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Building our Social World: Exploring group-level inferences of Competence and Warmth

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This study investigates how individuals are evaluated based on stereotypical profiles differing in competence and warmth, the two core dimensions of the Stereotype Content Model (SCM). Participants assessed individuals described as either high in competence and low in warmth (HCLW) or low in competence and high in warmth (LCHW) across a broad range of traits.
Consistent with the SCM, HCLW targets were perceived as significantly more competent but less warm, while LCHW targets were viewed as significantly warmer but less competent. Notably, LCHW individuals were rated as significantly more likeable, highlighting the primacy of warmth in interpersonal judgments. Several traits aligned predictably with the competence-warmth distinction, while others (e.g., such as honesty, calmness, and emotional stability) showed no significant differences, suggesting they may be viewed as universally desirable or trait-invariant.
These findings extend prior research by demonstrating that warmth and competence stereotypes influence not only global evaluations but also specific personality trait inferences. The results are discussed in terms of their theoretical and practical implications, as well as future research directions.

Keywords: warmth, competence, impression formation.

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Introduction

First impressions are the quiet architects of social life. Whether we're choosing a friend, hiring a candidate, voting for a leader, or forming opinions about entire social groups, the way we perceive others, often a quick process that is conducted in mere seconds, profoundly shapes our actions and decisions. The consequences of these snap judgments extend far beyond individual interactions. Field experimental evidence demonstrates that hiring discrimination based on names alone persists across Western nations, with employers making first-round cuts based on superficial impressions from a resume (Pager et al., 2009). Recent analyses reveal that discrimination in hiring has remained unchanged in five of six Western countries over the past decades (Quillian & Lee, 2023), and artificial intelligence systems now amplify these biases, favoring white-associated names 85% of the time in resume screening (Wilson & Caliskan, 2024).

Hence, understanding how minimal cues (i.e., a group description, a name, a brief behavioral sample), cascade into comprehensive personality judgments is therefore not merely an academic exercise but a matter of consequential social policy with implications for employment equity, organizational diversity, and intergroup relations.

From the Stereotype Content Model to the Dual Perspective Model: Organizing Social Perception

Decades of research in social cognition have demonstrated that people rely on core dimensions when forming impressions of individuals and groups. One of the most robust and widely supported models is the Stereotype Content Model (SCM; Fiske et al., 2002; Fiske et al., 2007; Judd et al., 2005), which posits that social judgments are primarily structured along two fundamental dimensions: competence (e.g., capability, intelligence) and warmth (e.g., friendliness, trustworthiness).

Building on related but distinct traditions in person perception, Abele and Wojciszke (2007, 2014) developed the Dual Perspective Model (DPM; Abele & Wojciszke, 2014), which provides crucial insights into how these fundamental dimensions operate differently depending on whose perspective is taken. The DPM distinguishes between agency (traits profitable for the self, such as competence and assertiveness) and communion (traits profitable for others, such as warmth and morality), proposing that agency is more relevant and desirable from the self-perspective, while communion is more relevant and desirable from the other-perspective. Importantly, the DPM establishes that communion is the primary dimension, as it comprises more variance in trait descriptions and is more strongly related to other-profitability (r = .89) than agency is to self-profitability (r = .67; Abele & Wojciszke, 2007). This primacy of communion reflects its fundamental importance in social relationships: knowing whether another person has benevolent or malevolent intentions toward us is more immediately critical for survival and well-being than knowing their capability level (Abele & Wojciszke, 2014).

Recent theoretical advances have further refined our understanding of these dimensions by identifying distinct facets within each. Specifically, the horizontal dimension (warmth/communion) encompasses morality (fair, honest,

moral, reliable, and trustworthy) and friendliness (affectionate, caring, friendly, sociable, and warm), while the vertical dimension (competence/agency) comprises ability (capable, competent, intelligent, skillful, and smart) and assertiveness (ambitious, assertive, decisive, determined, and self-assured; Barbedor et al., 2024). This four-facet model has been validated across multiple types of targets, including both individuals and groups, with research demonstrating that the correlation between facets within the same dimension (e.g., morality and friendliness) is higher than correlations between facets across dimensions (i.e., morality and ability; Koch et al., 2024).

These dimensions and their facets map onto social groups in systematic ways and predict emotional and behavioral responses (Fiske et al., 2007). They shape not only interpersonal evaluations but also guide how people perceive social groups, influence trust formation (Cuddy et al., 2010), predict behavioral intentions such as helping or harming others (Fiske, 2018), and underlie a wide range of group stereotypes across cultures (Cuddy et al., 2009; Abele et al., 2021). According to these models, the two dimensions can be combined in various ways, leading to distinct stereotypes. For instance, a highly competent but cold business executive may be respected yet disliked (high agency/vertical, low communion/horizontal), while a warm but less competent individual may elicit sympathy but little influence or status (low agency/vertical, high communion/horizontal). These evaluations are not trivial; they inform whom we approach, avoid, help, or even harm (Fiske et al., 2007; Wojciszke et al., 2009). Such impressions affect societal outcomes, ranging from discrimination and dehumanization (Kteily et al., 2015) to workplace bias and leadership selection (Rudman & Glick, 2001).

While a robust body of research has validated the predictive power of these models across groups, cultures, and contexts, including recent work on neural representations of stereotype content (Collins et al., 2024) and the application of the four-facet model to group evaluation (Barbedor et al., 2024), questions remain about the cognitive processes underlying these judgments and how they extend to broader trait attributions beyond these core dimensions and their established facets to other domains of personality.

Explaining the organization of Social Perception

In the recent literature, two relevant phenomena help explain how people rapidly form trait-based impressions: Spontaneous Trait Inference and Evaluative Conditioning. Spontaneous Trait Inference underlines that people spontaneously infer impressions of others based on single behaviors (STI; Winter & Uleman, 1984; Uleman et al., 1996; Garcia-Marques et al., 2022). For example, observing someone carrying an elderly person's groceries triggers the spontaneous inference that the person is helpful. A recent systematic meta-analysis of this literature (k = 86 publications, N = 13,630 participants) found that the average STI effect was moderate to large (d = 0.59) and robust across various methodological variations (Bott et al., 2022). STI effects occur rapidly, with minimal cognitive resources, and influence subsequent judgments and behavioral intentions (Degner, 2025).

Evaluative conditioning (EC; De Houwer et al., 2001) is another phenomenon through which impressions are formed. EC research investigates changes in the evaluation of an initially neutral stimulus after co-occurrence with an affective stimulus (see Hofmann et al., 2010 for a review). For example, when a neutral person (conditioned stimulus) is repeatedly paired with a positive or a negative stimulus (unconditioned stimulus), evaluations of that person shift accordingly (De Houwer et al., 2001; Moran et al., 2023). Recent work has demonstrated that EC effects extend beyond simple valence transfer to include non-evaluative attributes and trait inferences and that these effects can generalize from individual targets to social categories (Förderer & Unkelbach, 2011; Moran et al., 2023). Research has shown that promoting trait inferences increases EC effects, while undermining them decreases these effects (Moran et al., 2022), suggesting that trait-based reasoning plays an important role in how evaluations are formed and transferred.

Because sometimes different phenomena require different terminology, the commonalities might be lost from attention. Hence, De Houwer et al. (2019) proposed the feature transformation framework, which offers a unified vocabulary to facilitate communication about effects typically studied in different areas of psychology. In this framework, the term feature can be used to refer to any attribute of a stimulus (e.g., behavioral, affective, physical), and the term feature transformation is used when a feature of a source object affects the assumptions made about a feature of a target object. In feature transformation, known aspects of the environment shape judgments about unknown or ambiguous features (De Houwer et al., 2019). Applied to our context, feature transformation when evaluations along one trait dimension (e.g., group-level warmth) systematically influence judgments about conceptually distinct trait dimensions (e.g., honesty, emotionality, sociability).

In our study, the "source object" is the stereotyped group (HCLW or LCHW), the "source features" are the warmth and competence dimensions, and the "target features" are the comprehensive set of personality traits we measure. Hence, feature transformation effects represent the transformation process through which source features (minimal competence-warmth stereotypes) shape evaluations of target features (specific personality traits like honesty, ambition, or sociability). Additionally, this process reflects a form of probabilistic inference in which perceivers leverage available stereotypic information to fill in unknown or ambiguous features (Kervyn et al., 2008; Fiske et al., 2002). Hence, we refer to trait generalization as the instance where individuals infer a broad range of social or personality traits from limited stereotypic information about a target. In the context of this study, trait generalization occurs when participants use minimal warmth-competence cues about a group to construct comprehensive trait profiles that extend well beyond these two dimensions. Research on stereotype structure demonstrates that people rarely possess complete information about social groups; instead, they use core dimensions like warmth and competence as scaffolding to infer a wider array of characteristics (Judd et al., 2005).

From individual to group-level evaluations

While individual-level trait transfer mechanisms are well-established, a critical gap exists in understanding how these processes operate when the unit of evaluation shifts from individuals to groups. This gap matters because real-world stereotypes typically operate at the group level, as we hold beliefs about "business executives," "elderly people," or "ethnic minorities" as categories, yet most experimental research on impression formation focuses on individual-level processes.

Much prior work has examined either abstract group categories (e.g., nationalities, professions, age groups; Fiske et al., 2007; Strinić et al., 2021) or controlled individual targets (e.g., faces with manipulated expressions; Todorov et al., 2005) without systematically testing how group-level competence-warmth cues translate into comprehensive personality trait attributions. As a result, we lack detailed empirical evidence about which specific personality traits people systematically infer when confronted with stereotypic group descriptions.

Recent meta-analytic evidence confirms robust STI effects (Bott et al., 2024) at the individual level. However, these paradigms differ substantially from how people encounter group-level stereotypes in everyday life. When we learn that a particular social group is "highly competent but tends to be cold," we are not observing individual behaviors but rather receiving abstract, category-level information. Recent reviews have questioned whether findings from highly controlled individual-level paradigms truly capture impression formation processes when people evaluate groups based on minimal stereotypic descriptions rather than concrete behavioral evidence (Degner, 2025).

Moreover, prior SCM research has focused predominantly on measuring the two core dimensions themselves, asking participants to rate how warm or competent various groups are, without systematically examining which other personality traits people infer from these judgments. While we know that warmth and competence organize group perceptions (Abele et al., 2021; Cuddy et al., 2009), we lack detailed empirical documentation of the trait-level transfer patterns that follow. When people learn that a group is competent but cold, do they systematically infer that group members are also ambitious? Organized? Intellectually curious? Conversely, when a group is described as warm but incompetent, do people infer humility, cheerfulness, or emotional expressiveness? And critically, which traits remain relatively unaffected by warmth-competence stereotypes, maintaining independence from these core dimensions?

This gap is not merely descriptive but theoretically significant. Societal stereotypes must somehow transform into individual-level evaluations and behavioral responses that guide hiring decisions, trust formation, and interpersonal behavior, yet the mechanisms underlying this transmission remain incompletely mapped (Schultner et al., 2024). Understanding which personality traits are systematically inferred from minimal group-level warmth-competence cues, and which are not, illuminates how abstract stereotypes cascade into concrete personality judgments. Moreover, identifying boundaries of stereotype transfer (i.e., which traits resist contamination) has practical implications for interventions targeting bias: if certain personality dimensions maintain relative independence from warmth-competence stereotypes, they may offer more objective grounds for evaluation in contexts where stereotypes typically intrude.

To address these questions, recent experimental work (Huzoaica et al., in preparation) examined trait transfer at the individual level using a two-phase design. Participants first formed impressions of individuals differing in warmth and competence based on behavioral descriptions, then evaluated new targets presented alongside those individuals. Drawing on De Houwer et al.'s (2019) feature transformation framework, the study demonstrated that competence and warmth impressions transferred to new targets, with likeability ratings aligning with warmth-based associations. This established that minimal behavioral cues can shape subsequent trait evaluations at the individual level.

The present research extends and replicates this work by examining whether similar transfer processes operate when the source of information is group-level stereotype content, abstract descriptions of what a group is like, rather than individual behavioral cues.

The Current Research

The present study investigates a straightforward yet underexplored empirical question: When people encounter minimal stereotypic descriptions of groups that vary in competence and warmth, which specific personality traits do they systematically infer? Building on the theoretical framework of the Stereotype Content Model (Fiske et al., 2002; Fiske et al., 2007; Judd et al., 2005) and the Dual Perspective Model (Abele & Wojciszke, 2014), we shift focus to the group level, examining how people generalize impressions across both social judgment dimensions (ability, friendliness, assertiveness, morality; Barbedor et al., 2024) and comprehensive personality traits drawn from the HEXACO Adjective Scales across six dimensions (Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, Openness to Experience; Romano et al., 2023) when evaluating stereotypical group profiles.

Specifically, participants evaluated two fictional group profiles: one characterized as competent but cold (high competence, low warmth; HCLW) and the other as incompetent but warm (low competence, high warmth; LCHW). These profiles reflect the common ambivalent stereotypes found in the SCM (Fiske et al., 2007; Abele et al., 2021). By measuring a comprehensive set of 23 traits spanning both the four-facet social judgment framework and HEXACO personality dimensions, we test whether people construct predictable trait-based templates from minimal group-level stereotypic cues.

This approach makes three modest but meaningful empirical contributions. First, it provides systematic documentation of the trait-level feature transformation effects from group-level warmth-competence stereotypes across both social judgment and personality domains. While extensive research has validated that warmth and competence are fundamental dimensions of social perception, we lack detailed empirical mapping showing which specific traits within established personality frameworks (like HEXACO) are systematically inferred from these stereotypic dimensions. Our study fills this descriptive gap by measuring a comprehensive trait inventory rather than only the core SCM dimensions.

Second, by integrating two measurement traditions, the four-facet social judgment framework (Barbedor et al., 2024) and the HEXACO personality model (Romano et al., 2023), we bridge assessment approaches that are rarely combined in stereotype research. This integration allows us to examine whether feature transformation effects differ between explicitly social judgment traits (which share clearer conceptual overlap with warmth-competence) and more general personality traits (which may show more variable susceptibility to stereotype contamination). The HEXACO model is particularly valuable here because its distinct Honesty-Humility dimension, not present in the Big Five.

Third, we identify empirical boundaries of stereotype generalization. Understanding which traits are vulnerable versus resistant to feature transformation effects is not only theoretically informative, revealing the specificity versus

breadth of stereotype-based inference, but also practically relevant. If certain personality dimensions (e.g., honesty, emotional stability) maintain relative independence from warmth-competence stereotypes, they may offer more objective evaluation criteria in contexts where bias is a concern, such as hiring decisions or performance appraisals.

We test two primary hypotheses grounded in established SCM principles:

Hypothesis 1: To test the stereotype-consistent generalization of traits based on warmth and competence dimensions, we expected participants evaluating the HCLW group to have significantly higher ratings on competence-related traits (e.g., capable, efficient), while those evaluating the LCHW group to have significantly higher ratings on warmth-related traits (e.g., friendly, sociable). This prediction follows from research demonstrating that warmth and competence organize distinct trait clusters (Abele & Wojciszke, 2014; Barbedor et al., 2024) and that feature transformation processes should produce strongest feature transformation effects for traits sharing conceptual overlap with source dimensions (De Houwer et al., 2019). This dimensional structure suggests that competence stereotypes should enhance ratings of capability-related traits (efficient, capable, intelligent), while warmth stereotypes should enhance ratings of sociability-related traits (friendly, sociable, trustworthy). The two dimensions tap into fundamentally different aspects of social perception, intent versus capability, that organize distinct trait constellations.

Hypothesis 2: We also expected for participants to rate the HCLW group as more competent but less likeable, whereas the LCHW group to be perceived as warmer and more likeable but less competent. This reflects the established primacy of warmth over competence in determining interpersonal liking (Fiske, 2018; Wojciszke et al., 2009) and the ambivalent emotional responses characteristic of mixed stereotypes, competence elicits respect without affection, while warmth elicits affection despite low respect (Cuddy et al., 2007). From an evolutionary and functional perspective, warmth assessments address the more urgent adaptive question of whether another person or group intends harm or help (Fiske et al., 2007; Fiske, 2018). This functional prioritization makes warmth judgments more diagnostic for likeability and approach-avoidance decisions than competence assessments. Knowing whether someone has positive or negative intentions toward us is more immediately relevant for survival and well-being than knowing their capability level.

An important methodological feature of this study is the use of brief, abstract group descriptions rather than rich behavioral information or visual cues. Participants received only minimal stereotypic characterizations (e.g., "this group is highly competent but tends to be cold"), mirroring how stereotypes often circulate in real-world contexts, through hearsay, media representations, or brief organizational descriptions. This minimal-cue paradigm allows us to test whether group-level warmth-competence information alone is sufficient to trigger systematic trait inferences across comprehensive personality domains, or whether more elaborate information is required.

In sum, this study provides a systematic empirical characterization of how minimal group-level warmth-competence stereotypes cascade into comprehensive personality trait attributions, identifies which traits show feature transformation effects, and bridges social judgment and personality assessment traditions to offer a more complete picture of stereotype-based inference processes.

Ethics and Open Science

The study was approved by the Scientific Council of Research and Creation at the West University of Timisoara regarding compliance with ethical aspects in scientific research (No. 39418/21.06.2023). The study was pre-registered on the Open Science Framework (OSF) website and is available at: https://osf.io/qvkr8 .

Methods

Sample size strategy

Although an a priori power analysis was not conducted, the decision to collect data from approximately 150 participants was guided by pragmatic considerations, including the availability of time, funding, and participant access. This approach aligns with recommendations by Lakens (2022), who emphasises that sample size planning can be informed not only by statistical criteria but also by practical constraints, ensuring research remains feasible without compromising its integrity.

Participants

Data was collected from 145 participants (71 were female, 73 were male, 1 participant responded “other”, *Mage* = 40.65 years, *SDage* = 11.13). Participants were recruited through Prolific Academic (https://www.prolific.co/), an online recruitment platform. Payment was provided to participants who completed all phases of the study.

Regarding educational background, 46.21% held a Bachelor's degree, 34.48% had a high school certificate, 11.72% had a Master's degree, 4.83% had attended graduate school (without specifying a degree), and 2.76% held a Ph.D. This distribution indicates that the sample was relatively well-educated, with over 60% having attained at least a Bachelor's degree.

Participants accessed the experiment via Inquisit Web, which required downloading a dedicated application to complete the study. The entire procedure took approximately five minutes. Inclusion criteria specified that participants should be fluent English speakers, between 18 and 60 years of age, and possess a high level of education. Based on these criteria, five individuals were excluded from the final sample due to incomplete participation.

Materials

To assess participants' impressions of competent and cold individuals versus incompetent and warm individuals, we used a list of 23 social and personality traits. The traits were presented in pairs on a scale ranging from -3 (the negative aspect of the trait; i.e., *dishonest*) to 3 (the positive aspect of the trait; i.e., *honest*). The adjectives were selected to reflect aspects of social judgement (Barbedor et al., 2024; e.g, Warmth - *friendliness*; Morality - *trustworthiness*) and personality traits (Romano et al., 2023; e.g., Emotionality - *strength*; Agreeableness - *calm*; Honest-Humility - *humbleness*). The full list of the included traits is presented in Table 1.

Procedure

The study was conducted using Inquisit 6.0 software (Inquisit 6.5.1, 2021). Upon accessing the study, participants were first presented with an informed consent form outlining the purpose and expected duration of the research, along with information about their rights as participants and the confidentiality of their data. Only after providing their informed consent the participants could

proceed further with the study. Following consent, participants were given detailed on-screen instructions explaining the structure of the study and the task requirements. Once they had reviewed the instructions, they entered the assessment phase. During this phase, participants were asked to evaluate a set of 23 social and personality features. These features were rated individually, with participants indicating their responses using a standardized scale. The presentation of the features was controlled and randomized to minimize order effects.

After completing the feature evaluations, participants responded to a series of exploratory questions. These questions aimed to gain insight into their reasoning processes, their interpretation of the features, and their understanding of the study's purpose. Participants then provided information on their gender, age, level of education, country of residence, and primary language.
Lastly, participants were debriefed with a summary of the study's aims and potential implications. They were also thanked for their time and contribution to the research.

Table 1. *List of social and personality traits used to evaluate the HCLW and LCHW*

Dimension	Trait	HCLW			LCHW		
		M (SD)	Sk	K	M (SD)	Sk	K
General features:	Like - Dislike	-1.01 (1.25)	0.53	-0.36	1.00 (1.22)	-0.60	0.14
	Competent - Incompetent	2.33 (1.01)	-1.47	1.28	-2.44 (1.03)	2.14	4.65
	Warm - Cold	-2.25 (1.09)	1.54	2.13	2.55 (1.00)	-3.01	4.11
Social judgments[1]:							
Ability (competence)	Capable - Incapable	2.12 (0.95)	-0.76	-0.47	-1.49 (1.28)	1.28	1.73
	Efficient - Inefficient	2.19 (0.82)	-0.85	0.19	-1.83 (1.07)	1.29	1.79
Friendliness (warmth)	Friendly - Unfriendly	-1.64 (1.12)	0.85	0.53	2.31 (0.93)	-2.74	4.92
	Sociable - Unsociable	-1.36 (1.33)	1.00	0.90	1.92 (1.08)	-1.26	1.67
Assertiveness	Self-assured - Doubtful	1.81 (1.12)	-0.58	-0.82	-0.28 (1.44)	0.11	-0.90
	Ambitious - Unambitious	1.75 (1.21)	-0.63	-0.75	-0.50 (1.40)	0.14	-0.54
Morality	Honest - Dishonest	0.95 (1.19)	0.17	-0.78	0.92 (1.33)	-0.55	0.44
	Trustworthy - Untrustworthy	0.54 (1.13)	0.07	-0.11	0.38 (1.46)	-0.33	-0.48
Personality traits[2]:							
Emotionality	Emotionally stable - Hypersensitive	0.97 (1.39)	-0.25	-0.85	0.60 (1.14)	-0.27	0.24
	Secure - Vulnerable	1.27 (1.16)	-0.35	-0.75	-0.21 (1.25)	0.03	-0.80
Extraversion	Cheerful - Shy	-0.37 (1.03)	-0.46	0.61	1.53 (1.09)	-1.31	2.29
	Extraverted - Introverted	-1.03 (1.51)	0.65	-0.19	1.00 (1.28)	-0.81	0.59
Agreeableness	Calm - Overbearing	0.55 (1.69)	-0.26	-1.17	0.71 (1.31)	-0.31	-0.52
	Tranquil - Quarrelsome	-0.04 (1.60)	-0.17	-0.75	1.21 (1.13)	-0.61	0.29
Honest-Humility	Humble - Snob	-0.84 (1.52)	0.41	-0.39	1.19 (1.29)	-0.57	0.15
	Faithful - Hypocritical	-0.01 (1.44)	-0.03	-0.53	0.82 (1.14)	-0.75	2.05
Consciousness	Careful - Inconstant	1.42 (1.20)	-0.67	-0.18	-1.06 (1.20)	0.66	0.34
	Organized - Disorganized	1.96 (1.04)	-0.72	-0.35	-1.26 (1.21)	0.80	1.05
Openness to Experience	Intellectual - Conventional	1.25 (1.48)	-1.23	1.30	-0.99 (1.16)	0.57	0.81
	Original - Unoriginal	0.34 (1.40)	0.04	-0.24	0.15 (1.35)	0.22	-0.31

Note. $N = 145$; HCLW = high competence and low warmth group condition; LCHW = low competence and high warmth group condition; *M* = mean; *SD* = standard deviation; Sk = Skewness; K = Kurtosis; 1 = social traits selected from Barbedor et al. (2024); 2 = personality traits selected from Romano et al. (2023)

Design

In this study, we employed a between-subjects design in which the participants were randomly assigned to evaluate one of two stereotypical group profiles (high competence, low warmth vs. low competence, high warmth) across a series of 23 social and personality traits. Specifically, each participant was presented with a brief description of a group characterized either as competent and cold (high competence, low warmth; HCLW condition) or incompetent and warm (low competence, high warmth; LCHW condition). These descriptions were designed to reflect common stereotype combinations identified in the social cognition literature. The assignment to conditions was counterbalanced to ensure that potential order or contextual biases were evenly distributed across the sample, as follows:

46.21% ($N = 67$) were assigned to the HCLW condition and 53.79% ($N = 78$) to the LCHW condition.

Analytic strategy

Data processing and all analyses were conducted in R version 4.4.0 (R Core Team, 2024) by using multiple statistical packages. Descriptive statistics were obtained using the summarytools package (Comtois, 2025), while internal consistency and correlations were assessed using the psych package (Revelle, 2025). Data formatting was performed with the dplyr package (Wickham et al., 2022).

To examine the relationship between perceived competence-warmth trade-offs and likeability (H2), we computed a difference score by subtracting each participant's general warmth rating from their general competence rating. This difference score, derived exclusively for the two feature ratings (not from the aggregated related traits), served as an index of the relative emphasis on competence versus warmth in participant's evaluations.

For the primary analyses, we employed Welch's independent samples t-tests, with the rstatix R package (Kassambara, 2023), to compare the feature templates derived from participants' evaluations of individuals characterized as competent and cold versus those described as incompetent and warm. Welch's t-test was chosen due to its robustness in handling unequal variances and sample sizes between the HCLW and LCHW groups.

To control for the inflated Type I error rate associated with conducting multiple comparisons across 23 trait ratings, we applied false discovery rate (FDR) correction using the Benjamini-Hochberg procedure (Benjamini & Hochberg, 1995). The FDR approach was selected because it provides an appropriate balance between controlling false positives and maintaining statistical power, which is particularly suitable for exploratory analyses of multiple trait dimensions within a theoretically grounded framework. All adjusted p-values are reported alongside the original p-values in the results.

Prior to the analysis, the data was screened for quality and completeness. Participants were excluded if they failed to complete all phases of the study, had missing or incomplete data, or provided outlier responses. These criteria ensured that only valid and reliable responses were included in the final analysis.

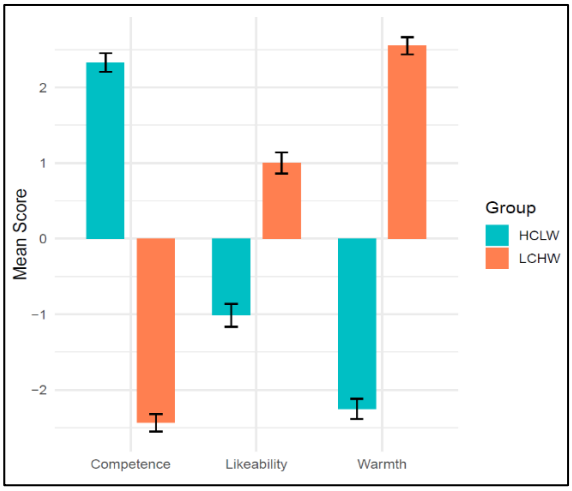
Results

To test whether participants would rate individuals described as competent but cold (HCLW) higher on competence-related traits, and those described as incompetent but warm (LCHW) higher on warmth-related traits (H1), Welch's t-tests were conducted. This approach was chosen because some dependent variables did not meet the assumption of normality, and group sizes were unequal.

As expected, participants clearly distinguished between the two profiles on the general features of competence, $t(140.53) = 28.16$, $p < .001$, $d = 4.68$, and warmth, $t(135.32) = -27.44$, $p < .001$, $d = -4.60$, with large effect sizes in both cases. These results confirm that participants perceived the individuals according to the stated stereotype (competent and cold vs incompetent and warm).

Moreover, significant differences emerged in likeability ratings, $t(138.54) = -9.80$, $p < .001$, $d = -1.64$, such that participants found the incompetent but warm group ($M = 1.00$, $SD = 0.85$) significantly more likable than the competent but cold group (M = -1.02, SD = 0.85), despite the former's lower performance orientation. This aligns with prior work suggesting that warmth is a stronger driver of interpersonal liking than competence. As shown in Figure 1, individuals in the LCHW group were rated significantly higher on warmth and likability, whereas those in the HCLW group were rated significantly higher on competence.

Figure 1. *Mean ratings of competence, likeability, and warmth by group (HCLW vs. LCHW)*



Note. Error bars represent ±1 standard error of the mean. HCLW = individuals described as high in competence and low in warmth; LCHW = individuals described as low in competence and high in warmth. Participants rated individuals in line with stereotypical expectations: the HCLW group was rated as significantly more competent but less warm and likeable than the LCHW group.

Consistent with H1, evaluations of competence-related traits (e.g., capable, efficient, organized, intellectual) were significantly higher for the HCLW group, all $ps < .001$, with very large effect sizes (e.g., $d = 4.17$ for efficient, $d = 2.83$ for organized). Conversely, warmth-related traits (e.g., friendly, sociable, humble) were rated significantly higher for the LCHW group, with very large negative effect sizes (e.g., $d = -3.86$ for friendly, $d = -2.73$ for sociable).

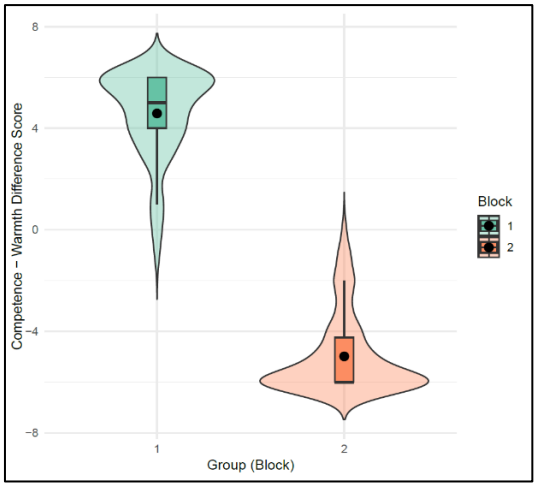
Significant differences were observed in 18 out of 23 traits, with all effects remaining significant after FDR correction for multiple comparisons. Five traits showed no significant differences: calm ($p = 0.55$), honest ($p = 0.93$), trustworthy ($p = 0.77$), emotionally stable ($p = 0.09$) and original ($p = 0.41$). The results are summarized in Table 2, which presents the mean scores for each feature, the t-values, degrees of freedom, p-values, and Cohen's d for each comparison. Finally, to address whether participants would perceive the competent-but-cold group as more capable but less likable, while perceiving the incompetent-but-warm group as more likable but less competent (H2), we computed a difference score using the general competence and warmth ratings (competence minus warmth) and tested its association with likeability. A strong negative correlation was found between the competence-warmth difference score and likeability, $r = -.64$, $p < .001$, indicating that as perceived competence outweighed warmth, likeability decreased.

Table 2. *Welch's t-tests, means, and effect size for social and personality traits*

Trait	Mean HCLW	Mean LCHW	t-value	df	P-value	P-value adj	Cohen's d
Competence	2.33	-2.44	28.16	140.53	< .001	< .001	4.68
Warmth	-2.25	2.55	-27.44	135.32	< .001	< .001	-4.60
Likeability	-1.02	1.00	-9.80	138.54	< .001	< .001	-1.64
Capable	2.12	-1.49	19.49	140.11	< .001	< .001	3.18
Efficient	2.19	-1.83	25.55	141.17	< .001	< .001	4.17
Friendly	-1.64	2.31	-22.82	128.39	< .001	< .001	-3.86
Sociable	-1.36	1.92	-16.12	126.69	< .001	< .001	-2.73
Calm	0.55	0.71	-0.60	123.52	0.55	0.60	-0.10
Tranquil	-0.05	1.21	-5.35	116.54	< .001	< .001	-0.91
Self-assured	1.81	-0.28	9.82	141.61	< .001	< .001	1.60
Ambitious	1.75	-0.50	10.35	143.00	< .001	< .001	1.71
Humble	-0.84	1.19	-8.57	130.04	< .001	< .001	-1.45
Faithful	-0.02	0.82	-3.83	124.85	< .001	< .001	-0.65
Honest	0.94	0.92	0.08	142.70	0.93	0.94	0.01
Trustworthy	0.45	0.39	0.29	141.56	0.77	0.81	0.05
Emotionally stable	0.97	0.60	1.72	127.85	0.09	0.11	0.29
Secure	1.27	-0.21	7.35	142.12	< .001	< .001	1.22
Cheerful	-0.37	1.53	-10.79	141.74	< .001	< .001	-1.79
Extraverted	1.27	0.21	7.35	142.12	< .001	< .001	1.22
Careful	1.42	-1.06	12.45	139.84	< .001	< .001	2.07
Organized	1.96	-1.26	17.211	143.00	< .001	< .001	2.83
Intellectual	1.25	-0.99	10.036	124.09	< .001	< .001	1.70
Original	0.34	0.15	0.827	138.07	0.41	0.47	0.14

Note. N = 145; HCLW = group of individuals described as highly competent and cold; LCHW = group of individuals described as incompetent and warm. P-value adj are FDR-adjusted for multiple comparisons using the Benjamini-Hochberg procedure.

Figure 2. *Distribution of the competence-warmth difference scores by stereotype group*



Note. The violin plots show the distribution of participants' perceived difference between competence and warmth ratings for each group. Box plots within violins represent the interquartile range and median, while the dot indicates the mean. Block 1 = HCLW (high competence, low warmth); Block 2 = LCHW (low competence, high warmth).

As shown in Figure 2, participants rated the HCLW targets as significantly more competent than warm (M = 4.58, SD = 1.63), while the LCHW targets were perceived as more warm than competent (M = -4.99, SD = 1.53). A Welch's t-test confirmed that the competence-warmth difference score significantly differed between groups, $t(133.05) = 34.77$, $p < .001$, with a very large effect size ($d = 5.85$).

This relationship was further supported by regression analysis, which showed that the competence-warmth difference score significantly predicted likeability, β = -0.64, $t(143) = -10.07$, $p < .001$, explaining 41.5% of the variance ($R^2 = .42$). The unstandardized coefficient (b = -0.20) indicates that each-unit increase in the competence-warmth difference score was associated with 0.20-unit decrease in likeability ratings.

Discussion

The present study sought to extend the Stereotype Content Model (Fiske et al., 2002; Fiske et al., 2007; Judd et al., 2005) and the Dual Perspective Model (Abele & Wojciszke, 2014), by examining how group-level stereotypes shape trait-level associations across social

judgment and personality traits. Specifically, we tested whether people generalize impressions of fictional groups characterized by high competence and low warmth (HCLW) or low competence and high warmth (LCHW) across a wider array of traits, and whether these generalizations follow predictable dimension-based patterns. The results largely support our hypotheses and provide insightful observations regarding participants' perceptions of those individuals, which align closely with established stereotypes, reinforcing the fundamental organization around competence and warmth dimensions.

Trait Generalization from Warmth and Competence Dimension Combinations

Consistent with the first hypothesis, participants clearly distinguished between the HCLW and LCHW groups along both competence and warmth-related dimensions. Evaluations of traits such as efficient, capable, organized or intellectual were significantly higher for the HCLW group, whereas traits such as friendly, sociable, faithful or humble were endorsed more strongly for the LCHW group.

Previous research underlined that, for instance, people can make quick judgments about others' warmth and competence starting from facial features alone (Todorov et al., 2005; Willis & Todorov, 2006; Hack et al., 2013), or based on a global impression effect (i.e., valence, Huzoaica et al., 2025; or attractiveness, Rougier et al., 2023). The present findings align with previous work demonstrating that warmth and competence are not only core dimensions of social perception (Fiske et al., 2002) but also serve as efficient cognitive templates through which individuals form trait-level associations. Specifically, even minimal stereotypical cues, such as group descriptions framed around competence and warmth, are sufficient to elicit systematic trait inferences across a wide array of social and personality characteristics.

For example, Carrier et al. (2019) explored how perceptions of warmth are influenced by the personal relevance of others' competence. Across their studies, they found that people infer warmth based on competence cues, especially when the competence of others is personally consequential. This suggests that inferences about one trait dimension (i.e., warmth) can be extrapolated from information about another trait dimension (i.e., competence), demonstrating a mechanism by which people generalize traits from minimal input. This idea was clearly reflected in the current study's design, where trait impressions extended beyond warmth and competence to include impressions related to likeability, social judgments, and specific personality traits.

In a complementary line of research, Kervyn et al. (2008) showed that perceptions of competence and warmth are often used in a compensatory fashion to evaluate national groups. Their findings suggest that when a group is perceived as highly competent, it may be seen as colder, and vice versa. Importantly, this study demonstrates that trait judgments are contextually malleable and stereotype-driven, even when based on minimal or generalized group-level information. This compensatory pattern reinforces the notion that individuals apply stereotypic heuristics to generalize personality traits from broad, abstract descriptors, mirroring the patterns observed in the current research.

Importantly, the observed findings were not limited to traits directly tied to competence or warmth, but also extended to other social and personality characteristics such as ambition, extraversion, humility, or carefulness, reinforcing the perceived trade-off between competence and warmth. This indicates that stereotypes not only shape evaluations on the core dimensions of social judgements (Abele et al., 2021; Barbedor et al., 2024), but also extend to trait-level associations across personality domains measured through single-item ratings (Romano et al., 2023).

Notably, some traits, such as honesty and trustworthiness, or calm and emotional stability did not significantly differ between the two groups. These results might be supported by previous findings that suggest that certain moral traits are perceived as less malleable or more universally valued, and may resist change based on a superficial group categorization (Brambilla & Leach, 2014; Goodwin et al., 2014). More specifically, these traits may operate as core moral judgments that are less susceptible to spillover from stereotypical profiles, providing boundaries to trait generalization effects, or simply are not activated in this context (trait activation theory; Tett & Burnett, 2003).

Warmth vs. Competence: Implications for Likeability

The findings also supported the second hypothesis, as participants judged the LCHW group as more likeable than the HCLW group, despite the former being rated as significantly less competent. This suggests that while competence is highly valued, warmth and likeability play crucial roles in interpersonal evaluations. The preference for warmth over competence in the context of likeability may reflect the importance of social harmony and the human tendency to gravitate towards individuals who are perceived as friendly and approachable (Cuddy et al., 2010).

This also aligns with prior research indicating that warmth is a stronger determinant of likeability and social preference than competence (Carrier et al., 2019; Judd et al., 2005; Fiske, 2018; Yzerbyt et al., 2022). The strong negative correlation between competence-warmth imbalance and likeability ($r = -.64$) further supports the idea that perceived social warmth plays a primary role in interpersonal evaluations, even when trade-offs in competence are salient. This effect also reflects the ambivalent structure of many real-world stereotypes. For example, elderly individuals and homemakers are often perceived as warm but incompetent, while professionals or high-status individuals are seen as competent but cold (Cuddy et al., 2010; Fiske et al., 2007). Our results support

these real-world patterns, suggesting that stereotype-based ambivalence translates into broader trait impressions and preference judgments.

Theoretical and Practical Implications

While our findings align with established SCM and DPM principles, they extend traditional competence-warmth evaluations in three specific ways that have both theoretical and practical significance.

First, traditional SCM research focuses primarily on ratings of warmth and competence themselves, or on broad emotional responses such as admiration, pity, envy, and contempt (Cuddy et al., 2007; Fiske et al., 2002). Our study extends this by providing systematic empirical documentation of which specific traits within established assessment frameworks, the four-facet social judgment model (Barbedor et al., 2024) and the HEXACO personality structure (Romano et al., 2023), show feature transformation effects from minimal group-level stereotypic cues. By measuring 23 traits across both frameworks, we reveal three important patterns. First, 18 of 23 traits showed significant differences between HCLW and LCHW groups, demonstrating that feature transformation from competence-warmth stereotypes extends well beyond the core dimensions. Second, five traits showed resistance to feature transformation: honest ($d = 0.01$), trustworthy ($d = 0.05$), calm ($d = -0.10$), emotionally stable ($d = 0.29$), and original ($d = 0.14$). These resistant traits cluster meaningfully in moral judgment (honest, trustworthy) and emotional stability domains. Third, effect sizes varied systematically, ranging from near-zero to very large ($d = 0.01$ to 4.68), revealing a magnitude gradient rather than uniform effects. This trait-level mapping has not been systematically documented in prior SCM work and provides a new insight about which personality domains are vulnerable versus resistant to stereotype-based feature transformation.

Secondly, a particularly important finding made visible only through HEXACO assessment concerns the Honesty-Humility dimension, unique to HEXACO and absent in the Big Five. Within this dimension, we observed a critical dissociation: core moral traits (honest, trustworthy) showed virtually no feature transformation effects ($d = 0.01$ and 0.05), while traits related to social deference and modesty (faithful, humble) showed substantial effects ($d = -0.65$ and -1.45). This dissociation suggests that certain moral traits might function as a "firewall" against stereotype contamination, maintaining relative independence from warmth-competence stereotypes. From a theoretical perspective, this finding suggests that not all traits within a personality domain could show equal susceptibility to stereotype-based feature transformation. Moral traits related to honesty and trustworthiness may be perceived as more essential, stable, or context-independent characteristics (Goodwin et al., 2014), thereby resisting inference from group-level warmth-competence information.

And lastly, a critical advance beyond traditional SCM work is our identification of trait-specific boundaries. Rather than simply documenting that stereotypes influence judgments, we reveal which personality domains are vulnerable versus resistant to feature transformation. Understanding which traits resist stereotype contamination has direct implications for organizational contexts. For example, in hiring and performance evaluation settings where warmth-competence stereotypes may bias judgments, focusing assessment on traits that show resistance, honesty, trustworthiness, emotional stability, may provide more objective evaluation criteria less susceptible to stereotype-based distortion. While we do not claim these traits are entirely immune to bias, our findings suggest they maintain greater independence from warmth-competence stereotypes than traits like sociability, ambition, or cheerfulness. Moreover, the magnitude gradient we observe (effect sizes ranging from 0.01 to 4.68) provides practical guidance about which trait domains require the most vigilance in stereotype-prone contexts. Traits with the largest effects (e.g., friendly $d = -3.86$, efficient $d = 4.17$) are most vulnerable to contamination and should be assessed with particular care through behavioral observation, structured interviews, or work samples rather than relying on subjective impressions that may be stereotype-driven.

Limitations and Future Directions

While the present study provides new insights, several limitations warrant discussion.

First, the use of fictional groups, while useful for experimental control, may reduce ecological validity. Future research should assess whether similar trait generalization patterns emerge when real-world groups (e.g., professions, social categories) are used. Real groups carry richer associations, historical context, and personal experience that may modulate feature transformation effects in ways our minimal fictional group paradigm does not capture.

Second, an important methodological consideration is that all traits were explicitly labeled in our assessment (e.g., "honest-dishonest," "capable-incapable"), meaning participants engaged in deliberate, conscious evaluation rather than spontaneous trait inference. This design differs fundamentally from spontaneous trait inference (STI) paradigms, where traits are inferred implicitly from behavioral descriptions without explicit prompting (Uleman et al., 1996; Bott et al., 2024). Our findings therefore reflect controlled, reflective judgments about how stereotypic group descriptions translate into explicit trait attributions, rather than automatic, spontaneous inference processes. This distinction is important for several reasons. First, it means our results may overestimate the strength or pervasiveness of trait generalization that occurs in more naturalistic contexts where people encounter group stereotypes without being explicitly prompted to evaluate specific personality

dimensions. Second, explicit labeling may have introduced demand characteristics, wherein participants inferred that they should rate traits consistently with the stereotype manipulation, producing stronger coherence in trait profiles than would emerge spontaneously.

Nevertheless, several features of our data suggest that participants engaged in systematic trait-based reasoning rather than simply responding to demand characteristics: (1) five traits showed no significant differences between conditions, indicating participants did not indiscriminately align all ratings with the manipulation; (2) the pattern of resistant traits (honest, trustworthy, calm, emotionally stable, original) has theoretical coherence, clustering in moral judgment and emotional stability domains; and (3) effect size magnitudes varied systematically across trait categories in ways predictable from the feature transformation framework (De Houwer et al., 2019). Future research should complement explicit evaluation paradigms with implicit measures (e.g., Implicit Association Tests, lexical decision tasks with response latencies, or savings-in-relearning paradigms) to determine whether similar feature transformation patterns emerge under conditions more conducive to spontaneous inference. Such multi-method approaches would help establish whether trait generalization from group stereotypes reflects primarily deliberate reasoning, automatic associations, or both.

Third, all trait ratings were collected using the same response format (-3 to +3 scale) within a single experimental session, which may have inflated correlations through shared method variance. Our findings therefore demonstrate trait-level association patterns, that is, systematic differences in how individual traits are rated based on group stereotypes, rather than generalization to latent personality dimensions. We cannot claim, for instance, that participants perceive HCLW groups as higher on 'Conscientiousness as a latent factor' but only that they rate HCLW groups higher on specific traits associated with conscientiousness (organized, careful). This distinction is important: trait-level associations may reflect heuristic matching of stereotype-consistent labels rather than comprehensive personality structure inferences. This methodological feature could artificially increase the observed relationships between traits, as participants may have developed response sets or maintained consistency in their rating patterns. While the theoretical coherence of our findings, specifically, the differential effects on warmth versus competence trait clusters, provides some reassurance that our results reflect substantive rather than purely methodological patterns, we cannot fully rule out method variance contributions. Future research could address this limitation through multi-method approaches that combine explicit ratings with implicit measures (e.g., Implicit Association Tests, reaction time paradigms), distribute trait assessments across multiple sessions, or employ confirmatory factor analysis to partition shared method variance from trait-specific variance.

Fourth, although we included a wide range of traits spanning social judgment and personality domains, further research could explore how other trait clusters (e.g., attractiveness, athleticism, creativity, leadership potential) are influenced by warmth-competence framing, and whether the four-facet model (morality, sociability, ability, assertiveness; Barbedor et al., 2024) produces differential feature transformation patterns.

Fifth, several of the observed effect sizes, particularly those exceeding |4.0| (e.g., competence: d = 4.68), are unusually large for social–psychological research. These values appear to result from the intentionally strong manipulation used in this study: the HCLW and LCHW group descriptions were designed to be highly polarized, producing large mean differences across multiple trait ratings (see Table 2). In several cases, participants' ratings also approached the upper or lower bounds of the scale, suggesting partial ceiling or floor effects and range restriction that may have further inflated the magnitude of Cohen's d. Thus, although the direction and relative size of the effects align with theoretical expectations, the absolute magnitude of these effect sizes should be interpreted with caution. Future research using more ecologically realistic or less extreme stimulus descriptions may yield smaller and more generalizable effect estimates.

Lastly, although we demonstrated asymmetries in likeability based on warmth-competence trade-offs, future work could explore how cultural values (e.g., collectivism vs. individualism) may modulate these effects (Durante et al., 2013). Exploring how culture, context, or individual differences in need for closure or cognitive style shape trait spillover would deepen our understanding of stereotype-driven evaluations.

Conclusion

The present study offers evidence that individuals show a tendency to generalize social and personality traits from minimal stereotypical cues framed around competence and warmth. Participants evaluated fictional groups using trait combinations consistent with the the Stereotype Content Model (Fiske et al., 2002; Fiske et al., 2007; Judd et al., 2005) and the Dual Perspective Model (Abele & Wojciszke, 2014), while trait associations followed clear and predictable patterns. The HCLW group was associated with traits reflecting ability and ambition, while the LCHW group was linked to friendliness and sociability, demonstrating that even brief descriptions can activate trait-level associations across multiple dimensions. These trait-level associations extended beyond the core dimensions of competence and warmth to include specific personality trait attributions measured through explicit ratings.

These findings are supported by and expand upon prior research. Carrier et al. (2019) showed that trait inferences can cross dimensional boundaries (e.g., inferring warmth from competence), while Kervyn et al.

(2008) demonstrated how these dimensions are often used in a compensatory fashion in group judgments. Together, these results point to a broader cognitive tendency to use competence and warmth as heuristic anchors for trait-level evaluations.

Importantly, our findings also revealed boundaries to feature transformation: five traits (honest, trustworthy, calm, emotionally stable, original) showed no significant differences between stereotype conditions, suggesting that certain moral and emotional stability traits maintain relative independence from warmth-competence stereotypes. This pattern, particularly the dissociation within HEXACO's Honesty-Humility dimension, has important implications for understanding which personality domains are most vulnerable versus resistant to stereotype contamination.

Lastly, the study demonstrated that likeability was more strongly associated with perceived warmth than competence, highlighting the primacy of affiliative traits in interpersonal judgments and confirming established theoretical principles about the functional importance of warmth assessments in social evaluation.

Contributions

The author was responsible for the conceptualization, study design, data collection, data analysis, interpretation of results, and manuscript writing. All aspects of the research were conducted by the author.

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Competing Interests

The author has stated that they do not have any conflicts or competing interests to declare.

Data Accessibility

The Inquisit code, dataset, and R scripts for data preparation and analyses for this study are made publicly available on OSF and are available at: https://osf.io/43kyb

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