Don't sit so close to me: Unconsciously elicited affect automatically provokes social avoidance

Wyer, NA

http://hdl.handle.net/10026.1/2934

10.1037/a0023981
Emotion

All content in PEARL is protected by copyright law. Author manuscripts are made available in accordance with publisher policies. Please cite only the published version using the details provided on the item record or document. In the absence of an open licence (e.g. Creative Commons), permissions for further reuse of content should be sought from the publisher or author.
Don't Sit So Close to Me: Unconsciously Elicited Affect Automatically Provokes Social Avoidance

Natalie A. Wyer and Guglielmo Calvini


CITATION
行为可能由线索触发，这些线索存在于我们的社会环境中。先前的研究已将重点放在对刺激性解释上。这种解释表明，非意识过程可能会受到类似自动影响的影响。我们建议，将刺激群体视为危险时，可能产生焦虑反应，进而导致向该群体移动的倾向。在本文中，我们通过在未被觉察的情况下向参与者展示群体图像，并发现他们在后续互动中表现出更大的回避行为。批判性的是，这种效应的解释是由他们对威胁相关信息的增加敏感性引起的。这些发现证明了非意识引致的影响在人际行为上的作用。

**关键词:** 非意识预示，情感，行为

在遇到一个与物理外貌或群体性刻板印象相关的个体时，与群体相关的反应可能由线索触发。这种反应与敌意或攻击性有关，而这种反应可能会在未被觉察的情况下被激活。例如，通过穿越街道或在房间的另一侧坐下（即，不直接与群体接触）。这种反应可能与敌意或攻击性有关，而这种攻击性可能被学者们认为是“自动”反应。基于这些结果，Bargh和同事（1996）提出，激活老年人刻板印象会引发与该群体一致的行为（走更慢的路）但并不真正影响参与者的情绪。然而，这种可能性尚未得到充分研究，尤其是在研究刻板印象自动效应和其自动影响的背景下。

尽管已经进行了数个展示如何自动激活刻板印象的示例，但这些示例仅影响认知和行为反应，相对而言，未被觉察的影响是自动化的。这种影响在未被觉察的情况下产生，可能在个体意识到威胁的程度中起作用。特别是，当群体与社会环境中的线索相关时，这种影响可能在未被觉察的情况下产生，从而影响个体的反应。这可能是个令人惊讶的结果，因为在一些情况下，个体对群体的反应可能不仅取决于个体知道什么（即，个体关于群体的感受）也取决于个体对群体的反应。因此，个体对群体的反应是自动化的。这可能是一个特殊情况，当一个社会群体与负面情绪如恐惧或厌恶相关时。此外，对于Bargh等人（1996）而言，值得注意的是，激活老年人刻板印象会引发与该群体一致的行为（走更慢的路）但并不真正影响参与者的情绪。然而，根据这项研究，行为结果是从自动化的群体代表中产生的。这些自动的运动程序可能会引发与群体一致的行为。这些认知行为和情感后果可能有时是自动的和未被觉察的，因此，这些影响可能在某种程度上被归因于群体的知觉。

While we do not refute the possibility that prime-to-behavior effects may sometimes be the direct and unmediated consequence of the activation of a group representation alone, recent evidence suggests that such effects can also be mediated by changes in how the self, others, or the situation are perceived. For example, Smeesters, Wheeler, and Kay (2010) propose that “indirect” prime-to-behavior effects emerge when a prime alters self-construal, biases perceptions of others, or changes one’s interpretation of the present situational context. In each case, priming effects on behavior are underpinned by cognitive mechanisms that produce prime-congruent changes in perception.
Of greater importance for the present work, research on emotion activation would suggest that the move to completely disregard the role of affect may have been premature. Unconsciously elicited emotions have a direct effect on affect-relevant behavior (Ruys & Stapel, 2008), and unconscious perception of affectively laden social stimuli elicits congruent behavioral and affective responses (Winkielman, Berridge, & Wilbarger, 2005). Therefore, it becomes critical to investigate whether such affective reactions also contribute to automatic effects of stereotypes on behavior. Indeed, we suggest that one’s behavioral reaction to individuals perceived as threatening may have more to do with one’s affective or emotional response than with the thoughts that spring to mind when one sees such individuals. In previous work by Plant and Devine (2003), overt anxiety was a significant predictor of avoidance of intergroup contact. Anxiety or feelings of threat that are induced by nonconscious priming may similarly encourage avoidance. Unlike intergroup anxiety, however, anxiety stemming from unconscious exposure to a threatening group is likely to produce avoidance in the absence of a specific (consciously perceived) target—thus, generalized avoidance behavior (rather than avoidance of a specific group or group member) may emerge.

Here, we tested the hypothesis that priming a social group stereotyped to be hostile (“hoodies” in the United Kingdom, defined in the Oxford English Dictionary as “a young person who wears a hoodie and is typically regarded as socially disruptive . . . a hooligan, a thug”) provokes a state of tension marked by increased sensitivity to signs of danger or threat. We expect that this affective response will, in turn, produce avoidance in an interpersonal context. Specifically, we propose that exposure to the group “hoodies” will elicit affective responses that are typically associated with encountering a hoodie (i.e., anxiety or fear), which will encourage behavior tailored to coping with that affective state (i.e., avoiding potential threats).

We subliminally primed participants with images of a young man who appeared to be a hoodie or who was neutral in appearance. Participants then completed a selective attention task designed to assess their level of anxiety by measuring their sensitivity to threat-related stimuli. Finally, participants were led to believe that they would be meeting another participant, and the distance they placed between themselves and the person they expected to meet was measured as an indication of avoidance behavior. Because situations involving unfamiliar others may be construed as potentially threatening, we hypothesized that participants who were primed with images of a hoodie would tend to avoid unfamiliar others, and their avoidance would be mediated by sensitivity to threat.

Method

Participants

Participants were 52 undergraduate students at the University of Plymouth (38 female, $M_{age} = 22.15$) who completed the study to fulfill a course requirement.

Design and Procedure

Participants were randomly assigned to a hoodie prime or neutral prime condition. The priming phase was adapted from Bargh et al. (1996; Study 3). Participants were introduced to a “spatial perception” study, which was in fact the priming task. The computerized task consisted of 100 trials, each beginning with a row of asterisks in the center of the screen (1000 ms), followed by the priming stimulus (11 ms), a series of hash marks covering the same area as the prime (11 ms), a pattern mask of gray ovals (21 ms), and a display of colored dots (up to 2000 ms). Participants were asked to judge whether the number of dots was odd or even and respond by pressing one of two keys. The prime-mask sequence varied depending on condition. Participants in the hoodie prime condition were presented with a grayscale photograph ($247 \times 269$ pixels on a $640 \times 480$ screen) of a young man in a hooded shirt (in the fashion of a hoodie). Participants in the neutral prime condition were presented with a grayscale photograph of the same young man dressed in casual, nonhooded, attire.

Second, participants completed a digit matching task designed to assess whether the priming stimuli had elicited a heightened state of anxiety or threat. Previous studies confirm that chronically anxious individuals typically show increased interference from threat-related words in selective attention tasks (e.g., Williams, Mathews, & MacLeod, 1996; cf. Rothermund, Voss, & Wentura, 2008). Similarly, emotionally salient or personally significant words capture nonanxious participants’ attention during selective attention tasks (Anderson & Phelps, 2001; Wolford & Morrison, 1980). Because the hoodie prime was expected to elicit an affective state of heightened anxiety or threat, the attention of participants exposed to that prime should be automatically captured by threat-related words in a selective attention task. The digit matching task was modeled on a digit parity task, which has shown increased processing interference from threat-related words compared to neutral words (Aquino & Arnell, 2007).

Half of the 48 trials consisted of threat-related words (e.g., agony, coffin, disease; MacLeod, Mathews, & Tata, 1986) and half of neutral words (e.g., potato, umbrella, locker). Each word was presented in the center of the screen, flanked on both sides by a number. On half of the trials, the numbers were the same (e.g., a “7” appeared on each side of the word), whereas, on the other half, the numbers differed (e.g., a “7” appeared on the left, and a “5” appeared on the right). Words and numbers were both presented in Arial 14-point font. Participants’ task was to judge whether the two numbers were the same and respond by pressing one of two keys. The time required to respond to each trial was recorded. To the extent that participants’ attention was drawn to threatening information, they should be slower to make the digit matching judgment on trials involving threat-related words because of the increase in attentional processing elicited by those words.

After the digit matching task, participants were informed that the next part of the experiment required them to work on a task with another participant in an adjacent room. The experimenter led the participant into a room (approximately 20 m$^2$) where a table was placed in the corner opposite from the door. One chair was placed at the far end of the table, upon which was a (nonhooded) jacket and backpack (neutral with respect to gender), with a stack of similar chairs placed near the door. The experimenter informed 1 Participant gender did not moderate affective or behavioral responses to the prime, as no significant main or interaction effects involving gender were found.
the participant that the other student had left to make a phone call but would return momentarily. The experimenter explained that while s/he was waiting, the participant could begin by filling out a questionnaire, and so s/he should take another chair from the stack and have a seat at the table while the experimenter retrieved the questionnaire. After the participant was seated, the experimenter returned with a questionnaire (unrelated to the current experiment) and, on the pretext of explaining what to do, knelt down to place a marker on the floor at the corner of the participant’s chair. The distance between this marker and the chair purportedly belonging to the other participant was measured and recorded at the end of the experiment.

After completing the questionnaire, participants were thoroughly debriefed and excused. An extensive funnel debriefing procedure (Bargh & Chartrand, 2000) was used to confirm that participants were unaware of the priming stimuli. No participant reported awareness either of the priming stimuli or of any connection among the three phases of the experiment.

### Results

#### Seating Distance

An independent-samples t-test comparing participants’ seating distance revealed that those in the hoodie prime condition sat significantly farther away ($M = 147.38$ cm, $SD = 75.24$) than did those in the neutral prime condition ($M = 106.81$ cm, $SD = 42.49$), $t(50) = 2.39$, $p = .02$, $d = .68$. Avoidance is a response typical of individuals who encounter hoodies (see Discussion). Here, avoidance emerged among participants for whom images of hoodies were perceived, as a response to someone who was not themselves believed to be a hoodie.

#### Attention to Threat

Participants’ response times (RTs) on the digit matching task were examined to determine whether participants’ attention was automatically drawn to threat-related stimuli. After removing trials where response times deviated more than 3 standard deviations from the mean (1.2% of all responses), average RTs on trials involving threat-related versus neutral words were computed separately and subjected to a two-way mixed-model Analysis of Variance (ANOVA), where trial type (threat-related vs. neutral) was entered as a repeated-measures variable and prime (hoodie vs. neutral) was a between-participants variable. This analysis yielded only a significant two-way interaction, $F(1, 50) = 4.51$, $p = .04$, $\eta^2_p = .08$ (see Figure 1). Analyses of simple main effects revealed that hoodie-primed participants were slower than neutral-primed participants on trials involving threat-related words, $F(1, 50) = 3.05$, $p = .08$, $d = 0.48$, whereas there was no difference between the two groups on neutral trials, $F < 1$, $d = 0.20$. Furthermore, hoodie-primed participants were slower to respond to threat-related than neutral trials, $t(25) = 1.93$, $p = .065$, $d = 0.40$, whereas neutral-primed participants were not, $t(25) = 1.12$, $p > .27$, $d = 0.23$. Thus, exposure to hoodies produced a heightened sensitivity to threat-related stimuli.

#### Mediation

Threat-sensitivity scores were computed for each participant as the average RT to threat-related trials minus the average RT to neutral trials on the attention task. These scores represent the additional attention captured by threat-related words, with higher scores indicating greater attentional bias toward threat-related information. To assess whether differences in threat sensitivity scores accounted for the effects of hoodie priming on seating distance, the steps outlined by Baron and Kenny (1986) were followed (see Figure 2). As formal tests of mediation (e.g., Sobel) are not appropriate for small samples, the procedure recommended by Preacher and Hayes (2004) was followed. The bootstrap estimate of the indirect effect was $16.11$ ($SE = 10.69$), with a 95% confidence interval ranging from 1.27 to 46.93. This suggests that threat sensitivity did, in fact, mediate the effect of hoodie priming on seating distance.

However, consistent with our hypotheses, additional analyses indicated that the mediation was driven by hoodie-primed participants, for whom threat sensitivity was a significant predictor of seating distance, $b = .69$, $t(25) = 4.65$, $p < .001$. Among neutral-primed participants, the relationship between threat sensitivity and seating distance was nonsignificant, $b = .09$, $t(25) = .46$, $p = .65$. Formal tests (Preacher, Rucker, & Hayes, 2007, moderated mediation Model 1) confirmed a significant conditional indirect effect, $b = .31$, $t(51) = 3.60$, $p < .001$.

### Discussion

The present experiment establishes, for the first time, that subliminal exposure to a threatening out-group produces not only cognitive and behavioral responses but also affective responses. Moreover, the data reported here establish that such affective responses determine prime-to-behavior effects under conditions in which the primed out-group is associated with strong affective reactions and in which the behavior in question is assessed in interpersonal contexts. It appears that unconsciously perceiving the

---

2 The effect of hoodie priming on seating distance appears to be highly reliable, as it has been replicated in three additional experiments not reported here.
The presence of a social group produces an automatic affective response that alone influences subsequent social behavior. This research highlights the complexity of priming effects on behavior. Only recently have researchers begun to identify the conditions in which distinct varieties of prime-to-behavior effects occur (e.g., DeMarree & Loersch, 2009) and to explore the mechanisms responsible for producing them (e.g., Smeesters, Wheeler, & Kay, 2009). The overwhelming majority of this work has focused on cognitive factors that play an undeniable role in producing these effects. However, this singular focus has neglected the possibility that affective mechanisms may also be at work. The present research provides a first demonstration that priming drives attention to affectively relevant information, which, in turn, predicts the behavioral outcome. Much of the previous work has focused on behavioral measures that can be interpreted in terms of multiple processes (e.g., assimilation, contrast, or response), making their implications ambiguous (e.g., Chen & Bargh, 1997). In contrast, the results reported here are unequivocal in their implication: increased seating distance reflects a response (rather than assimilation or contrast) to hoodies. Unlike early reports of prime-to-behavior effects, which described behavioral assimilation or contrast to activated traits or stereotypes (e.g., Dijksterhuis, et al., 1998), response effects entail behavior that is suited to interacting with a member of a primed social group (e.g., Cesario, Plaks, & Higgins, 2006; Jonas & Sassenberg, 2006). We were careful in this study to identify a behavior that is unambiguously a response to hoodies and not a stereotypic association. In pretesting reported in Wyer, Calvini, Nash, and Miles (2010), avoidance was the most frequently listed response to encountering a “hoodie” but had no association with the hoodie stereotype. The same pretesting indicated that approach-related behavior (e.g., crowding, pushing, etc.) was unrelated to the hoodie stereotype. Thus, we are able to conclude that our measure of seating distance reflects a behavioral response to hoodies rather than either assimilation or contrast. This strongly suggests that our results are the outcome of an affective process rather than stereotype activation. Response effects of priming have previously been attributed to direct activation of interaction behaviors via goal states (Cesario et al., 2006), situation models (Jonas & Sassenberg, 2006), or, most recently, action semantics (Cesario, Plaks, Hagiwara, Navarrete, & Higgins, 2010). In particular, Cesario et al. (2010) reported that participants primed with African American faces later increased their physical distance from another (unknown) person, if they were able to do so. Intriguingly, participants in the same study displayed a different behavioral response (i.e., aggression) if their ability to distance themselves was constrained by the physical environment. While the authors attributed these effects to activation of fight-or-flight action semantics, their results are largely compatible with the conceptualization offered here. Threat-related affect is likely to trigger a “flight” response when social avoidance is possible; when it is not possible, other behavioral strategies are likely to be used.

The present work highlights a second, albeit related, route for prime-to-behavior effects. Our findings suggest that exposure to the feared group, “hoodies,” produced increased sensitivity to threat, which then led to greater avoidance behavior. Thus, the unconscious activation of an anxious response associated with a social group (such as the feeling experienced after exposure to a hoodie) may automatically trigger behaviors suitable to resolve the unconscious affect. In fact, social avoidance is likely to be the first and most direct response to cope with unpredictable conditions in the absence of further appraisal processes (see Kurzban & Leary, 2001).

Alternatively, an unconscious affective response might also influence people’s social behavior in a less direct way by mediating their conscious appraisal of the behavior’s social context. In the current experiment, participants may have construed their interaction partner as the actual source of their affective state, hence intentionally avoiding interaction with a threatening individual. This is not incompatible with Smeesters et al.’s (2009) findings that trait priming influences interpersonal behavior by influencing how one’s interaction partner is construed. Such construal processes may have contributed to participants’ avoidance behavior in the present experiment.

In this study, however, the construal appears likely to have been driven by affective processes rather than by straightforward (cognitive) assimilation of the other person to the prime. The relative contribution of affective and cognitive mechanisms in producing response effects will need to be clarified by further investigation. It is likely that some groups are more strongly associated with stereotypic beliefs while others have predominantly affective associations; thus, the extent to which affective processes play a role in producing prime-to-behavior effects may vary. We would contend, however, that the great majority of groups that one may encounter in daily life are characterized by both strong affective and cognitive associations. Thus, the unconscious influence of priming on (social) behavior will be the outcome of the interaction of both types of automatic responses to the prime.

In closing, the present experiment advances the current literature by demonstrating, for the first time, that affective processes contribute to prime-to-behavior effects. Of course, it is yet to be determined how the activation of affective responses may interact with other factors in influencing how one’s interaction partner is construed. The results reported here are largely compatible with the conceptualization offered here. Threat-related affect is likely to trigger a “flight” response when social avoidance is possible; when it is not possible, other behavioral strategies are likely to be used.

### Figure 2
Threat sensitivity as a mediator of the effect of hoodie priming on seating distance. Betas in parentheses indicate simple or direct effects on seating distance; betas outside of parentheses indicate effects on seating distance when the other variable in the model is controlled for. 

\* \( p < .05 \)
\*\* \( p < .01 \)
\*\*\* \( p < .001 \)

\[ \beta = .29^* \]
\[ \beta = .32^* \]
\[ \beta = .49^{***} \]
\[ \beta = .48^{***} \]

### Table 1

<table>
<thead>
<tr>
<th>Prime (Neutral = 0; Hoodie = 1)</th>
<th>Threat Sensitivity</th>
<th>Seating Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Neutral</strong></td>
<td>( \beta = .29^* )</td>
<td>( \beta = .20 )</td>
</tr>
<tr>
<td><strong>Hoodie</strong></td>
<td>( \beta = .49^{***} )</td>
<td>( \beta = .48^{***} )</td>
</tr>
</tbody>
</table>

| Figure 2. Threat sensitivity as a mediator of the effect of hoodie priming on seating distance. Betas in parentheses indicate simple or direct effects on seating distance; betas outside of parentheses indicate effects on seating distance when the other variable in the model is controlled for. 

\* \( p < .05 \)
\*\* \( p < .01 \)
\*\*\* \( p < .001 \). |
with other prime-congruent cognitive representations (such as group stereotypes). The present findings suggest that, at least for highly affectively charged social groups, interpersonal behavior is unambiguously the consequence of the individual’s affective states alone. However, the automatic activation of the group’s cognitive representation (i.e., stereotype) may still occur and play a role in other behavioral conditions. Thus, this study should serve as an impetus for further research into affective routes through which prime-to-behavior effects may emerge.

References

Received June 22, 2010
Revision received March 21, 2011
Accepted March 28, 2011
