



# ASSOCIATION FOR CONSUMER RESEARCH

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## **Warm It Up With Love: the Effect of Physical Coldness on Liking of Romance Movies**

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Are romance movies more desirable when people are cold? Results from three experiments show that physical coldness leads to increased liking for romance movies. Furthermore, using a dataset of online movie rentals and historical temperature data, we found a negative relationship between weather temperature and consumption preference for romance movies.

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words, we found that sunlight exposure increased the participant's preference for risk. We also found that prior exposure to sunlight (how long participants had been in the sun that day) was also positively correlated with risk-seeking.

In our second study, we collected data at a parking lot in Singapore. Twice-a-day for two weeks, we recorded information on every car parked in the lot. Crucially, because of Singapore's parking payment system, we were able to record the time at which the driver parked the car, whether the car's legal parking period had expired, and the extent to which the car was or was not in violation. We supplemented this primary data with climate measurements from a local weather station. Using logistic regression, we found that the level of solar radiation (sunlight) at the time of parking was a positive predictor of whether the car was in violation. In other words, the sunnier it was outside when an individual parked, the more likely they were to leave their car in violation. Further, we found that higher levels of sunlight at the time of parking were correlated with more severe parking violations.

In our third study, we analyzed 40 years of historical data from Major League Baseball games. In this data, we look at attempted stolen bases as the primary measure of risk taking. We find that stolen base attempts were more likely during day games than during night games. Importantly, we find this effect attenuates for games played in indoor stadiums. Further, we find that baserunners tend to be more successful at stealing bases during night games, suggesting that the increase attempt rate for day games is not motivated by a greater likelihood of success. As a final test of our hypothesis, we merged 15 years of weather data with the baseball data set. For games played in outdoor stadiums, we find that higher levels of solar radiation are positively correlated with more stolen base attempts. Interestingly we also find a positive effect of day-time solar-radiation levels on risk taking in night games. One possible explanation for this finding is that cumulative exposure to sunlight, and not just current exposure, can lead to increased risk taking. This would be consistent with our findings in Studies 1 and 2.

In sum, across three different operationalizations, we find that exposure to sunlight is linked to increased levels of risk seeking. We find positive effects on risk taking for both current level of sun exposure and cumulative level of sun exposure. Possible mechanisms for this effect include an "affective" path and a more direct path. Although the affective path is plausible, research is mixed on the link between positive affect and risk taking. The direct path is intriguing because it implicates a more innate biological basis. It is possible that the tendency to take greater risks while the sun is shining evolved as an adaptive behavior. Current work is focusing on identifying evidence in support of one of these paths versus the other.

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## Warm It Up With Love: The Effect of Physical Coldness on Liking of Romance Movies

### EXTENDED ABSTRACT

Are romance movies more desirable when people are cold? Building on research on embodied cognition (Barsalou 2008; Niedenthal et al. 2005), we hypothesize that physical coldness (vs. warmth) activates a desire for psychological warmth, which in turn leads to increased liking for romance movies. We tested our hypothesis in three laboratory experiments and one analysis of online movie rentals.

Study 1 tests our basic hypothesis that physical coldness leads to increased liking for romance movies. We manipulated physical coldness by giving participants a warm or a cold drink. Participants were first told that they would be taking part in a drink evaluation study. Those in the warm condition were given a cup of hot tea and those in the cold condition were given a cup of iced tea. Participants were told to finish the drink slowly while completing another study on movie preference, which was our main dependent measure. For the movie preference task, we selected four genres (romance, action, comedy, and thriller) and three movies from each genre based on the categorization used by the Internet Movie Database (IMDb.com). Participants were given the information of the movies while drinking the tea. For each movie, participants were first presented with the title, a synopsis, a fictitious viewer rating (ranging from 8.5 to 8.8 out of 10), and the genre of the movie. They were then asked to indicate how much they would like to watch the movie and how good they think the movie would be. The order of the movies presented was randomized. Thus, a 2 (physical temperature: cold vs. warm)  $\times$  4 (genre: romance vs. action vs. comedy vs. thriller)  $\times$  3 (replicate within genre) mixed design was employed, with physical temperature as a between-subject factor, and genre and replicate as within-subject factors. Consistent with our predictions, we found that physical coldness led to increased liking for romance movies, but not for other genres.

Study 2 was designed to examine the mechanism underlying the effect observed in study 1 that physical coldness increases people's liking of romance movies. We argued that the reason that physical coldness increases liking for romance movies is that physical coldness activates a desire for psychological warmth and romance movies are associated with psychological warmth. To provide evidence for this conjecture, we measured the extent to which people associated romance movies with psychological warmth. Although people in general associate romance movies with psychological warmth, there should be individual differences in terms of the extent of this association. We expected that people's perceived association between romance movies and psychological warmth would moderate the effect. Specifically, for participants who associate romance movies with psychological warmth, physical coldness would lead to increased liking for romance movies; conversely, for those who do not associate romance movies with psychological warmth, the effect of physical coldness on liking of romance movies should be attenuated. The results supported our predictions.

Study 3 was designed to examine people's lay belief about the relationship between physical warmth and psychological warmth. That is, whether they believe psychological warmth can compensate for physical coldness. To examine this issue, we manipulated the salience of people's physical temperature by varying the order of the movie preference task and the measure of physical coldness. Thus, a 2 (physical temperature: cold vs. warm)  $\times$  2 (salience of physical temperature: salient vs. nonsalient)  $\times$  3 (replicate) mixed design was used. We found that when participants' physical temperature was

measured after the movie preference task, as we did in studies 1 and 2, we replicated our earlier findings that physical coldness increases liking of romance movies; however, when participants' physical temperature was made salient by measuring it before the movie preference task, there was no effect of physical coldness on their preference for romance movies. These results seem to suggest that, at an explicit level, participants did not believe that psychological warmth can (or should) compensate for physical coldness and thus corrected for this influence.

Finally, in study 4, to demonstrate the external validity of the observed effect, we tested our hypothesis using detailed rental records from an online movie rental company in the U.S. The data span a period of nearly three years, from August 2002 to May 2005. In this study, since we could not manipulate physical temperature, we used weather temperature as a proxy for physical coldness (warmth). After controlling for customers' idiosyncratic preference for romantic movies, the availability and quality of the movies in stock, and any seasonal effect that is unrelated to temperature, we still found a significant negative relationship between weather temperature and consumption preference for romance movies; and such relationship was not observed for other major genres (action, comedy, drama, and thriller).

In sum, in three laboratory studies and one study using online movie rental data, we provide support for the hypothesis that physical coldness increases liking of romance movies, but not for other major genres. The current research adds to the growing literature on embodied cognition by showing that physical coldness activates a goal of seeking psychological warmth. Our data also seem to suggest that the association between physical warmth and psychological warmth might operate at a subconscious level and that people do not believe that psychological warmth can (or should) compensate for physical coldness at an explicit level. The current research also adds to past research on seasonality in the movie industry (Eliashberg, Elberse, and Leenders 2006; Radas and Shugan 1998) and offers practical implications for optimizing the release time for romance movies.

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## More than Just "Sex Sells": The Economics of Attraction Motives in Complex Social Consumption Contexts

### EXTENDED ABSTRACT

Marketers often use provocative tactics to capture consumers' interest in brands, products, and messages. Ads often depict an attractive model in a sexually suggestive pose or setting even when the image has little to do with the product message. Recent research demonstrates that incidental exposure to sexual stimuli lead male consumers to choose smaller, more immediate rewards (Van

den Bergh, Dewitte, and Warlop 2008) and to spend more of their resources to signal social status or uniqueness (Griskevicius et al. 2007). Many marketers might look at these effects and see them as evidence of the old business adage, "sex sells."

Recent research in consumer behavior has additionally shown that the presence of other people, even those unrelated to the consumer, activate relational goals that influence status signaling behavior (Argo et al. 2005). Here, we examine the role of a particular type of "mere presence" effect: sex ratio, or the ratio of males to females in an environment. While basic reward sensitive perspectives demonstrate that viewing attractive individuals of the opposite sex increases status signaling (Griskevicius et al. 2007) and risk taking (Ariely and Loewenstein 2006; Van den Bergh et al. 2008) through motivation for reward, both advertisements and retail environments contain more complex social groups. Specifically, it is unclear how same-sex presences may impact status and reward seeking behavior.

Derived from biological research, research on sex ratios may accurately predict the effect of a varied social environment (or advertising context) on an individual's status signaling behavior (Baumeister and Vohs 2004). Sex ratio research predicts that as the competition level increases (i.e., number of same-sex individuals relative to opposite-sex individuals increases), behaviors designed to signal status should increase. Thus, we propose a reward perspective that incorporates sex ratio and provides two behavioral studies and one neuroimaging study that support a sex ratio sensitive reward model. Across two behavioral studies that utilize priming paradigms, we demonstrate that competitive sex ratios a) increase status signaling above sex ratios that lack competition and b) depend on the attractiveness of same-sex competition.

In Study 1, we primed sex ratio using a sequence of images that depict attractive opposite and same sex faces. The study had four conditions: a Control condition with no faces and three Sex Ratio conditions that varied the ratio of same-sex individuals from zero (No Competition), to a few (Low Competition), to many (High Competition). Status signaling (operationalized as willingness to pay for status products; Griskevicius et al. 2007) was then measured for a series of status-related items in an ostensibly unrelated task. Findings showed that Low and High Competitive sex ratios result in increased status signaling relative to both No Competition sex ratios and neutral control. Thus, mere exposure to mixed-sex groups led people to be more willing to pay for status products when the sex ratio contained same-sex individuals.

Study 2 extended the findings from the first study. Using a similar paradigm as the first study, Study 2 manipulated the attractiveness of same-sex competition photos, thus varying competition not only through quantitative ratio but qualitative competitiveness. Results conceptually replicate Study 1, showing that mere exposure to competitive sex ratios led people to want to signal status. In addition, we show that the presence of attractive competitors produced to the strongest desire to signal status.

Study 3 utilized a novel functional magnetic resonance imaging (fMRI) paradigm to explore neural changes in response to sex ratios. A sex ratio model suggests that the desirability of the opposite sex increases when competition is present. Thus, we examined the brain's response to sets of images that contain either competition or no competition. Within the Nucleus Accumbens (NAcc), an area of the brain that encodes desirability (Aharon et al. 2001), we observe an increase in neural activation for pictures of attractive opposite sex faces when they have been viewed in the presence of attractive same sex faces. Thus, we find that exposure to competitive sex ratios increase reward value in the nucleus accumbens.