View it in a different light: Mediated and moderated effects of dim warm light on collaborative conflict resolution

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ABSTRACT

How can the physical environment, especially light, facilitate conflict resolution? Previous research has led to no clear answers about optimal lighting conditions in conflict situations and, until now, potential moderators and mediators have been scarcely investigated. Building on research on light-induced cooperativeness, we expected that self-oriented individuals would be influenced by the lighting in social situations such as conflict resolution. In self-oriented individuals, dim warm light should promote interdependent self-construal and, in turn, lead to a preference for collaborative conflict resolution strategies. Two studies confirmed our assumptions, with social dominance orientation and trait interdependent self-construal serving as indicators of individuals' social orientation. Overall, these results provide an explanation for inconsistent previous findings and contribute to the understanding of light-induced changes in social behavior. Limitations as well as practical implications for lighting design in social spaces are discussed.

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1. Introduction

Driving a hard bargain or yielding to an opponent's demands in a business negotiation? Obliging one's partner's vacation plans, asserting one's own wishes, or finding a compromise? Avoiding a confrontation with one's children regarding tidying up or negotiating an integrative solution? In all these situations and decisions, people can either pursue only their own interests or take into account others' wishes. It all depends on how they view the situation and their relationship with the other individual. Research from the areas of grounded cognition and environmental psychology indicates that environmental features such as lighting conditions (e.g., Baron, Rea, & Daniels, 1992; Knez, 1995; Steidle, Hanke, & Werth, 2013) and room temperature (e.g., Gockel, Kolb, & Werth, 2014; IJzerman & Semin, 2009) can influence social perception. Thus, it should be of particular interest to examine how light affects interpersonal processes, especially concerning conflict resolution.

Although a study (Baron et al., 1992) has shown significant effects of lighting conditions on the preference for certain conflict resolution strategies, using another measure of conflict resolution strategies in the same study did not replicate these findings. To clarify these inconsistent results, the present research investigated a cognitive process (self-construal) that may explain why some light settings are able to promote collaborative conflict resolution. Moreover, we focused on a possible moderator (social orientation) to enhance the understanding of preconditions that limit the emergence of the light-conflict resolution link (see Fig. 1 for the hypothesized model). This knowledge could contribute to the creation of collaborative work environments, in which light is always present, but its influence seldom considered.

Conflict resolution strategies have been widely researched in social (Pruitt, 1998) and organizational psychology (e.g., Rahim & Bonoma, 1979; Ross & Stittinger, 1991). During conflict resolution, individuals can focus on their own interests, the other person's interests, or both, which yields five strategies (Rahim, 1983; Rahim & Bonoma, 1979): integrating (problem solving by exchanging information, looking for alternative solutions and aiming to reach a mutually acceptable solution), obliging (playing down the differences between two parties and accentuating commonalities), compromising style (a "give-and-take" strategy where both partners have to give up something to reach a decision that is

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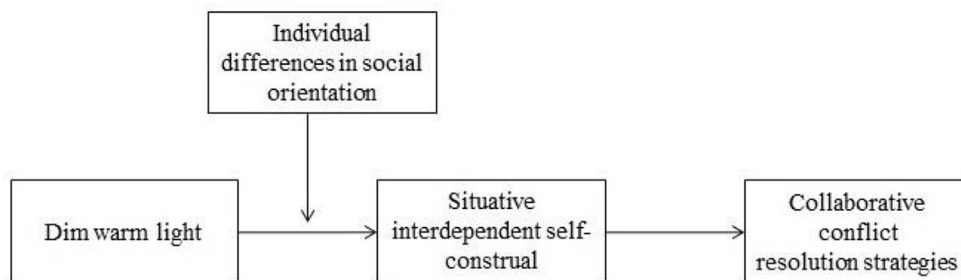
Fig. 1. Hypothesized Model.

acceptable for both), dominating (a win-lose orientation and rejection of needs and expectations of the other party), and avoiding (withdrawal). Integrating, obliging, and compromising incorporate at least some inclination to consider the interests of others, while dominating and avoiding are associated with a low regard for others' interests. Hence, the former three strategies can be interpreted as collaborative and the latter two as non-collaborative (Chanin & Schneer, 1984; Volkema & Bergmann, 1995).

Baron et al. (1992) have directly tested the effect of lighting conditions on conflict resolution strategies. It was assumed that lighting conditions induce positive affect, which in turn should promote a preference for collaborative conflict strategies. In their laboratory studies, Baron et al. (1992) varied lighting in terms of illuminance level (150 vs. 1500 lx) and color temperature (warm white vs. cool white). Participants exposed to warm white light reported stronger preferences for conflict resolution through collaboration (i.e., integration) and weaker preferences for conflict resolution through avoidance than those exposed to cool white light. The preference for the non-collaborative avoidance strategy was lowest in the dim warm light condition. In contrast to these light-induced changes in general preferences for collaboration, light did not lead to more lenient responses to a colleague who failed on a work task for different reasons in a scenario that served as an additional measure of conflict resolution strategies. However, Baron et al. (1992) did not directly test the mediation effect via positive affect. Thus, these findings allow no clear conclusions about which lighting conditions may promote collaborative conflict resolution or about the underlying process.

Instead of investigating positive affect to explain the effect of light on conflict resolution, we focus on the effects of light that may occur without changing the emotional state (Friedman, Fishbach, Förster, & Werth, 2003). Light largely determines how we perceive a room and its atmosphere (Custers, de Kort, IJsselsteijn, & de Kruiff, 2010; Flynn, 1992), and this induces automatic assessments of the required behavior in a given situation. Hence, lighting conditions may well affect how individuals interpret a social situation and their resulting interpersonal behavior. Previous research showed that light can elicit a cozy and informal atmosphere, which should facilitate contact and openness among individuals. For example, one study showed that dimly lit rooms appear more intimate, relaxing, and romantic, and less tense, friendly, and threatening than brightly lit rooms (Custers et al., 2010). In addition to brightness, the warmth of the light affects its meaning: warm light creates a relaxing and cozy room atmosphere compared to neutral white (Theiss, 2000) and cold white light (Vogels, de Vries, & van Erp, 2008, pp. 15—18), which appears rather cool and formal. Particularly, the combination of relatively low color temperature (about 3000 K) and low illuminance levels (about 150 lx) creates a cozy and relaxing room ambience (Kuijsters, Redi, de Ruyter, Seuntiëns, & Heynderickx, 2015).

Thus, we believe that there is a range of warm light on low until very low light intensity that may evoke associations of informality, intimacy, and coziness. However, the interpretation of the room atmosphere depends on further situational and individual characteristics. For instance, individuals may interpret dim warm light as cozy and intimate for social interactions, but as exhausting and confusing for activities requiring high concentration. As conflict resolution represents situations with social interaction, we assume that the intimacy, informality, and coziness of dim warm light, as compared to other combinations of brightness and color temperature, would promote interpersonal closeness and, in turn, collaborative conflict resolution.

However, to understand the emergence of the light-conflict resolution link, it is important to consider the underlying mechanism and potential limiting conditions. Visual messages of the light exert their influence via concomitant cognitive and motivational processes (Steidle & Werth, 2013; Steidle et al., 2013). Self-construal represents an orientation towards interdependence which is sensitive to small variations in light (Steidle et al., 2013) and temperature (IJzerman & Semin, 2009), and can help to explain light-induced changes in social behavior. In line with this assumption, several studies revealed that dim and warm light can positively influence person perception and social interaction. For instance, one study (Baron et al., 1992) showed that dim light (150 lx) led to more favorable person evaluations than bright light (1500 lx), while warm white light resulted in more helping behavior than cool white light. Additionally, dim light promoted cooperativeness (Steidle et al., 2013) and intimate communication (Gifford, 1988). Similarly, individuals preferred low brightness in informal and social situations (e.g., romantic; Biner, Butler, Fischer, & Westergren, 1989). Moreover, other environmental cues of warmth or coldness (e.g., room temperature) also influence social proximity and affiliation (IJzerman & Semin, 2009; Inagaki & Eisenberger, 2013). Thus, due to the reported direct effects (Baron et al., 1992) and the indirect links between dim warm light and a cozy atmosphere, intimacy associations, as well as positive social interactions, we assume that dim warm light may promote interdependent self-construal.

Generally, self-construal distinguishes two ways of representing oneself in relation to other individuals (Cross, Hardin, & Gercek-Swing, 2011; Markus & Kitayama, 1991): independent ('I') and interdependent ('we'). Independent self-construal is related to defining oneself as being apart from others (e.g., being exceptionally creative) and as a unique person with reference to stable internal traits (e.g., ambition). In contrast, interdependent self-construal is related to defining oneself in terms of group memberships (e.g., Asian) and to view the self as encompassing important relationships (e.g., as a friend).

Self-construal also affects conflict resolution. According to Ting-Toomey (1988), connection to others may result in additional effort for the maintenance of group harmony and high concern for others.