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Forecasting the Primary Dimension of Social Perception: Symbolic and Realistic Threats Together Predict Warmth in the Stereotype Content Model

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Abstract

The Stereotype Content Model (SCM) posits two fundamental dimensions of intergroup perception, warmth and competence, predicted by social-structural dimensions of competition and status, respectively. However, the SCM has been challenged on claiming perceived competition as the socio-structural dimension that predicts perceived warmth. The current research improves by broadening warmth's predictor (competition) to include both realistic and symbolic threat from Integrated Threat Theory (Study 1). We also measure two components of the warmth dimension: sociability and morality. Study 2 tests new items to measure both threat and warmth. The new threat items significantly improve prediction of warmth, compared with standard SCM items. Morality and sociability correlate highly and do not differ much in their predictability by competition/threat.

Ingroups as well as reference groups generally receive positive stereotypes. In contrast, outgroups, especially minority groups, routinely receive negative stereotypes conducive to prejudice and discrimination. Nevertheless, the content of these negative stereotypes differs systematically (Fiske, Cuddy, Glick, & Xu, 2002; Fiske, Xu, Glick, & Cuddy, 1999). For instance, elderly people are perceived as forgetful, but also caring (Cuddy, Norton, & Fiske, 2005). At the same time, Asian immigrants are seen as untrustworthy, but also hard-working (Fiske et al., 1999). To account for the variety of stereotype content, the Stereotype Content Model (SCM; Fiske, Cuddy, Glick, & Xu, 2002; Fiske, Xu, Glick, & Cuddy, 1999) stipulates: first, two trait dimensions—warmth and competence—organize social perception, and second, these fundamental dimensions are predicted respectively by the social-structure variables of competition and status. Status refers to a group's societal resources and prestige (Fiske, Cuddy, Glick, & Xu, 2002; Fiske, Cuddy, & Glick, 2007), and competition refers to perceived incompatibility of the outgroup's goals with those of the ingroup (Fiske & Ruscher, 1993).

Over the past dozen years, these propositions have been widely supported (Claussell & Fiske, 2005; Cuddy et al., 2009; Cuddy, Fiske, & Glick, 2007; Harris & Fiske, 2006; Russell & Fiske, 2008; see Fiske, Cuddy, & Glick, 2007, for a review). Evidence of these links uses both convenience (Fiske et al., 2002) and representative (Cuddy, Fiske, & Glick, 2007) samples, as well as cross-cultural studies (Cuddy et al., 2009; Durante et al., 2013), parallel efforts from other research teams (Phalet & Poppe, 1997; Poppe & Linssen, 1999), and experimentally created groups with manipulated status and competition (Caprariello, Cuddy, & Fiske, 2009; Cambon, Yzerbyt & Yakimova, 2014).

As with all scientific models, the SCM is likely too simple and must evolve with new evidence. Several critiques have emerged, primarily considering the warmth dimension. Among them are: defining the warmth dimension, predicting it from cooperation/competition, and parallel but fewer issues for competence. After elaborating these issues, we report two studies that begin to clarify them.

Defining Warmth

Several researchers have proposed that a missing morality dimension matters more than warmth and competence. First, Leach et al. (2007) argued for not two but three dimensions of ingroup perception: competence, sociability, and morality. Whereas sociability means cooperating and forming connections with others (e.g., amiability, kindness) (Anderson & Sedikides, 1991; Leach et al., 2007), morality links to ethics, a sense of right and wrong, and important social values (e.g., sincerity, trustworthiness). Essentially, these authors argued that this third dimension of morality is central to ingroup perception. Also, morality measured alone predicts information-gathering about others (Brambilla et al., 2011), group evaluations (Brambilla et al., 2012), and behavioral intentions toward both ingroup and outgroup (Brambilla et al., 2013). We consider that even though morality may better predict group perception, sociability and morality are two highly correlated sub-dimensions of the more encompassing warmth dimension, and both are essentially orthogonal to competence. In agreement, Leach et al. (2007) themselves note that sociability and morality fall on the same general dimension.

Moreover, morality items such as “sincere” and “tolerant” often appeared in early SCM work (Fiske, Xu, Cuddy, & Glick, 1999). With time, however, most SCM studies (Cuddy, Fiske, & Glick, 2007; Cuddy et al., 2009) used only “friendly” and “warm,” two sociability items, to measure warmth. As such, the morality component was very much part of the idea of group warmth in the early efforts aimed at uncovering the content of group stereotypes. Despite the move toward sociability items in the procedures subsequently used to measure warmth, the theoretical inclusion of morality as part of warmth has never been dropped from the SCM. For instance, here is the definition of the warmth dimension given in a review of the SCM “*First, actors need to anticipate others’ intentions toward them; the warmth dimension—comprising such traits as morality, trustworthiness, sincerity, kindness, and friendliness—assesses the other’s perceived intent in the social context*” (Cuddy, Fiske, & Glick, 2008, p. 63).

Another reason to broaden the definition of warmth is that related person perception research refers to communion and agency as the “big two” interpersonal perception dimensions (Wojciszke, 1994). Together, these two dimensions account for 82% of the variance in interpersonal impressions (Wojciszke, Bazinska, & Jaworski, 1998). Communion includes morality as a central facet. Thus, possibly, the definition of warmth in the SCM could improve by returning to items that measure both sub-dimensions of warmth, not only sociability, but also morality. Both present studies test the possibility in the context of concurrent validity.

Predicting Warmth

SCM predicts a negative correlation between competition and warmth, which has proved to be consistent but small (averaging $-.32$), sometimes not even significant (Clausell & Fiske, 2005; see Cuddy, Fiske, & Glick, 2009, for a detailed discussion). For example, across 25 nations (36 samples; Durante et al., 2014), only 18 of 36 competition-warmth correlations were significant or marginal. This weak, unstable prediction of warmth is problematic for the SCM, but also more broadly, especially because warmth is the primary of two fundamental dimensions of social perception (Abele & Wojciszke, 2007). Why is the prediction of warmth from competition weak and uneven? Some contextual approaches emphasize competition over resources versus positive identity, constrained by social reality (Aktan, 2013; Aktan & Sakallı-U urlu, 2013), but provide no data. Others link morality to threats endangering group safety and positive image (Brambilla et al., 2012, 2013).

Two studies propose to test threat as a way to improve the prediction of warmth in the SCM. Drawing from Integrated Threat Theory (Stephan & Renfro, 2003; Stephan & Stephan, 2000; Stephan, Ybarra, Martinez, Schwarzwald, & Tur-Kaspa, 1998), we broaden the definition of competition, as both realistic and symbolic threat, to improve SCM’s predictive power.

Synthesizing much intergroup-threat research (Kinder & Sears, 1981; Sherif et al., 1961; Sherif & Sherif, 1969; Zanna, 1994), the Integrated Threat Theory (Stephan & Renfro, 2003; Stephan & Stephan, 2000; Stephan, et al. 1998) proposes two kinds of perceived threat from outgroups. The first kind comes from research on Realistic Group Conflict Theory (Sherif & Sherif, 1969), which posits that groups compete for scarce resources and therefore one group’s success threatens other groups’ well-being, resulting in negative outgroup attitudes. *Realistic* threat is thus defined as threats to ingroup welfare, including its political and economic power (Stephan & Stephan, 1996). The second kind of intergroup threat originates from research on Symbolic Racism, which considers racism as coming from conflicting beliefs and values rather than conflicting goals (Kinder & Sears, 1981). *Symbolic* threat perceives the outgroup as threatening ingroup worldviews, assuming group differences in values, standards, beliefs, and attitudes (Biernat, Vescio, & Theno, 1996; Stephan et al., 2002; Stephan, Ybarra, & Bachman, 1999; Stephan et al., 1998).

Clearly, the realistic-threat construct resembles SCM’s socio-structural variable competition. Indeed, Stephan et al. (1999) measure realistic threat by such items as “...make it harder for other Americans to get good jobs” and “...make it harder for other Americans to have a

good quality of life.” These items fit SCM’s competition items: “The more power ... have, the less power other groups in America are likely to have,” “How much does special treatment given to ... make things more difficult for other groups in America?” and “If resources go to ..., to what extent does that take resources away from the rest of society?”.

As for the symbolic threat side of the Integrated Threat Theory, the relevant items include “The values and beliefs of ... regarding social relations are NOT compatible with the beliefs and values of most Americans.” and “Immigration from ... is undermining American culture.” Apparently, symbolic threat has no direct equivalent in the SCM. Hence, we propose here to improve the prediction of warmth: broadening the socio-structural variable of competition into a more general variable of perceived threat that encapsulates both realistic and symbolic threat.

To help resolve the first two issues of warmth’s definition and prediction, thus, we propose to build upon the view put forth in Leach et al.’s (2007) recommendation to appraise warmth both in terms of sociability and morality, as well as upon the Integrated Threat Theory idea that perceived threat distinguishes realistic and symbolic threat. Implementing these distinctions may better conceptualize and measure warmth, and improve its prediction.

Defining Competence

Mostly, the definition of competence has not been problematic, using synonyms such as capability, skill, talent. Reliabilities have been high, and the status-competence link has been extremely robust, adding confidence to the construct (see Fiske et al., 2007, for an earlier review). However, early on, the SCM research differentiated intelligence from other kinds of competence, not wanting to make the link with status (e.g., education) circular (Fiske et al., 2002).

Moreover, the placement of some groups, in particular, housewives and women generally, was sometimes low- and sometimes high-competence (though always warm); this variability suggested that definitions of competence might vary with the target group and the subject sample. For example, students rated housewives lower than did an adult male representative sample (Cuddy et al., 2007; Fiske et al., 2002). And the types of competence stereotypically attributed to traditional women might well differ from those attributed to professionals. In a parallel focus on the meaning of competence for particular target groups, Black subtypes seem to vary in competence defined as ability versus intelligence (Walzer & Czopp, 2011).

Although the definition of competence may vary somewhat across groups, a series of convergent studies suggests that it generally falls between the semantic differential’s potency and evaluative dimensions, high on both (Kervyn, Fiske, & Yzerbyt, 2013). Competence also fits Rosenberg et al.’s (1968) task/intellectual traits.

Predicting Competence

The status-competence correlation has consistently been high, above .80, and generalizes across cultures (average $r=.90$, range $=.74-.99$, all $p's<.001$; Durante et al., 2013), regardless of inequality, so this prediction does not seem problematic. Status predicts competence even

when (rarely) status also predicts warmth, for example as a job requirement for psychologists (Brambilla, Sacchi, Castellini, & Riva, 2010). Both current studies measure the status-competence correlation.

Overview and Predictions

In a standard SCM study (Fiske et al., 2002, 2007; Durante et al., 2013), a pre-test selects relevant social groups, which the main sample then rates for perceived status, competition, warmth, and competence. Repeatedly, groups tend to cluster into four SCM quadrants, namely high competence / high warmth, low competence / low warmth, high competence / low warmth, and low competence / high warmth. Rather than examining this pattern, the focus of the present research is predicting the two stereotype dimensions from the socio-structural dimensions of status and competition. To be sure, we expect to replicate the prediction of competence by status. More importantly, we expect to replicate but also to improve the prediction of warmth by (low) competition.

To address SCM's above-mentioned gaps in definitions and predictions of warmth, Study 1 reproduced SCM correlational methods, adding, with an exploratory approach, broader measures of warmth and competition. Study 2 experimentally manipulated the old and new variables derived from Study 1, to examine their relative predictive power and generality across 16 separate groups. Both studies have two main predictions: First, a measure of threat that includes both realistic and symbolic threat will better predict warmth than using only competition as predictor; second, a measure of warmth that includes both morality and sociability, rather than only sociability, will lead better predict warmth.

Study 1

Study 1 replicates a standard SCM study (Cuddy et al., 2007; Fiske et al., 2002), but includes new predictors stemming from Integrated Threat Theory (Stephan & Renfro, 2003; Stephan & Stephan, 2000; Stephan, Ybarra, Martinez, Schwarzwald, & Tur-Kaspa, 1998) and new stereotype dimension traits derived from Leach et al.'s (2007) research on the importance of morality. So, the SCM replication measured two predictors (status and competition) and two stereotype dimensions (warmth and competence). To explore relationships to other relevant models, two other predictors came from Integrated Threat Theory, namely realistic threat and symbolic threat (both for warmth). Three additional stereotype measures were adapted from Leach et al. (2007), namely morality, sociability, and competence.

The introduction discussed similarities between what SCM research calls competition and what Integrated Threat Theory calls realistic threat. These two indexes were combined into a realistic-competition index. And, as the materials section describes, the redundant Leach et al. and SCM competence items together compose our competence score (see Appendix B). Finally, the SCM's warmth items and Leach's sociability item together constitute our sociability score (see Appendix B). Thus, there will be three (rather than four) predictors: realistic-threat/competition, and symbolic threat, and the uncontested status measure, plus

three (rather than five) stereotype dimension scores: sociability, morality, and the uncontested competence measure.

As SCM predicts, status should relate to competence, and competition should relate to warmth. Our main goal is to improve the prediction of warmth by broadening competition beyond realistic threat to include symbolic threat and by broadening the notion of warmth beyond sociability to include morality.

Methods

Group Selection Pretest¹—¹This pretest also generated the groups used by Kervyn, Fiske, & Yzerbyt (2013), and the pretest methods appear first in that article, adapted slightly and reproduced here by permission.

Thirty-four U.S. participants (24 women), recruited through M-Turk (the on-line paid participant opportunity), took part in the pilot study in exchange for a small monetary compensation. On the first screen, the study was introduced as a survey on social groups in American society today. Participants were informed that their participation was voluntary and anonymous. Age and gender were recorded, and participants under 18 were screened out. On the second screen, participants answered the following question: “Off the top of your head, what various types of people do you think today’s society categorizes into groups (i.e., based on age, ethnicity, gender, occupation, race, religion, etc.)?” Participants had the possibility to list up to 30 groups for each question, though a minimum of 3 answers was requested. Twenty groups were listed by 25% or more of the respondents: rich people (74%), Blacks/African Americans (68%), poor people (62%), Whites (56%), Asians (53%), elderly people (53%), Hispanics/Latinos (53%), Muslims (50%), teenagers (47%), women (44%), liberals/democrats (41%), men (41%), Christians (38%), blue-collar workers (35%), Catholics (35%), Jews (35%), conservatives/republicans (32%), gays (29%), white-collar workers (29%), and atheists/agnostics (26%).

Participants and Design—One hundred and five U.S. adult participants (62 female; *M* age: 35.94), recruited through M-Turk and each paid a small monetary reward, filled out our online questionnaire. To avoid participant fatigue, we split the list of groups into 4 lists of 5 groups each. The order of the 5 groups on each list was counterbalanced across participants (this factor had no significant impact on the results and will therefore not be discussed further). Participants were randomly assigned to one of the 8 conditions created by crossing the 4 lists with the 2 counterbalanced orders.

Procedure—The first screen introduced the study as a survey on social groups in American society today. Participants learned that their participation was voluntary and anonymous. Their age and gender were recorded, and participants under 18 were screened out. On the next 10 pages, participants rated 5 social groups as they were viewed by Americans in general. Each social group was rated on the 3 different predictors (see below) in a first screen and then on the 3 different stereotype dimensions (see below) in a second screen. All predictor items appeared in a randomized order, as did all stereotype dimensions items. All items were rated on 7-point scales (*Not at All, Extremely*).

Materials—The SCM predictors comprised the items used in prior research (Cuddy et al., 2007) to measure status and competition (see Appendix A). The realistic threat and the symbolic threat measures included three items for each type of threat (see Appendix A), adapted from a longer scale developed by Stephan, Ybarra, and Bachman (1999). The SCM warmth and competence dimensions were the set of items used in that research (Cuddy et al., 2007) (see Appendix B). For the three dimensions of morality, sociability, and competence, we used the 3 respective sets of 3 items identified by Leach et al. (1999) (see Appendix B). Of course, when items from the SCM and Leach et al. (1999) overlapped, only one measure was taken.

Results

Group Level of Analysis—Results were averaged across all participants who rated a given list. Groups are the unit of analysis, so our analyses rest on a 20 (groups) by 20 (items) matrix, with $n = 25$ to 28 raters per entry. For the predictor scores, we averaged the items presented in Appendix A in order to compute a status score ($\alpha > .98$), a competition score ($\alpha > .91$), a realistic-threat score ($\alpha > .93$), and a symbolic-threat score ($\alpha > .86$). For the stereotype dimensions scores, we averaged the items presented in Appendix B in order to compute a competence score ($\alpha > .97$), a sociability score ($\alpha > .97$), and a morality score ($\alpha > .97$).

The SCM's competence and Leach et al.'s competence were almost perfectly correlated ($r = .98$; $p < .001$). This is not surprising given that the two sets of items were partly redundant (see Appendix B). In light of this, we opted for a single competence score ($\alpha > .97$), computed as the mean of the four different competence items from Leach et al.'s and the SCM's research. The SCM's competition and the realistic threat from Integrated Threat Theory were highly correlated ($r = .92$; $p < .001$). We therefore decided to use a single realistic-competition score ($\alpha > .96$), computed as the mean of the two competition and the three realistic-threat items. Finally, the SCM's warmth and Leach et al.'s sociability were also almost perfectly correlated ($r = .99$; $p < .001$). Again, this is not surprising given that the two sets of items were almost entirely redundant (see Appendix B). Given this state of affairs, we decided to use a single sociability score ($\alpha > .97$), computed as the mean of the three sociability items from Leach et al., two of which were also the SCM's warmth items. In order to test our hypothesis, we created two global scores that we expected to better predict warmth from threat. The Global Threat score ($\alpha > .93$) averages the 8 competition, realistic threat, and symbolic threat items. The Global Warmth score ($\alpha > .97$) averages the six sociability and morality items.

As expected and replicating SCM findings, the status score positively correlated with the competence score ($r = .80$, $p < .001$; see Table 1) and the realistic-competition score negatively correlated with the sociability score ($r = -.59$, $p < .001$; see Table 1). In order to test our hypothesis that the prediction of warmth could be improved, we ran separate stepwise linear regressions with either sociability or global warmth as the dependent variable and realistic competition and symbolic threat as predictors. When realistic competition was the only predictor of sociability, the overall model was significant ($R^2 = .35$, $F(1,18) = 9.69$, $p < .01$); realistic competition was a significant negative predictor of sociability ($b = -.59$, $t(18) =$

-3.11, $p > .01$). When symbolic threat was added as a second predictor, the overall model significantly improved ($R^2 = .60$, $F(2,17) = 12.81$, $p < .001$; R^2 change = .25, $F_{\text{change}}(1,17) = 10.69$, $p < .01$). Realistic competition was no longer a significant negative predictor of sociability ($b = -.19$, $t(17) = -.95$, ns), but symbolic threat was a significant negative predictor ($b = -.61$, $t(17) = -3.27$, $p < .01$).

Moving to the prediction of global warmth: With realistic competition as the only predictor, the overall model was significant ($R^2 = .41$, $F(1,18) = 12.70$, $p < .005$). Realistic competition was a significant negative predictor of global warmth ($b = -.64$, $t(18) = -3.56$, $p > .005$). When symbolic threat was added as a second predictor, the overall model was significantly improved ($R^2 = .65$, $F(2,17) = 15.83$, $p < .001$; R^2 change = .24, $F_{\text{change}}(1,17) = 11.51$, $p < .005$). Realistic competition was no longer a significant negative predictor of global warmth ($b = -.23$, $t(17) = -1.35$, ns), but symbolic threat was a significant negative predictor ($b = -.54$, $t(17) = -3.40$, $p < .005$).

Interestingly, the correlation between global threat and (old) sociability was $r = -.72$, $p < .001$. Also, the correlation between (old) realistic/competition and global Warmth was $r = -.64$, $p < .001$. Finally, when using broad versions of both threat and of warmth, we found that the correlation between global threat and global warmth correlation was $r = -.77$, $p < .001$, the best result.

Multi-level (Individual) Analyses—To use our dataset to its full extent, and to check that the results do not merely reflect a level of analysis that collapses over participants, we ran a second round of analyses using a multi-level approach. In other words, we examined whether the correlations observed between the various dependent variables held when taking into account each participant's different ratings. In four models, for each participant, the criterion was either sociability or global warmth and the predictor was either realistic-competition or global threat. The first analysis confirmed that realistic-competition was a negative predictor of sociability, $b = -.33$, $t(515) = -9.33$, $p < .001$. Realistic-competition was also a negative predictor of global warmth, $b = -.38$, $t(515) = -11.40$, $p < .001$. The third model showed that global threat was a negative predictor of the (old) sociability, $b = -.44$, $t(515) = -11.51$, $p < .001$. Finally, global threat proved to be a strong negative predictor of global warmth, $b = -.49$, $t(515) = -13.96$, $p < .001$, the best result combining broader indicators of both predictor and criterion.

Unpacking the predictor, this multi-level approach also allowed us to test whether, as we claim in our introduction, symbolic threat alone would prove to be a significant predictor of warmth over and above realistic threat. To test this, we wrote two models in which, for each participant, the criterion was either sociability or global warmth and the predictors were realistic-competition and symbolic threat. For the prediction of sociability, realistic-competition was a negative predictor ($b = -.14$, $t(481) = -3.25$, $p < .001$) and even more so symbolic threat ($b = -.33$, $t(494) = -7.51$, $p < .001$). For the prediction of global warmth, realistic-competition was a negative predictor ($b = -.18$, $t(476) = -4.66$, $p < .001$) and again even more so symbolic threat ($b = -.34$, $t(489) = -8.35$, $p < .001$). Thus, symbolic threat is an important addition.

Discussion

This first study offers encouraging results supporting our theoretical arguments as to how the SCM relates to the Integrated Threat Theory and to the morality and sociability subdimensions of warmth. First, the SCM predictions are replicated. Status predicts competence, and competition negatively predicts warmth. As in previous SCM studies, the status-competence correlation is stronger than the competition-warmth correlation. The results also clearly support our prediction that the SCM's competition variable is close to the Integrated Threat Theory's realistic threat. And the results confirm that the SCM's warmth is similar, even redundant with Leach et al. (2007)'s sociability dimension, as are the SCM and Leach et al. (2007) competence dimensions.

Our proposed improvement to the prediction of warmth is also supported by the results. Previous research on the SCM used realistic competition to predict sociability. The current regressions show that, as in past research, realistic competition negatively predicts sociability. In support of our hypothesis, adding symbolic threat as a predictor leads to a better prediction of sociability and also of the global warmth score. At the group level, realistic competition becomes non-significant when both predictors are entered in the model. Using the more powerful multi-level analyses, both predictors proved significant.

Kervyn et al. (2013) have shown that both warmth and competence are valenced dimensions in that they both positively correlate with evaluation (Osgood, Suci, & Tannenbaum, 1957). This positive correlation was also reported in research on the closely related dimensions of agency and communion (Suitner & Maas, 2008). This is how we interpret the current positive correlation between warmth and competence (see Table 1). This positive relation also means a significant negative correlation between competence and other warmth-related items: morality, symbolic threat, and the global warmth score.

The results of Study 1 are only correlational and could be challenged by the fact that more items composed the global threat score than the competition score and that more items composed the global warmth score than the sociability score. We designed Study 2 in order to address this weakness of Study 1 and to be able to experimentally test our hypothesis of an improved threat-warmth correlation.

Study 2

This second study systematically tests whether broadening the notions of both threat and warmth leads to a better prediction of perceived warmth by perceived threat. By doing this between participants, we will be able to check whether one set of items does indeed lead to a significantly stronger prediction of warmth by threat.

We measured the perception of the 16 groups most often cited in the pretest described in Study 1 by manipulating two factors: the threat measure and the warmth measure. The first factor was the threat factor that we used: either the SCM competition items (Fiske et al. 2002) or new threat items. The new threat measure has one competition/realistic threat item ("As viewed by Americans, if resources go to . . . , to what extent does that take resources away from the rest of society?") and one symbolic threat item ("As viewed by Americans,

the values and beliefs of ... are NOT compatible with the beliefs and values of most Americans”). The other factor was the warmth factor: either the SCM items (Fiske et al. 2002) or new warmth items measuring both sociability (friendly) and morality (moral). Our prediction is that the new-item conditions will better predict warmth from threat than what is observed in the standard SCM conditions.

Method

Participants and Design—Eighty-five U.S. adult participants (54 female; *M* age: 35.75), recruited through M-Turk, filled out our online questionnaire for a small monetary reward. Participants were randomly assigned to one of the four conditions created by crossing 2 experimental factors: Threat Condition (SCM Competition vs. New Threat) and Warmth Condition (SCM Warmth vs. New Warmth). The groups were rated in a randomized order.

Procedure—The first screen introduced the study as a survey on social groups in American society today. Participants learned that their participation was voluntary and anonymous. On the next 16 pages, participants rated 16 social groups as they were viewed by Americans in general. Each social group was rated on 5 (New Threat condition) or 6 (Competition condition) different predictor items and then on 4 stereotype items (see below). All the predictor items appeared in a randomized order, as did all the stereotype items. Items were rated on 7-point scales (*Not at all, Extremely*). The last page recorded age and gender.

Materials—For the competition conditions, we manipulated the set of predictors commonly used in SCM research to measure competition. In the competition condition, we use the 3 competition items from Fiske et al. (2002) (see Appendix C). For the new threat conditions, we used one realistic-threat item and one symbolic-threat item, both adapted from the scale developed by Stephan, Ybarra, and Bachman (1999) (see Appendix C). For both threat conditions, the status measure was the same, as we used the 3 items from Fiske et al. (2002). For the personality trait items, we used “warm” and “friendly” for the old SCM warmth conditions and “friendly” and “sincere” for the new warmth conditions. For both warmth conditions, we used “capable” and “competent” to measure perceived competence.

Results

Group Level of Analysis—Results were averaged across all participants who rated a given list, so our analyses use a 64 (16 groups * 4 conditions) by 9 or 10 (items) matrix, with $n = 21$ to 22 raters per entry. Separately in each condition, we computed status, threat, warmth, and competence scores for each of the 16 groups by averaging the two or three items measuring each of these dimensions (all α s $>.73$). We then mean-centered our key predictor variables, namely the threat and status scores.

We first looked at the prediction of competence. We ran a regression with competence as the criterion and with status, threat condition (old/new items), warmth condition (old/new items), their two-way interactions, and the three-way interaction as predictors. As expected, status was a significant positive predictor of competence ($b=.67$, $t(56)=15.82$, $p<.001$). None of the other predictors approached significance (all $ps>.15$).

Next, we examined our main hypothesis using a regression with warmth the criterion and with threat, threat condition (old/new items), warmth condition (old/new items), their two-way interactions, and the three-way interaction as predictors. Threat was a significant negative predictor of warmth ($b = -.70$, $t(56) = -4.83$, $p < .001$), and threat factor was a marginal predictor ($b = -.13$, $t(56) = -1.83$, $p < .08$). More importantly, these two predictors were qualified by a threat-by-threat-condition interaction ($b = -.41$, $t(56) = -2.83$, $p < .01$). None of the other predictors reached significance (all p 's $> .14$).

To interpret the threat-by-threat-condition interaction in the prediction of warmth, we conducted two additional regressions using each level of the threat condition as our reference condition (Judd, McClelland, & Ryan, 2009). When participants used the (old) competition items, the prediction of warmth by threat was almost significant ($b = -.30$, $t(56) = -1.95$, $p = .06$). As predicted, when the threat measure included the new set of items, threat was a more robust predictor of warmth ($b = -1.11$, $t(56) = -4.47$, $p > .001$).

Multi-level (Individual) Analyses—We again did a multi-level analysis based on our participants' individual warmth and threat ratings as a function of the between-participant experimental variables, namely new/old threat and new/old warmth. We used SAS PROC MIXED to predict, for each participant, a group's warmth from the variables threat, threat condition (old/new), warmth condition (old/new), their two-way interactions, and the three-way interaction.

Confirming the group-mean findings, threat negatively predicted warmth ($b = -.29$, $t(1297) = -11.36$, $p < .001$). As hypothesized, the threat-by-threat-condition interaction also proved significant ($b = -.05$, $t(1297) = -2.12$, $p < .04$). None of the other predictors reached significance (all p 's $> .25$).

To unpack the threat-by-threat-condition interaction, two additional analyses used each experimental condition as our baseline. When participants used the (old) competition items, the negative prediction of warmth by threat was significant ($b = -.23$, $t(1348) = -7.45$, $p > .0001$). As predicted, when participants answered the new threat items, threat even more strongly predicted warmth ($b = -.34$, $t(1238) = -8.60$, $p > .0001$).

Discussion

The study corroborates the SCM predictions and lends experimental support to the correlational pattern found in Study 1. Clearly, the richer measure of threat better predicts warmth, as supported by both group-level and mixed-model, participant-level, approaches. Whereas Study 1 showed that using a new measure of warmth that includes morality slightly improves prediction, an experimental test of our hypotheses failed to confirm that finding.

General Discussion

These two studies reached our stated goals: assessing the definitions of warmth, competence, and their predictions by competition/threat and status, respectively. First, we did replicate the traditional SCM findings that competence is predicted by status, and warmth is predicted by competition. Beyond this, our data are most successful in improving the SCM's prediction

of warmth. Broadening the definition and measurement of threat significantly strengthens predictions of warmth. Study 1 showed that the threat measure used in the SCM is too narrow. Indeed, the SCM competition measure relates mainly to perceived realistic threat. This means that, when using the SCM measure, symbolic threat is largely missing. Broadening the definition of threat not only made conceptual sense but also improved the prediction of warmth.

Importantly, the alternative interpretation for the observed improvement of the correlation in terms of number of items used does not hold for Study 2. Study 2 relied on even fewer threat items for the new threat measure than for the (old) competition measure. This modification of the predictor used for warmth is not a mere methodological change but has theoretical consequences. Using the Integrated Threat Theory to design our threat measure, instead of the more narrow view of economic cooperation/competition, creates a more comprehensive model of how social-structural factors influence perceptions of social groups on the two fundamental dimensions of social perception. For instance, a group can be well accepted as cooperating economically, but it will be perceived as cold if that group's values are perceived as conflicting with the perceiver's group's values. Building on both realistic and symbolic threat measures to predict perceived warmth thus makes for a more reliable measure that applies to a wider selection of social groups. The proposed new version of the predictor of warmth is not purely a socio-structural factor but also covers a more cultural aspect of intergroup relations.

The second result is that the items used to measure warmth do not consistently and largely improve predicting warmth. This finding does not contradicting research reporting differences in sociability and morality perceptions (Brambilla et al., 2011, 2012, 2013; Leach et al., 2007). As stated by Leach and colleagues, sociability and morality are two sub-dimensions of the wider warmth dimension. As the introduction reviewed, this assumption also informed the original SCM. Further, Study 2 data found a high Cronbach α for the new warmth measure that comprised one sociability and one morality item. Therefore, we interpret our data as meaning that even the sociability sub-dimension by itself provides a good measure of the general warmth dimension. This lack of differentiation between the two sub-dimensions of warmth may be due to our participants rating mostly outgroups. In contrast, Leach et al.'s (2007) focused on ingroup perception. The work by Brambilla and colleagues includes both ingroups and outgroups, but focuses more on comparing how morality and sociability are processed, a useful distinction within the warmth dimension.

Another reason to broaden the warmth definition is research on the "big two," in which communion combines morality and sociability (Wojciszke, 1994; Wojciszke et al., 1998). This research has consistently measured morality and sociability together as the communion dimension. Hence, the results might or might not differ if using only the sociability aspect. Furthermore, the agency-communion framework remains silent as to whether socio-structural variables predict the two dimensions (Abele & Wojciszke, 2007). It is thus hard to interpret our results in light of the agency-communion framework.

Study 2's Cronbach's α s show that threat indeed combines perceived realistic and symbolic threat. One question is thus whether it makes sense to mix realistic and symbolic threat

items in a new threat measure. Eventually this choice will depend on researchers' specific ideas they want to test. Still, we think that it does make sense to consider these two aspects in combination. This not only provides a more flexible measure of perceived threat that, as shown here, constitutes a better predictor of warmth, but it also fits other major approaches regarding group perception. Actually, we think that the threat-warmth prediction is not simply a measurement issue. The combination of symbolic and material threat better captures the societal structural relationships between groups that contribute to stereotype content. Resource control matters, but so does perceived control over cultural values. Overall, the convergence among theories of intergroup threats and theories of social cognitive content is impressive. Taking each theory seriously can improve the prediction of real-world perceptions.

In short, building on a variety of efforts from integrated threat theory, from social identity theory, and from a handful of researchers working on the fundamental dimensions of social perception, the present studies show that several issues raised about the Stereotype Content Model over the past 15 years now seem capable of resolution. This is a reassuring message indeed.

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Appendix A. Predictors used in Study 1

Status
How prestigious are the jobs generally held by ...?
How economically successful have ... been?
Competition
How much does special treatment given to ... make things more difficult for other groups in America?
If resources go to ..., to what extent does that take resources away from the rest of society?
Realistic threat
...dominate American society more than they should.
... make it harder for other Americans to get good jobs.
... make it harder for other Americans to have a good quality of life.
Symbolic threat
... are undermining American culture.
The values and beliefs of ... are NOT compatible with the beliefs and values of most Americans.

... should have to accept American ways.

Appendix B. Stereotype dimensions items used in Study 1

Stereotype dimensions from SCM

<u>Warmth</u>	<u>Competence</u>
<u>Warm</u>	<u>Competent</u>
<u>Friendly</u>	Capable

Stereotype dimensions from Leach et al. (2007)

<u>Morality</u>	<u>Sociability</u>	<u>Competence</u>
Trustworthy	<u>Warm</u>	<u>Competent</u>
Honest	<u>Friendly</u>	Intelligent
Sincere	Likable	Skilled

Items used to compute more than one measure are underlined.

Appendix C. Predictors used in Study 2

Status

How prestigious are the jobs generally held by ...?

How economically successful have ... been?

How well educated are ...?

Threat items SCM condition

If resources go to ..., to what extent does that take resources away from the rest of society?

How much does special treatment given to ... make things more difficult for other groups in America?

The more power ... have, the less power other groups in America are likely to have.

Threat items New threat condition

If resources go to ..., to what extent does that take resources away from the rest of society?

The values and beliefs of ... are NOT compatible with the beliefs and values of most Americans.

Table 1

Group-level correlations of Study 1.

	Status	Competence	Realistic competition	Symbolic threat	Sociability	Morality	Global threat	Global warmth
Status	1.0							
Competence	.80 ^{**}	1.0						
Realistic competition	.26	-.25	1.0					
Symbolic threat	-.17	-.50 [*]	.63 ^{**}	1.0				
Sociability	.13	.54 [*]	-.59 ^{**}	-.76 ^{**}	1.0			
Morality	.19	.62 ^{**}	-.66 ^{**}	-.76 ^{**}	.88 ^{**}	1.0		
Global threat	.10	-.38	.94 ^{**}	.85 ^{**}	-.72 ^{**}	-.77 ^{**}	1.0	
Global warmth	.17	.60 ^{**}	-.64 ^{**}	-.78 ^{**}	.97 ^{**}	.97 ^{**}	-.77 ^{**}	1.0

^{**} $p < .01$

^{*} $p < .05$

[†] $p < .1$

Correlations for which some items were used to compute both indexes (see Appendix B) are underlined.