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Social Anhedonia and Intergroup Processes: A multi-study investigation of known and novel group memberships

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Social Anhedonia and Intergroup Processes:
A multi-study investigation of known and novel groups

THESIS

submitted in partial satisfaction of the requirements
for the degree of

MASTER OF ARTS

in Social Ecology

by

Madeline Elizabeth Snyder

Thesis Committee:
Associate Professor Elizabeth A. Martin, Chair
Professor Jason Schiffman
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2023

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ABSTRACT OF THE THESIS

Social Anhedonia and Intergroup Processes:

A multi-study investigation of known and novel groups

by

Madeline Elizabeth Snyder

Master of Arts in Social Ecology

University of California, Irvine, 2023

Associate Professor Elizabeth A. Martin, Chair

Introduction: Group memberships play an important role in promoting psychological well-being and supporting social functioning. However, studies suggest that individuals with social anhedonia, a characteristic defined by limited pleasure from social bonds, may show abnormalities in their desire to cultivate positive feelings, such as belongingness, from social groups. Still, these abnormalities have not been studied in the context of intergroup processes, leaving the relation between social anhedonia and subjective evaluations of group memberships unclear. **Methods:** Across three studies (Ns = 124–659), we examined associations between social anhedonia and affective and cognitive attitudes about different types of ingroups and outgroups using self-report and behavioral measures. **Results:** Taken together, results indicate that social anhedonia is associated with less positive and more negative feelings and beliefs about most ingroups and outgroups from everyday life, as well as negatively biased stereotyping of many prominent social groups. At the same time, individuals with either extremely high or low levels of social anhedonia did not report significantly different intergroup attitudes when group memberships were experimentally manipulated in a minimal group setting. **Discussion:**

Overall, these findings suggest that social anhedonia is associated with less positive and more negative subjective evaluations of long-established, real-world ingroups, but not of a newly formed ingroup that requires little motivation or social engagement to maintain group membership. Aberrant feelings and attitudes toward one's ingroups are consistent with the theory that social anhedonia is related to anomalies in the need to belong within social groups from everyday life and could inform psychosocial interventions for related psychopathologies.

INTRODUCTION

Cultivating a sense of belongingness and social identity through group memberships is an important aspect of the human experience. Social inclusion within groups brings life greater meaning, generates feelings of pleasure, and contributes to the preservation of healthy psychological functioning (Baumeister, 1991). Furthermore, when the need to belong is not fulfilled, either through situational social exclusion or through chronic social isolation, there are negative mental and physical consequences (see Cacioppo et al., 2002; MacDonald & Leary, 2005). Accordingly, Baumeister and Leary (1995) hypothesized that humans have a fundamental drive to develop and maintain positive social connections with others, leading them to cultivate a sense of belonging in groups. However, theory and preliminary research suggest that individuals with social anhedonia, a characteristic among people in the general population as well as in clinical groups, might lack this sense of belonging (Brown et al., 2007; Kwapil et al., 2013; Silvia & Kwapil, 2011). Thus, the current group of studies aimed to test whether social anhedonia is associated with aberrant feelings and beliefs about the social groups that one does or does not belong to.

The motivation to feel like one belongs is thought to involve two components: (1) the human need for consistent, positive interactions with other people, and (2) the need for these regular interactions to occur within dyads or groups of people who care about fellow members' overall well-being (Baumeister & Leary, 1995). Typically, the need to belong is most visible in group contexts, and it is often privileged over other human needs. For example, individuals may sometimes join groups (e.g., gangs, the military, fraternities) to fulfill their needs for belongingness with the knowledge that group membership may result in putting their personal safety or ethical values at risk (Berry et al., 2021; Littman & Paluck, 2015). Having a sense of

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belonging to one's social groups is also a crucial component of social identity development (Tajfel, 1979). According to social identity theory (Tajfel & Turner, 1986), an individual's identity is developed from the knowledge, feelings, and personal value that they assign to the groups that they belong to—or their ingroups (Tajfel, 1981). Furthermore, an individual's self-esteem is derived from the positive feelings and favoritism they feel toward their ingroups in comparison to their outgroups, or the groups they do not belong to (Tajfel & Turner, 1979). Thus, group memberships are believed to be an integral part of pleasurable social experiences and human psychological needs overall, a downstream consequence of which can be negative intergroup relations caused by negative thoughts and feelings toward outgroups.

There is a personality characteristic, however, that is associated with reduced pleasure from social relationships and may be related to limited motivation to develop strong feelings of belongingness within one's group memberships. Social anhedonia (SocAnh), or the diminished experience of positive emotion from social stimuli, is characterized by social abnormalities, such as a lack of interest in close relationships and limited social connections (Blanchard et al., 1998; Brown et al., 2007; Silvia & Kwapil, 2011). One such abnormality—a preference for solitude over companionship in people with elevated SocAnh (Brown et al., 2007; Kwapil et al., 2009)— is related to anomalies in the need to cultivate a sense of belonging within one's social groups (Silvia & Kwapil, 2011). Consequently, researchers have proposed that people with SocAnh may lack the psychological need to belong (Kwapil et al., 2009; Kwapil et al., 2013; Silvia & Kwapil, 2011), which may impact the feelings of well-being that are typically derived from group memberships (Sheldon & Bettencourt, 2002) and contribute to poorer functioning overall (Silvia & Kwapil, 2011). It is unclear, however, how aberrancies in intergroup relations manifest in feelings, attitudes, and behaviors toward group memberships in people with SocAnh.

SocAnh presents on a spectrum of severity in various psychopathologies (e.g., schizophrenia-spectrum disorders, depression, eating disorders; Barkus & Badcock, 2019) and in the general population. It is associated with poor outcomes (e.g., Li et al., 2022; Martin & Kerns, 2010), including a heightened risk for developing a schizophrenia-spectrum disorder (Gooding et al. 2005; Kwapil, 1998). Consequently, this research may be relevant to many people who find building and maintaining connections within groups challenging and could potentially inform interventions aimed at preventing schizophrenia-spectrum disorder onset. Thus, in three studies, we investigated components of intergroup relations in people with different levels of SocAnh.

Across three studies, we utilized social psychological theories and methodological paradigms to study group memberships and intergroup processes in relation to SocAnh. Our main goal was to examine how people with different levels of SocAnh feel about and perceive their ingroups and their outgroups. First, in Study 1, we assessed how SocAnh was related to positive and negative feelings toward self-nominated ingroups and levels of identification with those groups. Then, in Study 2, we determined how people with varying levels of SocAnh reported their feelings and beliefs toward a standardized set of group memberships: those commonly nominated in Study 1 (i.e., friends and family), and politically polarizing social groups (i.e., groups that have been shown to elicit strong feelings). Finally, in Study 3, we experimentally manipulated the participants' group membership in a minimal group context to examine how differences in intergroup processes manifest behaviorally in the laboratory setting.

CHAPTER 1

Study 1

Study 1

An individual's social identity is developed based on their positive and negative affective feelings towards, as well as their levels of identification with, their group memberships (Tajfel & Turner, 1979). People typically experience self-conscious positive feelings, such as pride, and self-conscious negative feelings, such as shame, due to shared group associations and an extended sense of identity (Lickel et al., 2007). People also typically feel warmth and liking towards their ingroups, especially in comparison to their outgroups (Tajfel & Turner, 1979). Given that individuals with elevated SocAnh have a disinterest in interpersonal relationships (Silvia & Kwapil, 2012) and lower positive trait affect (Blanchard et al., 2011; Martin et al., 2011), we predicted that higher levels of SocAnh would be associated with less positive/more negative evaluations, less warmth/more coldness, and less pride toward their ingroups. Furthermore, as research suggests that social deficits may be related to feelings of shame about affective expression in SocAnh (Gerhart et al., 2022), we predicted that higher levels of SocAnh would be associated with greater shame about group memberships. Because participants self-nominated group memberships before answering questions about each group, we explored the group types that participants reported to determine whether SocAnh was associated with specific types of group memberships prior to comparing ratings across all self-nominated ingroups.

In general, peoples' self-representations, such as their social identities and self-esteem, are composed of multiple levels—including the individual and collective level (Brewer & Gardner, 1996). While most people tend to place importance in both their personal and collective self-representations (Brewer & Gardner, 1996), it is uncertain whether this is true for people with elevated SocAnh. As people with elevated SocAnh have lower self-esteem in general (Ritsner et al., 2018), we predicted that greater levels of SocAnh would be associated with lower levels of

private regard. In addition, people with elevated SocAnh are disinterested in interpersonal relationships (Silvia & Kwapil, 2011) and may not hold normative identity-related beliefs about pleasure in situations involving semantic memories (Strauss & Gold, 2012). This aberrant pattern of beliefs could impact a situation where a participant is recalling their general group memberships, such as in this study. Thus, we predicted that greater levels of SocAnh would be associated with lower scores on identity centrality, or less importance placed in group memberships in one's overall sense of identity.

Materials and Methods

Participants

Study participants were undergraduate students at a large public university. Participants received extra credit for their Psychology course for their participation. In this online study, participants completed the 13-item Chapman Infrequency Scale—a scale used to identify inattentive or careless responding (Chapman & Chapman, 1983). Consistent with previous research (e.g., Martin et al., 2011; Martin et al., 2012b; Moore et al., 2019), a participant's data were excluded from all analyses if they endorsed more than two items on the scale ($n = 21$ participants excluded from the current study). Our final sample consisted of 225 undergraduate students ($M_{age} = 20.52$; $SD_{age} = 2.61$; 77.8% female; 4.0% African American/Black; 44.4% East/South/Southeast Asian; 16.9% White; 24.4% Hispanic American/Latino(a)/Mexican; 0.4% Pacific Islander; 0.8% Multiracial).

Measures

Group Membership Listing Task and Feelings Towards Ingroups

To assess feelings towards their ingroups, participants were first tasked with reading a brief paragraph about group membership. Based on the typology of groups by Lickel et al.,

(2001), the paragraph explained that there are different types of groups that a participant may belong to (e.g., task-oriented groups) and that some groups may share common interests or experiences while other groups may represent various identities. Participants were then asked to list 10 groups to which they belong. After submitting their list, participants were presented with each of the 10 groups separately and were asked to rate how they felt about each group on four bipolar Likert scales (1=*Bad* - 7=*Good*, α = .80; 1=*Unpleasant* - 7=*Pleasant*, α = .79; 1=*Negative* - 7=*Positive,* α = .77; 1=*Strongly dislike* - 7=*Strongly like*, α = .77). These ratings were standardized and averaged to create a composite measure of ingroup evaluation (α = .79). Participants also reported how warm/cold they felt about each ingroup on a feeling thermometer (0=*Very Cold* - 100=*Very Warm*, with intervals of 10 degrees, α = .86; e.g., Ho et al., 2015). Then, participants reported to what extent they felt pride (α = .82) and shame (α = .87) about belonging to each group on a 7-point Likert scale (1=*Not at all* - 7=*Very Much*).

Revised Social Anhedonia Scale (Eckblad et al., 1982)

To assess levels of SocAnh, participants completed the Revised Social Anhedonia Scale (Eckblad et al., 1982; α = .88; *M* = 9.93; *SD* = 5.75), a 40-item true-false questionnaire that is designed to measure a lack of social connections and limited pleasure from social interactions (e.g., "Having close friends is not as important as many people say"). Higher total scores on the scale indicate higher levels of SocAnh. The Revised Social Anhedonia Scale has been used to measure SocAnh in both nonclinical and clinical populations (e.g., Fonseca-Pedrero et al., 2009; Horan et al., 2007; Wang et al., 2014), and individuals who score high on this scale are at an increased risk for schizophrenia-spectrum disorders (Gooding et al., 2005; Kwapil, 1998).

Collective Self Esteem (Luhtanen & Crocker, 1992)

To assess self-esteem related to group membership, participants completed the 4-item Private Self-Esteem subscale ($\alpha = .79$; e.g., "I feel good about the social groups I belong to") and the 4-item Collective Identity subscale ($\alpha = .76$; e.g., "The social groups I belong to are an important reflection of who I am") of the Collective Self-Esteem Scale (Luhtanen & Crocker, 1992). The first subscale measured the individual's positive feelings towards their social groups (private regard) and the second subscale measured the importance of group membership to an individual's self-concept (identity centrality). Each item in the survey was rated on a 7-point bipolar Likert scale (1=*Strongly disagree* - 7=*Strongly agree*).

Procedures

Informed consent was obtained from each participant prior to beginning the study. Throughout the study, participants were allowed to skip questions if they preferred not to answer. The total number of participants who completed each measure is listed under each table (see Table 1 & Table S2 in the Supplemental Materials). Participants completed the group membership listing task, the Revised Social Anhedonia Scale, and the Collective Self Esteem Scale. The order of the group membership listing task and the other measures was counterbalanced. Finally, participants filled out demographic questions and were presented with a debriefing statement. All tasks and scales were administered through the Qualtrics website (Qualtrics, Provo, UT). This study was approved by the Institutional Review Board at the University, and the study procedures were in accordance with the principles of ethical conduct of human research.

Statistical Approach

We first determined whether the types of group memberships nominated differed systematically by participants' levels of SocAnh. The 10 groups submitted by each participant in the group membership list task were systematically coded by two trained researchers using the Lickel et al. (2001) typology of groups. Specifically, the group memberships were coded as: intimacy groups (i.e., smaller groups where the relationships are long in duration with high levels of intimacy and interaction, such as friends, family, and fraternities), task groups (i.e., smaller groups where members work together toward a shared goal and the relationships are moderate in duration with high levels of interaction, such as work groups and sports teams), social categories (i.e., very large groups based on similarities along a demographic characteristic, such as gender or race), or loose associations (i.e., smaller groups that are of limited duration and interaction between members, such as people in a waiting room at the doctor's office). Agreement between the two coders was high (85%) and one coder's responses were selected at random for the analysis. Then, correlations between SocAnh and each of the four group-types were calculated.

Next, ratings of feelings towards group memberships were standardized and averaged to create a composite measure of ingroup evaluation. IBM SPSS Statistics Version 28 (SPSS Inc., Armonk, NY) was used to calculate Pearson correlations between SocAnh scores and ingroup evaluation (where higher scores indicate more positive and less negative evaluations), warmth, pride, and shame. Then, correlations were calculated between SocAnh scores and private regard and identity centrality.

Results

Overall, participants with different levels of SocAnh were generating similar types of ingroup memberships.[1] That is, in general, SocAnh did not predict specific ingroup types. Thus, we were able to readily compare the various outcome variables while averaging across all self-generated group membership evaluations.

Consistent with our predictions, there were several significant correlations between SocAnh and measures of feelings towards ingroups, ranging from weak to moderate in size. As seen in Table 1, SocAnh had a moderate negative association with ingroup evaluation and identity centrality (Cohen, 1988). SocAnh also had a weak negative association with ingroup warmth, ingroup pride and private self-esteem. Furthermore, SocAnh had a weak positive association with ingroup shame. Therefore, averaging across all groups generated by each participant, higher levels of SocAnh were associated with less positive/more negative ingroup evaluation, less warmth/more coldness towards ingroups, less ingroup pride, and more ingroup shame. Finally, higher levels of SocAnh were associated with lower private regard as well as less identity centrality, that is, less importance placed in group memberships when conceptualizing one's self-concept or identity.

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[1] After coding each ingroup by type, we found that higher levels of SocAnh were marginally associated with less task groups (i.e., work groups), $r(223) = -.13$, $p = .051$. However, SocAnh was not associated with any other group types, $ps > .12$ (see Supplemental Table S2 for full results). Therefore, overall, the participants were generating the same types of ingroup memberships, though there was one marginally significant correlation that we report here for transparency.

Table 1

Zero Order Correlations Between Social Anhedonia and Feelings Towards Groups

	1	2	3	4	5	6	7
1. Social anhedonia	1						
2. Ingroup evaluation	-.30***	1					
3. Ingroup warmth	-.25***	.68***	1				
4. Ingroup pride	-.23***	.67***	.66***	1			
5. Ingroup shame	.16*	-.42***	-.41***	-.32***	1		
6. Private regard	-.27***	.35***	.25***	.22**	-.33***	1	
7. Identity centrality	-.36***	.19**	.15*	.17*	-.12	.48***	1

Note. $N = 224$ completed ingroup evaluation, warmth, pride, and shame ratings; $N = 223$ completed private regard and identity centrality ratings.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Discussion

In accordance with existing research that has shown that people with SocAnh experience limited pleasure from social bonds (Kwapil et al., 2013; Silvia & Kwapil, 2011), we found that greater levels of SocAnh were associated with less positive feelings towards and derived from group memberships. Furthermore, consistent with our hypotheses, SocAnh was associated with less positive/more negative ingroup evaluations, less warm/more cold feelings towards ingroups, less ingroup pride, more ingroup shame, and lower private regard. Also, group memberships were less important to the identities of individuals with greater levels of SocAnh. These findings provide initial support for our prediction that SocAnh is associated with diminished reward (i.e., less positive feelings and weaker social identity) from social group memberships. In Study 2, we sought to replicate and extend these findings. Specifically, we assessed participants' feelings towards their intimacy groups (friends and family), which were frequently identified as group memberships in this study. We also included two additional measures of healthy human relationships in Study 2—relationship quality and perceived social support.

Given that participants in Study 1 were asked to generate their own social groups and had no knowledge of the task prior to the study, there was individual variability in the group memberships that participants nominated. It is therefore possible that some participants did not include all of their important group memberships. Furthermore, participants may have had stronger or different feelings about other groups that they did not think of at the time of the study. Therefore, Study 2 addressed some of the limitations of Study 1 by assessing participants' feelings and attitudes toward a standardized set of groups that have been shown to elicit strong feelings (e.g., politically polarizing groups; Brandt et al., 2014; Conover, 1988; Weisel & Böhm, 2015) to test the relation between SocAnh and prejudice towards ingroups. Also, intergroup

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prejudice is typically conceptualized as preference for ingroups relative to outgroups, yet Study 1 only assessed feelings towards ingroups. Study 2 addressed this point by assessing feelings or beliefs about outgroups in order to measure intergroup biases. Finally, intergroup prejudice consists of both affective and cognitive processes (see Mackie & Smith, 1998). While Study 1 investigated components of affective prejudice (i.e., ingroup evaluation and warmth), it did not investigate cognitive prejudice (i.e., stereotyping) towards social groups. Therefore, Study 2 included both affective and cognitive prejudice measures.

CHAPTER 2

Study 2

Study 2

Preserving one's social identity, which involves continually distinguishing between ingroup and outgroup members, may be one of the strongest motivations for prejudicial feelings and attitudes (Brewer, 1999). Feeling more positively toward ingroups than outgroups (i.e., harboring affective prejudice) is associated with higher self-esteem (Tajfel & Turner, 1979). Thus, while cultivating a sense of belongingness through social identity (Cameron, 2004), individuals may also cultivate affective preferences for ingroups over outgroups (Van Bavel et al., 2012) and harbor cognitive prejudice by stereotyping outgroups (Jost & Banaji, 1994). In this study, we examined how SocAnh was related to affective prejudice and stereotyping of specific groups, such as political parties, which have been shown to provoke strong responses in the general population (Conover, 1988; Miller et al., 2004).

Affective prejudice is based on feelings of warmth (or coldness) towards a group in comparison to feelings towards another group. Given that SocAnh levels have a strong, inverse association with extraversion (Martin et al., 2012a) and its facet of warmth (Silvia & Kwapil, 2011), we predicted that SocAnh would be associated with less warmth/more coldness towards both political ingroups and political outgroups. Importantly, given its strong negative association with warmth-related traits (Silvia & Kwapil, 2011), we also expected SocAnh to be negatively associated with affective prejudice (i.e., affective preference for political ingroups over outgroups). Finally, consistent with the findings of Study 1 and extant research on relationship quality in people with SocAnh (e.g., Goldstein et al., 2021; Kwapil, 1998), we predicted that SocAnh would be associated with less warm/more cold feelings towards friends and family, lower perceived relationship quality, and less perceived social support.

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Cognitive prejudice encompasses stereotypes or beliefs about members of a particular social group. Past research has established that people tend to stereotype certain prominent social groups—such as particular ethnic or religious groups—based high (H) or low (L) competence (C) and warmth (W) perceptions, resulting in clusters of stereotyped groups (i.e., HCHW, HCLW, LCHW, LCLW groups) (Cuddy et al., 2008; Fiske et al., 2002). It is unknown, however, if people with elevated SocAnh stereotype these target groups in the same manner. Consequently, we conducted an exploratory investigation of the associations between SocAnh and high and low warmth and competence stereotyping of commonly stereotyped groups. Extending the results of Study 1, we also assessed the relation between SocAnh and subjective evaluations of friends and family. As SocAnh is associated with more negative perceptions of social support and relationships (e.g., Blanchard et al., 2011; Goldstein et al., 2021; Ritsner et al., 2018), we predicted that SocAnh would be associated with evaluating close others as less competent, less friendly, as well as less positive/more negative perceptions of family and friends overall.

Materials and Methods

Participants

Participants were undergraduate students at one of two large public universities. Participants received extra credit for their Psychology course at their respective university as compensation for participating in the study. Participants completed the 13-item true-false Chapman Infrequency Scale, a measure that is used to identify inattentive or careless responding (Chapman & Chapman, 1983). Consistent with previous research (e.g., Martin et al., 2011; Moore et al., 2019), to be included in any of the analyses for the current study, participants must have endorsed two or less items on the Chapman Infrequency Scale ($n = 105$ participants

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excluded in the current study). The final sample consisted of 659 undergraduate students ($n = 7$ excluded due to incomplete total SocAnh data; $M_{age} = 21.55$; $SD_{age} = 4.97$; 78.7% female; 1.2% African American/Black; 26.1% East/South/Southeast Asian; 46.4% White; 16.5% Hispanic American/Latino(a)/Mexican; 2.1% Middle Eastern; 1.1% other; 6.2% Multiracial).

Measures

Brief Revised Social Anhedonia Scale

Given recent evidence of superior psychometric properties, such as measurement invariance across non-White ethnic groups (Cicero et al., 2019; Li et al., 2021), we used the brief version of the Revised Social Anhedonia Scale in this study (Winterstein et al., 2011; α = .77; $M = 2.74$; $SD = 2.71$).

Participant Characteristics

Participants reported various demographic characteristics (i.e., age, gender, racial/ethnic background, religion, political party, political orientation (1=*Extremely conservative -* 7=*Extremely liberal*), family education history, household income, and SES) to confirm their ingroup or outgroup status within the groups listed in the affective prejudice and stereotyping measures. The political party with the largest representation in our sample was the Democratic party (47% Democratic party; 13.8% Republican Party; 32.6% Independent Party; 6% other).

Measures of Affective Prejudice and Stereotyping

Based on stereotyping and prejudice literature, 33 distinct groups were selected to represent a wide array of groups that people with different political beliefs could harbor warmth or prejudice towards (e.g., atheists, gay men and lesbians; Brandt et al., 2014; Evangelical or "born again" Christians, women; Brandt & Van Tongeren, 2017; the elderly, the disabled; Cuddy et al., 2007).

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To assess affective prejudice, participants were asked to indicate their feelings towards these groups on a 7-point bipolar Likert scale (-3=*Very cold* - 3=*Very warm*; Crites et al., 1994). Greater affective prejudice was defined as greater feelings of warmth/less feelings of coldness towards the ingroup relative to the outgroup.

To assess stereotyping (i.e., cognitive prejudice), participants were presented with the same groups and were asked to separately rate how competent and how friendly they perceived each group to be on a 7-point bipolar Likert scale (-3=*Very incompetent/unfriendly* - 3=*Very competent/friendly*). Friendliness ratings were used to indicate perceived warmth when assessing stereotyping. Selected groups were then included in the stereotyping analyses based on existing literature (Fiske et al., 2002; Fiske, 2015; see Results for groups lists).

Relationships With Close Others

The quality of an individual's close relationships was assessed in several ways. Participants evaluated their feelings towards and the competency and friendliness of family and friends (-3=*Very cold/incompetent/unfriendly* - 3=*Very warm/competent/friendly*). Next, participants answered 13 items about their relationship quality with their family (α = .96; Gere & MacDonald, 2013).[2] This measure of relationship quality consists of four subscales: intimacy (Sternberg, 1997; 1=*Strongly disagree* – 6=*Strongly agree*), relationship satisfaction (Murray et al., 1996; 1=*Not at all true* – 6=*Extremely true* response scale used for all other subscales), relationship trust (Larzelere & Huston, 1980), and relationship commitment (Murray et al., 1996) (subscale alphas ranged from .85 - .92). Then, participants answered the same 13 items about their relationship quality with their friends (subscale alphas range from .85 - .92; overall α = .96).

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[2] Fourteen items were administered (α =. 94), but the relationship commitment subscale had low internal consistency (α =. 61). However, by dropping item #3 from the relationship commitment subscale (i.e., "I do *not* feel any moral duty or obligation to continue my family relationship"), the alpha coefficient for the subscale increased from .61 to .86, and the internal consistency for the entire scale improved to .96.

Perceived Social Support

Two measures were used to assess perceived social support. First, participants completed the Social Provisions Scale (Russell & Cutrona, 1984) which measures the available and provided social support a participant perceives in their life. This 24-item questionnaire (overall α = .89) includes six subscales: guidance, reassurance of worth, social integration, attachment, nurturance, and reliable alliance (subscale alphas range from .76 - .85). Each item was rated on a 4-point bipolar Likert Scale (1=*Strongly disagree* - 4=*Strongly agree*).

Then, participants completed the Social Support Questionnaire (Sarason et al., 1983). This 12-item questionnaire (overall α = .82) includes three subscales: appraisal support, belonging support, and tangible support (subscale alphas range from .71 - .80). Each item in was rated on a 4-point bipolar Likert scale (1=*Definitely false* - 4=*Definitely true*).

Procedures

Informed consent was obtained from participants prior to commencing the laboratory study. In this study, participants were allowed to skip questions if they preferred not to respond. Thus, the total number of participants who completed each measure is listed under each table. Participants began by completing the counterbalanced affective prejudice and stereotyping questions. Next, participants completed the counterbalanced relationship quality and social support scales. Participants also completed the brief version of the Revised Social Anhedonia Scale and the Chapman Infrequency Scale. Finally, participants filled out demographic questions to confirm their ingroup or outgroup status in the groups listed in the affective prejudice and stereotyping measures. All tasks and scales were administered through the Qualtrics website (Qualtrics, Provo, UT). This study was approved by the Institutional Review Board of both

Universities and the study procedures aligned with the principles of ethical conduct of human research.

Statistical Approach

IBM SPSS Statistics Version 28 (SPSS Inc., Armonk, NY) was used to test the relation between SocAnh and the ingroup and outgroup-related variables using the entire sample *(N = 659)*. A total SocAnh score was calculated for each participant based on their answers to the brief version of the Revised Social Anhedonia Scale. Consistent with prior research (e.g., Gaertner & Schopler, 1998), ingroup evaluation was calculated as feelings towards political ingroups, and outgroup evaluation was calculated as feelings towards political outgroups. Affective prejudice was calculated by subtracting feelings of warmth/coldness towards outgroups from feelings of warmth/coldness towards ingroups. Because the sample was predominantly liberal, we scored the social groups such that ingroups were liberal-favored groups (e.g., LGBT, racial minorities) and outgroups were conservative-favored groups (e.g., Christians).

As we expected political orientation to vary strongly with affective prejudice (with liberals reporting more affective prejudice than conservatives, based on how prejudice was measured (Brandt et al., 2014; Wetherell et al., 2013)), we used hierarchical multiple regression to test if SocAnh predicted feelings of warmth/coldness towards liberal ingroups and conservative outgroups above and beyond political orientation. Hierarchical multiple regression was then used to test if SocAnh predicted affective prejudice towards political ingroups relative to outgroups above and beyond political orientation. Next, the same analyses were repeated with the largest political group in the sample, the Democratic subsample (*n = 313*), to confirm our findings with a subsample where liberal ingroup and conservative outgroup relationships were

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guaranteed. While this was a more explicit test of our hypotheses, it also required a loss in

statistical power. Thus, we reported both methods of testing our predictions for full transparency.

Next, using the entire sample, correlations between SocAnh and competence and warmth

ratings for the LCLW, LCHW, HCLW, and HCHW groups were calculated to assess the strength

of stereotyping of these group clusters. Competence and warmth ratings were then combined to

create an overall group stereotyping measurement and then these composite ratings were

correlated with SocAnh. Finally, correlations between SocAnh and ratings of affective feelings

towards close others, positive/negative evaluations of close others, relationship quality, and

social support measures were also calculated.

Results

Affective Prejudice

Across the entire sample ($N = 652$), as described in Table 2, SocAnh was associated with

significantly less warmth/more coldness towards liberal ingroups, as well as significantly less

warmth/more coldness towards conservative outgroups. These findings were not surprising given

that the full sample was liberal-leaning overall ($M = 4.70$; $SD = 1.33$; range 1-7). In addition, we

found that SocAnh was not significantly associated affective prejudice above and beyond

political orientation in the full sample, $\beta* = .05$, $p = .10$.

Given that close to half of the sample identified as a member of the Democratic party

(47%), we repeated the same analyses to examine whether there were any changes in the strength

or direction of associations after removing participants from other parties. Like the results of the

full sample, SocAnh was associated with colder feelings towards outgroups in the Democratic

subsample ($n = 306$) (see Table S3 in the Supplemental Materials for full results). In addition,

SocAnh predicted greater affective prejudice above and beyond political orientation amongst

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Democrats, $\beta* = .13$, $p = .02$. In other words, after controlling for participants' political orientation, Democratic participants with higher levels of SocAnh reported greater affective prejudice towards liberal ingroups relative to conservative outgroups.

Stereotyping

Across the entire sample, we found that SocAnh levels had small associations with less positive and more negatively-biased stereotyping of Lower Competence Lower Warmth groups (LCLW; i.e., illegal immigrants, people on welfare, poor people), Higher Competence Lower Warmth groups (HCLW; i.e., Asian Americans, rich people, Big Business, Jewish people), and Higher Competence Higher Warmth groups (HCHW; i.e., Christians, women, middle class people, whites). SocAnh, however, was not significantly associated with overall stereotyping of Lower Competence Higher Warmth groups (LCHW; i.e., the elderly, the disabled). Thus, SocAnh did not reliably predict more extreme stereotyping of groups along the two dimensions of warmth and competence. Rather, it was most often associated with tendency to see different social groups in a less positive, more negative light (see Table S4 and Section 2.1 in the Supplemental Materials for full results).

Relationships with Close Others

To replicate the findings of Study 1 and to extend these findings to important intimacy ingroups specifically, we assessed whether SocAnh was associated with different levels of positive/negative feelings towards friends and family, or close others. Consistent with Study 1, we found a moderate association between SocAnh and less warmth/more coldness towards close others, $r(657) < -.37$, $p < .001$. Thus, SocAnh was associated with less positive/more negative affective feelings towards friends and family in general. Furthermore, SocAnh was moderately associated with lower competence evaluations, $r(657) = -.32$, $p < .001$, lower friendliness

evaluations, $r(657) = -.26$, $p < .001$, and more negative perceptions of close others overall, $r(657)$ $= -.32$, $p < .001$. Thus, SocAnh was related to less positive/more negative evaluations of one's friends and family as well (see Table S5 in the Supplemental Materials for full results). Next, we found that SocAnh had moderate to large negative associations with different relationship quality facets among friends, $rs(657) < -.42$, $ps < .001$. The magnitude of the negative associations between SocAnh and different relationship quality facets among family members were smaller, $rs(657) < -.16$, $ps < .01$ (see Table S6 in the Supplemental Materials for full results). Overall, SocAnh was significantly associated with less positive/more negative feelings and evaluations related to one's friends and family as well as less positive/more negative perceptions of the quality of one's relationships with friends and family.

Perceived Social Support

To complement our understanding of the participants' evaluations of their friends and family and perceived relationship quality overall, we measured associations between SocAnh and several facets of perceived social support. As seen in Table 3, correlations between SocAnh and indicators of social support ranged in size from weak to strong, $-.53 < rs(656) < -.17$, $ps <$ .001. SocAnh had a strong negative association with attachment and appraisal support. Furthermore, SocAnh had a moderate to strong negative association with guidance. SocAnh also had a moderate negative association with the facets of reassurance of worth, social integration, reliable alliance, belonging support, and tangible support. Finally, SocAnh had a weak negative association with nurturance. Thus, SocAnh was significantly associated with lower perceived social support across all support types.

Table 2

Hierarchical Regression Model of Predictors of Affective Prejudice Across the Total Sample

	β	*SE*	*t*	95% CI	R^2 and *F* statistic
Liberal Ingroup Warmth					
Predictor					
Step 1					
Political orientation	.17	.03	6.16***	.11, .22	R^2 = .055, Adj. R^2 = .054, $F(1, 651)$ = 37.97, $p < .001$
Step 2					
Political orientation	.17	.03	6.35***	.12, .22	
Social anhedonia	-.04	.01	-2.67**	-.06, -.01	ΔR^2 = .010, $\Delta F(1, 650)$ = 7.13, $p < .01$
Conservative Outgroup Warmth					
Predictor					
Step 1					
Political orientation	-.25	.03	-7.83***	-.31, -.19	R^2 = .086, Adj. R^2 = .085, $F(1, 651)$ = 61.28, $p < 0.001$
Step 2					
Political orientation	-.24	.03	-7.66***	-.31, -.18	
Social anhedonia	-.05	.02	-3.42***	-.08, -.02	ΔR^2 = .016, $\Delta F(1, 650)$ = 11.68, $p < 0.001$
Affective Prejudice					
Predictor					
Step 1					
Political orientation	.42	.02	18.84***	.37, .46	R^2 = .353, Adj. R^2 = .352, $F(1, 651)$ = 354.86, $p < .001$
Step 2					
Political orientation	.41	.02	18.72***	.37, .46	
Social anhedonia	.02	.01	1.65	-.003, .04	ΔR^2 = .003, $\Delta F(1, 650)$ = 2.73, $p = .10$

Note. $N = 652$ completed all ingroup or outgroup survey responses. β = unstandardized beta coefficient; 95% *CI* = 95% bootstrapped confidence interval for β.
** $p < .01$, *** $p < .001$.

Table 3

Zero Order Correlations Between Social Anhedonia and Perceived Social Support Measures

	1	2	3	4	5	6	7	8	9	10
1. Social anhedonia	1									
2. Guidance	-.49	1								
3. Reassurance of worth	-.38	.64	1							
4. Social integration	-.46	.72	.69	1						
5. Attachment	-.53	.81	.63	.70	1					
6. Nurturance	-.17	.30	.38	.43	.35	1				
7. Reliable alliance	-.38	.78	.61	.71	.70	.30	1			
8. Appraisal support	-.50	.76	.54	.61	.71	.30	.63	1		
9. Belonging support	-.45	.54	.54	.57	.59	.40	.54	.53	1	
10. Tangible support	-.41	.59	.53	.58	.60	.31	.64	.62	.66	1

Note. $N = 658$ completed all measures. All Pearson correlations listed in Table 3 have p-values $< .001$.

Discussion

Consistent with our hypotheses, higher levels of SocAnh were associated with feelings of less warmth/more coldness towards prominent sociopolitical ingroups and outgroups across the entire sample. These findings align with existing research which reports a strong negative association between SocAnh and the facet of warmth within trait-level extraversion (Silvia & Kwapil, 2011). These findings also align with the results of Study 1, which found negative associations between SocAnh and ingroup warmth. Furthermore, in support of our hypothesis that SocAnh would be associated with less positive/more negative perceptions of friends and familial ingroups, we found that SocAnh was associated with feelings of less warmth/more coldness towards close others, lower perceived relationship quality, lower perceived social support, as well as evaluating one's close others as less competent and less friendly. Contrary to our hypothesis that SocAnh would be negatively associated with affective prejudice, across the entire sample, SocAnh was not significantly associated with affective prejudice towards liberal ingroups above and beyond political orientation. However, in the Democratic subsample, SocAnh was instead positively associated with affective prejudice towards liberal ingroups above and beyond political orientation. Taken together, most results of Study 2 corroborate the findings of Study 1 that SocAnh was associated with less positive and more negative evaluations of different types of ingroups. In addition, the results of Study 2 indicate that SocAnh was associated with increased affective prejudice towards politically polarizing ingroups relative to outgroups among a liberal subsample of participants; further research is needed to provide a well-powered test of this association among conservative participants.

However, given that the group memberships assessed thus far exist in everyday life and are often long-established, it is difficult to determine the underlying reasons for an individual's

feelings towards these groups and what external factors may be influencing these evaluations. Also, it is likely that any longstanding social difficulties experienced by people with elevated SocAnh may impact the strength and quality of the bonds they form within and to their long-established ingroups, including close others. Thus, to address these potentially confounding variables and to extend our research from Studies 1 and 2, we recruited a sample of individuals with extreme levels of SocAnh and assigned them each to a minimal group in the laboratory.

CHAPTER 3

Study 3

Study 3

While a sense of belonging is generally developed through positive interactions with fellow members of an ingroup throughout daily life (Baumeister & Leary, 1995), it can also be created in a laboratory setting by assigning participants to minimal groups. Researchers use minimal group paradigms to provide strong experimental evidence of the natural human tendency to favor a randomly assigned, minimal ingroup over a minimal outgroup absent of any history of intergroup conflict, structural disadvantage, or other factors that exacerbate intergroup biases (Tajfel, 1970; Gaertner & Insko, 2000). Furthermore, differences in levels of personal attachment to one's various ingroup memberships and fellow members likely influence one's feelings, attitudes, and valuation of these groups, such as one's need for belongingness within a group. Therefore, by forming minimal groups in the laboratory, we were able to circumvent some of these issues related to pre-existing differences in individuals' subjective evaluations of previously established social relationships.

By experimentally manipulating group membership, we aimed to assess how abnormalities in intergroup relations and the necessity to belong manifest—at implicit and explicit levels of prejudice—in individuals with high SocAnh relative to those with low SocAnh. Studies 1 and 2 measured explicit prejudices, in that participants were directly asked to report their feelings and beliefs about the target groups. Study 3 used measures of explicit prejudice and added a measure of implicit prejudice, which is an indirect measure of participants' associations of their ingroup with more positivity and less negativity than the outgroup (Brownstein et al., 2020; Greenwald & Banaji, 1995). Measures of implicit prejudice are only weakly correlated

with measures of explicit prejudice, but both forms of prejudice can predict consequential intergroup behaviors (see Greenwald et al., 2009; Ofosu et al., 2019).

For this experiment, we used an extreme groups approach to recruit participants with high and low levels of SocAnh to maximize statistical power (Preacher et al., 2005). Then, we assigned participants with high and low levels of SocAnh to minimal groups to assess both implicit (i.e., behavioral) and explicit prejudice. As SocAnh is characterized by a disinterest in social connections and lower trait-level extraversion (Martin et al., 2012) and warmth (Silvia & Kwapil, 2011), and consistent with our findings from Studies 1 and 2, we predicted that the high SocAnh group would have less positive/more negative feelings and attitudes about their minimal group membership than the low SocAnh group. Thus, we expected the high SocAnh group to report less positive/more negative ingroup evaluation ratings, less warmth/greater coldness towards ingroups, lower ingroup pride, higher ingroup shame, and more negative group-based emotions than the low SocAnh group.

Materials and Methods

Participants

The participants for this study were undergraduate students at a large public university. Students were invited to participate in the study based on their responses to the Revised Social Anhedonia Scale (Eckblad et al., 1982; $M = 10.96$; $SD = 8.58$) and the Chapman Infrequency Scale (Chapman & Chapman, 1983) in a previous screening study. Consistent with previous research using an extreme groups approach (Preacher et al., 2005), participants were recruited for this study if they were a high-scorer (>1.96 SD above the same sex mean) or a low-scorer (>0.5 SD below the same sex mean) on the Revised Social Anhedonia Scale based on norms from previous studies (e.g., Kerns & Berenbaum, 2000; Martin et al., 2011; Martin et al., 2012b) and

fewer than three items endorsed on the Chapman Infrequency Scale (e.g., Martin et al., 2011).

Our final sample consisted of 124 undergraduate students with 66 high-scorers and 58 low-scorers on the Revised Social Anhedonia Scale (M_{age} = 20.88; SD_{age} = 3.49; 67.7% female; 42.7% Asian/Asian American; 3.2% Black or African American; 29.0% Hispanic; 0.8% Pacific Islander; 22.6% White; 1.6% other; see Table S1 in the Supplemental Materials for full results). Participants received extra credit for their Psychology coursework as compensation.

Measures

Explicit Prejudice

Feelings toward Ingroup. Each participant was randomly assigned to either the Suns or Moons group. They were presented with six different images of their group's symbol and rated how much they liked each symbol on a bipolar Likert scale (1= *Strongly dislike - 7=Strongly like*). Participants rated how they felt about their assigned group on the same 7-point Likert scales as Study 1 (1=*Bad - 7=Good*; 1=*Unpleasant - 7=Pleasant*; 1=*Negative - 7=Positive*; 1=*Strongly dislike - 7=Strongly like*). These ratings were averaged to create a composite measure of ingroup evaluation (α = .96). Furthermore, participants rated how they warm/cold they felt towards their ingroup on a feeling thermometer (0=*Very cold - 100=Very warm*, with intervals of 10 degrees; Ho et al., 2015). Participants also rated to what extent they felt pride about belonging to their assigned group and to what extent they felt shame about belonging to their assigned group on 7-point Likert scales (1=*Not at all - 7=Very much*).

Feelings toward Outgroup. Participants rated how they felt about the other group on the same 7-point Likert scales that were used to rate their feelings towards their assigned group. These ratings were averaged to create a composite measure of outgroup evaluation (α = .92).

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Participants also rated how warm/cold they felt towards the other group on a feeling thermometer (Ho et al., 2015).

Explicit Ingroup Favoritism. Outgroup evaluation ratings were subtracted from ingroup evaluation ratings to create a measure of ingroup favoritism.

Explicit Affective Prejudices. Outgroup feeling thermometer ratings were subtracted from ingroup feeling thermometer ratings to create a measure of affective prejudice. Furthermore, ingroup shame ratings were subtracted from ingroup pride ratings to create a measure of group-based emotions.

Implicit Prejudice

Each participant completed an Implicit Association Test (IAT; Greenwald, Nosek, & Banaji, 2003) to assess their implicit attitudes about the minimal ingroup relative to the minimal outgroup in the experiment. In preparation for the IAT, the participant reviewed the six symbols associated with the Suns group and the six symbols associated with the Moons group. Consistent with the standard IAT format (Nosek et al., 2007), each participant completed five phases of the task during which they categorized pleasant and unpleasant words as well as Suns and Moons images as quickly as possible. Responses that occurred after 1000ms were coded as incorrect. Also, if a participant completed greater than 10% of their responses within 300ms, the participant was dropped from the IAT analyses ($n = 9$, five SocAnh high-scorers and four SocAnh low-scorers, excluded from analyses). Response times across the different symbol-word pairs were averaged to create an implicit prejudice measure, which describes how positively an individual implicitly feels about their ingroup in comparison to how they feel about the other group.

Procedures

      After providing informed consent, participants were randomly assigned to either the Suns or Moons group. Each participant completed the minimal groups IAT and related survey questions through Media Lab and DirectRT (Empirisoft, New York, NY). The order of the implicit and explicit ingroup and outgroup measures was counterbalanced. After completing these tasks, participants answered demographic questions. Throughout the study, participants were able to skip items if they did not wish to answer any particular question. This study was approved by the Institutional Review Board and the study procedures were compliant with the principles of ethical conduct of human research.

Statistical Approach

      IBM SPSS Statistics Version 28 (SPSS Inc., Armonk, NY) was used to conduct one-sample t-tests to determine whether explicit ingroup favoritism, affective prejudice, and group-based emotion scores were significantly different than zero. A one-sample t-test was also conducted to determine if implicit association test scores were significantly different from zero. These analyses were used to assess if the paradigm was effective in inducing explicit and implicit intergroup prejudice across the sample. Next, independent samples t-tests were measured to investigate any group differences between SocAnh low-scorers and high-scorers in ingroup evaluation scores, outgroup evaluation scores, and ingroup favoritism. Independent t-tests were also used to examine SocAnh group differences in ingroup warmth/coldness, outgroup warmth/coldness, and affective prejudice. Finally, independent t-tests were conducted to assess group differences between SocAnh low-scorers and high-scorers on feelings of pride and shame towards the ingroup, group-based emotions, as well as implicit prejudice.

Results

Manipulation Check

We first tested whether the minimal group paradigm was effective in inducing feelings of explicit prejudice towards the randomly assigned Suns or Moons ingroup relative to the outgroup across the entire sample. Ingroup favoritism scores were significantly different from zero across the sample, $t(123) = 7.46$, $p < .001$, $d = 0.67$, 95% CI [0.47, 0.86]. Affective prejudice scores were significantly different from zero across the sample as well, $t(123) = 5.20$, $p < .001$, $d = 0.47$, 95% CI [0.28, 0.65]. Finally, group-based emotion difference scores were also significantly different from zero, $t(123) = 14.64$, $p < .001$, $d = 1.31$, 95% CI [1.07, 1.55].

Next, we tested whether the minimal group paradigm was effective in inducing feelings of implicit prejudice towards the randomly assigned ingroup relative to the outgroup. Across the sample, implicit association test scores were significantly different from zero, $t(114) = 4.54$, $p < .001$, $d = 0.42$, 95% CI [0.23, 0.61], indicating that participants demonstrated implicit prejudice towards their minimal group assignment relative to the other group. Overall, these results revealed that the minimal group paradigm was successful in inducing both explicit and implicit prejudice towards one's minimal group membership (i.e., Suns or Moons) relative to the other minimal group across the entire sample.

Differences in Intergroup Prejudice by SocAnh

We tested for high vs. low SocAnh group differences in feelings towards ingroups and outgroups in the minimal group paradigm. As described in Table 4, we did not find statistically significant SocAnh group differences on any indicator of implicit or explicit feelings towards one's ingroup or one's outgroup. Overall, contrary to our hypotheses, these findings suggest that

minimal group assignment did not have a differential impact on implicit nor explicit feelings towards the ingroup or outgroup in people with high and low levels of SocAnh.

Table 4

Independent Groups T-Tests Between Low and High SocAnh Groups in Explicit and Implicit

Prejudice

	t	p	Cohen's d and 95% CI
Ingroup favoritism	-.54	.59	d = -0.10, [-0.45, 0.26]
Ingroup evaluation	.70	.48	d = 0.13, [-0.23, 0.48]
Outgroup evaluation	1.64	.10	d = 0.30, [-0.06, 0.65]
Affective prejudice	-.24	.81	d = -0.04, [-0.40, 0.31]
Ingroup warmth/coldness	.53	.60	d = 0.10, [-0.26, 0.45]
Outgroup warmth/coldness	.92	.36	d = 0.17, [-0.19, 0.52]
Group-based emotions	-.18	.86	d = -0.03, [-0.39, 0.32]
Ingroup pride	.33	.83	d = 0.04, [-0.31, 0.39]
Ingroup shame	.96	.34	d = 0.17, [-0.18, 0.53]
Implicit prejudice (IAT)	-.89	.38	d = -0.17, [-0.53, 0.20]

Note. N = 124 participated in the minimal group paradigm. N = 115 had valid IAT scores. p = two-tailed p-values.

Discussion

After experimentally manipulating group memberships across the sample, we determined that the minimal group paradigm was effective in eliciting significantly greater implicit and explicit prejudice towards the minimal group assignments. Next, we found that SocAnh high-scorers and low-scorers reported very weak, non-significant differences in implicit and explicit feelings and prejudice towards ingroups and outgroups. The results of the minimal group paradigm diverge from the results of Studies 1-2 where we found that SocAnh was significantly associated with less positive and more negative feelings towards pre-existing group memberships. Overall, these findings suggest that decreased positive/increased negative feelings towards ingroups may not be universal across all group memberships in people with elevated SocAnh. Relatedly, given the deviating findings between Studies 2 and 3, levels of prejudice towards ingroups may fluctuate depending on the ingroups and outgroups being compared in people with elevated SocAnh.

GENERAL DISCUSSION

Across three studies, we investigated how abnormalities in intergroup processes manifest among people with different levels of SocAnh. Through this research, we found that overall, SocAnh was associated with less positive/more negative feelings and attitudes towards real-world group memberships including commonly emotion-evoking groups such as political affiliations and family and friends. Furthermore, we found that in general, SocAnh was associated with more negative perceptions and stereotyping of many long-established ingroups and outgroups as well as greater affective prejudice against politically polarizing outgroups amongst Democrats. Overall, these findings appear to be consistent with the theory that people with elevated SocAnh have abnormalities in the need to belong amongst most social groups, thus preferring solitude over interpersonal interactions due to a lack of desire to bond socially with others (Kwapil et al., 2013; Silvia & Kwapil, 2011). In Studies 1 and 2, SocAnh was associated with less warm/more cold feelings towards both their long-established ingroups and outgroups, suggesting that people with elevated SocAnh appear to feel less positively/more negatively towards social groups in general. This pattern of feelings aligns with the idea that people with SocAnh prefer to be alone over engaging in interpersonal connections (Silvia & Kwapil, 2011), including even typically close connections such as friendships and familial bonds.

In contrast, when participants with extreme levels of SocAnh were assigned to a minimal group during a laboratory experiment in Study 3, individuals with high and low SocAnh both exhibited ingroup favoritism and showed no differences in the strength of explicit or implicit intergroup prejudice across multiple measures. These findings suggest that when social engagement with group members is not required, little effort is needed to obtain or maintain group membership, and social rejection is not a concern, people with elevated SocAnh

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demonstrate typical patterns of intergroup attitudes. Thus, it is possible that by limiting external confounds and assigning group membership in Study 3, we overlooked important hurdles that individuals face in the real-world to become or remain a member of specific ingroups (e.g., social skills, motivation). Furthermore, overcoming these hurdles may typically promote greater levels of prejudice towards ingroups by increasing the perceived value of group membership (Tajfel, 1981). Potentially, people with elevated SocAnh may not put in the same amount of effort to overcome these frequent hurdles in daily life and may place less value in the maintenance of social bonds, resulting in an abnormally low need for group belongingness. In sum, while many ingroup memberships in the real-world require characteristics such as persistent motivation and social skills to remain a group member, minimal group membership required neither of these qualities.

The results of the three studies may also elucidate a possible psychological mechanism for why individuals typically show greater positive feelings towards their ingroups while people with SocAnh often do not. Research has found that humans report greater levels of attraction or "liking" towards individuals who they are more familiar with, and this association is reportedly mediated by perceived responsiveness and knowledge as well as increased comfort and satisfaction during the social interaction (Reis et al., 2011). Given that people with elevated SocAnh prefer to be alone and are less likely to seek out interpersonal interactions with their ingroup members (Silvia & Kwapil, 2011), they may experience lower levels of familiarity with their ingroup members overall. As a result, this is one possible explanation for why people with elevated SocAnh experience fewer positive feelings, such as less warmth/more coldness, towards their real-world group memberships and how these feelings may relate to negative stereotyping based on perceived competence and warmth. We suggest that future research should explore

group differences between SocAnh high-scorers and low-scorers using emotionally stimulating or commonly stereotyped minimal group assignments that are less likely to control for all important components of everyday group memberships. Furthermore, future research should explore high and low SocAnh group differences in implicit and explicit prejudice using social psychological paradigms with group assignments that participants may already be members of outside of the laboratory environment (e.g., cultural group).

While this study provides novel insights on the relation between SocAnh and feelings and attitudes about ingroups and outgroups, we were limited in our ability to make causal claims due to our cross-sectional designs. Therefore, we cannot be sure what precedes these personal evaluations. It could be that previous experiences of ostracism from other groups due to poor social skills or personality factors leads to the development of learned biases, resulting in less positive and more negative feelings towards the groups to which one belongs. It could also be that the need to belong was always deficient among individuals with elevated SocAnh, leading them to continually avoid seeking out close personal bonds with other ingroup members. Based on these three studies, we cannot draw conclusions on the cause of intergroup feelings and attitudes in people with SocAnh. Future studies should examine SocAnh levels, group memberships, and feelings towards group memberships throughout early and late adolescence to model changes in these relations over time and associations with psychopathology development.

Our studies also relied substantially on self-report. While self-report is a preferred method for eliciting emotion, attitude, and personal value-related data, it is possible that self-report data may not always reflect an individual's true experience (Strauss & Gold, 2012). The veracity of subjective reports is limited by factors such as social desirability (Bergen & Labonté, 2020) as well as biased memories and beliefs influencing emotional self-report (Strauss & Gold,

2012). Future research should use additional behavioral experimental paradigms—such as intergroup prisoner's dilemma-maximizing difference game (Halevy et al., 2008)—to examine implicit and explicit motivation to both help ingroups and hurt outgroups in relation to SocAnh.

Despite these limitations, Study 3 is the first experimental study to examine group memberships, and associated positive and negative feelings and attitudes, in individuals with different levels of SocAnh in the context of social identity and intergroup relations. This research can help to inform research in the fields of clinical and social psychology on the human "need" to belong within social groups and possible exceptions to this need in individuals with certain psychopathological characteristics. Finally, these three studies can help to inform psychological interventions for people with elevated SocAnh, such as some patients with schizophrenia-spectrum disorders and major depressive disorder, to improve social functioning amongst ingroups that may require more motivation and effort to maintain, such as friendships. It is critical that we continue to investigate how anomalies in intergroup relations manifest so that psychotherapeutic intervention—and eventually prevention—methods can be developed to improve clinical outcomes overall.

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APPENDIX

Supplemental Materials

Table S1

Demographic Information by Study

	Study 1	Study 2	Study 3	Study 3: Low vs. High SocAnh
	$n = 225$	$n = 659$	$n = 124$	Test statistic and effect size
Female n (%)	77.8%	78.7%	67.7%	$\chi^2(1, 124) = 7.88$, $p < 0.01$, $V = 0.25$
Age *Mean* (*SD*)	20.52 (2.61)	21.55 (4.97)	20.88 (3.49)	$t(122) = -0.41$, $p = 0.68$, $d = -0.07$
Race/Ethnicity n (%)				$\chi^2(5, 124) = 9.15$, $p = 0.10$, $V = 0.27$
African American/Black	4.0%	1.2%	3.2%	
East/South/Southeast Asian	44.4%	26.1%	42.7%	
European American/White	16.9%	46.4%	22.6%	
Hispanic American/Latino(a)/Mexican	24.4%	16.5%	29.0%	
Pacific Islander	0.4%	-	0.8%	
Other/Biracial	0.8%	9.4%	1.6%	

Note. In Study 2, "Asian/Asian Pacific Islander" was a combined response option in the racial/ethnic background measure.

Study 1

Table S2

Zero Order Correlations Between Social Anhedonia and Group Types

	1	2	3	4	5
1. Social anhedonia	1				
2. Intimacy groups	-.06	1			
3. Task groups	-.13†	-.05	1		
4. Social categories	-.05	-.28***	-.30***	1	
5. Loose associations	.10	-.34***	-.42***	-.20**	1

Note. $N = 225$ completed group membership listing task.
† $p = .05$.

Table S3

Hierarchical Regression Model of Predictors of Affective Prejudice in the Democratic

Subsample

	β	*SE*	*t*	95% CI	R^2 and *F* statistic
Liberal Ingroup Warmth					
Predictor					
Step 1					
Political Orientation	.18	.05	3.52***	.08, .27	$R^2 = .039.$, Adj. R^2 $= .036$, $F(1, 305) =$ 12.41, $p < .001$
Step 2					
Political Orientation	.18	.05	3.60***	.08, .28	
Social Anhedonia	-.02	.02	-1.26	-.06, .01	$\Delta R^2 = .005$, $\Delta F(1,$ $304) = 1.60$, $p = .21$
Conservative Outgroup Warmth					
Predictor					
Step 1					
Political Orientation	-.17	.07	-2.52*	-.29, -.04	$R^2 = .020$, Adj. $R^2 =$ $.017$, $F(1, 305) =$ 6.35, $p = .01$
Step 2					
Political Orientation	-.15	.07	-2.36*	-.28, -.03	
Social Anhedonia	-.07	.02	-2.78**	-.11, -.02	$\Delta R^2 = .025$, $\Delta F(1,$ $304) = 7.74$, $p < .01$
Affective Prejudice					
Predictor					
Step 1					
Political Orientation	.34	.05	7.03***	.25, .44	$R^2 = .139$, Adj. $R^2 =$ $.137$, $F(1, 305) =$ 49.42, $p < .001$
Step 2					
Political Orientation	.33	.05	6.91***	.24, .43	
Social Anhedonia	.04	.02	2.45*	.01, .08	$\Delta R^2 = .017$, $\Delta F(1,$ $304) = 6.00$, $p = .02$

Note. N = 306 Democrats completed all ingroup or outgroup survey responses. β = unstandardized beta coefficient; 95% CI = 95% bootstrapped confidence interval for β.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Section 2.1 Stereotyping

Across the entire sample, when assessing stereotyping across levels of SocAnh, we found

that for the Lower Competence Lower Warmth groups (LCLW; i.e., illegal immigrants, people

on welfare, poor people), SocAnh was associated with lower competence ratings, $r(654) = -.10$, p

$< .01$, lower warmth ratings, $r(654) = -.12$, $p < .01$, and more negative stereotyping overall,

$r(654) = -.12$, $p = .003$. (As competence and warmth were measured on bipolar scales, -3=*Very*

incompetent/unfriendly - 3=*Very competent/friendly*, a negative association between SocAnh and

stereotyping indicates less positive/more negative stereotyping overall. The opposite would be

true for a positive association between SocAnh and stereotyping.) The LCLW group associations

were small in magnitude. Thus, overall, higher levels of SocAnh were associated with greater

stereotyping of LCLW groups on competence and warmth. We also found that for the Lower

Competence Higher Warmth groups (LCHW; i.e., the elderly, the disabled), SocAnh was

associated with lower competence ratings, $r(654) = -.08$, $p < .05$, but was not associated with

warmth ratings, $p > .49$, and was not associated with overall stereotyping, $p > .10$. Therefore,

higher levels of SocAnh were only associated with greater stereotyping on competence in

LCHW groups.

Next, we found that for the Higher Competence Lower Warmth groups (HCLW; i.e.,

Asian Americans, rich people, Big Business, Jewish people), SocAnh was associated with lower

competence ratings, $r(654) = -.11$, $p < .01$, lower warmth ratings, $r(654) = -.10$, $p < .01$, and more

negative stereotyping overall, $r(654) = -.12$, $p < .01$. The HCLW group associations were small

in magnitude. Thus, overall, higher levels of SocAnh were associated with less stereotyping on

competence and greater stereotyping on warmth in HCLW groups. Furthermore, we also found

that for the Higher Competence Higher Warmth groups (HCHW; i.e., Christians, women, middle

class people, whites), SocAnh was associated with lower competence ratings, $r(654) = -.12$, $p <$ .01, lower warmth ratings, $r(654) = -.15$, $p <.001$, and more negative stereotyping overall, $r(654)$ $= -.15$, $p < .001$. The HCHW group associations were small in magnitude. Thus, overall, higher levels of SocAnh were associated with less stereotyping of HCHW on both competence and warmth.

Table S4

Zero Order Correlations Between Social Anhedonia and Evaluations of Commonly Stereotyped Groups

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Social anhedonia	1												
2. LCLW Competence	-.10*	1											
3. LCLW Warmth	-.12**	.67***	1										
4. LCLW Stereotyping	-.12**	.93***	.90***	1									
5. LCHW Competence	-.08*	.68***	.52***	.66***	1								
6. LCHW Warmth	-.03	.43***	.63***	.57***	.46***	1							
7. LCHW Stereotyping	-.06	.67***	.66***	.73***	.89***	.81***	1						
8. HCLW Competence	-.11**	.51***	.46***	.53***	.47***	.48***	.56***	1					
9. HCLW Warmth	-.10**	.50***	.65***	.61***	.50***	.56***	.62***	.52***	1				
10. HCLW Stereotyping	-.12**	.58***	.64***	.66***	.56***	.60***	.68***	.85***	.89***	1			
11. HCHW Competence	-.12**	.62***	.51***	.62***	.58***	.53***	.65***	.81***	.55***	.77***	1		
12. HCHW Warmth	-.15***	.46***	.64***	.59***	.47***	.65***	.64***	.59***	.73***	.76***	.68***	1	
13. HCHW Stereotyping	-.15***	.59***	.63***	.66***	.58***	.64***	.71***	.76***	.76***	.84***	.91***	.92***	1

Note. $N = 656$ completed all evaluations of commonly stereotyped groups.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Table S5

Zero Order Correlations Between Social Anhedonia and Prejudice and Evaluations of Close Others

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Social anhedonia	1												
2. Family warmth	-.22***	1											
3. Friends warmth	-.44***	.43***	1										
4. Family friendliness	-.18***	.64***	.28***	1									
5. Friends friendliness	-.27***	.31***	.47***	.41***	1								
6. Family competence	-.23***	.65***	.33***	.57***	.40***	1							
7. Friends competence	-.34***	.36***	.52***	.37***	.47***	.54***	1						
8. Family evaluation	-.23***	.73***	.35***	.89***	.46***	.88***	.51***	1					
9. Friends evaluation	-.36***	.39***	.58***	.45***	.82***	.56***	.89***	.57***	1				
10. C.O. warmth	-.37***	.89***	.80***	.57***	.45***	.60***	.51***	.66***	.56***	1			
11. C.O. friendliness	-.26***	.60***	.43***	.89***	.78***	.59***	.49***	.84***	.72***	.61***	1		
12. C.O. competence	-.32***	.58***	.48***	.54***	.50***	.89***	.87***	.80***	.82***	.63***	.62***	1	
13. C.O. evaluation	-.32***	.65***	.51***	.54***	.70***	.83***	.77***	.91***	.86***	.70***	.89***	.91***	1

Note. $N = 659$ completed all measures. Evaluation = overall positive/negative evaluation of the intimacy group based on combined friendliness and competence ratings; a negative correlation indicates a negatively-biased overall evaluation while a positive correlation indicates a positively-biased overall evaluation. C.O. = Close Others, or friends and family.
*** $p < .001$.

Table S6

Zero Order Correlations Between Social Anhedonia and Relationships with Close Others Measures

	1	2	3	4	5	6	7	8	9
1. Social anhedonia	1								
2. Family intimacy	-.21***	1							
3. Family satisfaction	-.19***	.89***	1						
4. Family trust	-.21***	.87***	.81***	1					
5. Family commitment	-.16**	.68***	.64***	.20***	1				
6. Friendship intimacy	-.52***	.28***	.24***	.20***	.24***	1			
7. Friendship satisfaction	-.52***	.29***	.29***	.23***	.25***	.86***	1		
8. Friendship trust	-.48***	.27***	.25***	.25***	.23***	.82***	.81***	1	
9. Friendship commitment	-.43***	.18***	.18***	.13***	.43***	.60***	.54***	.51***	1

Note. $N = 659$ completed all relationship quality measures.
** $p < .01$, *** $p < .001$.