Abstract

Drawing from the intergroup contact model (Brown & Hewstone, 2005) and self-categorization theory (Turner et al., 1987), we advanced the novel hypothesis of a valence-salience effect, whereby negative contact causes higher category salience than positive contact. As predicted, in a laboratory experiment of interethnic contact, White Australians (N = 49) made more frequent and earlier reference to ethnicity when describing their ethnic contact partner if she had displayed negative (vs. positive, neutral) nonverbal behavior. In a two-wave experimental study of retrieved intergenerational contact, American young adults (N = 240) reported age to be more salient during negative (vs. positive) contact and negative contact predicted increased episodic and chronic category salience over time. Some evidence for the reverse salience-valence effect was also found. Because category salience facilitates contact generalization, these results suggest that intergroup contact is potentially biased towards worsening intergroup relations; further implications for theory and policy making are discussed.

Key words: Intergroup contact, quality of contact, category salience, self-categorization theory, prejudice, intergroup relations

… the knowledge gained from past contact research is limited by its primary emphasis on positive features of the contact situation. Factors that curb contact's ability to reduce prejudice are now the most problematic theoretically, yet the least understood. These negative factors deserve to become a major focus of future contact research (Pettigrew & Tropp, 2006, p. 767).

Over fifty years ago, Gordon Allport (1954) formally proposed that face-to-face interactions between individuals of opposing groups, or *intergroup contact,* may lead to more harmonious intergroup relations, and identified a set of optimal conditions to accelerate this desirable outcome—intimacy, equal status, common goals, and institutional support. This relatively simple idea has inspired a wealth of research and desegregation policies around the world (Pettigrew, 1998), but it is recent theoretical and empirical progress that has reinvigorated optimism about contact's instrumental value. Meta-analytic evidence now unequivocally confirms that, although the contact-attitude link is not large, intergroup contact typically improves both attitudes towards the specific individuals involved in contact and the outgroup as a whole (Pettigrew & Tropp, 2006).

As Pettigrew and Tropp (2006) recognize, however, previous research is tempered by a severe positivity bias (see also Pettigrew, 2008). In natural settings, intergroup contact can be either positive *or negative* (Dijker, 1987), and in unstructured, unsupervised settings, the valence of actual and anticipated contact is far from being pre-set (Christ, Ullrich, & Wagner, 2008; Plant & Devine, 2003). Nonetheless, past emphasis on using intergroup contact to *improve* intergroup relations has led to the progressive exclusion of negative contact from most research designs (Dixon, Durrheim, & Tredoux, 2005; Pettigrew, 2008), thus limiting the identification of negative features of the contact situation and the appreciation of differential effects of negative vs. positive contact.

This research reintroduces negative contact in the research design and revisits the social psychological consequences of both positive *and* negative contact. Building on established models of contact (Brown & Hewstone, 2005) and self-categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987), we advance the hypothesis of a new mechanism that may "curb contact's ability to reduce prejudice". We predict that negative contact makes individuals more aware of their respective group memberships (i.e., causes *high* category salience), whilst positive contact causes low category salience. We call this mechanism a *valence-salience effect* and put it to stringent and directional test using a laboratory experiment of face-to-face interethnic contact and a two-wave experiment of retrieved intergenerational contact. Our perspective and its immediate consequences are illustrated in Figure 1.

Category Salience and Contact Generalization

The issue of how contact generalizes its effects from the specific contact partners to their groups as a whole, or simply *contact generalization,* has troubled contact researchers for over 20 years (Brewer & Miller, 1984; Hewstone & Brown, 1986). Early research documented improvements in attitudes towards the individuals directly involved, but recurrent failures to achieve generalized changes in attitudes towards the rival outgroup (the link between the last two boxes in Figure 1; Pettigrew, 1998). This was problematic because intergroup contact can only influence broad intergroup relations if attitude change extends to new outgroup members and to the whole outgroup.

Recently, however, competing models of contact generalization (Brewer & Miller, 1984; Gaertner & Dovidio, 2000; Hewstone & Brown, 1986) have been successfully integrated into unified frameworks (cross-sectionally, Brown & Hewstone, 2005; longitudinally, Pettigrew, 1998). Most importantly for the present work, Brown and Hewstone's (2005) review of research into their intergroup model (Hewstone & Brown, 1986)

has demonstrated that contact generalization is facilitated by high category salience. That is, generalization is greater when the contact partners are psychologically aware of their group memberships (high category salience—path d in Figure 1), than when they are not (low category salience—path e). High category salience ensures that contact partners see themselves as representatives of their groups, rather than as individuals, thus "funneling" changed attitudes from specific individuals to their social categories (Rothbart & John, 1985).

Category salience, however, is not a panacea against intergroup friction and prejudice (see Brown & Hewstone, 2005). In this work, we argue that an asymmetrical relationship between negative-vs.-positive contact and category salience is in fact responsible for making negative, rather than positive, contact potentially more influential for intergroup relations.

Contact Valence and Category Salience

Table 1 lists several published articles documenting (often tangentially) a sizeable negative relationship between various proxies of contact valence and category salience, thus, indicating that negative contact typically goes together with high category salience. As this research spans a variety of intergroup settings, participant populations, and measures, it points towards the ubiquity and ecological validity of this association. In interpreting this relationship, contact researchers have suggested that high salience causes anxious or negative contact (e.g., Hewstone & Brown, 1986; Islam & Hewstone, 1993); we call this effect a *salience-valence effect*. From this perspective, contact partners' awareness of their distinct group memberships would cause anxiety about making mistakes or being misunderstood (Islam & Hewstone, 1993). This unease would trigger motivational and emotional biases (Stephan & Stephan, 1985) that poison or limit future contact (Paolini, Hewstone, Cairns, & Voci, 2004; Plant & Devine, 2003). The cross-sectional nature of all but one of these tests, however, makes it impossible to substantiate the directionality of this interpretation.

We argue for an alternative, largely neglected interpretation of the same relationship, which we call a *valence-salience effect*. Our key prediction is that negative contact causes high*er* category salience (path a in Figure 1) than positive contact (path b). This hypothesis is consistent with self-categorization theory's assumptions about the determinants of category salience (Turner et al., 1987). According to self-categorization theory, negative contact with outgroup members should increase category salience because negative contact has a better 'normative fit'; it is more consistent with people's expectations about outgroups—at least negatively perceived outgroups (Reynolds, Turner, & Haslam, 2000; see Coates, Latu, & Haydel, 2006 for evaluative fit). As Oakes, Haslam, and Turner (1994) put it, "the fit of stimuli into ingroup and outgroup categories [i.e., category salience] would be higher … to the extent that the stimuli included in the ingroup categories are associated with positive connotations and those in the outgroup categories are associated with negative connotations" (p. 154). Greenland and Brown's (1999) two-wave longitudinal study is the only existing data which informs the directionality of valence-salience associations. Japanese students reported on intergroup anxiety and the salience of their nationality during contact with British students, at the beginning and end of their 12-month stay in the UK. Greenland and Brown found that increases in category salience did *not* predict increases in anxious contact over time; but that increases in anxious contact *did* predict increases in category salience (for coefficients, see Table 1). These data support our hypothesized direction, but more directional tests are needed.

Because of the pivotal role of category salience for contact generalization (path c in Figure 1), the main implication of this new valence-salience effect is that, under conditions of ordinary, unsupervised, and unstructured contact (i.e., when the valence of intergroup contact experiences is likely to be variable; Christ et al., 2008; Pettigrew, 2008), we would expect intergroup contact to be naturally biased towards worsening rather than improving intergroup relations. For example, we expect negative contact between White and Black Americans to

have a greater impact on broad White-Black relations (path d in Figure 1) than positive contact (path e) because negative interactions make the contact partners more aware of their respective backgrounds (paths a) and thus more susceptible to generalization. In contrast, positive White-Black interactions should have little impact because these interactions encourage the contact partners to pay limited attention to respective group memberships (low category salience; path b in Figure 1), leading to minimal generalization.

Overview of the Present Research

The moderating role of category salience for generalized changes in attitudes after contact is well-established (paths c, d, and e in Figure 1; for a comprehensive review, see Brown & Hewstone, 2006). Therefore, in this work we chose to focus on the novel portion of the process in Figure 1 (paths a and b). Our main aim was to carry out controlled and systematic tests of valence-salience effects. Hence, we opted for research designs that would give us solid ground for causal inferences. In Study 1, we manipulated contact valence *experimentally* in the context of face-to-face interethnic contact and measured ethnicity salience using an unobtrusive open-ended measure. In Study 2, we experimentally manipulated contact valence again, but this time in the context of retrieved intergenerational contact and within a two-wave *longitudinal* design with standard self-report measures of age salience.

Notwithstanding these paradigmatic differences, in both studies, we expected *mean difference tests* to show that category salience is significantly higher in the negative than in the positive contact conditions. To test our valence-salience effect at both extremes of the valence spectrum and shed a light on the exact affective and communicative underpinnings of these effects, in both studies after manipulating contact valence, we measured it in terms of positive and negative emotions (Fiske, Cuddy, Glick, & Xu, 2002) and evaluatively marked communicative behaviors (e.g., Harwood, Hewstone, Paolini, & Voci, 2005).[1] The exact affective and communicative indices that we assessed varied from study to study to account for setting and paradigm specificities. Nonetheless, in both studies, we expected *relationship tests* to show that affective and communicative indicators of contact valence systematically predict category salience, both cross-sectionally (Studies 1 and 2) and longitudinally (Study 2), in line with a valence-salience effect.

Study 1

Study 1 tested our hypothesis of a valence-salience effect using an experimental design and in the context of interethnic relationships between White and ethnic Australians. We chose this intergroup setting because, within multi-ethnic Australia, the social distinction between the White Anglo-Saxon majority and minorities of other ethnicity is socially very significant (Nesdale & Mak, 1999). In this study, White university students were asked to engage in face-to-face dyadic exercises with a visibly ethnic confederate, as part of a study on "first impressions". We experimentally manipulated contact valence between-subjects by varying the valence of the ethnic confederate's nonverbal behavior to be either cold and detached (negative contact), warm and welcoming (positive contact), or somewhere between (neutral contact) and assessed perceptions of contact valence in terms of perceived confederate nonverbal immediacy (our 'communicative indicator'), as well as participants' positive and negative intergroup emotions (our 'affective indicators'). We measured ethnicity salience using a non-obtrusive open-ended measure in which participants freely described their contact partner. Category salience was coded in terms of frequency of ethnicity-related responses and primacy (or ranking position) of the first ethnicity-related response.

Method

Participants and Design

Participants were 52 students (35 male and 17 female; age, $M = 22.77$ yrs, $SD = 4.34$)

from a large regional Australian university. All participants had an Anglo-Saxon background and were native English speakers. They received a small monetary compensation for their participation (AU\$20). Participants were randomly allocated to one of three between-subjects contact valence conditions; two negative contact and one positive contact participants were excluded from analyses because they expressed suspicion about the research confederate at debriefing (final $N = 49$; negative and neutral contact $ns = 17$, positive contact $n = 15$).

Procedure

Cover story. At recruitment, participants learnt that, as part of a study on first impressions, they would evaluate an unfamiliar student after engaging in a series of dyadic exercises together. The unfamiliar student was a female, native English speaking research confederate in her early twenties, who was visibly from a nonAnglo-Saxon (Sri Lanka) background for which Anglo-Australians hold negative expectations (Nesdale & Mak, 1999). Once in the laboratory, the pair engaged in 45 minutes of interactive exercises modeled from contemporary interpersonal literature (Aron et al., 1997) and designed to elicit moderate levels of interpersonal closeness as well as offering a structured context for turn-taking and scripted verbal input from the confederate. For example, during a "dream and nightmare jobs game", the two took turns to share their three most preferred and least preferred jobs and provide a short explanation for their choice.

Contact valence manipulation. We systematically varied the confederate's nonverbal behavior, so that it was either very warm and relaxed, very distant and tense, or somewhere between (positive, negative, neutral, contact conditions). This was achieved through extensive training along key nonverbal parameters identified by contemporary nonverbal immediacy research (Witt & Wheeless, 2001; proximity, frequency of eye gaze, hand gestures, body openness, body position, body movement, facial and vocal expressiveness, and vocal variety). To ensure that this manipulation was independent from group stereotypes (or structural fit; Oakes et al., 1994), we carefully scripted the confederate's verbal responses to remain constant across conditions and category-unrelated. It followed a script developed by a student focus group instructed to identify hobbies, life experiences, likes and dislikes of the typical student at that university. Some visible links between the confederate and her ethnic group were maintained by having her wear a (stereotypical) hair band and noticeable earrings, as identified by the focus group, and convey information about her ethnic background ("Sri Lankan") in writing, as part of a short vita form completed and exchanged during one of the early exercises [2].

Questionnaire

Category salience. After the dyadic interactive exercises and two individual filler tasks, participants expressed their first impressions of their contact partner by completing a research booklet containing our key measures (see Appendix for complete list). They started with our unobtrusive open-ended measure of category salience; they described their contact partner by completing 12 *"this person is…"* stem sentences with single words and short sentences (Mendoza-Denton, Ayduk, Mischel, Shoda, & Testa, 2001). Two independent judges then coded open-ended responses into seven categories, including the focal category of explicit reference to ethnicity (e.g., "has dark skin") or stereotypical traits of Sri Lankan people (e.g., "wears large earrings"). Judges were blind to conditions and individual responses from different conditions and participants were arranged in a single fully-randomized order to minimize carry-over effects during coding. Inter-judge agreement across responses was 56%, thus well above chance (14.3% for seven mutually exclusive categories); discrepancies were resolved through discussion. We expressed the *frequency* of ethnicity-related responses in terms of percentages of participants' responses (*Skew* = .12, SE_{skew}= .34; *Kurt* = .55, SE_{kurt} = .67; see also Gabriel & Gardner, 1999). We also coded for the *primacy* of the first ethnicity

related response within each participant's set (range 0-12; *Skew* = -.61, *SE*~skew~= .34; *Kurt* = -.96, *SE*~kurt~ = .67). Both indices were scored so that zero indicated no ethnicity response and higher values indicted higher salience; they were predictably highly related, r (49) = .63, p < .001.

  Communicative and affective indicators of contact valence. Next, we included 35 self-report items (see Appendix) to measure contact valence in terms of perceived nonverbal immediacy (Richmond, McCroskey, & Johnson,1987; e.g., "The other student gestured while talking to me"), contact quality (Voci & Hewstone, 2003; e.g., "did you find the interaction … pleasant), intergroup anxiety (Stephan & Stephan, 1985; e.g., " how much did you feel …anxious") and other positive and negative intergroup emotions towards the contact partner (Fiske et al., 2002; e.g., "… admiring"). All items were rated on a 10-point scale (immediacy, 1 = *never*; 10 = *very often*; other items, 1 = *not at all*, 10 = *very much*). These measures of the manipulated independent variable followed the dependent variable not to cue the research hypotheses. At the conclusion of the laboratory session, we questioned research participants about any suspicions they had.

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Results and Discussion

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Preliminary Analyses

  Appropriate contact valence items were reverse scored. We computed a *nonverbal immediacy* index (8 items, alpha = .92) with high values indicating more positive confederate nonverbal behavior. A principal axis analysis with promax rotation (Fabrigar, Wegener, MacCallum, & Strahan, 1999; Russell, 2002) extracted two interpretable factors among the remaining contact valence items (r = .25; 27.27% and 13.89% of explained variance). The first factor conveyed positive emotions and quality of contact and resulted in a reliable *positive emotions* index (10-items, alpha = .88; higher values more positive emotions); the second factor conveyed *anxiety* and resulted in a reliable index (8-items, alpha = .88; higher values more anxiety). Items included in the computed indices are identified in Appendix. Our communicative and affective indices of contact valence were all predictably related; however, the closest proxy to our contact valence manipulation (immediacy) overlapped more with positive emotions, r = .76, p < .001, than anxiety, r = -.25, p = .083; positive emotions-anxiety, r = -.20, *ns*.

Manipulation Checks

  We expected negative contact participants to perceive the nonverbal behavior of their ethnic contact partner as being more negative and to report less positive emotions and more anxiety than positive and neutral contact participants. The effect of contact valence was fully significant on nonverbal immediacy and positive emotions and marginally significant on anxiety (see Table 2 for statistics); all predicted differences between the negative and positive contact conditions were significant (*p*s < .05) and the neutral condition always fell predictably between (although not always significantly apart from both conditions). Hence, the manipulation checks confirmed that, without capitalizing on group stereotypes and within the boundaries of ethically responsible research, our manipulation had been successful at reproducing in the laboratory interethnic contact experiences that varied in contact valence and spanned a significant portion of the negative-positive spectrum.

Assessing Valence-Salience Effects

  Mean difference tests. We expected ethnic salience to be higher in the negative contact condition than in the positive and neutral conditions. The effect of contact valence was fully significant on the ethnicity-frequency index and marginally significant on the ethnicity-primacy index (see Table 2). We found the predicted difference between the negative and the positive contact conditions on both indices, *p*s < .05, and the neutral contact condition again fell always between. Hence, in line with our valence-salience effect hypothesis, when

describing their ethnic contact partner, negative contact participants made more frequent and earlier reference to ethnicity than positive and neutral contact participants, thus displaying higher ethnicity salience.

Relationship tests. Using regression analyses, we assessed which communicative process (nonverbal immediacy) and affective responses (positive emotions, anxiety) were involved in the increases in ethnicity salience. In line with a valence-salience effect, participants referred more frequently and earlier to ethnicity in their description of their ethnic partner the less welcoming and warm the ethnic confederate behaved nonverbally, the less pleasant contact, and the weaker the positive emotions they experienced (immediacy-frequency; $\beta = -.40$, $b = -1.97$, $p < .01$; immediacy-primacy; $\beta = -.33$, $b = -.65$, $p < .05$; positive emotions-frequency; $\beta = -.45$, $b = -3.03$, $p < .01$; positive emotions-primacy; $\beta = -.34$, $b = -.86$, $p < .05$). The results for anxiety were however flat, suggesting that a lack of positivity, rather than the presence of negativity, was driving our valence-salience effects (cf. Greenland & Brown, 1999). Hence, the less positive the communicative and affective processes during contact the higher the ethnicity salience.

To summarize, Study 1's design was tailored to gauge valence-salience effects and brought convincing directional evidence for the existence of such effects. Because past co-variations between contact valence and category salience (Table 1) may reflect valence-salience effects, salience-valence effects, or both, in Study 2 we opted for a design that, while still leading to stringent causal inferences, allowed for a fairer examination of bidirectional influence between valence and salience.

Study 2

With Study 2, our main aims were to test the generalizability of our valence-salience effects to a new intergroup context and research paradigm and to provide a balanced assessment of both valence-salience and salience-valence effects. Hence, we investigated intergenerational contact and, this time, used a two-wave experimental design. For this, young participants recalled and reenacted in their mind a contact experience they had with an older person that was either negative or positive (for mental visualization and contact, see Crisp & Turner, 2009). In addition, one third of the participants thought of a negative *and* a positive contact experience to allow a within-subjects assessment of valence-salience effects. To identify the exact affective and communicative underpinnings of these effects, once again we assessed self-reported positive and negative emotions during contact (Fiske et al., 2002); this time, we included both positively and negatively marked communicative behaviors that prior intergenerational contact research indicates being systematically associated with age salience (Harwood et al., 2006; Harwood, Raman, & Hewstone, 2006; Soliz & Harwood, 2006).

The affective and communicative indices of contact valence and self-reported measures of age salience were measured immediately after implementing the contact valence manipulation (Time 1 or T1), as well as 10 weeks later (Time 2 or T2). We expected to replicate and extend Study 1's evidence for valence-salience effects. In particular, we expected age salience to be higher in the negative than positive conditions (both in between- and within-subjects comparisons) and we expected communicative and affective indicators to predict age salience at both measurement times. We expanded on Study 1 by testing for both valence-salience effects *and* salience-valence effects cross-sectionally and longitudinally.

We expanded on Study 1 also by testing for *generalized* forms of these effects. In the literature, it is recognized that attitudes towards the outgroup as a whole have more far-reaching effects on intergroup relations than attitudes towards specific outgroup members (Brewer & Miller, 1984; Hewstone & Brown, 1986). We reasoned that, by extension, we should be more persuaded that valence-salience effects adversely impact intergroup relations if their reach extends beyond the specific setting and contact partners involved. Hence, in this

study, beside measuring *episodic* valence and salience (i.e., as they are experienced in a particular contact encounter and with specific outgroup members; see Study 1), we also examined their *chronic*, context-free, and dispositional counterparts (for the episodic-chronic distinction, see Blanz, 1999; Paolini, Hewstone, Voci, Harwood, & Cairns, 2006). At both T1 and T2, after reporting about a specific contact experience, participants indicated the extent to which they attended to the social category 'age' *in general* (chronic category salience) and *typically* enjoyed spending time with older adults (chronic contact valence). We used bootstrapped mediation analysis (Preacher & Hayes, 2008) to test cross-sectionally, at both time measurements, and longitudinally, across Time 1 and Time 2, a model in which negative contact predicts increases in episodic salience (a standard or episodic valence-salience effect), and this is turn predicts increases in chronic salience (a generalized or chronic valence-salience effect; see top model in Figure 2). Because according to learning models of contact (Paolini et al., 2006; Smith & Mackie, 2006), episodic effects should translate into chronic effects with some time delay and only in part, we anticipated chronic variables to display similar but weaker and possibly delayed effects than episodic variables.

Method

Participants and Design

Participants were 240 young adults (age, $M = 20.60$yrs, $SD = 2.62$; 68 male and 171 female; one missing) enrolled in communication courses at a large Southwestern US university (74.5% of the sample White; 25.5% ethnic or missing) and receiving partial course credit. At Time 1, participants were randomly allocated to one of the three cells of a contact valence (negative-only, positive-only, negative-and-positive) between-subjects design; conditions had between 75 and 86 participants. One hundred and eighty-two participants also provided T2 data (24.17% attrition)[3].

Procedure and Questionnaire

Cover story and contact valence manipulation. As part of a "two-stage questionnaire study on intergenerational relations" participants were instructed to complete two research booklets at home in their own time and were given instructions on how to return them to allow T1-T2 data linkage and credit allocation. The manipulation of contact valence was implemented using four visibly identical but slightly different T1 booklet versions (negative-only, positive-only, negative-and-positive, positive-and-negative). Participants were asked to start by recalling and describing on a blank page a "positive and enjoyable" interaction or a "negative and unenjoyable" interaction that they had with someone over the age of 65 years in the last year. Because we were interested in contact with the same older person over time, we asked participants to focus on a person with whom they were likely to interact again during that semester and to provide a nickname that would aid them in remembering this person in the future.

Communicative and affective indicators of episodic contact valence. Participants continued by completing 19 items measuring self-reported positive and negative communicative behaviors that recent intergenerational contact research has indicated are predictive of age salience (Harwood et al., 2006; Soliz & Harwood, 2006). In order of appearance in the questionnaire, these items assessed, mutual self-disclosure (e.g., "during this interaction, how much personal information did your interaction partner disclose to you?"), mutual humor (e.g., "… we joked with each other quite a bit"), respondent's overaccommodation (e.g., "I talked louder than I normally do"), partner's painful self-disclosure (e.g., "during the interaction, how often did this person talk about painful events in his/her life"), partner's cognitive decrement (e.g., "how often did this person forget someone's name") and partner's wisdom ("…provide you with good advice"). We then presented a 12-item subset of the intergroup anxiety and intergroup emotions items that we had used in Study

1. Communicative behaviors were rated on a 7-point scale and intergroup emotions on a 5-point scale with minor variations in scale anchors (1 = *very little/not at all/strongly disagree/never*; 5/7 = *a great deal/strongly agree/very often*). A complete list of all the measures' items and response formats can be found in Appendix.

Episodic category salience. A four-item measure of episodic age salience followed (Harwood et al., 2005; e.g., "during this interaction, how much did you think about differences between young and older people?"; 1 = *very little, 7 = a great deal*). After reporting on a first contact experience, participants in the negative-and-positive and positive-and-negative conditions reported on a second interaction by completing the same measures described above (the positive-negative order was counterbalanced). These participants chose whether to report on the same or different older person at T1 and their decision was recorded (same *n* =18, different *n* = 57).

Chronic category salience and contact valence. After some filler tasks aimed at limiting carry-over effects, participants completed a three-item measure of chronic age salience (Islam & Hewstone, 1993; e.g., "thinking of your interactions with people over 65 in general, how often do you think about differences between people over 65 and people of your age?") and a single-item measure of chronic contact valence ("Overall, I enjoy talking to people over 65"; all items 1 = *not at all, 7 = a great deal*).

Time 2 measurements. Between 8 and 12 weeks later, participants were re-approached and given a T2 research booklet. Participants recalled and described another interaction that had occurred since T1 with the first/only older person they reported on at T1 (valence unspecified); if unavailable they reported on an interaction with the second person (within-subjects participants only), or failing that a new person. To facilitate this task, the T2 booklet front page reported the unique nickname(s) of the contact partner(s) provided at T1. Among T2 participants, 76.37% reported on the contact partner they reported at T1 (*n* = 139); our longitudinal analyses focused on these participants. At this point, the same measures of episodic valence, episodic and chronic salience, and chronic valence described above were presented again.

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Results and Discussion

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Preliminary Analyses

To obtain reliable indices, we explored the invariance of factor structure and factor loadings of our contact valence items across three measurements (T1 first interaction, T1 second interaction, and T2) using a principal axis analysis with promax rotation, and separately for the communicative behaviors and the intergroup emotions items. The communicative behavior items led to the extraction of three interpretable factors (*r*s between factors between .01 and .32). The first factor (explaining between 19.27% and 22.49% of variance across the three measurements) comprised mutual humor and partner's wisdom and formed a reliable *positive disclosure* index (5-items, alphas between .83 and .87). The second factor (9.13% to 17.23% variance) comprised partner's cognitive decrement and participant's overaccommodation and formed a reliable *deficit-oriented interactions* index (6-items, alphas .78-.79). The third factor (7.52%-11.29% variance) consisted of the partner's painful self-disclosure items and formed a reliable *negative disclosure* index (4-items, alphas .74-.85). The indices were computed so that the higher the value the more the exchange was characterized by positive disclosure, negative disclosure, and deficit-oriented interactions (for items included, see Appendix). The same analytical approach, when used with the intergroup emotion items, led to a single reliable factor (25.71%-33.42% variance), comprising emotions of *disdain* (e.g., "I felt 'frustration', 'disgust', and (lack of) 'respect'; 5-items, alphas .84-.91; higher values more disdain). With the exclusion of two significant co-variations, positive disclosure-disdain, *r* = -.68, *p* < .001, negative disclosure/deficit-oriented, *r* = .27, *p* < .001,

our communicative and affective indices were substantially independent, disdain/deficit-oriented, $r = .07$; disdain-negative disclosure, $r = .09$; positive disclosure-deficit-oriented, $r = .02$; positive-negative disclosure, $r = .06$, all *ns*.

The four items measuring *episodic age salience* formed a reliable index across measurements (alphas .74-.80); whereas the three measuring *chronic age salience* did not (T1 and T2 alpha = .50) and forced us to use a single-item index. This complemented the single-item index for *chronic contact valence*. Higher values indicated higher episodic age salience during the specific contact experience, higher chronic age salience and more positive contact in general. Correlational analysis confirmed that the episodic and chronic levels of the two key constructs could be empirically distinguished; episodic-chronic salience, rs $< .27$; episodic-chronic valence, rs $< |.29|$.

Manipulation Checks

We expected negative contact participants to report less positive disclosure, more deficit-oriented interactions, more negative disclosure, and more emotions of disdain than positive contact participants. Between-subject comparisons of negative vs. positive (first or only) contact at T1 supported these predictions along all the contact valence indicators, except for deficit-oriented interactions (see Table 3). These results were substantially replicated in within-subject analyses, comparing positive vs. negative contact among negative-and-positive participants; all ps $< .07$, confirming that our manipulation of contact valence had been effective.

Assessments of Episodic Valence-Salience Effects

Mean difference tests. We expected episodic age salience to be higher in the negative contact than positive contact conditions. This prediction was supported, both between-subjects when focusing on the (only or first) T1 contact experience (see first episodic age salience row in Table 3), and within-subjects when focusing on negative-and-positive participants only (see second episodic age salience row in Table 3). A similar valence-salience effect was found when restricting the focus further to the within-subject participants who had reported on the same person for both first and second interaction at T1 ($n = 18$; see third episodic age salience row in Table 3). The results of this third test demonstrate that valence-salience effects are not due to a confound between contact valence and person and are even larger across contact experiences with the same outgroup member. Altogether, in line with Study 1, our contact valence manipulation produced an immediate valence-salience effect on episodic age salience.

Cross-sectional relationship tests. We regressed episodic category salience onto each of the communicative and affective indices of contact valence in turn and separately for T1 (first/only interaction) and T2 data, and found significant valence-salience effects in all these analyses, T1, βs ranging between $|.15|$ and $|.30|$, all ps $< .05$; T2, βs ranging between $|.22|$ and $|.44|$, all ps $< .05$[4]. Hence, more deficit-oriented interactions, negative disclosure, emotions of disdain and less positive disclosure between the young and older contact partners were all involved in increased episodic age salience. Interestingly, with a stronger representation of the positive and negative end of the valence spectrum, the salience enhancing effects of negative contact were found on both positive and negative indicators, pointing towards the involvement of lack of positivity and presence of negativity.

Assessments of Generalized Valence-Salience Effects

Mean differences and cross-sectional relationship tests. We expected chronic category salience to show a similar, but possibly weaker, pattern to that found on the episodic measure. Contrary to expectations, the reliable difference detected between the negative vs. positive contact conditions did not replicate on the chronic indicator, $F < 1$. We still tested whether communicative and affective indicators predicted reliable changes on chronic salience. We found a tendency for more emotions of disdain to predict increased chronic category salience

at T2 ($\beta = .14$, $b = .30$, $p = .056$) and for more deficit-oriented interactions and more negative disclosure to predict increased chronic age salience at both T1 and T2 (T1, deficit-oriented, $\beta = .22$, $b = .35$, $p < .01$; negative disclosure, $\beta = .15$, $b = .30$, $p < .05$; T2, deficit-oriented, $\beta = .17$, $b = .26$, $p < .05$; negative disclosure, $\beta = .19$, $b = .38$, $p < .05$).

These results point towards the existence of chronic valence-salience effects. In line with learning models of contact, these chronic effects were comparatively smaller and less wide-spread than their episodic counterparts.

Mediational tests. We used Preacher and Hayes' (2008) nonparametric bootstrapping extension of established mediational approaches (Baron & Kenny, 1986) with 5000 bootstrapped samples to test the valence-salience effects captured in Figure 2's top model; results are in the top panel of Table 4. At both T1 and T2 (see left and middle columns), we found that more deficit-oriented interactions, more negative disclosure, more emotions of disdain, and less positive disclosure predicted increased chronic salience, *through* increased episodic salience.

The indirect effects along disdain and positive disclosure persisted over a 10-week period (see right column). Hence, more emotions of disdain and less positive disclosure at T1 predicted increased episodic age salience at T1, which in turn predicted increased chronic age salience 10-weeks later at T2. Altogether, the relationship and mediational tests confirmed the existence of chronic or generalized valence-salience effects; some of these indirect effects persist over a significant period of time.

Assessments of Episodic and Generalized Salience-Valence Effects

We adapted the bootstrapping analytical approach described above to test for the episodic and generalized salience-valence effects displayed in the bottom model of Figure 2; results are reported in the bottom panel of Table 4. At T1 (see left column), we found that higher episodic age salience predicted more emotions of disdain and less positive disclosure, which in turn predicted reduced chronic contact valence. The indirect effect on chronic contact valence, through positive disclosure, persisted also in our longitudinal analyses. Hence, the mediational tests brought some evidence for the existence of episodic and generalized salience-valence effects: Higher episodic category salience predicted episodic negative contact at Time 1, which in turn predicted chronic expectations of negative contact with the outgroup at Time 2. Overall, however, the evidence for salience-valence effects was comparatively less robust than that for valence-salience effects, as signalled by visibly smaller and more sparse significant indirect coefficients.

To summarize, Study 1's results for robust episodic valence-salience effects were replicated within the context of intergenerational contact. Extending Study 1, we found comparatively weaker evidence for episodic salience-valence effects and for generalized valence-salience and salience-valence effects. In line with learning models of contact, the chronic effects were comparatively smaller and less reliable. In addition, all of these effects held longitudinally over a 10-week period, at least on some of the indicators.

General Discussion

With this research, we investigated a new psychological mechanism that may curb contact's ability to reduce prejudice. Based on self-categorization theory (Turner et al., 1987), we proposed a novel hypothesis for a *valence-salience effect*—i.e., negative contact leads to high category salience. We also retested an established hypothesis for a *salience-valence effect* theory (i.e., high category salience leads to negative contact; Hewstone & Brown, 1986). These hypotheses were tested by an experiment of face-to-face interethnic contact between White and ethnic Australians (Study 1) and a two-wave experiment of retrieved intergenerational contact between younger and older Americans (Study 2). In both studies, contact valence was systematically varied and category salience was assessed in its episodic,

contact-specific form (Studies 1 and 2), as well as in its chronic, dispositional form (Study 2). We found consistent evidence for valence-salience effects and some evidence for salience-valence effects, at both episodic and chronic levels.

Evidence for Valence-Salience Effects

In line with our new hypothesis, Study 1 revealed that White individuals made reference to *ethnicity* more frequently and earlier in descriptions of an ethnic partner (i.e., higher ethnicity salience) when she displayed negative (as opposed to positive or neutral) nonverbal behavior during contact. A closer look at the communicative and affective underpinnings of these effects revealed that perceptions of the ethnic partner's nonverbal immediacy and participants' positive emotions contributed to increases in category salience. Study 2 replicated and extended Study 1's results. Negative intergenerational contact led to higher episodic *age* salience and all the communicative and affective indicators contributed to these valence-salience effects (i.e., positive and negative disclosure, deficit-oriented interactions and disdain).

To ascertain whether valence-salience effects extend beyond the specific contact experience, in Study 2 we tested also for generalized or chronic valence-salience effects. We found that episodic contact valence predicted an increase in chronic age salience both directly and indirectly through increased episodic salience. This effect held for three of our four specific indices of episodic valence. Consistent with learning models of contact (Paolini et al., 2006; Smith & Mackie, 2006), these chronic effects, however, were somehow delayed (i.e., no mean difference at T1) and less spread out (e.g., i.e., less communicative and affective indices involved) than their episodic counterparts; nonetheless these effects prove that valence-salience effects have *wide-reaching* effects and extend beyond the specific contact experience.

In our longitudinal mediational analyses, we found evidence that valence-salience effects are also relatively *long-lasting*. Study 2 showed that episodic and generalized valence-salience detected cross-sectionally endured over a 10-week period, in two out of four tests (top model in Figure 2). Contact valence at T1 predicted immediate increases in episodic category salience at T1, which in turn predicted increases in chronic category salience at T2. Altogether, this longitudinal evidence suggests that valence-salience effects endure over time, at least at the chronic level (for more longitudinal evidence, see Greenland & Brown, 1999).

Evidence for Salience-Valence Effects

The reverse effect of category salience on contact valence was not the main focus of our research. Nonetheless, in Study 2, we also tested for episodic and chronic salience-valence effects (bottom model in Figure 2). We found some evidence that increases in episodic salience predict chronic expectations of negative contact indirectly through a specific negative contact experience with an outgroup member. One of these effects held also over time. Altogether, however, this evidence was comparatively weaker , with smaller coefficients and only two of our valence indices involved.

<center>Implications of This Research</center>

Intergroup friction and prejudice remain key social issues worldwide despite increased contact between social groups. Our results shed some light on this disturbing pattern, providing evidence of robust links between contact valence and category salience. Due to the controlled nature of our research designs, these findings bring fresh and compelling evidence that negative contact causes high category salience, in line with a valence-salience effect (see also Greenland & Brown, 1999). To a lesser extent, the data also showed that high category salience causes negative contact, in line with traditional interpretations of salience-valence associations (e.g., Islam & Hewstone, 1993). These two effects may have contributed *synergistically* to past negative co-variations (see Table 1) and may reinforce one another in a pernicious spiral going from negative contact to high category salience, to even more negative

contact, and so forth. Our evidence for chronic and longitudinal effects already speaks for effects that are generalized (i.e., extend beyond the specific contact experience) and long-lasting.

This work adds a new note of caution to the general applicability of the intergroup model of contact (Hewstone & Brown, 1986). Within this literature, it is already recognized that, although high category salience is beneficial when coupled with positive contact, it can still be potentially harmful when coupled with negative and sub-optimal contact (Islam & Hewstone, 1993). Hence, recent refinements to the model (Brown & Hewstone, 2005) have explicitly integrated its original key ingredient (high category salience) with forms of contact that are intrinsically positive (i.e., interpersonally-oriented contact and super-ordinate contact; Brewer & Miller, 1984; Gaertner & Dovidio, 2000). Our evidence for a strong causal link between negative contact and high category salience now suggests that this desirable integration may be very difficult to achieve in practice (for an early intuition, see Islam & Hewstone, 1993, p. 708) and, at least in unsupervised, unstructured settings where contact valence is variable, the feared coupling of category salience *with* negative contact may be much more likely to materialize.

Finally, given the solid moderating role of category salience for contact generalization (Brown & Hewstone, 2005), evidence for episodic and chronic valence-salience effects implies that intergroup contact has greater chances to *exacerbate*, than reduce, intergroup conflict. Or, more technically, that negative changes in intergroup attitudes after negative contact should occur more readily than positive changes after positive contact (see Fig. 1). Because the moderating role of category salience is empirically well-established (right-hand side of Figure 1; for a review of evidence, see Brown & Hewstone, 2005), we chose to focus on the newest (left-hand) portion of Figure 1 and to use category salience as our outcome variable. Future research will need to provide a more complete test of valence-salience asymmetry that includes category salience and extends to attitudes (for some methodological hints, see Baumeister et al., 2001). We discuss below more ideas for future investigations.

Future Research

On the basis of a self-categorization theory account of valence asymmetries (Turner et al., 1987), we would expect the perceived typicality (or normative fit) of the contact partner or contact experience with prior intergroup expectations to statistically explain our effect. A promising first segment of this mediational jigsaw is already available. In a series of clever experimental studies by Richeson and Trawalter (2005), White American participants were found to be significantly faster and more accurate in sorting pictures of famous admired (i.e., *positive*) Whites and famous disliked (i.e., *negative*) Blacks than pictures of famous disliked Whites and admired Blacks. Those data confirm that negative outgroup members fit the outgroup category better than positive outgroup members (see also Coates et al., 2006). A more complete mediational test will require extending Richeson and Trawalter's paradigm to realistic contact settings and to measures of category accessibility (Blanz, 1999) similar to the ones that we used in this research.

Future research will also need to test the robustness and invariance of valence-salience effects against a variety of possible boundary conditions. We predicted negative intergroup contact to increase category salience *in general*. However, following self-categorization theory, we would expect people's general tendency to expect negative encounters with out-group members might be overridden by the valence of the specific groups or by the clarity of the intergroup boundaries. Situations in which people hold positive expectations about outgroups or are unclear about the out- vs. ingroup status of their contact partner (e.g., along continuous categories like age, or due to the crossing with simultaneous social categories) should yield a *reverse* or nullify our valence-salience effect due to the higher normative fit

between positive contact experiences and positive groups.

Finally, this work encourages more research with dynamic and time-dependent perspectives on contact (Paolini et al., 2006; Smith & Mackie, 2006) by shedding some light on at least other three kinds of dynamic interplays. First, we examined how what takes place during contact involves *both* contact partners (e.g., the older person's cognitive decrement goes together with the young people's communicative overaccommodation). Second, we identified some of the affective and communicative underpinnings of contact valence (e.g., negative intergenerational contact reflects deficit-oriented interactions *and* disdain). Future research will need to continue explore these processes—and possibly their causal links with different research paradigms—because only these more finely-grained analyses can clarify exactly how to achieve positive contact through interventions. Third, we showed how processes that take place during a specific contact experience (episodic variables) inform future contact experiences with same or different contact partners (chronic variables). Because our key hypothesis is framed—in line with self-categorization theory—with reference to *episodic* valence and salience, our chronic variables were comparatively less refined. Future work should improve on their psychometric qualities, and possibly check for results' invariance with different variable orders. Altogether, stepping away from static operationalizations of contact (Dixon & Reicher, 1997; Dixon et al., 2005) proved to be fruitful here and more research is needed in this direction (Soliz & Harwood, 2006).

Concluding Remarks

This research responds to Pettigrew and Tropp's (2006) call for research on the negative features of contact, and its results may suggest a rather pessimistic outlook on intergroup relations. However, we need to stress that our results are not a call and should not serve as a justification for intergroup segregation or isolationism. In particular, three points need to be taken into account. First, solid meta-analytic evidence now gives us confidence that intergroup contact *is* typically beneficial, even when it does not fully meet the credentials for optimal contact (Pettigrew & Tropp, 2006). Thus, it is more than desirable to promote positive and optimal contact whenever possible. Second, the valence-salience effects detected in our research and in earlier investigations are not large; hence, they may explain only limited amounts of variance in category salience and intergroup attitudes. Finally, there is at least another important reason to be hopeful. As Baumeister and colleagues (2001) candidly put it, "good may prevail over bad *by superior force of numbers*" (p. 323, emphasis added). Recent evidence from large representative samples of adults from the White German population indicates that positive contact, at least between majority and non-EU immigrants, is far more frequent than negative contact (Christ et al., 2008; Pettigrew, 2008). If replicated, these results would suggest that the damaging consequences of valence-salience effects are outweighed and ultimately diluted by a greater availability of positive contact experiences.

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Author Note

Footnotes

1. Past operationalizations of contact valence have been criticized for glossing over the exact psychological processes responsible for making a contact experience positive or negative in nature (Dixon & Reicher, 1997; Mackie, Queller, Stroessner, & Hamilton, 1996; Soliz & Harwood, 2006). We aimed to revert this trend. For our contact valence indicators, we drew from emerging communication, behavioral and physiological research indicating that the contact partners' subjective experience of face-to-face intergroup exchange is shaped by a continuous and dynamic interplay between verbal and nonverbal communicative signals (e.g., Dovidio, Hebl, Richeson, & Shelton, 2006; Vorauer & Sakamoto, 2006) and affective responses (e.g., Blascovich, Mendes, Hunter, Lickel, & Kowai-Bell, 2001; Gray, Mendes, & Denny-Brown, 2008). An analysis of the causal links between communicative and affective processes during contact, however, was beyond the scope of the present work.

2. To pilot test our contact valence manipulation, 10 White participants from the same population as our participants watched three video-clips (negative, neutral, positive; order counterbalanced) focusing on the ethnic research confederate as she engaged in one of the interactive exercises with a White individual and rated the confederate for body tension and the interaction for pleasantness (ratings ranging between 1 and 10; with higher value more body tension and pleasantness). We found evidence for a robust within-subject effect of contact valence on both items, tense body, $F(2, 18) = 32.35$, $p < .001$, $\eta_p^2 = .78$; and pleasant contact, $F(2, 18) = 133.58$, $p < .001$, $\eta_p^2 = .94$, reflecting tenser body of the ethnic confederate and less pleasant contact in the negative than positive condition, tense body, $M = 7.10$, $SD = 1.52$ vs. $M = 2.50$, $SD = .97$, pleasant contact, $M = 1.70$, $SD = .48$ vs. $M = 8.80$, $SD = .79$, both ps $< .001$. The means for the neutral video condition fell predictably between, tense body, $M = 4.90$, $SD = 1.37$; pleasant contact, $M = 6.60$, $SD = 1.17$, all ps $< .05$.

3. Dropped-out participants reported more disdain, less positive disclosure, and chronic salience ($M = 1.67$, 3.85, and 3.19, respectively) than stayed participants ($M = 1.48$, 4.04, and 3.57, all ps $< .07$; all other univariate ps $> .11$; multivariate group difference $F(7, 226) = 2.00$, $p = .056$, $\eta_p^2 = .06$). However, our manipulation did not interact with stayed-dropped participant status (multivariate, $F < 1$, univariate, all ps $> .30$), suggesting that panel attrition is not responsible for our key findings.

4. At the end of their T1 booklets, Study 2 participants rated the perceived stereotypicality of each of the communicative behaviors investigated. From these ratings, we computed aggregate indices that paralleled those included in the main text and used them as a covariate in the key analyses. Results with covariate were substantially identical to those without covariate, confirming that our findings were not driven by the behaviors' normative fit.

Table 1

Published Research Demonstrating Cross-Sectionally a Sizeable Co-variation Between Negative Contact and Category Salience.

		Contact Valence Indicators					
Study	Intergroup Setting	Negative commun.	Anxious contact	Contact quality	Optimal contact	Positive commun.	Effect size
Anderson, Harwood, & Hummert (2005, Study 2)	American grandparents and adult grandchildren	√		√		√	.34 -.21 -.14
Bachman & Gaertner (1996), cited in Gaertner & Dovidio (2000, p. 87-93)	American banking executives of merging financial institutions				√		-.32^
Banker & Gaertner (1998)	American stepfamily members and biological family			√	√		-.60 -.73
Eller & Abrams (2003)	American students and Mexican people in Mexico		√		√		.16 -.19
Eller & Abrams (2006)	British students and French people in the UK			√			-.39^
Greenland & Brown (1999, Study 1)	British and Japanese students in the UK		√	√			.45^ -.21^
Greenland & Brown (1999, Study 2)	British and Japanese students in the UK		√				-.01/.51$^
Harwood, Raman, & Hewstone (2006)	American grandparents and adult grandchildren	√				√	.17/.46 -.14/-.21
Harwood, Hewstone, Paolini, & Voci (2005, Study 2)	American grandparents and adult grandchildren		√		√	√	.42* -.25 -.19/-.42

Islam & Hewstone (1993)	Bangladeshi Hindus and Muslims	√	.29
Soliz & Harwood (2006)	American grandparents and adult grandchildren	√	.42[^]

Note: ^ identifies effect sizes expressed as standardized partial beta coefficients extracted from larger path models; otherwise coefficients are zero-order correlations. $ identifies a study using a longitudinal design (first null coefficient when T1 salience predicting T2-T1 anxiety; second when T1 anxiety predicting T2-T1 salience). * indicates a coefficient that had a typos in the original publication. Negative/Positive commun. = negative/positive communicative indicators

Table 2

Means, Standard Deviations, and F statistics for All Variables as a Function of Contact Valence (Manipulation Checks and Mean Difference Tests, Study 1 Anglo-Australians N = 49)

	Contact Valence			
Variable	Negative	Neutral	Positive	*F* statistics
Contact Valence Indicators				
Immediacy	3.76_a	6.76_b	7.68_c	$F (2, 46) = 43.83, p < .001, \eta^2 = .66$
	(1.45)	(1.13)	(1.14)	
Positive Emotions	5.13_a	7.09_b	7.33_b	$F (2, 46) = 17.22, p < .001, \eta^2 = .43$
	(1.58)	(1.02)	(.74)	
Anxiety	3.65_a	3.76_a	2.68_b	$F (2, 46) = 2.87, p = .068, \eta^2 = .11$
	(1.56)	(1.32)	(1.30)	
Dependent Variable				
Ethnicity Frequency	25.74_a	17.65_b	17.50_b	$F (2, 46) = 3.80, p < .05, \eta^2 = .14$
	(9.34)	(9.94)	(10.35)	
Ethnicity Primacy	9.65_a	7.76_a	6.33_b	$F (2, 46) = 2.88, p = .066, \eta^2 = .11$
	(2.74)	(4.70)	(4.10)	

Note. Contact valence indices vary between 1 and 10 (1 = *not at all*, 100 = *extremely*). Ethnicity frequency varies between 0 and 100; ethnicity primacy between 0 and 12 (higher values higher salience). Different subscripts within rows indicate significant ($p < .05$) LSD post-hoc tests.

Table 3

Means, Standard Deviations, and F statistics for All T1 Variables as a Function of Contact Valence (Manipulation Checks and Mean Difference Tests, American Young Adults N = 240)

	Contact Valence		
Variable	Negative	Positive	*F* statistics
Contact Valence Indicators			
Deficit-Oriented Interactions	2.79 (1.04)	2.74 (1.12)	$F < 1$
Positive Disclosure	2.57 (1.03)	3.97 (1.09)	$F(1, 236) = 103.71, p < .001, \eta^2 = .30$
Negative Disclosure	2.33 (.95)	2.07 (.84)	$F(1, 236) = 5.16, p < .05, \eta^2 = .02$
Disdain	2.89 (1.19)	1.54 (.53)	$F(1, 236) = 131.27, p < .001, \eta^2 = .36$
Dependent Variable			
Episodic Age Salience	5.27 (1.24)	4.51 (1.34)	$F(1, 236) = 20.57, p < .001, \eta^2 = .08$
Episodic Age Salience^w	5.41 (1.24)	4.25 (1.25)	$F(1, 74) = 59.17, p < .001, \eta^2 = .44$
Episodic Age Salience^{ws}	5.75 (1.14)	4.89 (1.14)	$F(1, 17) = 17.76, p = .001, \eta^2 = .51$
Chronic Age Salience	3.38 (1.77)	3.36 (1.69)	$F < 1$

Note. Communicative indices of contact valence vary between 1 and 7 and affective indices

between 1 and 5 (higher values more behaviors/emotions). Age salience indices vary between 1 and 7 (higher values higher salience). 'b' identifies between-subjects comparisons among all participants (first interaction only for negative-and-positive participants; $N = 240$). 'w' identifies within-subjects comparisons among negative-and-positive participants ($N = 75$). 'ws' identifies within-subjects comparisons among negative-and-positive participants who reported on the same person for both first and second interaction at T1 ($N = 18$).

Table 4.
Bootstrapped Cross-Sectional and Longitudinal Mediational Tests for Valence-Salience Effects, Including Episodic and Chronic Category Salience (Top Panel) and for Salience-Valence Effects, Including Episodic and Chronic Contact Valence (Bottom Panel, Study 2).

Mediational Test
episodic contact valence > episodic category salience > chronic category salience

Contact valence indicators	Time 1 *n* = 240		Time 2 *n* =182		Longitudinal *n* = 139	
	b	95%BCI	*b*	95%BCI	*b*	95%BCI
Deficit-oriented inter.	.072	.003/.162	.133	.057/.251	---	*ns*
Positive disclosure	-.070	-.133/-.021	-.083	-.188/-.018	-.072	-.172/-.011
Negative disclosure	.054	.005/.142	.074	.010/.184	---	*Ns*
Disdain	.089	.031/.173	.087	.005/.210	.057	.001/.160

Mediational Test
episodic category salience > episodic contact valence > chronic contact valence

Contact valence indicators	Time 1 *n* = 240		Time 2 *n* =182		Longitudinal *n* = 139	
	b	95%BCI	*b*	95%BCI	*b*	95%BCI
Deficit-oriented inter.	---	*ns*	---	*ns*	---	*ns*
Positive disclosure	-.057	-.103/-.026	-.047	-.100/-.011	-.038	-.102/-.002
Negative disclosure	---	*Ns*	---	*ns*	---	*ns*
Disdain	-.028	-.066/-.001	---	*ns*	---	*ns*

Note. b coefficients are bootstrapped mediation coefficients. Coefficients are significant when the 95% Bias Corrected Confidence Interval (95%BCI) does not include 0. Deficit-oriented inter. = deficit-oriented interactions

Figure Caption

Figure 1. Negative intergroup contact generalizes more to intergroup attitudes because negative contact causes high category salience (valence-salience effect hypothesis; left-hand side) and category salience moderates the effect of intergroup contact on intergroup attitudes (intergroup model of contact; right-hand side)

Figure 2. Model depicting the category salience enhancing effects of negative contact (valence-salience effects) extending to chronic category salience (top panel) and model depicting salience-valence effects extending to chronic expectations of negative contact (bottom panel).
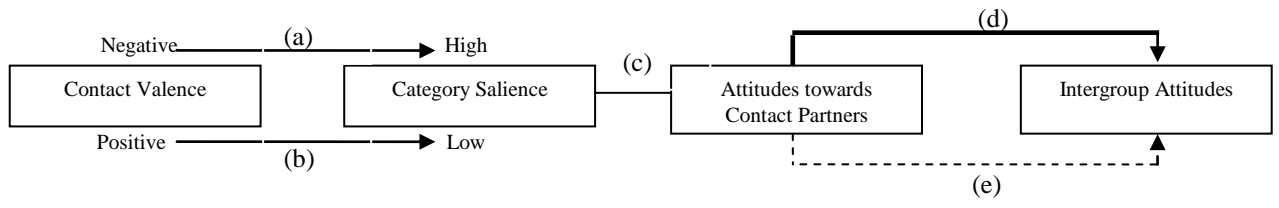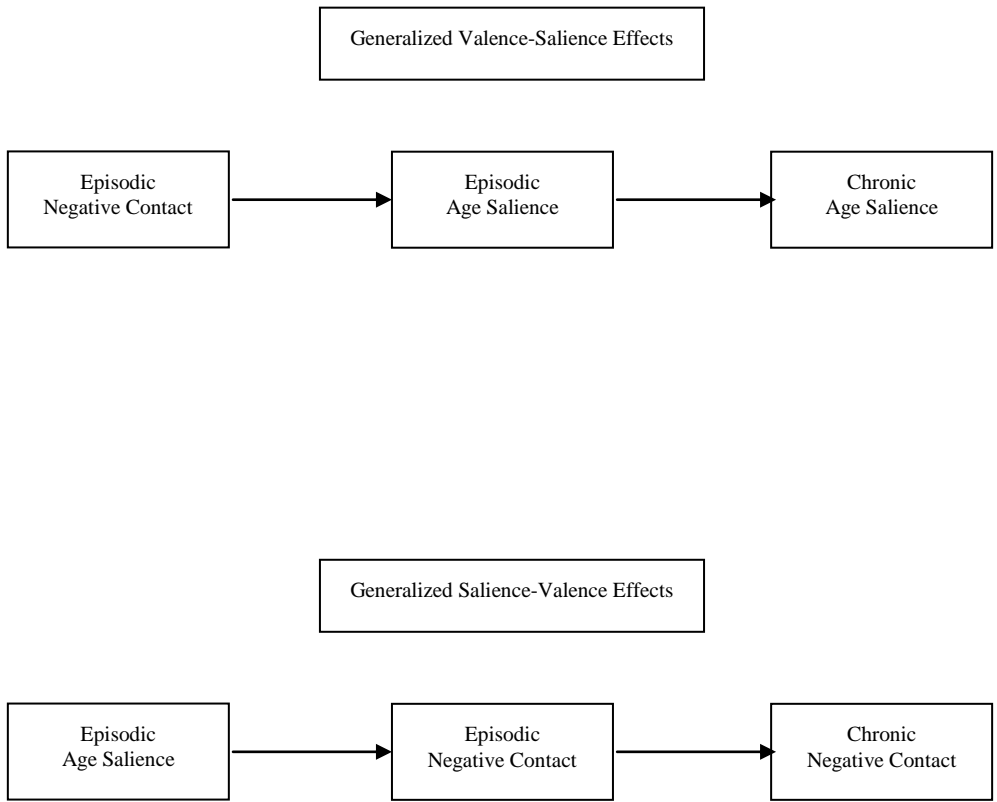
Figure 1

Figure 2

Generalized Valence-Salience Effects

| Episodic Negative Contact | → | Episodic Age Salience | → | Chronic Age Salience |

Generalized Salience-Valence Effects

| Episodic Age Salience | → | Episodic Negative Contact | → | Chronic Negative Contact |

APPENDIX

Task Instructions, Items and Response Scales for Tools Used in The Research

Study 1: Inter-ethnic Contact	
Contact Valence	
Perceived non-verbal immediacy	1 = *never*
Below are some descriptions of things that some people have been observed doing while interacting with others. With the *behaviour of the other student* during today's interactive exercises in mind, please indicate how often the other student engaged in those behaviours.	10 = *very often*
The other student gestured while talking to me*. The other student used monotone/dull voice when talking to me (r)*. The other student looked at me while talking*. The other student smiled at me while talking*. The other student had a very tense body position while talking to me (r)*. The other student looked somewhere else while talking to me (r)*. The other student had a very relaxed body position while talking to me*. The other student used a variety of vocal expressions when talking to me*.	
Contact quality	1 = *not at all*
Listed below is a series of questions about various impressions that people may have when interacting with other people.	10 = *very much*
Did you find the interaction…. enjoyable?* informal? unpleasant?(r)* superficial?(r) boring?(r)* formal?(r) pleasant?* involving?*	
Positive and negative emotions, including intergroup anxiety	1 = *not at all*
Listed below is a series of questions about emotions we may feel when interacting with other people.	10 = *very much*
How much did you feel…. sympathetic?* tense?(r)* anxious?(r)* admiring?* understanding? at ease?* worried?(r)* contemptuous?(r) distressed?(r)* apprehensive?(r)* uncertain?(r) compassionate?* relaxed?* angry?(r) respectful?* fond?* calm?* indifferent?(r) unsympathetic?(r)	

Category Salience	Response scale
In this section, we are interested in *the way you perceive the other student right now*. Please write twelve answers to the question "Who is this person?" in the spaces provided below under the grid's column with the heading 'WHO IS THIS PERSON?' Your answers can take the form of a single word, a phrase, or an entire sentence. Please try to give different answers for each response and do provide all the twelve answers. You can write the answers in the order that they occur to you*.	Who is this person? This person is…. (repeated 12 times in a grid format)

Study 2: Inter-generational Contact	
Episodic Contact Valence	
Mutual self-disclosure	1 = *very little*
	7 = *a great deal*
During this interaction… How much did you express your feelings? How much personal information did you disclose? How much of his/her feelings did your interaction partner express to you? How much personal information did your interaction partner disclose to you?	
Mutual humor	1 = *strongly disagree*
In this interaction… we joked with each other quite a bit*. We used a lot of humor*.	7 = *strongly disagree*
Respondent's overaccomodation	1 = *strongly disagree*
In this interaction… I talked louder than I normally do*. I talked slower than I normally do*. I tried to use simple words and sentences*.	7 = *strongly agree*
Partner's painful self-disclosure	1 = *not at all*
The following are things that your interaction partner may have talked about during this interaction.	7 = *a great deal*
Please indicate how much he/she talked about…Painful events in his/her life*. Things that make him/her unhappy (r)*. Unpleasant aspects of his/her life*. His/her health problems*.	
Partner's cognitive decrement	1 = *not at all*
Now, think about what your interaction partner might have felt or done during this interaction.	7 = *a great deal*
During the interaction, how often did this person… Have trouble thinking of a word (it was on the "tip of his/her tongue")*. Lose track of the topic of the conversation*. Forget someone's name*.	
Partner's wisdom	1 = *very little*
Now, think about what your interaction partner might have felt or done during this interaction.	7 = *a great deal*
During the interaction, how often did this person… Talk about things in a really wise way*. Say something that helped you in some way*. Provide you with good advice*.	
Positive and negative emotions, including intergroup anxiety	1 = *never*
	5 = *very often*
Please rate how much you felt the following emotions during this interaction.	

Admiration*, Pity(r), Sympathy, Envy(r), Revulsion(r), Anxiety(r), Frustration(r)*, Anger(r)*, Respect(r)*, Disgust(r)*, Uneasiness(r), Jealousy(r).

Episodic Category Salience

Still thinking about the same interaction, during this interaction…	1 = *very little* 7 = *a great deal*

How aware were you of the age difference between you and your interaction partner?* How much did you think about differences between young and older people?* How aware were you that you and your interaction partner belonged to different age groups?* How much did you think about your interaction partner's age and your own age?*

Chronic Contact Valence

Please continue thinking about *all* of your experiences with people over 65.	1 = *very little* 7 = *very much*

Overall, I enjoy talking to people over 65*.

Chronic Category Salience

Thinking of all your interactions with people over 65 *in general* …	1 = *very little* 7 = *a great deal*

How different do you think people over 65 and people of your age are? How often do you think about the differences between people over 65 and people of your age?* In general, how aware are you of other people's and your own age?

Note. (r) indicates items to be reverse coded to indicate more positive contact and more category salience. * identifies items that were included in the aggregate indices, as based on item analysis.