthermore, at the *high end* of the distribution, +1 and +2 SD for both studies, the simple slope was significant and positive. However, for the Canadian samples we found a different pattern of results – the function was flat (a non-significant simple slope) at the low end of the distribution and then became significantly positive.

**Johnson-Neyman Technique.** Recently, Miller and colleagues (2013) have developed a Johnson-Neyman technique for assessing the structure of a quadratic function. This method is more robust for skewed-data than the Aiken and West (1991) approach, and specifies the exact regions of the curve in which the simple slope are significant. The Johnson-Neyman technique indicates the exact two values of X where the simple slope crosses the significance threshold. When both Johnson-Neyman values fall *within* the range of observable values of X, this provides evidence that the function is either a U-shaped or inverted U-shaped function. If only one Johnson-Neyman value falls within the observable values of X this indicates that the function is quadratic but not U-shaped. Providing evidence of a “U-shaped” function, our analyses revealed that in studies 1A, 1B, 2A and 2B both Johnson-Neyman values fell within the observable range of ingroup affect. Conversely, in Study 1B and Study 1D, which both utilized the same Canadian community sample, we found that the Johnson-Neyman values contained one value which was outside the observable range of X, indicating a curvilinear but non-U-shaped function.

Taken together these analyses provide compelling evidence that in all studies a

*quadratic* effect characterizes the relation between ingroup affect and identity centrality. Importantly, in 4 of the six studies we found strong evidence that this relation could be characterized by a U-shaped curve. Furthermore, the community samples collected from South Africa provided the strongest and most consistent evidence of a U-shaped curve across our four statistical criteria. The U-shaped curve may have been most pronounced in the South African data sets given the large number of participants who reported decidedly negative affect in the South African samples. For the South African data, a greater representation of negative identifiers at the low end of the distribution of ingroup affect likely facilitated the statistical detection of a significant negative simple slope. Conversely, for the Canadian samples (Studies 1A-1D), the low end of the X distribution was primarily represented by group members with neutral affect. Thus, it supports our theory of a U-shaped function that the simple slope would be non-significant at this point of the curve, as we expect group members with neutral affect to have relatively low identity centrality.

### **General Discussion**

The present research is an initial attempt to study the quadratic inter-relation between two important dimensions of group identification: ingroup affect and identity centrality. Across six studies (including four Canadian samples and two large South African community samples), we find evidence for a quadratic relation between ingroup affect and identity centrality with respect to religious, cultural, ethnic, and racial identities. Thus, our findings imply that group members who feel strong negative affect towards their group, as well as those who feel strong positive affect, are more likely to experience high levels of identity centrality relative to group members with neutral affect.

### Implications for Social Identity Theory

Social identity theory assumes that group members are motivated to maintain a positive and distinct social identity (Tajfel & Turner, 1979; Tajfel & Turner, 1986). Specifically, the self-esteem hypothesis within SIT proposes that group members seek to identify with relatively positive social identities as a means of maintaining a positive self-concept (see, Hogg & Abrams, 1990, for a review). Thus, our finding that group members who feel strong negative affect towards their group may, at the same time, feel that their negative group identity is central to their self-concept, is somewhat at odds with the self-esteem hypothesis. Beyond our research, support for the self-esteem hypothesis has been mixed and, more recently, SIT theorists have sought to either abandon or revise the self-esteem hypothesis (e.g., Hogg, 2012; Spears, Jetten, & Scheepers, 2002; Jetten et al., 2015). Proposing a revised stance on the original self-esteem hypothesis, Jetten and colleagues (2015) have provided robust evidence that, rather than identification with a *positive* social identity being important for self-esteem and well-being, “*mere identification*” (p.2) with any important social group may provide a self-esteem boost and promote psychological well-being (see also, Greenway et al., 2015; Haslam et al., 2009; Oyserman, 2007; Tiessen et al., 2009; Osborne & Taylor, 2010). Therefore, there may be psychological benefits from remaining identified with one’s group despite feeling negative ingroup affect.

Our own theorizing and research findings appear to be more congruent with this revised position by Jetten and colleagues (2015) than with the original self-esteem hypothesis. If identification with important social groups in general (whether positive or negative) is linked to the psychological well-being of group members, this may be, in part, why some individuals who feel strong negative affect towards their group may still have a

tendency to view their group identity as central to their self-concept. In summary, our findings, alongside research revealing that individuals who hold negative stereotypes towards their own group may still be highly identified group members (Mlicki & Ellemers, 1996), and that mere identification with important groups may have positive psychological functions (Jetten et al., 2015), support a new direction in social identity theorizing. Indeed, our research situates the experience of harboring decidedly negative affect towards a self-defining social identity as a relevant and theoretically plausible phenomenon. Thus, specific attention will be needed within SIT to further detail and investigate the psychological implications that holding central yet negative social identities may have for group members.

### **Practical Implications for Group Members**

We have argued that even group identification with a negative social identity may have important psychological functions for group members. At the same time, it is important to acknowledge that identification with a negative social group may also be associated with several psychological challenges for group members. In general, group identification is associated with positive outcomes for well-being (e.g., Branscombe et al., 1999; Haslam et al., 2009). However, some research has differentiated which specific dimensions of group identification relate positively to psychological well-being—while ingroup affect appears to be associated with better psychological well-being, identity centrality has been found to relate unreliably, or even negatively, with psychological well-being (Bombay et al., 2010). In this regard, group members who feel that their group identity is central to their self-concept are often especially hurt by discrimination because they view social identity threats as personal attacks to their self-concept (Beiser & Hou, 2006; Bombay et al., 2010; McCoy & Major, 2003; Operario & Fiske, 2001; Petta &

Walker, 1992). In a similar vein, feeling decidedly negative affect towards one's *own* group may also have especially destructive consequences for the psychological well-being of group members with high identity centrality. When group members internalize or fixate on an identity towards which they feel especially negative, feelings of negative in-group affect may also become directed towards the self. Similarly, Rowley, Sellers, Chavous, and Smith (1998) have found with respect to Black identity in the United States, that identity centrality moderated the relation between ingroup affect and self-esteem. Specifically, only when Black students had high identity centrality was positive ingroup affect linked to higher self-esteem. Our findings extend the relevance of this work by showing that it is also possible for group members to harbor strong negative affect towards a highly central identity. The psychological implications of such a combination, however, remain unclear.

### **Implications for Social Identity Measurement**

Researchers frequently compute an overall score of group identification by combining ratings from various subscales, which often include dimensions reflecting ingroup affect and identity centrality (e.g., Cameron & Nickerson, 2009; Nadler, Harpaz-Gorodeisky & Ben-David, 2009; Terry & Hogg, 1996; Spears et al., 1997; Thomas, Mavor & McGarty, 2011). Combining ingroup affect and identity centrality scores assume that the two variables are either orthogonal or always increase or decrease in the same direction. Our findings, however, indicate that the relation between ingroup affect and centrality varies conditionally as a function of ingroup affect. Thus, group members with *negative* ingroup affect and *positive* ingroup affect may score highly on items assessing identity centrality. As such, we recommend that researchers who wish to compute a composite score of group identification first ensure that ingroup affect and identity centrality are

(only) linearly related across the entire continuum of participants' ingroup affect scores. Failure to do so could result in making conclusions that do not accurately reflect the full spectrum of participants' complex feelings about their group identity.

Our findings may also have implications for measures of group identification that use a single item to assess the construct, for example: "I identify with my group (or category)" (Postmes, Haslam & Jans, 2013). From the perspective of multi-dimensional models of group identification, it is possible that a single-item measure of group identification may miss important variance in group identification, assuming that the single-item does not tap into all dimensions of group identification equally. Previous work by Postmes, Haslam and Jans (2013) indicates that their single-item measure is positively correlated to the ingroup ties, ingroup affect, and identity centrality components of group identification. However, it is important to keep in mind that these three dimensions are also commonly found to positively correlate with one another, especially within Western samples in which the majority of participants score moderately to highly on the ingroup affect dimension of group identification (and with whom single-item measures of social identification have thus far been validated; Postmes et al., 2013; Reyson, Katzarska-Miller, Nesbit, & Pierce, 2013).

Our findings may have implications for the question of whether it is theoretically and methodologically possible for a single-item measure of group identification to capture a group member's perception of ingroup affect and identity centrality simultaneously and equivalently. Indeed, if it cannot be assumed that the conditional linear relation between ingroup affect and identity centrality is always positive, then it may not be possible for a single-item measure of group identification to assess both ingroup affect and identity

centrality simultaneously. For example, if both negative affect and positive affect are associated with high levels of centrality, then scoring highly on a single-item measure of group identification would be indicative of two possible combinations of ingroup affect and identity centrality: (1) high centrality and positive ingroup affect or, (2) high centrality and negative ingroup affect. This poses a theoretical and methodological limitation for single-item measures, as it would be difficult to discern from a relatively high response on a single-item measure of group identification whether the participant felt either positive or negative affect towards their group.

Of course, there may be instances in which space or time limit the use of multi-dimensional measures of group identification. In such cases, where single-item measures may be necessary, we would simply alert researchers as to the potential limitations of single-item measures, especially when using non-Western samples or assessing identities of marginalized groups. Furthermore, it may not always be theoretically relevant in a specific project to differentiate group members with central and negative identities from group members with central and positive identities. In such cases, single-item measures may be adequate.

### **Implications for Sampling Strategies for Social Identity Research**

The present research findings also speak to the importance of recruiting samples from populations in which there is a broad range of affect that individuals feel towards their social groups. Social contexts in which multiculturalism and diversity are generally viewed in a positive light and are normatively valued, such as in our Canadian samples (see, Berry & Kalin, 1995; Bloemraad, 2015; Guimond et al., 2013), may be skewed to primarily include individuals who feel neutral or positive affect towards their racial/ethnic or

religious identities. In contrast, in social contexts where there are tense social relations between different racial/ethnic or religious sub groups, such as our stratified and representative South African samples (Dambrun et al., 2006; de la Sablonnière et al., 2013), there may be a greater representation of group members who feel negative affect towards their social (racial) identity. By recruiting participants from populations in which group members may very well feel negative affect towards their social groups, identity researchers will be able to tap into the psychological complexities of individuals who may be living with decidedly negative yet central social identities.

A further distinction can be made between the Canadian and South African samples used in the present research, in that the Canadian samples can be classified as coming from a relatively wealthy, educated, industrialized, rich, and democratic (WEIRD) population (Henrich, Heine, & Norenzayan, 2010). Sampling from WEIRD populations was important in the present research, because these types of populations are typically what have been used in social psychological research on group identification. And indeed, we did find evidence of a quadratic relation between ingroup affect and identity centrality for these populations. However, the quadratic relation between ingroup affect and identity centrality appeared to be strongest for South African (non-WEIRD) populations. Further research is needed to determine which specific factor(s) pertaining to WEIRD populations (i.e., the W, E, I, R, or D) may account for why the quadratic relation between ingroup affect and identity centrality appears to be stronger in non-WEIRD populations. It is important to note however, that even among WEIRD and non-WEIRD populations, cultures can vary greatly in terms of the composition of the racial, ethnic, and religious groups that comprise the population. Thus, it will be important for future research to consider how the nature of

specific intergroup contexts at play within any particular WEIRD or non-WEIRD population may also impact the inter-relation between ingroup affect and identity centrality.

### **Future Directions: Exploring Moderation Hypotheses**

It is important to note that, in all samples, the linear relation between ingroup affect and identity centrality remained significant. Indeed, examination of the scatter plots graphing the relation between ingroup affect and identity centrality indicated that some, yet not all, group members with decidedly negative ingroup affect perceived their social identity to be central to their self-concept. The presence of a significant linear relation between ingroup affect and identity centrality was not unexpected given that the majority of participants in all samples ranged from having neutral to positive ingroup affect. Thus, for these participants we would expect identity centrality to increase positively and linearly as ingroup affect increased from neutral to highly positive, and this positive linear effect is reflected in our findings.

Across six studies we found consistent and significant evidence of a quadratic relation between ingroup affect and identity centrality. However, the effect sizes of these quadratic effects ranged from small ( $R^2_{\text{change}} = 0.01$ ) to large ( $R^2_{\text{change}} = 0.14$ ). Overall, across the six studies, the average effect size of the quadratic effect was  $f^2 = .07$ , which can be interpreted as a small yet meaningful effect (Cohen, 1988). The range of the effect sizes across our different samples indicates that intergroup contexts may moderate the strength of the quadratic relation between ingroup affect and identity centrality. In particular, the quadratic effect was strongest with respect to racial identity for community samples living in post-apartheid South Africa (Studies 2A and 2B). Racial issues in South Africa are highly salient, having profound practical implications for South Africans, who may be

perceived on the basis of their race at all times (whether they like it or not). As such, one's racial category may be a persistent, inescapable aspect of a South African's self-concept. Conversely, negative consequences as a result of one's cultural, ethnic, racial, or religious identity may be a less salient aspect of Canadians' everyday experiences. This is not to say that Canadians do not experience ethnic or religious discrimination (see Ysseldyk, Talebi, Matheson, Bloemraad, & Anisman, 2014); however, such experiences occur within a cultural context in which multiculturalism is highly valued and discrimination is not normatively tolerated (Bloemraad, 2006; Guimond et al., 2013).

The presence of a significant quadratic effect across six studies among vastly different populations points to the generalizability and robustness of our findings. However, future research should directly test whether the salience of group identity, or the extent to which group members feel they can dissociate from their group, might moderate the quadratic relation between ingroup affect and identity centrality. As well, a second avenue for future research may be to explore whether other quadratic non-linear relations exist between the different components of group identification. However, as we detail in our supplementary materials, in the present research, we did not find evidence of a quadratic relation between the ingroup ties dimension of group identification and centrality, or between ingroup ties and ingroup affect.

### **Caveats**

A potential limitation of the present research is that two different scales of group identification were used across Study 1 and Study 2. Importantly, however, the items used in Study 2 were taken from previously validated scales of group identification (Cameron, 2004 in Study 1; Jackson, 2002 and Luhtanen & Corcker, 1992 in Study 2). Furthermore,

we replicated our findings and found support for the quadratic relation between ingroup affect and identity centrality using both scales. Being able to replicate our findings with two different, yet both previously validated measures of group identification is important, given the number of validated and reliable scales that are repeatedly and interchangeably used by social identity researchers. Our results demonstrate that, regardless of which measurement tool was used to assess ingroup affect and identity centrality, there was robust evidence of a quadratic inter-relation between the two identity constructs. In this way, our use of two different scales can be seen as both a potential limitation and a potential strength of the present research.

### **Conclusions**

Social groups have profound psychological functions for group members and are often tied to externally distinguishing features, communities, and families. As such, people may hesitate to de-identify even when they feel decidedly negative affect towards their own group. The present research provides initial and direct evidence that group members who experience decidedly negative ingroup affect may also view their negative social identity as central to their self-concept. Thus, although ingroup affect and identity centrality are certainly related, it would appear that this is not necessarily a positive link. On the contrary, many people may currently be living with a negative social identity that serves as a central and defining feature of their self-concept. Indeed, the present research introduces the psychological reality of experiencing a decidedly negative yet central social identity as a further nuance of the complexities and contours of understanding social identification. Thus, further attention within social identity theorizing and research may be necessary to understand how the affect which group members feel towards their social identity—both

the good and the bad—relates to how central that social identity is to their overall sense of self.

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## Authors' Notes

<sup>1</sup> We screened for outliers using Cook's distance in all 6 studies. Only one influential case was found in Study 1C. Re-analyzing the data with this case removed did not influence the significance of our results (please see supplementary materials).

<sup>2</sup> Study 1B and Study 1D use the same sample. Participants reported ethnic group identification and religious group identification independently. In Study 1D we excluded Atheists and Agnostics.

<sup>3</sup> The survey contained one item that assessed racial pride "I am proud to be (*race*)". Some scholars propose that pride relates to an evaluative dimension of group identification which is separate from affect (Cameron, 2004; Jackson, 2002; Tajfel & Turner, 1979). Furthermore, the Cameron (2004) scale used in Study 1 does not contain a pride item. Thus we did not use the pride item in our reported analyses. The significance of our results did not change when including the pride item, with the exception of the Asian/Indian racial subgroup in Study 2B (see supplementary analyses).

Table 1: Labels Used to Refer to the Cognitive (Ingroup Centrality) and Affective (Ingroup Affect) Dimensions of Group Identification.

Article	Ingroup Affect	Identity Centrality
Brown, Condor, Mathews, Wade & Williams, 1986	“Affect”	“Awareness”
Hinkle, Taylor, Fox- Cardamone, Cook, 1989	“Group Identification Member- Affective Component”	“Group Identification Member- Cognitive Component”
Karasawa, 1991	“Identification with Group – Affective Component”	“Identification with Group – Cognitive Component”
Luhtanen & Crocker, 1992	“Private Collective Esteem”	“Identity”
Phinney, 1990	“Positive and Negative Attitudes to Group”	“Self-Identification”
Deaux, 1996	“Affective Aspects”	“Cognitive Aspects”
Sellers, Smith, Shelton, Rowley, & Chavous, 1997	“Private Regard”	“Centrality”

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Ellemers, Kortekaas, & Ouwerkerk, 1999	“Group Self-Esteem”	“Self-Categorization”
Jackson & Smith, 1999	“Attraction to the ingroup”	“Depersonalization “
Jackson, 2002	“Attraction to the ingroup”	“Self-Categorization”
Cameron, 2004	“Ingroup Affect”	“Identity Centrality”
Leach, et al., 2008	“Self-Investment – Satisfaction Subscale”	“Self-Investment – Centrality Subscale”
Roccas, Sagiv, Schwartz, Halevy, & Eidelson, 2008	<i>Not Measured</i>	“Importance”

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Table 2: Demographics, Inter-item Reliability, and Quadratic Effect of Ingroup Affect on Identity Centrality by Sub-Sample (Study 1A)

<sup>+</sup>  $p < .10$ ; <sup>\*\*</sup>  $p < .01$

Sample	Demographics (Gender and Age in Years)	Cronbach Alpha	F <sub>change</sub> (Quadratic Effect)	Degrees of Freedom	Variance Accounted for by Ingroup Affect (R <sup>2</sup> )	Variance Accounted for by (Ingroup Affect) <sup>2</sup> (R <sup>2</sup> )	Cohen's <i>f</i> <sup>2</sup> (Quadratic Effect)
Sample 1: Cultural Group Open Ended (N=212)	142 F, 69 M, 1 unspecified; M <sub>age</sub> =23.50, SD=7.22	$\alpha_{\text{ingroup}}$ affect=.87, $\alpha_{\text{centrality}}=.76,$	7.40**	1,209	.08	.03	.04
Sample 2: Canadian Identification (N=113)	91 F, 21 M, 1 unspecified; M <sub>age</sub> =21.30, SD=4.18	$\alpha_{\text{ingroup}}$ affect=.83 , $\alpha_{\text{centrality}}=.80,$	2.84 <sup>+</sup>	1,110	.09	.02	.03
Sample 3: Japanese Identification (N=25)	15 F, 10 M; M <sub>age</sub> =20.60, SD=2.58	$\alpha_{\text{ingroup}}$ affect=.57, $\alpha_{\text{centrality}}=.82,$	-	-	-	-	-
Sample 4: Canadian Identification (N=120)	109 F, 11 M; M <sub>age</sub> = 20.39, SD=1.79	$\alpha_{\text{ingroup}}$ affect=.90, $\alpha_{\text{centrality}}=.80,$	9.41**	1,117	.17	.06	.08
Sample 5: Cultural Group Open Ended (N=42)	35 F, 5 M, 2 unspecified; M <sub>age</sub> =20.19, SD=1.58	$\alpha_{\text{ingroup}}$ affect=.62 , $\alpha_{\text{centrality}}=.58,$	11.53**	1.39	.00	.23	.30

Table 3: Mean Identity Centrality and Ingroup Affect by Racial Group (Study 2A)

Race	Sample Size (N)	Centrality	Ingroup Affect	Number of Participants with Negative Ingroup Affect
White	462	M=8.15 SD=2.18	M=8.29 SD= 2.06	7.40% (N=34)
Black	2526	M=8.41 SD=2.18	M = 7.29 SD = 2.75	16.90% (N=426)
Colored	442	M=7.59 SD=2.48	M = 7.91 SD= 2.08	8.60% (N=38)
Asian/ Indian	141	M=8.04 SD=2.22	M = 7.44 SD= 2.68	15.6% (N=22)
TOTAL SAMPLE	3,571	M=8.26 SD=2.24	M=7.51 SD=2.62	14.60% (N=520)

Table 4: Variance in Identity Centrality Accounted for by Ingroup Affect and (Ingroup Affect)<sup>2</sup> for Racial Groups in South Africa (Study 2A)

Race	F <sub>change</sub> (Quadratic Effect)	Degrees of Freedom	Variance accounted for by Ingroup Affect (R <sup>2</sup> )	Variance accounted for by (Ingroup Affect) <sup>2</sup> (R <sup>2</sup> )	Cohen's <i>f</i> <sup>2</sup> (Quadratic Effect)
White	9.54***	1,459	.06	.02	.02
Black	73.95***	1,2523	.02	.03	.03
Colored	5.84*	1,439	.03	.01	.01
Asian/ Indian	10.87**	1,138	.04	.07	.07

\*\**p*<.01; \*\*\**p*<.001

Table 5: Mean Identity Centrality and Ingroup Affect by Racial Group (Study 2B)

Race	Sample Size (N)	Centrality	Ingroup Affect	Number of Participants with Negative Ingroup Affect
White	600	M=7.45 SD=2.45	M=7.18 SD= 2.52	18.2% (N=109)
Black	1216	M=7.92 SD=2.21	M = 6.71 SD = 2.51	22.8% (N=277)
Colored	405	M=6.85 SD=2.53	M = 6.85 SD= 2.33	19.8% (N=80)
Asian/ Indian	179	M=7.24 SD=2.45	M = 7.01 SD= 2.25	14.5% (N=26)
TOTAL	2,400	M=7.57	M=6.87	20.5% (N=492)
SAMPLE		SD=2.38	SD=2.47	

Table 6: Variance in Identity Centrality Accounted for by Ingroup Affect and (Ingroup Affect)<sup>2</sup> for Racial Groups in South Africa (Study 2B)

Race	F <sub>change</sub> (Quadratic Effect)	Degrees of Freedom	Variance accounted for by Ingroup Affect (R <sup>2</sup> )	Variance accounted for by (Ingroup Affect) <sup>2</sup> (R <sup>2</sup> )	Cohen's <i>f</i> <sup>2</sup> (Quadratic Effect)
White	41.58***	1,597	.01	.06	.07
Black	103.82***	1,1213	.06	.07	.13
Colored	18.68***	1,402	.02	.04	.07
Asian/ Indian	10.28**	1,176	.13	.05	.18

\*\**p*<.01; \*\*\**p*<.001

Table 7. Evidence of a “U” Shaped Curve by Study

Study	Observed Range of X (mean centered)	$B_2$	$X_{\text{Minimum}}$	Simple Slope, $t_{\text{SimpleSlope}}(-2 \text{ SD})$	Simple Slope, $t_{\text{SimpleSlope}}(-1 \text{ SD})$	Simple Slope, $t_{\text{SimpleSlope}}(+1 \text{ SD})$	Simple Slope, $t_{\text{SimpleSlope}}(+2 \text{ SD})$	Johnson-Neyman Values
Study 1A	-5.14, .86	.18	-1.81	-.06, $t = -.56$	.30, $t = 4.78^*$	1.01, $t = 7.21^*$	1.37, $t = 6.91^*$	Low = -1.47 High = -2.36
Study 1B	-3.50, 1.50	.10	-2.24	-.00, $t = .02$	.21, $t = 2.55^*$	.64, $t = 5.04^*$	.85, $t = 4.03^*$	Low = -1.27 High = -11.59
Study 1C	-3.42, 1.33	.35	-1.42	-.52, $t = -1.56$	.24, $t = 1.42$	1.77, $t = 6.22^*$	2.54, $t = 5.45^*$	Low = -.98 High = -2.52
Study 1D	-3.57, 1.43	.10	-3.79	.28, $t = 1.80$	.52, $t = 6.55^*$	1.00, $t = 7.92^*$	1.24, $t = 5.97^*$	Low = -2.32 High = -12.09
Study 2A	-7.51, 2.49	.05	-2.70	-.25, $t = -5.86^*$	.01, $t = .44$	.52, $t = 12.64^*$	.78, $t = 11.71^*$	Low = -2.34 High = -3.19
Study 2B	-6.87, 3.13	.09	-1.74	-.56, $t = -8.83^*$	-.13, $t = -3.99^*$	.73, $t = 15.40^*$	1.16, $t = 14.44^*$	Low = -1.49 High = -2.05

\* Indicates that the 95% confidence interval for the t-test for the simple slope did not contain zero and is

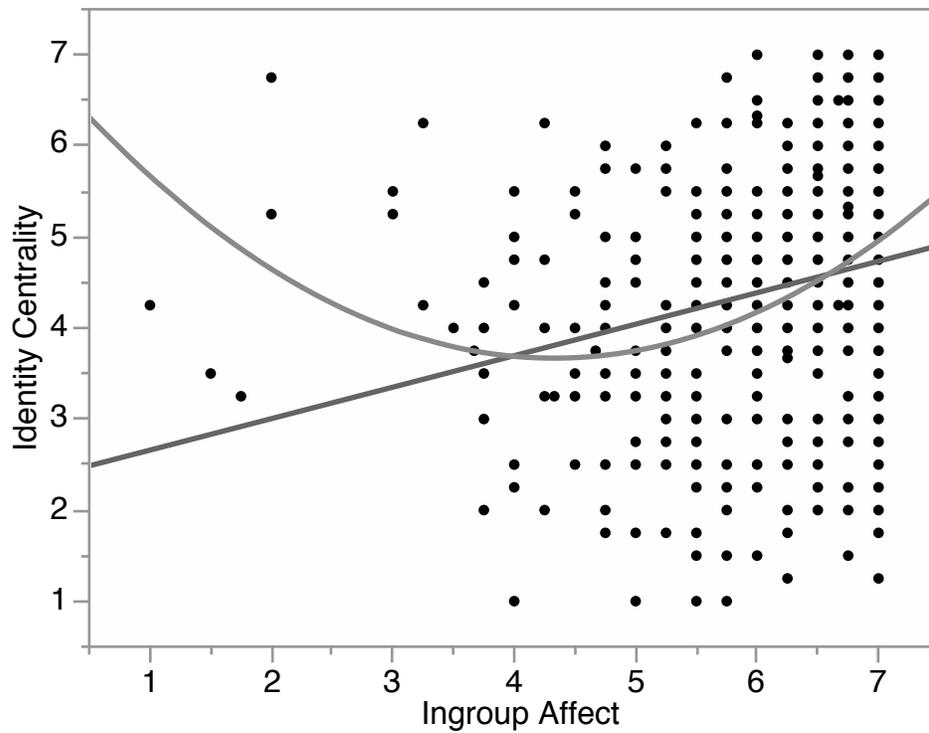


Figure 1. Scatter plot depicting the linear and quadratic relation between ingroup affect and identity centrality for cultural identification (Study 1A). Dots represent raw data points (non transformed).

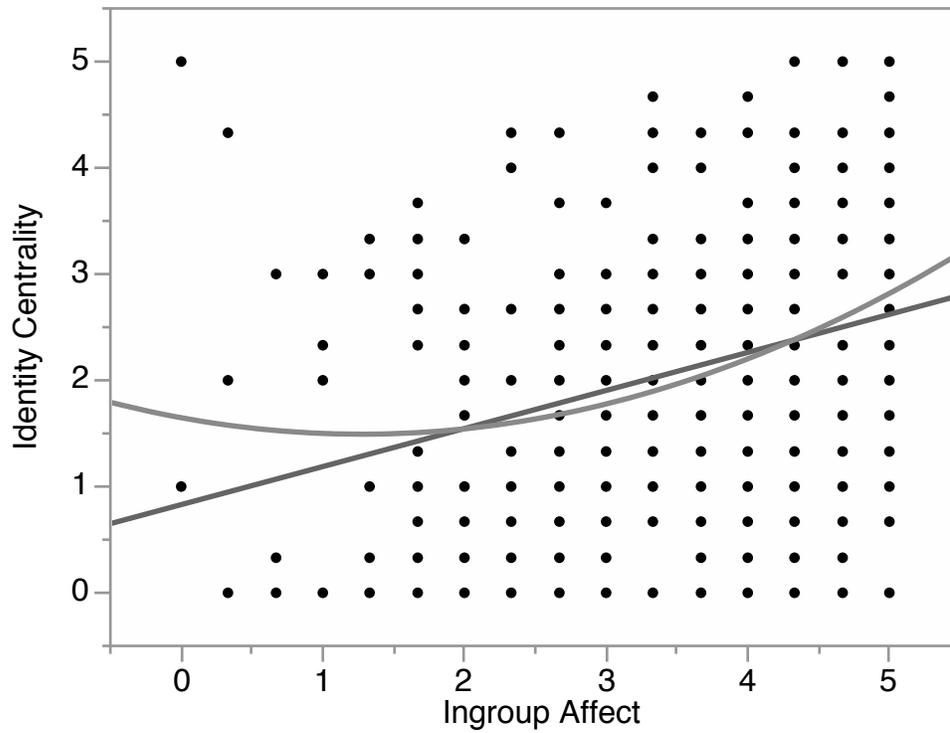


Figure 2. Scatter plot depicting the linear and quadratic relation between ingroup affect and identity centrality for ethnic identification (Study 1B). Dots represent raw data points (non transformed).

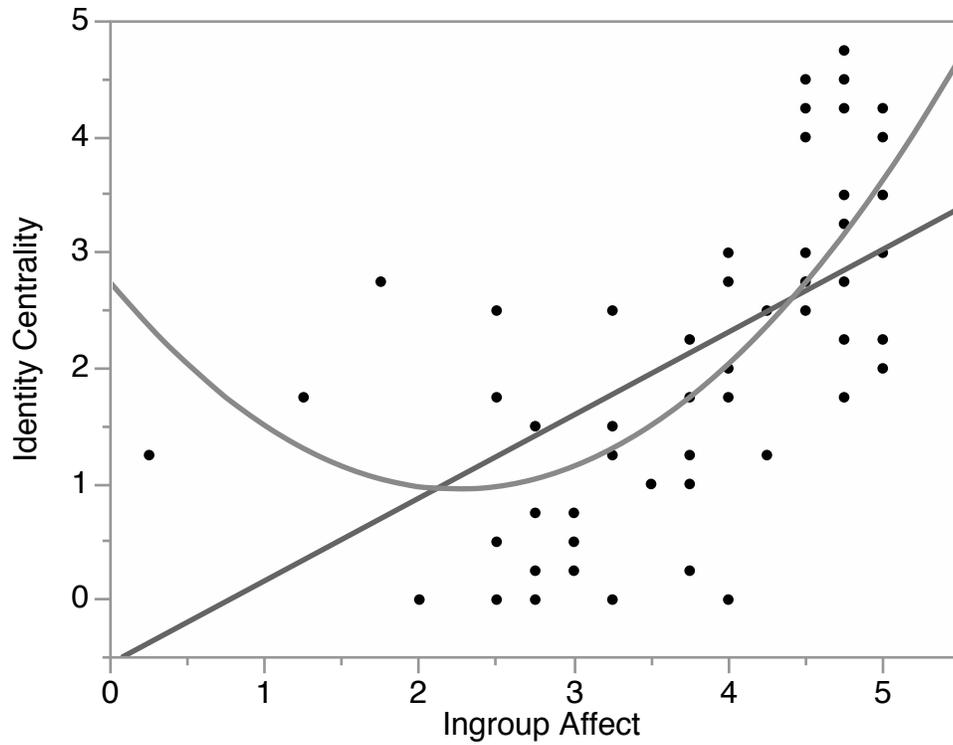


Figure 3. Scatter plot depicting the linear and quadratic relation between ingroup affect and identity centrality for religious identification (Study 1C). Dots represent raw data points (non transformed).

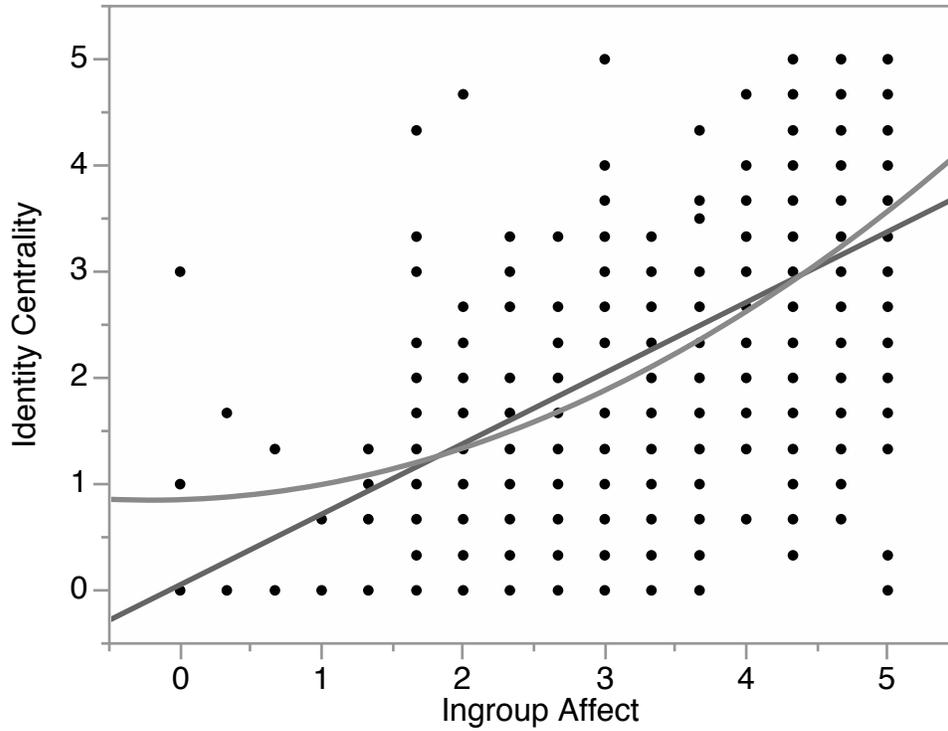


Figure 4. Scatter plot depicting the linear and quadratic relation between ingroup affect and identity centrality for religious identification (Study 1D). Dots represent raw data points (non transformed).

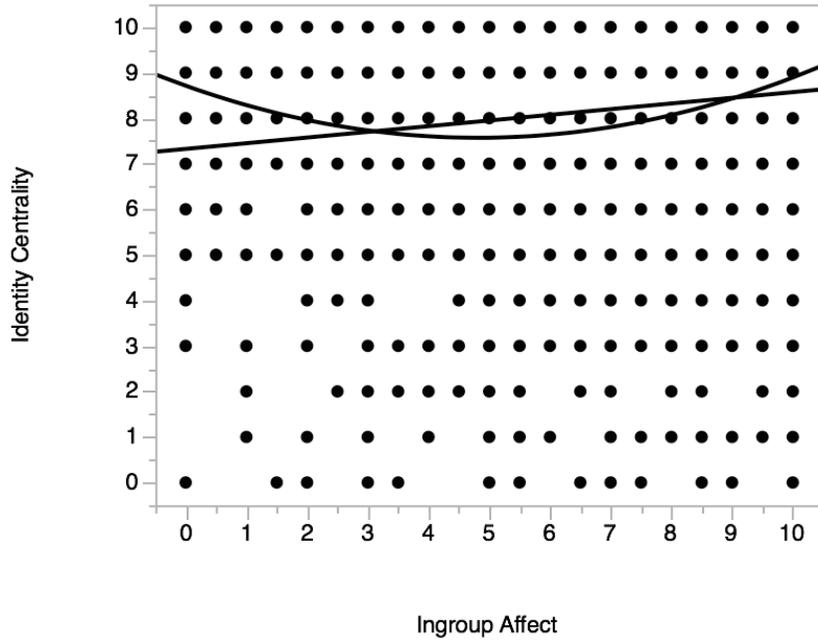


Figure 5. Scatter plot depicting the linear and quadratic relation between ingroup affect and identity centrality for racial identification (Study 2A). Dots represent raw data points (non transformed).

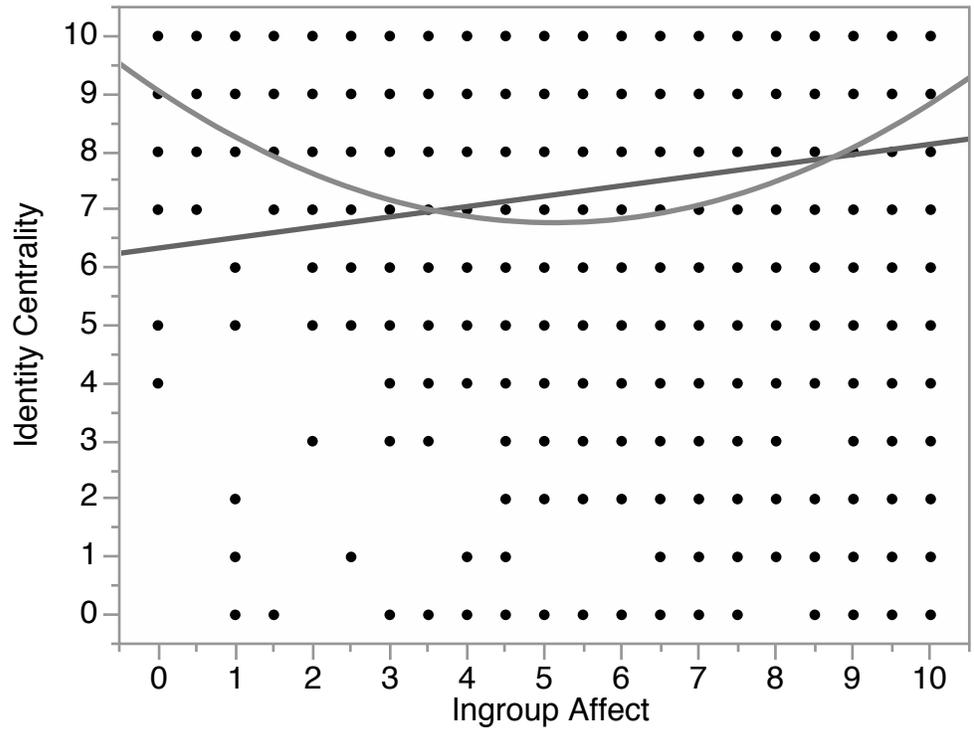


Figure 6. Scatter plot depicting the linear and quadratic relation between ingroup affect and identity centrality for racial identification (Study 2B). Dots represent raw data points (non transformed).