

Socioeconomic Status, Perceived Resources, and Susceptibility to Sickness Suggestions:

Investigating Whether a Manipulation of Socioeconomic Status Influences

Susceptibility to the Nocebo Effect

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Abstract

Because individuals with low socioeconomic status (SES) are exposed to greater stressors and perceive having more limited resources, they may be far more susceptible to the *nocebo effect* than individuals with higher SES. The nocebo effect is a negative reaction to the suggestion that a person may feel unpleasant, despite no environmental reason why this suggestion alone should induce a negative state. I examined the effects of a nocebo suggestion and social status on health symptoms. After administering my nocebo—a suggestion that dust in the lab environment was potentially harmful—I manipulated participants' subjective social status. We then examined reported health symptoms. My data indicated that being low in subjective SES resulted in greater health symptoms when a nocebo was not delivered. This nocebo effect was actually stronger among those in the low subjective SES condition than among those in the high subjective SES condition. Overall, the findings provide unique insight into the nature of SES and the nocebo effect, and the implications of the findings are discussed.

Socioeconomic status, perceived resources, and susceptibility to sickness suggestions:

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Susceptibility to the Nocebo Effect

Placebo and nocebo effects have received much attention over the course of the last sixty years. The placebo effect is a measurable, observable or felt improvement in health that is not attributable to an administered medication or treatment (Miller, Colloca, & Kaptchuk, 2009). Placebos have become widely recognized as a pharmacologically inactive substance, such as a saline solution or sugar tablet, that seemingly produces positive effects similar to those of a pharmacologically active substance, such as an antibiotic (Miller et al., 2009). On the other hand, the nocebo effect is a negative reaction to the suggestion that a person may feel unpleasant (either physically or mentally), despite there being no environmental reason why this suggestion alone should induce a negative state (Schweiger & Parducci, 1981). A person who is told that he/she may feel a particular negative symptom, such as a headache, may actually start to experience a headache; this means that the mere suggestion of oncoming negative affect can create a negative expectation that ultimately brings about those undesirable outcomes. The reason why placebos and nocebos have received so much attention is because their effects highlight the power of suggestion. The body is capable of healing itself, or hurting itself, simply based on a suggestion.

The Nocebo Effect

The most extreme example of the nocebo effect is voodoo death. Voodoo death, sometimes referred to as psychogenic death or psychosomatic death, is the phenomenon that someone can die from a strong emotional response to the mere suggestion that he/she was exposed to some degree of sorcery (Cannon, 2002). Although most reports of voodoo death

come from the records of anthropologists who lived in widely scattered parts of the world, some physicians today consider voodoo death to be well within the realm of possibility. Psychological theories that explain voodoo death rely on the notion that victims were experiencing feelings of helplessness, unworthiness, incompetence and a general “given-up complex” (Lester, 2008-2009). When someone feels unworthy, he/she is more likely to actually die.

Recently, researchers have focused on exploring the mechanisms behind the nocebo effect, and several classic studies have demonstrated the susceptibility that individuals have to this effect within a lab. For example, researchers were able to induce headaches among participants without any harmful stimulation (Schweiger & Parducci, 1981). College students were exposed to what they were told was a modified electroencephalograph that delivers a low-voltage current through the temples. They were also told that although the current was not strong enough to be felt on the skin, it *had* given participants headaches in the past; the inclusion of this piece of information served as the nocebo in this experiment. Results showed that even though the equipment in the laboratory was never actually turned on and no real electric current was delivered to anyone’s head, nearly 2/3 of the participants still reported experiencing a headache. Furthermore, even after researchers told the participants that there was no electric current, all of the participants still confirmed that the headaches they felt were completely real (Schweiger & Parducci, 1981).

Researchers have also found evidence of the nocebo effect as it relates to media suggestions of experiencing adverse symptoms (Withhöft & Rubin, 2012). In this study, participants were randomly assigned to either watch a television report about the negative health effects of WiFi or an irrelevant control film. After watching their designated film, participants were told they were in the presence of electromagnetic fields and received a fake exposure to a

WiFi signal for approximately fifteen minutes. Results indicated that over half of the participants reported experiencing physical symptoms of discomfort (i.e. head/concentration symptoms, anxiety related symptoms, tingling sensations, etc.) Viewing the media report about the dangers of WiFi increased one's likelihood of experiencing the symptoms being warned about, as well as the likelihood of attributing what they felt to the WiFi they assumed they were exposed to (Withhöft & Rubin, 2012). This research serves to demonstrate how a mere suggestion that one may experience adverse effects from a supposedly hazardous substance is enough to cause one to actually experience negative symptoms.

Why might low SES individuals be more vulnerable to the nocebo effect?

There are several suggested explanations for why low SES individuals are more susceptible to health problems than high SES individuals, such as increased exposure to stress, decreased resilience and contextual tendencies. I will describe each of these explanations in detail below.

Stress. Low SES individuals are more likely to be exposed to stressful situations. They tend to live in environments that are characterized by increased violence, harsh responses from the criminal justice system, as well as stigmatization and ostracism. Together, these threats create a stress-inducing atmosphere that fosters a multitude of health problems (Kraus et al., 2012). Unfortunately, the low objective nature of these people's SES usually prevents them from effectively coping with these stressful events. People who are of low objective SES lack sufficient finances and have limited access to education and healthcare. Someone who has little money will not be able to afford any degree of preventative health measures, nor a doctor visit for post-illness treatment. Likewise, someone who does not have access to a proper education will have a smaller chance of knowing how to take care of one's physical self or how to prevent

sickness across the board. Because these people have limited resources, they tend to be more chronically anxious and stressed. Chronic stress leads to temporary and chronic health problems, decreased life spans and increased rates of depression and other psychological disorders (Kraus et al., 2012).

Decreased resilience. Another reason that lower SES individuals may be more susceptible to illness is because, unlike high SES individuals who perceive themselves as capable of coping with stressful events, low SES individuals often have little confidence in overcoming particular challenges (Johnson & Krueger, 2005). This is usually the case because low SES individuals believe that they do not have the resources that wealthier people have to handle stressful obstacles. In other words, they *feel* poor. Having uncertainty in one's ability to cope leads to increased anxiety for potentially threatening events (Chen & Matthews, 2001) and decreased resilience. This, in turn, likely leads to increased susceptibility to suggestion, and thus, an increased likelihood that a nocebo will take hold. When faced with a serious problem, it may be more difficult for low SES individuals to "bounce back" than it would be for high SES individuals (Johnson & Krueger, 2005).

Generalized perception of little control. How one perceives their available resources mirrors how they perceive their general control over life's outcomes, a factor that is consistently correlated with physical health (Johnson & Krueger, 2005). This sense of control is very similar to self-efficacy and/or resilience. The reason this relationship between resources and control likely exists is because those who perceive themselves as having limited resources lack the confidence to exert control while dealing with bigger problems. If one has sufficient financial resources, on the other hand, he/she will feel in control to deal with a potential problem because he/she can rely on his/her resources to help with the issue. For example, if one has a lot of

financial resources and his/her car breaks down, he/she can afford to pay for the repair and rent a car in the meantime; he/she can exert control over the situation and cope with the problem by using their money. However, if one does not have resources and his/her car breaks down, life suddenly seems out of their control because they are not able to fix it, rent a car, and therefore, drive to work. Relatively minor annoyances for high SES individuals may be perceived as major life disruptions for low SES individuals (Johnson & Krueger, 2005).

Contextual tendencies. Stemming from this hypothesis of resource disparity is the idea that having perceptions of lower rank vis-à-vis others in society enhances contextual tendencies—that is, “external, uncontrollable social forces and other individuals who influence one’s life outcomes” (Kraus et al., 2012). In other words, while upper-class individuals—those who generally live lives of reduced threat and elevated personal control—attribute their personal outcomes to internal forces like personal goals and decisions, lower-class individuals are more likely to attribute personal outcomes to their external environment (Kraus et al., 2012). Low SES individuals have a tendency to attribute reward to the environment while simultaneously blaming the environment for their negative circumstances (Kraus et al., 2012).

Research across several different populations supports this phenomenon. In one national phone survey where people were asked to give explanations of wealth and poverty in society, lower-income participants endorsed explanations like political influence and discrimination whereas upper-income participants referenced more personal characterizations such as hard work and effort (Kraus et al., 2012). Because of low SES individuals’ tendency to attribute circumstances to external forces, those who perceive themselves as less well off than their average peer may be more willing to accept and blame physical symptoms on their environment, especially after being explicitly told that it may cause said outcomes.

How SES is conceptualized: objective vs. subjective

As I mentioned briefly above, SES can either be conceptualized objectively or subjectively. Objective SES refers to the material conditions of one's life, such as financial resources, access to and engagement in educational opportunities, and participation in social institutions (Kraus, Piff & Keltner, 2009). Subjective SES refers to how one feels they rank relative to other members of the same university, community, country, etc. In other words, subjective SES highlights how an individual perceives themselves within a resource-based, social hierarchy (Kraus et al., 2009).

A popular way to measure subjective SES is through a scale called the MacArthur ladder (Giatti, do Valle Camelo, de Castro Rodrigues & Barreto, 2012). While taking this scale, participants are told to think of the image of a ladder as representing a particular population. At the top of the ladder are people who come from families that are the best off—families who have the most money, the most education, and the most respected jobs. At the bottom of the ladder are the people who come from the families that are the worst off—families who have the least money, the least education, and the least respected jobs or no job. This measurement encourages individuals to adopt a hierarchical mindset and triggers upward and downward comparisons (Giatti et al., 2012). Objective SES, on the other hand, is usually measured through a series of questionnaires that evaluate factors such as familial income and parental education levels without invoking upward and downward subjective comparisons (Kraus et al., 2009).

Recently, researchers have found that subjective SES can be manipulated. That is, situations can be framed such that individuals think of themselves as upper or lower SES, relative to some comparison standard. Researchers were able to frame perceived SES among their participants by subjecting people to different graphs that displayed contradictory economic

trends in society. One group of participants was exposed to a graph that showed increasing disparity between the richest and the poorest sectors of United States society, while another group saw a graph that showed gradually decreasing disparity. How they perceived socioeconomic disparity, in turn, affected the way that they perceived their own socioeconomic standing (Kraus et al., 2009). Being able to manipulate perceived SES is advantageous because it allows us to determine a causal direction of variables in empirical research. As a measurement, subjective SES is superior to objective SES. Previous research suggests that across a number of different populations, subjective SES is a more reliable predictor of health outcomes than objective SES. Many empirical studies have found that higher subjective SES, as assessed by the ladder, is associated with better health, and that the relations remain after controlling for traditional objective measures (Cohen et al., 2008). In other words, subjective SES predicts health independent of objective markers.

Overview of the Current Study

The goal of this study is to evaluate how manipulating perceived SES can influence people's susceptibility to the nocebo effect. That is, will how an individual feels about the number of resources they have make him/her either more or less likely to feel physically ill? If this were the case, it would suggest that one's perception of his/her resources could ultimately buffer them from the threat of physical illness.

I hypothesized that (1) people who think they have low SES will be more susceptible to a nocebo than people who think they have high SES, (2) those who are generally optimistic will be less susceptible to a nocebo, (3) those who generally have high levels of resilience will be less susceptible to a nocebo, and (4) those who generally have anxiety will be more susceptible to a nocebo effect.

Method

Participants

Recruitment. Participants in this experiment were undergraduate students from The University of North Carolina at Chapel Hill. Participants were recruited from the UNC Sona-Systems psychology 101 participant pool. All of the students were enrolled in psychology 101—an introduction psychology course—and received one credit toward their final grade as compensation for participating in the study.

Measures

Raven's Progressive Matrices. Participants completed the Raven's Progressive Matrices (Raven, Raven & Court, 2003) as a filler cognitive task. For each item, participants saw one large visual pattern that had a piece missing. Participants were asked to choose the missing element that completed the pattern from six presented options. There were 60 items total.

Pennebaker Inventory of Limbic Languidness (PILL). A modified version of the Pennebaker Inventory of Limbic Languidness (PILL) (Pennebaker et al., 1982) was used to measure perceived psychosomatic symptoms. The modified version used in this study evaluated watery eyes, runny nose, sore throat, congestion, achy joints, coughing, headaches, and fatigue. Participants indicated the degree to which they were experiencing each symptom on a scale from 1 (*not at all*) to 6 (*severely*). There were eight items total.

The Life Orientation Test-Revised (LOT-R). The Life Orientation Test-Revised (LOT-R; Scheier & Carver, 1985) was used as a measure of optimism. This measurement included items such as "*In uncertain times, I usually expect the best*" and "*I hardly ever expect things to go my way*" and participants were asked to indicate the extent of their agreement with each

presented statement on a scale from 0 (*strongly disagree*) to 4 (*strongly agree*). There were ten items total.

The Brief Resilience Scale. Participants completed the Brief Resilience Scale (Smith et al., 2008) as a measure of resilience. This measurement included items such as “*I tend to bounce back quickly after hard times*” and “*I tend to take a long time to get over set-backs in my life.*” Participants indicated the extent to which they agreed with each statement on a scale of 1 (*strongly disagree*) to 4 (*strongly agree*). There were six items total.

The State-Trait Anxiety Inventory. Anxiety was measured via the State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch, Lushene, Vagg & Jacobs, 1983). Twenty statements that people use to describe themselves such as “*I feel calm*” and “*I am jittery*” were presented, and participants indicated to what degree they felt that emotion, at that moment, on a scale from 1 (*not at all*) to 4 (*very much so*).

Demographic questionnaire. Participants completed the study by answering a series of demographic questions. Subjective SES was measured again using the MacArthur scale (Aldler et al., 1999) and participants were asked to consider where they stood, relative to other people in the United States. Objective SES was measured by income on a 20-item scale ranging from “*less than \$5,000*” to “*\$175,000 or more.*” To further measure subjective SES, participants were presented with a series of eleven questions such as “*My family usually had enough money for things when I was growing up*” and “*I don’t worry too much about paying my bills.*” Participants indicated the degree to which they agreed with each statement on a scale from *strongly disagree* to *strongly agree*. Participants indicated their father and mother’s highest level of education on a scale from *less than a high school degree* to *doctorate level degree (for example PhD, MD, JDS.)* Finally, they indicated their race or ethnicity, gender and age.

Procedure

Participants were randomly assigned to either a nocebo condition or a control condition. The random assignment was based on time (e.g. studies that ran on even hours implemented the experimental condition and studies that ran on odd hours subjected participants to the control condition). Participants in the nocebo condition were exposed to a nocebo: the experimenter, who was wearing a lab coat and a surgical mask, told participants that the lab they were in was currently undergoing a construction project and because of this, there was dust and harmful particles in the air. They were told that there would be questions at the end of the study that asked them about how they felt so that any symptoms they felt could be controlled for when analyzing the data that I was interested in. The control condition was not exposed to this nocebo, meaning nothing was mentioned about an ongoing construction project or the possibility that they might feel sick. During the control condition, the experimenter was wearing a lab coat, but was not wearing a surgical mask.

All participants were then subjected to a social class manipulation through the MacArthur ladder (Aldler et al., 1999). They were randomly assigned to either a high subjective SES condition (the red X appeared near the top of the ladder) or a low subjective SES condition (the red X appeared near the bottom of the ladder). Participants were asked to think of reasons why they were similar to individuals on the ladder where the red X appeared. They typed these responses in a presented textbox. Participants were then subjected to a manipulation check. This was done using the MacArthur ladder as well. Participants were told to think of the ladder as representing where students stand at UNC and were asked to indicate where they thought they stood on the ladder: *on a rung LOWER than the red X, at the red X, or on a rung HIGHER than*

the red X. In a separate item, participants were asked to indicate where they thought they stood on the ladder and the measure was scored from 1 (lowest) to 10 (highest).

Participants were then asked to complete the Raven's Progressive Matrices, followed by a series of symptom and personality measurements in the following order: the PILL, the LOT-R, the Brief Resilience Scale, and the STAI. Participants completed the study by answering a series of demographic questions that evaluated their family income, parental education, race/ethnicity, age, and gender.

Results

Descriptive Statistics

The sample included 167 undergraduate students (72 women). The ages of participants in the sample ranged from 18 to 27 ($M = 18.8$, $SD = 1.25$). Of the participants, 76% identified as White/Caucasian, 12% identified as Black/African American, and 12% identified as Asian.

Familial income among the participants ranged from one student reporting a familial income of less than \$5,000 annually to 48 students reporting a familial income of greater than \$175,000 annually. It is important to note that the average familial income for the sample was quite high ($M = 16.32$, which translates to an average annual income between \$85,000 and \$99,999, $SD = 3.94$).

I used two different measures to assess subjective SES: (1) the MacArthur Ladder and (2) a series of questionnaires that determined the degree to which a person felt he/she had enough money. According to the measure using the MacArthur Ladder, the average subjective SES was high ($M = 6.56$ on a 10-point scale, $SD = 1.81$). According to the second measure of subjective SES, the average was, again, quite high ($M = 4.30$, $SD = 1.36$). In order to create a single measure of overall subjective SES, I averaged the two measures described above together

(Cronbach's $\alpha = .71$). I also created an index of objective SES by averaging together reports of annual familial income and the level of each parent's education.

Finally, the measures of anxiety, optimism, and resilience indicated a range of individual differences. The average anxiety rating was 1.81 ($SD = .45$, $Range=1-2.95$ on a 4-point scale), the average optimism rating was 3.49, ($SD = .56$, $Range=2.2-4.8$ on a 5-point scale), and the average resilience rating was 3.36 ($SD = .71$, $Range=1.33-5$ on a 5-point scale).

Correlations

In order to determine how the dependent variables of interest were related to each other, I ran a series of correlations (see Table 1). There was no significant correlation between self-reported health symptoms and objective SES. There was also no significant correlation between self-reported health symptoms and subjective SES. However, the data does replicate previous research in that there were significant correlations between health symptoms and anxiety, optimism, and resilience. Specifically, there was a weak, positive correlation between anxiety and self-reported health symptoms. As reports of state anxiety increased, people reported more health symptoms, $r = .30$, $p < .001$. There was a weak, negative correlation between optimism and self-reported health symptoms. As trait optimism increased, people reported fewer health symptoms, $r = -.16$, $p = .04$. Finally, there was a weak, negative correlation between resilience and self-reported health symptoms. As trait resilience increased, people reported fewer health symptoms, $r = -.20$, $p = .01$.

Manipulation Check

It is important to confirm that the subjective SES manipulation I implemented at the beginning of the experiment did, in fact, lead to changes in participants' self-reported subjective SES. I hypothesized that when a participant thought of reasons why he/she was similar to high

SES individuals, he/she would then, in turn, feel they were of high SES as well. In addition, when a participant thought of reasons why he/she was similar to low SES individuals, he/she would then, in turn, feel they were of low SES. This hypothesis was supported. Participants who were randomly assigned to list reasons why they were similar to high SES individuals self-reported having a higher SES ($M = .13$, $SD = .74$) than participants who were randomly assigned to list reasons why they were similar to low SES individuals ($M = -.12$, $SD = .71$), $t(165) = 2.27$, $p = .03$.

Primary Hypothesis

My primary hypothesis was that among participants in the nocebo condition, those who were randomly assigned to the low subjective SES condition would report significantly more health symptoms than participants randomly assigned to the high subjective SES condition. In order to investigate this hypothesis, I ran a 2 (Condition: control vs. nocebo) X 2 (SES: low vs. high) ANOVA. The results revealed a main effect for the condition, $F(1,166) = 21.81$, $p < .001$, which was qualified by a significant interaction between the nocebo condition and the SES condition, $F(3, 163) = 3.89$, $p = .05$ (see Figure 1).

To investigate this interaction further, I examined whether self-reported health symptoms differed among low and high subjective SES participants in the control condition alone. The results revealed that participants in the low subjective SES condition reported having more health symptoms ($M = 2.19$, $SD = .80$) than participants in the high subjective SES condition ($M = 1.91$, $SD = .74$), $t(84) = 1.70$, $p = .09$. This simple effect suggests that under typical conditions, leading individuals to feel lower SES may make them more likely to experience health symptoms. However, for the nocebo condition alone, there was not a significant difference

in self-reported health symptoms between the low subjective SES and high subjective SES participants, $t(79) = 1.06, p = .29$.

I also probed this interaction by investigating whether self-reported health symptoms differed between the control condition vs. the nocebo condition, separately for low SES and high SES conditions. The results revealed that for low subjective SES individuals, those in the control condition reported significantly more health symptoms ($M = 2.19, SD = .80$) than those in the nocebo condition ($M = 1.49, SD = .56$), $t(83) = 4.67, p < .001$. For participants who were in the high subjective SES condition, participants in the control condition reported marginally more health symptoms ($M = 1.91, SD = .74$) than high subjective SES individuals in the nocebo condition ($M = 1.62, SD = .61$), $t(83) = 1.92, p = .06$. Thus, in both high and low subjective SES conditions, there was a tendency for participants to report more health symptoms in the control condition than the nocebo condition, although this effect was stronger for participants in the low SES condition. These results suggest that the nocebo manipulation did not function as was predicted.

Secondary Hypothesis

My secondary hypotheses were that state anxiety, trait optimism, and trait resilience would moderate the interaction between the two condition variables: nocebo vs. control condition and high vs. low subjective SES condition. Contrary to this hypothesis, however, there were no significant three way interactions between nocebo condition, subjective SES condition, and state anxiety, trait optimism, or trait resilience, *all p's* > .33.

Discussion

My hypothesis was not supported by the results. The nocebo effect was not stronger among those in the low subjective SES condition. Instead, the results suggest that the nocebo

actually had unexpectedly backward effects, and this effect was stronger in the low subjective SES condition than in the high subjective SES condition. In other words, those who had been primed to think of themselves as having high SES were actually more susceptible to the nocebo effect than those who were primed to think of themselves as having low SES.

Interestingly, there was a marginally significant difference in symptomology in the control condition. Participants who were randomly assigned to the low subjective SES condition indicated experiencing marginally more physical health symptoms than those randomly assigned to the high subjective SES condition. This suggests that under typical conditions, people who perceive themselves as having low SES are more likely to perceive health symptoms they are experiencing as more severe.

My secondary hypothesis was that state anxiety, trait optimism, and trait resilience would serve to moderate an interaction between the nocebo vs. control condition and the high vs. low condition. I hypothesized that those who reported being generally optimistic would be less susceptible to a nocebo, and would therefore report experiencing fewer symptoms. In addition, those who had increased resilience would be less susceptible to a nocebo, and would therefore report experiencing fewer symptoms, and those who reported generally having anxiety would be more susceptible to a nocebo effect, therefore experiencing more symptoms. These hypotheses were not supported by the data.

Limitations

One possible explanation for the results of the current study is that our nocebo was, in a sense, too strong. In the majority of previous research that explores the nocebo effect, researchers deliver a nocebo that is very general or broad. For example, participants are told that they may feel a headache (Schweiger & Parducci, 1981) or a pain or itch (Van Laarhoven et al.,

2011). In the current study however, the suggestion was much more specific. I gave examples of the symptoms that participants could feel, clearly listing headaches, achy joints, congestion, watery eyes, sore throat and fatigue as possible side effects of the room conditions. It is possible that such a specific and drawn-out nocebo could have made participants hypersensitive to the way their body was feeling in the moment. Perhaps such hypersensitivity caused over-analysis of the degree to which symptoms were *really* being felt, which may have led to the downplay of negative feelings overall.

Another possible explanation for the unanticipated results in this study is the restrictive relationship between the nocebo and a participant's physical body. In the majority of previous research, there is a very direct relationship between a tangible nocebo and each participant's body. For example, in one study, participants were exposed to an electroencephalograph that supposedly delivered a low-voltage current through the temples, meaning that equipment was worn on his/her head and electrodes were connected via wire to the skin (Schweiger & Parducci, 1981). In many other studies, "dummy pills" that are inactive are orally consumed by the participants. In both of these scenarios, participants actually experienced direct, inevitable contact to a nocebo. This contact highlights a well-defined relationship between the nocebo and their symptoms, and allows participants to make a very straightforward attribution in terms of why they feel the way they do. In the current study, on the other hand, no such contact is made. Participants are told that there are harmful dust particles in the air, but they are unable to actually see the particles or confirm that they have inhaled them. Because of this, it is possible for participants to draw the conclusion that he/she was able to escape exposure to the nocebo. Likewise, participants were able to feel assured that they avoided exposure by holding their hand

or their shirt over their mouth and nose throughout the duration of the experiment. The experimental paradigm was such that no tangible/visible nocebo was implemented.

Additionally, because I did not systematically assess the current health conditions of the participants, it is possible that preexisting symptoms may have influenced my results in some way, e.g. perhaps in terms of symptom reports. However, the fact that the participants were randomly assigned to either the control condition or the nocebo condition undermines the notion that preexisting illness is the primary explanation for our findings.

Future Directions

Although the data collected from this experiment does not support my hypotheses, the results still offer valuable insight into the overall theory of the nocebo effect. Previous research has demonstrated how expectations, elicited by hearing a suggestion, can modify the way that we perceive harmful circumstances (Craig & Coren, 1975); however, few studies have focused on exploring what factors moderate that effect. We know that low SES individuals are more vulnerable to the threat of physical illness because of increased exposure to stress and the tendency to make contextual comparisons (Kraus et al., 2012), as well as generally low resilience and perceived lack of control (Johnson & Krueger, 2005). We also know, because of the current study, that it is possible to effectively manipulate subjective SES. Future research needs to study the interaction between SES and the nocebo effect via the implementation of a nocebo that is less specific and less restricting.

Understanding the relationship between SES and the nocebo effect is important for a number of reasons. Low SES individuals are vulnerable to health hazards; this includes temporary flu-like symptoms, as well as chronic illnesses such as cancer or heart disease. We know that it is possible to change the way that individuals perceive their own SES. Combining

this knowledge with a deeper understanding of what makes poor populations particularly susceptible to a nocebo would give us the insight that we need to discover how we can buffer people from the threat of physical illness altogether and reduce one's vulnerability to negative health outcomes. Ultimately, this research could give us insight into how to weaken the longstanding association between poor individuals and increased health problems.

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Tables

Table 1

Correlations between variables of interest

	1	2	3	4	5	6	7	8
Physical Health								
1 Symptoms								
2 Father's Education	.158*							
3 Mother's Education	-.002	.545**						
4 Family Income	.064	.471**	.378**					
5 Relative Deprivation	.029	-.245**	-.209**	-.510**				
6 Subjective SES	-.046	.260**	.205**	.454**	-.509**			
7 State Anxiety	.296**	-.089	-.135	-.159*	.119	-.145		
8 Trait Optimism	-.161*	.006	.071	.164*	-.257**	.299**	-.422**	
9 Resilience	-.196*	-.035	-.014	.016	-.099	.081	-.361**	.640**

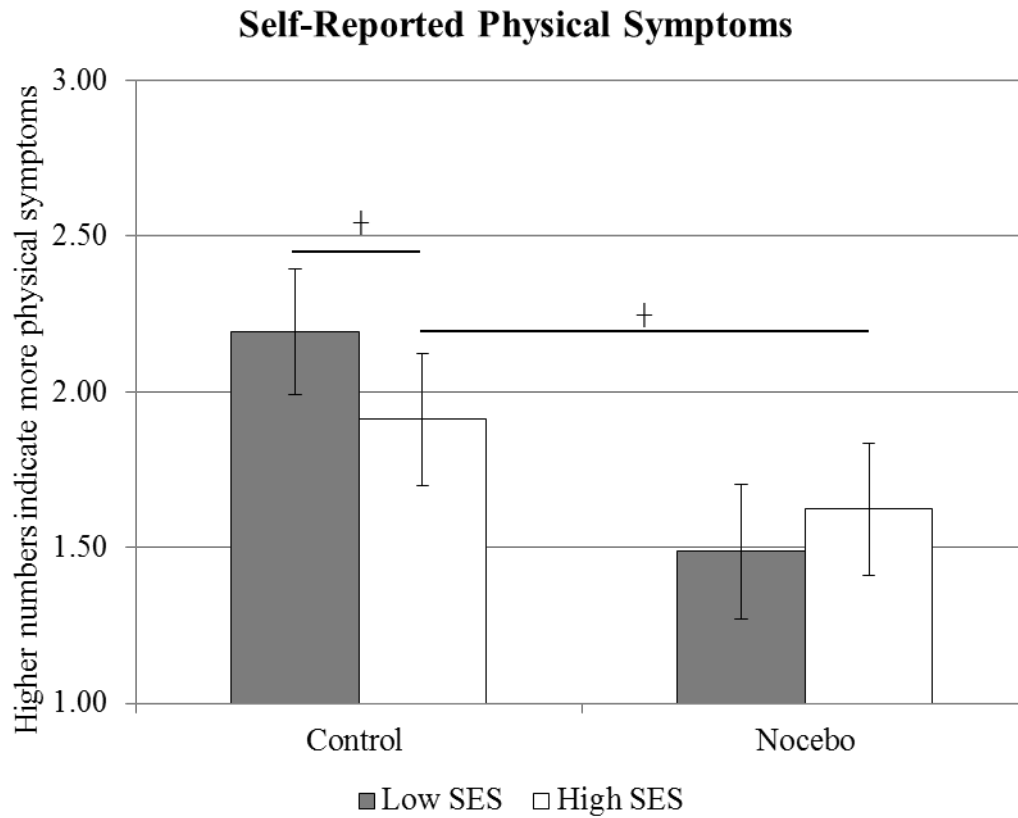
* indicates a p-value less than .05

** indicates a p-value less than .01

Figures

Figure 1

Average symptomology for each condition by SES condition



Note: Bars represent 95% confidence intervals.
 † Represents marginal significance, $.10 > p > .05$.
 When CI bars do not overlap, *p-value* is less than .05.