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# Class and Compassion: Socioeconomic Factors Predict Responses to Suffering

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Previous research indicates that lower-class individuals experience elevated negative emotions as compared with their upper-class counterparts. We examine how the environments of lower-class individuals can also promote greater compassionate responding—that is, concern for the suffering or well-being of others. In the present research, we investigate class-based differences in dispositional compassion and its activation in situations wherein others are suffering. Across studies, relative to their upper-class counterparts, lower-class individuals reported elevated dispositional compassion (Study 1), as well as greater self-reported compassion during a compassion-inducing video (Study 2) and for another person during a social interaction (Study 3). Lower-class individuals also exhibited heart rate deceleration—a physiological response associated with orienting to the social environment and engaging with others—during the compassion-inducing video (Study 2). We discuss a potential mechanism of class-based influences on compassion, whereby lower-class individuals' are more attuned to others' distress, relative to their upper-class counterparts.

*Keywords:* social class, socioeconomic status, emotion, prosociality, culture

Lower social class is defined by reduced material resources (e.g., lower income, educational attainment) and subordinate social rank vis-à-vis others. Lacking resources and rank, lower-class individuals face harsher environments than their upper-class counterparts (Adler et al., 1994; Lareau, 2003) and these environments are theorized to shape emotional experiences. Researchers studying class-based patterns in emotion have almost exclusively concentrated on how lower-class individuals experience more negative emotions, such as anxiety, sadness, and anger, than upper-class individuals (see Gallo & Matthews, 2003 for a review). For example, lower-class individuals prove to be more emotionally reactive to ambiguous and negative social situations (Chen, Langer, Raphaelson, & Matthews, 2004; Gallo, Bogart, Vranceanu, & Matthews, 2005; Kessler & Cleary, 1980; Matthews, Gallo, & Taylor, 2010; Taylor & Seeman, 1999), more likely to experience dysphoric affect (Link, Lennon, & Dohrenwend, 1993; Kraus, Horberg, Goetz, & Keltner, 2011), and more likely to report negative life experiences than their upper-class counterparts (Matthews et al., 2000).

Given these findings, one might conclude that lower-class environments only promote the experience of negative emotional states, creating emotional vulnerabilities. However, drawing from theoretical work (Bowlby, 1978; Piff, Kraus, Côté, Cheng & Keltner, 2010; Taylor, 2006), we hypothesize that relative to upper-class individuals, the harsher environments that lower-class individuals encounter will also tend to promote greater experiences of compassion, a prosocial emotion associated with approach-related and positively valenced feelings (e.g., Goetz, Keltner, & Simon–Thomas, 2010; Oveis, Horberg, & Keltner, 2010).

## Social Class and Responses to Threat

Social class is a form of social hierarchy that arises from the amount of material resources an individual possesses (Oakes & Rossi, 2003), and one's perceived social rank in society relative to others (Kraus, Piff, & Keltner, 2009, 2011). As such, people typically measure the construct with indexes of material resource measures, such as financial wealth, educational attainment, or occupational prestige (Oakes & Rossi, 2003), as well as comparative rank perception measures wherein individuals rank themselves in society relative to others in terms of income, education, and occupation status (Adler, Epel, Castellazo, & Ickovics, 2000; Kraus et al., 2009).

Dissimilar social environments arise from the disparities in resources and rank of lower- and upper-class individuals, and lead to divergent life challenges. Lower-class individuals develop in environments with greater threats and external obstacles (e.g.,

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less-safe neighborhoods, poorly funded educational institutions), and are less able to use their limited resources to overcome these obstacles (Gallo & Matthews, 2003). In response, lower-class individuals develop a heightened awareness of how their environment shapes and constrains their behavior. For example, when describing environmental trends in economic inequality and everyday life outcomes (e.g., being laid off from work), undergraduates of lower subjective socioeconomic status—measured by ranking oneself in society in terms of income, education, and job status relative to others—attribute the causes of economic inequality to more external reasons (e.g., political influence, educational opportunity) than dispositional reasons (e.g., hard work, talent), relative to their upper-class counterparts (Kraus et al., 2009).

With less choice in neighborhood, less freedom to obtain important job or educational achievements through one's own control and influence, and fewer resources to buffer against threats, lower-class individuals become more vigilant of the social context, and wary of potential threats in their environments (Gallo et al., 2005; Taylor & Seeman, 1999). This vigilant response style is seen in studies documenting that lower-class individuals show greater subjective and physiological threat responses to ambiguous situations (Chen et al., 2004). For example, lower-class individuals—measured in terms of education attainment and occupation status—consistently show elevated physiological measures that index, albeit with some degree of ambiguity, increased threat sensitivity. For example, lower-class children reacted to threatening and ambiguous written social scenarios with increased heart rate and blood pressure (Chen & Matthews, 2001). With regard to hostility and aggression, lower-class mothers tend to report more hostile emotions (e.g., anger) and to suppress their nonhostile emotions (e.g., sadness and anxiety) in response to hypothetical stories of their child's anger (Martini, Root, & Jenkins, 2004). In addition, lower-class individuals consistently show elevated self-reports of anxiety, hopelessness, and hostility (for a review, see Gallo & Matthews, 2003). Overall, the above research suggests that lower-class individuals are sensitive and reactive to external forces in their environment (Grossman & Varnum, 2011; Kraus et al., 2009; Stephens, Markus, & Townsend, 2007), and especially those that may threaten themselves and others.

More recently, researchers have theorized that an alternative strategy to coping with stressful environments and external threats is to engage in more affiliative behaviors that build cooperative networks for withstanding challenges (Taylor et al., 2000). This *tend-and-befriend* response strategy is theorized to promote greater attention to the needs of others, and to result in more prosocial responses to suffering (Pickett & Gardner, 2005; Taylor, 2006). For example, it is theorized that external threats are a trigger of attachment-related behaviors in humans (e.g., Bowlby, 1978; Mikulincer & Shaver, 2005). In a similar vein, relationship building processes supported by oxytocin networks in the brain and peripheral nervous system are likewise triggered by threat (Taylor, 2006).

The above analysis suggests that lower-class individuals may use tend-and-befriend strategies as a response to their environments of increased threat and uncertainty. That is, we reason that lower-class individuals may manage external threats by initiating cooperative relationships, which promote greater attentiveness, awareness, and concern for others (Kraus, Côté, & Keltner, 2010; Kraus, Piff et al., 2011). Recent studies lend credence to this claim. In one line of studies, lower-class individuals were found to be more attentive to others' emotional experiences, showing greater empathic accuracy, defined as the ability to accurately read others' emotions (Stinson & Ickes, 1992), relative to their upper-class counterparts (Kraus et al., 2010). In this work, lower-class individuals—measured in terms of subjective social class rank and educational attainment—more accurately read emotions in static images and during live social interactions, relative to their upper-class counterparts. Within unstructured social interactions, lower-class university students—measured in terms of family education and income—were found to display more engagement behavior (e.g., head nods, laughs, shared gaze) than upper-class individuals (Kraus & Keltner, 2009).

Converging evidence also suggests that lower-class individuals favor an interdependent view of the self, whereas upper-class individuals are more inclined to espouse beliefs in an individuals' independence and autonomy (Stephens, Fryberg, & Markus, 2011; Stephens, Markus, & Townsend, 2007). For instance, in one study lower-class university students, whose parents' highest level of education was a high school diploma, tended to make choices that helped them blend in with others (e.g., by choosing a pen that resembled other pens; Stephens et al., 2007). In contrast, upper-class individuals, whose parents graduated from college, tended to prefer choices that helped them stand out (e.g., by choosing a unique pen). In recent work, Stephens and colleagues (2011) suggest that stronger relational norms among working-class individuals result in a less positive perception of individual choice, which favors an individual's own needs. In this series of studies, working-class participants experienced more negative affect when making choices and preferred choices made by others.

These lines of evidence suggest that lower-class individuals, living in more threatening environments, are more empathically attuned to the emotions of others, responsive nonverbally to others' emotions, and interdependent than upper-class individuals. These findings set the stage for the central prediction tested in the present investigation: that lower-class individuals will experience more compassion at the trait and state level than their upper-class counterparts. Extending these findings to the literature on compassion, we reason that with a stronger tendency to attend to negative external stressors and a motivation to affiliate, lower-class individuals will be more likely to attend to the negative situational factors causing another individual to suffer. As a result, lower-class individuals may perceive a sufferer as experiencing greater distress (i.e., fear, worry) and in more need of support. Thus, we also examine how perceptions of the sufferer's distress may mediate the relationship between social class and compassion.

## Social Class and Compassion

Compassion is defined as feeling sorrow or concern for others along with a desire to alleviate their suffering (Goetz et al., 2010). Compassion is a critical other-oriented emotion that, in the short term, promotes caretaking and soothing of the victim (Batson, Fultz, & Schoenrade, 1987; Zahn–Waxler, Friedman, & Cummings, 1983), and in the long term increases bonding, cooperation, and closeness with others (Frank, 1988; Gintis, 2000; Nesse, 1990; Oveis et al., 2010; Valdeslolo & Desteno, 2011). Compassion is associated with feelings of warmth and tenderness toward others,

as well as sadness (see Goetz et al., 2010 for a review of compassion).

Recent research has identified physiological responses that may be associated with both an outward focus and social engagement. For instance, heart rate deceleration is associated with orienting toward external stimuli in the environment instead of an internal focus (Cacciopo & Sandman, 1978; Stekelenburg & Boxtel, 2002). In addition, heart rate deceleration accompanies inductions of sympathy, a state related to compassion, and is predictive of prosocial behavior in response to sympathy-inducing stimuli (Eisenberg et al., 1989; Eisenberg et al., 1991).

Previous research on social class and prosocial behavior, which often follows from the experience of compassion (e.g., Batson & Shaw, 1991), lends indirect support for our hypothesis that lower-class individuals will experience more compassion. For example, lower-class individuals tend to behave with more charity and generosity than higher class individuals (Greve, 2009; James & Sharpe, 2007; Johnston, 2005; Piff et al., 2010). In nationwide surveys of charitable contributions in America, lower-income individuals consistently give a higher proportion of their annual income to charity, when compared to higher-income individuals (Greve, 2009; James & Sharpe, 2007; Johnston, 2005). In laboratory research, Piff and colleagues (2010) found that across four studies using a set of economic game scenarios, lower-class individuals were more charitable and generous toward others relative to their upper-class counterparts. Moreover, in these studies, upper-class individuals showed less prosocial behavior except when induced to experience compassion—by watching a video depicting the suffering of others (Piff et al., 2010). Although suggestive, the present research directly extends this work by examining how social class shapes the physiological and subjective experience of compassion, what may account for potential class-based differences in compassionate responding, and by examining class-based differences in compassion in spontaneous social interactions.

## Present Research

In the present research, we tested two hypotheses regarding the influence of social class on emotion experience. First, based on our analysis of tend-and-befriend responses to external threat, we expected lower-class individuals to feel more compassion relative to their upper-class counterparts. Second, based on our analysis of class-based threat vigilance, we expected lower-class individuals' compassion responses to be explained by their elevated perception of others' distress. We tested these hypotheses using distinct measures of social class, and using measures of compassion that index trait and state self-report components of this construct, as well as physiological responses that may index greater attention to the environment and outward focus. Moreover, we used diverse methods that include a laboratory induction of compassion, as well as dynamic social interactions. It is important, given how social class is associated with particular demographic characteristics (Lachman & Weaver, 1998), that we took steps to control for ethnic background throughout our analyses. We also controlled for gender, given that female participants tend to show elevated reports of compassion relative to male participants (Lennon & Eisenberg, 1987).

## Study 1: Social Class and the Disposition to Experience Compassion

Self-report measures of the dispositional tendency to feel specific emotions capture the frequency and intensity with which individuals experience emotion states, as well as specific cognitive and behavioral tendencies of these emotions (e.g., Lerner & Keltner, 2001; McCullough, Emmons, & Tsang, 2002; Oveis et al., 2010). In Study 1, we investigate the relationship between social class and the trait-like tendency to feel compassion. Our central prediction was that lower-class individuals would report greater tendencies to feel compassion on a dispositional basis relative to upper-class individuals, and that this tendency would not be attributable to class-related tendencies to feel more positive emotion or more emotion in general. In addition to controlling for common demographic variables such as ethnicity (European American coded as 0, non-European American coded as 1) and gender, we also control for self-reported spirituality, which has traditionally been associated with compassion (Sprecher & Fehr, 2005).

### Method

#### Participants

One hundred and forty-eight undergraduates (70 male, 78 female) from a large public university participated in this study. Participants came to the laboratory and filled out demographic measures and dispositional measures of compassion. Participants were given credit toward a psychology class requirement in return for their participation. The ethnic composition of the sample was 2.7% African American, 53.4%, Asian American, 23.3% European American, 6.0% Latino American, and 14.6% other ethnicities.

#### Measures

**Social class.** Participants completed a standard measure of social class identification in which they chose the class label they identified with the most from five options ranging from (1) lower class, (2) lower middle class, (3) middle class, (4) upper-middle class, to (5) upper class (Horberg, Oveis, Cohen, & Keltner, 2010). Consistent with previous studies of social class categories, participants reported a median social class of middle class (mean [$M$] = 3.16, standard deviation [$SD$] = 0.96; Horberg et al., 2009; Hout, 2008). Pilot data within a nationally collected online community sample ($n$ = 81), demonstrated this particular measure of social class was correlated with household income, a more objective measure of the construct, $r = .51$, $p < .001$.

**Dispositional compassion.** The Dispositional Positive Emotion Scale (DPES) is a well-validated self-report measure of the trait-like tendency to feel several distinct positive emotions including joy, contentment, pride, love, compassion, amusement, and awe on an enduring, trait-level basis (Shiota, Keltner & John, 2006). Participants rated 38 items with respect to how much they agreed or disagreed with each self-descriptive statement. We were particularly interested in the five items that assessed compassion: "I am a very compassionate person; When I see someone hurt or in need, I feel a powerful urge to take care of them; Taking care of others gives me a warm feeling inside; I often notice people who need help; It's important to take care of people who are vulnera-

ble." Participants responded to these items on 7-point Likert scales (1 = *strongly disagree,* 7 = *strongly agree; M* = 5.50, *SD* = 1.04). The DPES and the dispositional compassion subscale displayed high levels of reliability ($\alpha = .92$ and $\alpha = .90$, respectively).

## Results and Discussion

In keeping with previous studies of social class, social class and ethnicity (European American coded as 0, non-European American coded as 1) were correlated, $r(147) = -.23$, $p < .01$, such that individuals of lower social class were more often non-European American (Adler et al., 2000).[1]

Our central hypothesis was that lower-class individuals would report higher levels of dispositional compassion than upper-class individuals, controlling for key demographic variables. We first assessed correlations between these demographic variables and dispositional compassion in three separate regression analyses with either gender, ethnicity, or spirituality as predictors. In keeping with previous literature, women reported feeling more dispositional compassion than men, $\beta = .21$, $p < .01$, (Lennon et al., 1987) and spirituality positively predicted dispositional compassion, $\beta = .39$, $p < .001$, (Sprecher & Fehr, 2005). Ethnicity did not predict dispositional compassion, $\beta = .08$, a nonsignificant (*ns*) finding.

To test our central hypothesis that lower-class individuals would report more dispositional compassion relative to their upper-class counterparts, we computed a linear regression with social class, ethnicity, gender, and spirituality as predictors of dispositional compassion. In support of our central hypothesis, participants who reported lower levels of social class on our seven-level measure of class identification reported higher levels of the trait-like tendency to feel compassion, controlling for gender, ethnicity, and spirituality, $\beta = -.25$, $p < .001$. In this analysis, spirituality remained a significant predictor of compassion, $\beta = .37$, $p < .001$, gender was a marginally significant predictor, $\beta = .14$, $p = .08$, and ethnicity was not a significant predictor, $\beta = .01$, *ns*. Moreover, using similar regressions controlling for gender, ethnicity, and spirituality, social class did not predict scores for dispositional joy, contentment, pride, love, amusement, and awe (see Table 1 for regression coefficients). These latter findings suggest that social class uniquely predicts compassion, and that this association is not due to a class-related tendency to feel higher levels of all positive or approach-related emotions.

Table 1
*Social Class Predicts Trait Measures Relating to Dispositional Compassion, but not Other Positive Emotions*

| | Social class |
|---|---|
| DPES | −0.04 |
| Compassion | −0.25*** |
| Amusement | 0.07 |
| Awe | 0.1 |
| Contentment | 0.08 |
| Joy | −0.03 |
| Love | −0.10 |
| Pride | −0.11 |

*Note.* Numbers indicate standardized beta coefficients. DPES = Composite across all positive emotions.
*** $p < .001$.

## Study 2: Social Class and a Physiological Correlate of Compassion

Building upon the social class and trait compassion findings of Study 1, in Study 2 we pursued two goals. First, whereas in Study 1 we documented that lower-class individuals tend to report greater compassion independent of the social context, in Study 2 we sought to document that lower-class individuals would report greater compassion in response to specific cues of suffering. Second, we sought to document that the association between class and compassion extends beyond self-report measures by examining whether lower-class individuals would respond to another's suffering with a greater peripheral physiological response—heart rate deceleration—that is associated with orienting toward and engaging with others (Eisenberg et al., 1989; Goetz et al., 2010). We pursued these goals by having participants, varying in their social class backgrounds, view two videos—one in which an individual disclosed an experience of suffering, and the other a neutral video. This paradigm allowed us to ascertain whether class-based differences in compassion are reducible to baseline differences, or if these differences arise particularly in contexts where others are suffering or in need.

## Method

### Participants

Sixty-five participants (33 male, 32 female) from a large public West Coast university took part in this study. Participants were given credit for a psychology class in return for their participation. The ethnic composition of the sample was 2.9% African American, 39.1%, Asian American, 33.3% European American, 8.7% Latino American, and 15.9% other ethnicities.

### Procedure

Participants were brought into the experiment room and seated in front of a computer. Participants were immediately connected to the MP 150 data acquisition and analysis systems (Biopac Systems, Inc., Goleta, CA), which measures physiology. Electrocardiogram recordings were sampled with leads placed on the abdomen on the right and left side in a Lead II configuration with a 35-Hz filter. Participants then filled out surveys for 15 min.

After filling out some demographic surveys, participants watched two, 2.5-min-long videos on the computer and reported how much they felt a variety of different emotions. The order of

[1] The data from all three studies reveal that Asian American participants do have significantly lower social class than non-Asian participants, $t$'s $> 2.15$, $p$'s $< .05$. Given that East Asian culture is associated with greater interdependence, and potentially, more compassion as an extension, we controlled for participant ethnicity coded as Asian (coded as 1) or non-Asian (coded as 0) ethnic identity in each of our three studies. This variable was not a significant predictor of compassion in any studies, Study 1: $\beta = -.11$, *ns*, Study 2: $B = -.23$, $t(118) = .32$, *ns*, Study 3: $B = .33$, $t(94.98) = .72$, *ns*. More important, social class consistently remained a significant predictor in all analyses even when accounting for Asian American ethnicity, Study 1: $\beta = -.24$, $p < .01$, Study 2: $B = -1.01$, $t(111) = 2.73$, $p < .01$, Study 3: $B = -.23$, $t(92.34) = -2.49$, $p < .05$.

the videos was counterbalanced and participants rested for 5 min between videos. The neutral video served as a control allowing us to evaluate participants' emotional responses to a nonemotional video and gather baseline physiological measures. The neutral video was an instructional demonstration where a woman explained how to construct a patio wall. The other video functioned as a compassion induction aimed at assessing participants' emotional responses to witnessing the suffering of others. This video portrayed children suffering from cancer and their families as they cope with chemotherapy. After watching each video participants listed how much they felt a variety of emotions.

## Measures

**Social class.** Participant's social class was assessed, as in prior research (Kraus & Keltner, 2009; Lachman & Weaver, 1998), in terms of family income and parental education attainment. Family income was measured in seven categories: (1) below $15,000, (2) $15,001–$25,000, (3) $25,001–$35,000, (4) $35,001–$50,000, (5) $50,001–$75,000, (6) $75,001–$100,000, (7) above $100,000. Median family income for participants in this sample was between $50,001 and $75,000. Parental education was assessed in terms of four categories: (1) less than high school graduation, (2) high school graduation, (3) college degree, (4) postgraduate degree, with the median education attained for both parents as a college degree. Measures of family income and education were intercorrelated, $r(64) = .56$, $p < .001$. To compute an overall measure of social class we standardized measures of family income and parental education, then computed an average indicating overall social class (e.g., Kraus & Keltner, 2009).

The current sample is consistent with other studies of social class, in that 28.8% of parents in our sample, and 31.2% in other nationally collected samples attained high school graduation as their highest level of education completed (Johnson & Krueger, 2005, 2006). The median level income of this sample was also comparable to the 2010 national median income ($51,965) according to the U. S. Census Bureau (DeNavas–Walt, Proctor, & Smith, 2010).

**Emotion ratings.** After watching the videos, participants rated the compassion/sympathy they experienced while watching the video, as well as 14 other emotions or emotion pairs (afraid/scared, angry, annoyed/irritated, anxious, contempt/disdain, disgusted, enthusiasm/excitement, happy, inspired, relaxed/comfortable, sad, surprised, trust, warmth/tenderness) after watching the videos. Each emotion was rated on 10-point Likert scales (1 = *I do not feel this emotion at all*, 10 = *I feel this emotion as much as I've ever felt it*).

**Heart rate.** Heart rate was measured continuously during the entire experiment, but was only analyzed during two time points: during 2.5 min of the neutral video and during the 2.5 min of the compassion-inducing video. Continuous electrocardiograph (ECG) readings were transformed into measures of heart rate (beats per minute) and then averaged over the entire two and a half minutes of each video. Artifacts in the ECG recording, errors that occurred randomly due to causes, which were unrelated to our manipulation (e.g., sneezing), were interpolated by taking the average time (in milliseconds) between the previous and subsequent heartbeat and inserting as an artificial R-spike in the ECG channel. This procedure was used for less than 5% of participants.

## Results and Discussion

We first confirmed that our two videos elicited different levels of compassion by comparing participants' self-reported compassion responses to the neutral and compassion videos. Participants reported over five times as much compassion after watching the cancer video ($M = 6.90$, $SD = 2.10$) than after watching the neutral video ($M = 1.34$, $SD = 1.38$), $t(64) = 19.66$, $p < .001$. The order of the video presentation did not influence self-reported compassion in the cancer video, $t(63) = .22$, *ns*, or heart rate deceleration, $t(62) = 1.11$, *ns*.

We hypothesized that in response to the video of cancer patients, lower-class participants would report more compassion and would experience greater heart rate deceleration—a physiological index of orienting toward and engaging with the social environment (Cacioppo & Sandman, 1978; Eisenberg et al., 1989)—relative to their upper-class counterparts. We used hierarchical linear modeling (HLMwin v. 6.04; Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2004) to test our predictions by creating a two-level model in which the two videos (neutral and compassion-inducing) were nested within participants. These analyses controlled for dependencies in the same person's data across videos. We were particularly interested in whether social class accounts for between-person differences in the association between type of video and self-reported compassion and heart rate, such that lower-class individuals experience greater increases in compassion or heart rate deceleration in response to the compassion-inducing video than did upper-class individuals. In other words, we examined a cross-level interaction between social class (a Level-2 variable) and video type (a Level-1 variable) predicting self-reported compassion and heart rate in separate analyses. Due to the potential of gender and ethnicity (coded as European American or non-European American) to influence the relationship between social class and compassion, we controlled for both in all subsequent analyses. Below is a sample equation with social class moderating the association between the type of video and self-reports of compassion. The Level-1 (within persons) equation predicting compassion was:

$$\text{Compassion}_{ti} = \pi_{oi} + \pi_1 (\text{Type of Video})_{ti} + e_{ti} \quad (1)$$

The Level-2 (between persons) equations for the intercept and slope were:

$$\pi_{oi} = \beta_{00} + \beta_{01} (\text{Gender})_i + \beta_{02} (\text{Ethnicity})_j + \beta_{02} (\text{Social Class})_i + r_{oi} \quad (2a)$$

$$\pi_{1i} = \beta_{10} + \beta_{11} (\text{Social Class})_i \quad (2b)$$

There were two main effects for self-reported compassion: first, the compassion-inducing video reliably elicited greater self-reports of compassion relative to the neutral video, $B = 5.56$, $t(113) = 19.48$, $p < .001$, and lower-class participants reported greater compassion across videos relative to upper-class participants, $B = .96$, $t(57) = 1.99$, $p = .05$. More important however, these main effects were qualified by the predicted interaction between social class and video type in predicting compassion, $B = -.81$, $t(113) = 2.78$, $p < .01$. As shown in Figure 1, lower-class participants showed greater increases in compassion from the neutral video to the compassion-inducing video than did their upper-class counter-

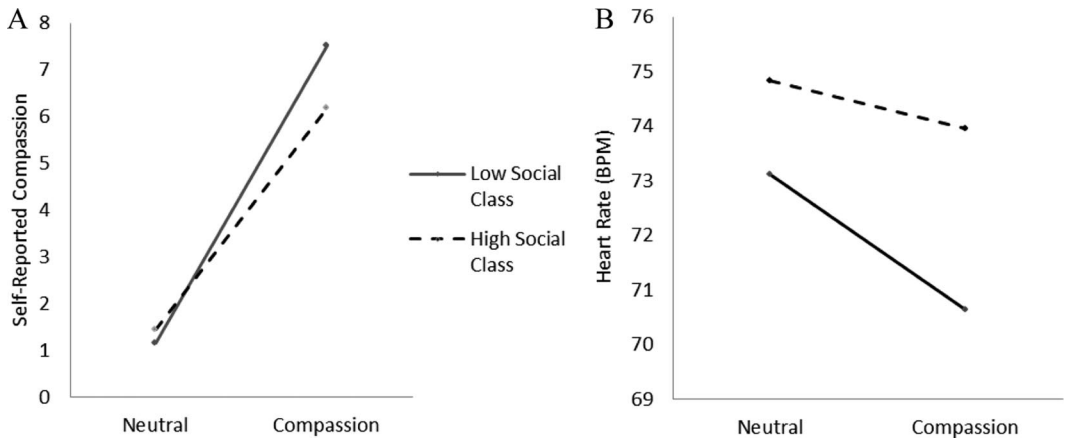


*Figure 1.* Self-reported compassion (A) and heart rate (B) as a function of the emotion induction condition and social class. In both panels high social class represents individuals one standard deviation above the mean and low social class represent those one standard deviation below the mean.

parts. Self-reported compassion was neither predicted by ethnicity, $B = .25$, $t(57) = .63$, *ns*, nor gender, $B = .61$, $t(57) = 1.68$, *ns*.

Using Equation 1, to predict heart rate deceleration we found a similar pattern of results. There was also a main effect of the type of video, $B = -1.67$, $t(114) = 5.40$, $p < .001$, such that participants watching the compassion-inducing video exhibited heart rate deceleration, however, in these analyses there was no main effect of social class, $B = .06$, $t(57) = .05$, *ns*. Again, there was a significant cross-level interaction, $B = .80$, $t(114) = 2.55$, $p = .01$, in which lower-class participants showed a greater deceleration in heart rate from watching the neutral video to watching the compassion-inducing video than did upper-class participants (see Figure 1). Heart rate was neither predicted by ethnicity, $B = .42$, $t(57) = .17$, *ns*, nor gender, $B = -1.26$, $t(57) = .47$, *ns*.

Sadness and anxiety often covary with experiences of compassion (Batson & Shaw, 1991; Eisenberg et al., 1989; Goetz et al., 2010). Given tendencies among lower-class individuals to react more negatively to aversive or ambiguous stimuli (e.g., Gallo et al., 2005), one might expect lower-class individuals to report more anxiety to others' suffering. However, parallel HLM analyses revealed that self-reports of sadness ($M = 5.41$, $SD = 2.33$), and anxiety ($M = 2.30$, $SD = 2.00$), did not yield significant interactions between social class and video type, self-reported sadness, $B = -.17$, $t(114) = .54$, *ns*; (self-reported anxiety, $B = .35$, $t(114) = 1.21$, *ns*). These findings suggest that class-based differences in emotional reactions to suffering center uniquely around the more prosocial and affiliative emotion of compassion, and are not part of a class-related, broader tendency to respond with distress or negatively valenced emotions. Cross-level interactions between social class and the type of video did not predict any other self-reported emotions, $B's \leq |.26|$, $t's < 1.08$, *ns*, suggesting that lower-class individuals uniquely experienced greater compassion, but not greater emotionality overall when witnessing others suffering or in need.

In Study 2, social class predicted participants' compassion-related subjective reports and autonomic responses associated with orienting toward and engaging with others. Although lower-class individuals typically show greater threat-related increases in heart rate and blood pressure than upper-class individuals in response to ambiguously negative stimuli (e.g., Chen & Matthews, 2001; Chen et al., 2004), in Study 2, lower class individuals showed greater heart rate deceleration in response to the suffering of others. This heart rate deceleration, which has been associated with a greater outward focus, engagement, and feelings of sympathy (Cacciopo & Sandman, 1978; Eisenberg et al., 1989), may be part of a bodily calming response that prepares individuals to engage with another person in a more affiliative and caretaking fashion. Overall, the results from Study 2 are in keeping with the complex emotions theorized to be part of a tend-and-befriend response to threat, and reveal that lower-class individuals appear to exhibit quite different autonomic responses depending on whether the threat is to the self or another person.

## Study 3: Social Class and Compassion During a Competitive Job Interview

In Study 3, we extended our first two studies by examining class-based compassion responses during a spontaneous social interaction with a stranger. Participants engaged in a mock job interview in a group setting with another person whom they had not met previously, reporting on their emotions both before and after the interview. We expected that relative to their upper-class counterparts, lower-class participants—measured in terms of family education and income—would be more likely to experience compassion toward their interview partner during the competitive interview. In addition, in Study 3 we sought to document a process that would give rise to class-related differences in compassion. Specifically, the perception of another person's distress is known to be the first stage in the compassionate response (e.g., Batson & Shaw, 1991; Goetz et al., 2010). In light of recent evidence that lower-class individuals are more empathically accurate in judging the emotions of others (e.g., Kraus et al., 2010), and more reactive to threats that impact others (Chen & Matthews, 2001), one might expect lower-class individuals to experience greater compassion as the result of their greater attunement to other individuals' distress

(fear, worry, sadness, and embarrassment). In Study 3, we tested this meditational hypothesis.

## Method

### Participants

One hundred six university student participants (49 male, 57 female) from a large West Coast university took part in this study. Participants were given credit for a psychology class in return for their participation. The ethnic composition of the sample was 2.8% African American, 44.3%, Asian American, 42.5% European American, 7.5% Latino American, and 2.9% other ethnicities.

### Procedure

Participants took part in the study in pairs and were seated directly across from one another in a separate room. Gender and social class were allowed to vary freely for each session. After getting acquainted, participants took part in a hypothetical job interview called the "job interview challenge." Participants were provided with a description of a lab manager job in a psychology department that outlined the responsibilities and required skills of the position. The experimenter interviewed both participants using six commonly used interview questions (e.g., "What do you consider to be your greatest strengths and weaknesses?"). Participants were told that the three best interviewees over the course of the entire experiment would be given cash prizes so as to increase motivation for the job interview competition and ensure engagement of the participants. Following the interview, participants answered demographic questions, rated their own emotions during the interview, and estimated the emotions of their partner during the interview.

### Measures

**Social class.** Social class was measured in the same manner as Study 2. The median family income of the study was between $50,001 and $75,000. Again, measures of family income and education were intercorrelated, $r(104) = .50$ $p < .001$. To compute an overall measure of social class, we standardized measures of family income and parental education, and then computed an average indicating overall participant social class (Kraus & Keltner, 2009).

**Emotion ratings.** Participants rated themselves and estimated their partner's emotions during the hypothetical job interview on a set of 20 positive and negative emotions (e.g., amusement, anger, compassion, contempt, contentment, disgust, embarrassment, excitement, fear, guilt, happiness, hope, inspiration, interest, jealousy, love, relaxation, sadness, surprise, and worry) using 10-point Likert scales (0 = *no emotion*, 9 = *a great deal of emotion*). Participant self-reports of compassion ($M = 4.33$, $SD = 2.33$) were used to determine compassion responses during the job interview. To determine perceptions of partner's distress, we computed the mean of partner estimates of four emotions: fear, worry, sadness, and embarrassment, ($M = 2.40$, $SD = 1.39$; $\alpha = .87$).

## Results and Discussion

Initially, we sought to determine if lower-class individuals reported experiencing more compassion following the job interview, relative to their upper-class counterparts, and if this relationship was independent of ethnicity and gender. For this analysis, we accounted for the dyad-level dependence of our data using the actor partner interdependence model (APIM; Kenny, Kashy, & Cook, 2006). We predicted actor compassion following the job interview with actor and partner reports of family social class, ethnicity (European American coded as 1 and non-European American coded as −1), gender (male coded as 1 and female coded as −1), and the interaction between actor and partner social class. The latter effect was added to the model to determine if individuals experience greater compassion for people who share similar social class standing—given that research suggests people experience compassion toward similar others (Batson, Lishner, Cook, & Sawyer, 2005). In this analysis, the ethnicity, $B = -.04$, $t(93.65) = -0.09$, *ns*, and gender, $B = -.37$, $t(92.57) = -0.83$, *ns*, of the actor were not significant predictors of compassionate responding. Unexpectedly, partner ethnicity was associated with compassion, $B = 1.52$, $t(94.84) = 3.34$, $p < .01$, such that participants were more compassionate to their European American partners, independent of social class. This unexpected effect may be due to the fact that participants were better able to recognize the suffering of individuals from a majority ethnic group. Alternatively, European Americans may be perceived to hold more power and acting compassionately toward them could initiate a beneficial social relationship. Future research is necessary to test these possibilities. Gender of partner was not associated with compassion, $B = -.35$, $t(94.13) = -0.81$, *ns*. Consistent with our main hypothesis, family social class was significantly associated with feeling more compassion for one's partner following the job interview, $B = -.25$, $t(91.52) = -2.75$, $p < .05$. It was interesting that partner social class, $B = -.04$, $t(91.52) = -0.50$, *ns*, along with the interaction between actor and partner social class, $B = -.01$, $t(46) = -0.33$, *ns*, were both unrelated to compassion responses. This latter result suggests that in the present study, participants did not experience more compassion while interacting with partners from a similar social class background.

Based on our conceptual analysis, we expected that lower-class individuals would be more likely to experience compassion during the stressful job interview due to their greater empathic reactions to the distress of others. Given this theoretical rationale, we predicted that participants' perceptions of distress would account for lower-class individuals' tendency to experience more compassion following the job interview.

To test this prediction, we conducted a mediation analysis using the APIM (West, Popp, & Kenny, 2007). In this analysis, to estimate the effect of social class on compassion, we predicted actor compassion following the job interview with actor and partner family social class, gender, ethnicity, baseline compassion, and baseline distress.[2] The analysis (displayed in Figure 2) yielded the predicted actor social class effect, such that lower-class participants reported experiencing more compassion relative to their upper-class counterparts, even after accounting for baseline reports of distress. Again, participants in this analysis were more likely to

[2] Participant social class was unrelated to participant self-reported distress at baseline $r = .11$, *ns*, suggesting that baseline differences in self-reported distress do not account for class-based patterns of compassion.

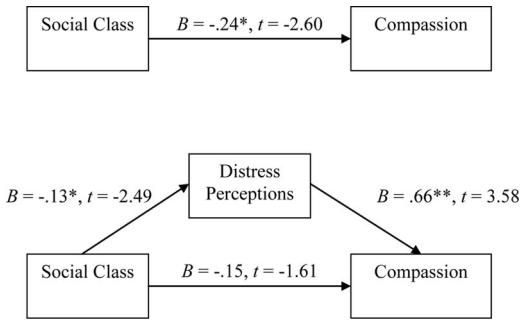


*Figure 2.* Path model displaying the association between actor family social class and actor reports of compassion following the job interview, explained by actor perceptions of partner's distress (fear, worry, sadness, and embarrassment) during the job interview. $^{*}p < .05$. $^{**}p < .01$.

experience compassion toward European American partners, $B = 1.45$, $t(88.98) = 3.09$, $p < .01$. No other effects were significant.

Next, we determined if lower-class individuals perceived that their partner was experiencing more distress during the interview. In this analysis, we predicted actor perceptions of the partner's distress with actor and partner social class, gender, ethnicity, baseline compassion, and baseline distress. The analysis yielded the predicted effect, suggesting that lower-class participants perceived that their partner was more distressed than did upper-class participants. In addition, participants reported perceiving significantly more distress if their partner was lower in social class, $B = -.11$, $t(76.30) = -2.09$, $p < .05$. Participants who exhibited higher baseline distress also perceived more distress in their partner, $B = .23$, $t(86.21) = 2.76$, $p < .05$. Participants also perceived more distress if their partner was European American, $B = .61$, $t(84.66) = 2.30$, $p < .05$, but these effects were all independent of the influence of social class on perceptions of one's partner's distress. No other effects were significant.

Finally, to determine if class-based perceptions of distress explained the relationship between family social class and compassion, we conducted another APIM analysis predicting actor compassion responses following the job interview with actor and partner variables for social class, ethnicity, gender, baseline compassion, and baseline distress. We included actor and partner perceived distress in this analysis as our mediator. The results yielded a pattern consistent with the hypothesis. Accounting for actor perceptions of their partner's distress rendered the originally significant relationship between actor social class and compassion following the job interview nonsignificant. Moreover, a test of the indirect effect of social class on compassion through perceptions of partner distress was significant (Sobel $z = 1.99$, $p < .05$). Overall, the results suggest that, due to their orientation to the social context and their perceptions of others' distress, lower-class individuals report experiencing more compassion compared to their less contextually oriented upper-class counterparts.

## General Discussion

Lower social class is associated with greater attention to environmental and contextual information as a way of coping with more threatening environments (e.g., Kraus et al., 2009). In some instances, this outward orientation can lead to increased negative reactivity as a response to self-relevant threats among lower-class individuals (Chen & Matthews, 2001; Kraus, Piff, et al., 2011). In the present studies, we hypothesized, building upon theory and research suggesting that compassionate, relationship-building responses are adaptive means of responding to threat (Pickett & Gardner, 2005; Taylor et al., 2000; Taylor, 2006), that lower-class individuals would respond with greater compassion to the suffering of others. In the present three studies we have provided evidence that is consistent with this hypothesis: lower-class individuals exhibited elevated compassionate responses in terms of trait (Study 1) and state (Studies 2 and 3) self-reports, and a physiological response suggesting an outward, other-focused engagement—heart rate deceleration (Study 2; Eisenberg et al., 1989). Lower-class individuals showed greater compassion for sufferers presented in videos and in face-to-face interactions, relative to their upper-class counterparts.

It was important these effects emerged even after accounting for ethnicity, gender, and spirituality—three variables associated either with social class or compassion responses. Moreover, in Study 3 we provided initial evidence indicating a mechanism explaining lower-class individuals' compassion responses—greater perceptions of the sufferer as distressed. This finding is in keeping with previous research suggesting that lower-class individuals are more reactive to negative or ambiguously hostile social situations that impact others (Chen & Matthews, 2001), and more vigilant of potential external influences on their and others' social outcomes (Kraus et al., 2009). It is important in the current research contexts where others were suffering or in need, lower-class individuals did not experience increased negative physiological reactivity nor did they respond with greater overall subjective distress. Rather, lower-class individuals showed self-report and physiological responses that are consistent with elevated compassion and concern for the distress of others who are suffering.

The present research provides evidence suggesting that lower-class individuals may exhibit two distinct responses to threat. In certain situations, as other researchers suggest, lower-class individuals respond with greater hostile reactions to threat (Chen & Matthews, 2001; Gallo & Matthews, 2003; Kraus, Horberg, et al., 2011). In other situations, when another person is suffering or in need, more vigilant lower-class individuals may instead more directly attune to the way in which this event adversely affects the sufferer. As a result, lower-class individuals would perceive the sufferer as feeling more distressed, and subsequently respond with greater compassion than their upper-class counterparts. In an effort to broaden the research on social class and emotions beyond negative emotion profiles, this work provides evidence for an alternative behavioral and emotional strategy for lower-class individuals and demonstrates how it is compatible with current analyses of responses to threat (Taylor, 2006).

## Caveats and Future Directions

Though our studies included a wide range of family incomes and results held for both subjective and objective measures of social class, participants in these studies were exclusively undergraduate university students. Lower-class students who attend a university may have different compassion responses than less educated or upwardly mobile lower-class individuals. In addition to extending this work to a national sample, future studies should

examine how this effect could be bounded at both ends of the spectrum of social class.

There may also be important boundary conditions of compassionate responding for individuals of high and low social class. For instance, prosocial behavior is often amplified in response to the needs of in-group as opposed to out-group individuals (e.g., Gaertner & Dovidio, 2000). Lower-class individuals, with the strategy of forming reciprocal networks with others, may define the in-group in broader terms, and respond compassionately to more people. In addition, compassion may be bound by the duration of investment required to help another person. Lower-class individuals may not be able to provide sustained levels of investment over a long period of time due to their own lack of resources. Given this, we might expect lower-class individuals to respond with less compassion if enduring, intense commitments are implicated in the suffering and need of others. These possible moderators of the relationship between social class and compassion warrant empirical investigation.

A similarly intriguing future direction concerns the contexts that enhance the compassion responses of upper-class individuals. For instance, it is possible that upper-class individuals—given their greater autonomy and independence—tend to selectively express compassion for in-group members who are suffering. It is also possible that upper-class individuals tend to experience compassion strategically, for example, as a means to gain elevated status in face-to-face social groups (e.g., Flynn, Reagans, Amanatullah, & Ames, 2006). Identifying the contexts that enhance compassion among upper-class individuals represents a promising area of future research.

The theoretical arguments we have advanced in this research reflect the current models of compassion and empathy, which suggest that attention to and recognition of suffering is a prerequisite step before compassion can take place (Batson et al., 1987; Goetz et al., 2010). In particular, the mediation analyses we presented in Study 3 align directly with this temporal course of compassionate responses. Future research could more directly test this temporal course by systematically varying the extent that distress may be perceived before assessing compassion responses. A related point concerns the focus of our investigation on very specific types of compassion-eliciting suffering: that of a child suffering from cancer, or a student suffering during a stressful job interview. Individuals define suffering in unique ways based on a number of factors, including cultural background (Goetz et al., 2010). Future research should examine the role of social class in compassion responses to other types of suffering.

Social class is typically conceived of as a stable and enduring characteristic arising from a person's material resources (e.g., educational attainment, wealth). Although it seems logical that social class would shape emotional responding in contexts where others are suffering, the current data are correlational, making this conclusion preliminary. Recent work has attempted to manipulate subjective ratings of social class by altering comparisons to people at the top or bottom of the social class hierarchy (Kraus et al., 2010), and future research should use this kind of method to disentangle the social class construct from other variables that co-occur with social class (e.g., neighborhood effects). Nevertheless, in the current research we have taken steps to control for critical variables that co-occur with both social class (e.g., ethnicity) and compassion (e.g., gender and spirituality), and have found converging evidence for class-based influences on compassion across several contexts. The role of other variables related to social class, such as family size or political orientation that could impact compassion should be studied in future work.

These findings suggest that an important strategy for those who chronically face challenges in their environments is to build and maintain support systems with others (Taylor et al., 2000). This strategy, consisting of elevated compassion and caretaking, would promote more reciprocity, which may be particularly important for overcoming harsh environments. The studies we present not only provide evidence for the stronger experience of prosocial emotion that may underlie increased patterns of prosocial behavior observed among lower-class groups (Piff et al., 2010), but also suggest the existence of this larger behavioral strategy among lower-class individuals.

In addition, the data from the present studies are germane to interpersonal interactions between individuals of different classes. The trajectory of an interpersonal interaction is determined by how an individual perceives his or her partner, especially when the situation is emotionally charged. Disparities in compassionate responding are explained by differences in perceptions of the target who is suffering. Our findings suggest that when a person is suffering, upper-class individuals perceive these signals less well on average, consistent with other findings documenting reduced empathic accuracy in upper-class individuals (Kraus et al., 2010). Taken together, these findings suggest that upper-class individuals may underestimate the distress and suffering in their social environments.

Compassion is thought to be a central element of the world's ethical systems (Armstrong, 2004). Here we show that the experience of this moral emotion is not randomly distributed across social classes—at the trait, state, and potentially physiological level, it appears to be a more consistent part of the emotional repertoire of lower-class individuals.

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