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Cognitive Dissonance and Attitudes Toward Unpleasant Medical Screenings

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Abstract

Two studies suggest that cognitive dissonance can lead people to adopt negative attitudes toward beneficial – yet unpleasant – medical screenings. People who thought that they were candidates for an unpleasant medical screening reported less favorable attitudes toward the screening than people who thought that they were ineligible (Study 1). The unpleasantness of a medical screening affected candidates' attitudes toward the screening to a greater extent than non-candidate's attitudes (Study 2). Limitations, including ambiguity regarding the extent to which participants' attitudes were affected specifically by dissonance, are discussed. This preliminary research suggests people attempt to reduce dissonance associated with their *anticipated* behavior.

Keywords: cognitive dissonance, medical decision making, medical screening

People are often ambivalent toward medical screenings; they may simultaneously think that screening is both in their best interest and a potential source of pain, discomfort, inconvenience, or embarrassment (e.g., Andrew, Tiggemann, & Clark, 2014; Booth, Norman, Harris, & Goyder, 2013; Peipins, Shapiro, Bobo, & Berkowitz, 2006). People are motivated to resolve such conflicting cognitions (Festinger, 1957), particularly when such cognitions involve the self (Aronson, 1992). They could do so by: a) overcoming their apprehension and participating in the screening, or b) adjusting their attitudes so that the screening is regarded as unnecessary. The present research tested the hypothesis that people who were told that they were candidates for an invasive health screening would report more negative attitudes toward the screening than those who were told that they were not candidates and those who were told that the screening was innocuous.

Cognitive Dissonance and Health-Related Decision Making

Many types of health screenings are unpleasant. People are rarely giddy about getting a colonoscopy (Vernon, 1997), and women frequently report pain associated with breast cancer screenings (Peipins et al., 2006). This can cause people to avoid health screenings that they know are good for them. Health-care workers (HCWs) may be particularly aware of the necessity of some unpleasant medical tests. Nevertheless, HCWs often fail to practice what they preach. For example, general practitioners were more likely to recommend an endoscopy for their patients than for themselves for the same symptoms (Gardner & Ogden, 2005). Helfand and Mukamal (2013) found that

female HCWs were less likely than non-HCWs to report getting a mammogram within the two years prior to their study.

Many people (including HCWs) have conflicting thoughts regarding unpleasant medical screenings. On one hand, people are aware of the benefits of such screenings; on the other hand, they are aware of the disagreeable nature of the screenings. In other words, one may simultaneously think “I ought to be screened” and “I don’t want to be screened.” Concurrently holding two cognitions that are inconsistent with one another is known as cognitive dissonance (Festinger, 1957). Cognitive dissonance is experienced as psychological discomfort that motivates people to reconcile the contradictory cognitions (Elliot & Devine, 1994). In the case of contemplating an unpleasant medical screening, one could reduce dissonance by either: a) overcoming one’s disinclination and going thorough with the screening, or b) changing one’s attitude so that one does not regard the screening as something he or she ought to do (for relevant discussion, see Beauvois, 2001). The present research suggests that dissonance associated with a medical screening leads to relatively unfavorable attitudes toward the screening.

Dissonance Reduction through Behavior Change and Attitude Change

Cognitive dissonance can lead people to engage in health-promoting behaviors. In one set of studies, participants who publically advocated safe sex and were subsequently led to recall times in which they had sex without using a condom reported greater intentions to use condoms in the future and bought more condoms at the end of the study compared to participants in control conditions (Aronson, Fried, & Stone, 1991; Stone,

Aronson, Crain, Winslow, & Fried, 1994). Participants experienced cognitive dissonance associated with simultaneously expressing positive attitudes toward condom use and acknowledging that they did not always use condoms. In this study, participants reported increased intentions to use condoms in the future to bring their behavior in line with their attitudes. Doing so would reduce their experience of cognitive dissonance. Although changing one's behavior/intentions is one way to reduce dissonance, changing one's attitudes can also reduce dissonance.

When people lack sufficient motivation to engage in unpleasant health behaviors, they may develop attitudes that would cast the avoidance of such health behaviors in a positive light. Such attitude change can be a strategy to reduce dissonance (e.g., van Veen, Krug, Schooler, & Carter, 2009). Clark, McCann, Rowe, and Lazenbatt (2004) argued that cognitive dissonance may affect how nurses who smoke regard smoking interventions. Nurses who smoke have been found to have more negative attitudes toward smoking-related health promotion (Clark et al., 2004), hold less confidence in the notion that passive smoking (i.e., second-hand smoke) is detrimental to one's health (Hughes & Rissel, 1999), and regard smoking intervention as less a part of their job (Young, Feeney, & Griffin, 1997) compared to non-smoking nurses. Nurses who smoke may experience dissonance associated with concurrently smoking and advocating smoking interventions. At least some nurses who smoke may deal with such dissonance by developing unfavorable views toward smoking interventions for their patients. In the present research, we examined how dissonance may lead to negative attitudes toward a health-promoting behavior (i.e., a health screening) among the general population.

Pre- vs. Post-Behavioral Dissonance Reduction

Much research on dissonance reduction has focused on post-behavioral dissonance reduction (e.g., Aronson et al., 1991; Aronson, 1992; Beauvois, 2001; Stone et al., 1994). An example of post-behavioral dissonance reduction would be expressing intentions to change one's behavior or attitudes after being reminded of an occasion in which one's behavior contradicted one's attitudes. In contrast, the present research tested the hypothesis that dissonance may affect people's attitudes when *anticipating* a situation in which their behavior might contradict their attitudes.

Emerging research suggests that such dissonance reduction strategies may be implemented before one ever acts in a dissonance-inducing way (Ent & Baumeister, 2014/under review). This type of pre-behavioral dissonance reduction strategy might spare people some measure of dissonance by bringing their attitudes in line with their anticipated behavior. When anticipating the opportunity to participate in an unpleasant medical screening, one may develop negative attitudes toward the efficacy or necessity of the screening. This would allow one to avoid the screening without experiencing any dissonance between one's attitudes toward the screening and one's refusal of the screening.

Dissonance in Self-Relevant and Other-Relevant Cognitions

Dissonance is primarily experienced when cognitions about oneself conflict (Aronson, 1992); cognitions regarding inconsistencies in the behavior or attitudes of

others are less likely to result in the experience of dissonance. In the case of unpleasant medical screenings, people would be unlikely to experience dissonance when thinking about others who refuse such a screening despite knowing that it is in their best interest. In the present research, we predicted that people who were told that they were candidates for an unpleasant screening would report less favorable attitudes toward the screening than people who were told that they were not candidates. Candidates may be motivated to adopt unfavorable attitudes toward the screening to reduce dissonance associated with the possibility that they would refuse the screening in the future. Non-candidates were not expected to have any such motivation, so we predicted that they would have relatively favorable attitudes toward the screening.

Present Research

In two studies, we presented participants with a fictitious medical screening tool. In Study 1, the screening was presented as invasive (i.e., causing discomfort). Half of the participants were told that they were candidates for the screening; half were told that they were ineligible for the screening. The hypothesis for Study 1 was that candidates would report less favorable attitudes toward the test compared to non-candidates.

Study 2 had a 2 (candidate vs. non-candidate) X 2 (invasive screening vs. noninvasive screening) design. Only participants who thought that they were candidates for the screening *and* believed that the test was invasive were expected to experience cognitive dissonance. We predicted that the invasiveness of the screening would interact with whether participants were candidates for the screening to predict participants'

attitudes toward the screening. We predicted that the invasiveness of the screening would predict participants' attitudes toward the test, but only among candidates for the test.

Participants who thought they were candidates and that the screening was invasive were expected to have less favorable attitudes toward the screening than participants in any of the other conditions.

Study 1

In Study 1, participants were told about an unpleasant test for a virus (human respiratory virus-27; this is a fictitious virus). We chose to use a fictitious virus in this study because we did not want participants to have preconceived notions about the virus (e.g., Jemmott, Ditto, & Croyle, 1986). Half of the participants were led to believe that they were candidates for the test; half were led to believe they were not candidates for the test. We predicted that participants who thought that they were candidates for the unpleasant test would experience dissonance associated with knowing that the test was both unpleasant and in their best interest – this dissonance was predicted to result in unfavorable attitudes toward the test. Therefore, the hypothesis was that participants who thought that they were candidates for the test would rate the test less favorably than those who thought that they were not candidates for the test.

Method

Participants. Forty-five undergraduates (34 female) participated in exchange for course credit. Participants' ages ranged from 18-29 ($M = 19.96$, $SD = 1.83$).

Procedure. Participants came to the laboratory to participate in a study titled “Attitudes about Public Health” and were greeted by an experimenter wearing scrubs. First, participants completed a computerized demographic questionnaire which included the question “Do you typically get a flu shot each year?” Participants responded to this item by selecting “yes” or “no.” Participants were asked whether they typically get a flu shot because that information may be indicative of their overall attitudes towards unpleasant medical procedures and their general attitudes toward protecting their health. People avoid flu shots for a variety of reasons, including inconvenience and a perceived lack of vulnerability (Chapman & Coups, 1999; Chapman & Coups, 2006; Tang, Shahab, Robb, & Gardner, 2014); such factors may affect participants’ attitudes toward a novel medical procedure such as the one in Study 1.

Participants were told that the purpose of the study was to assess people’s attitudes regarding human respiratory virus-27 (HRV-27) testing. The experimenter explained to participants that the virus is communicable, treatable, and – using a test – detectable before symptoms arise. Participants were told that the test for the virus involves collecting a sample of the mucus that exists between the nose and mouth by inserting a swab 5-6 centimeters into one’s nose. Using a long swab, the experimenter mimicked how the test would be administered.

Half of the participants (those in the self-relevant condition) were told that the virus is mainly a problem for students on college campuses. The experimenter placed a tray containing latex gloves, hand sanitizer, multiple swabs, and a medical specimen bag on a table in the lab room. The experimenter explained that she was qualified to administer the test and that participants could be tested at the end of the experiment if

they wished. Participants were told that the test would be sent to the university health center for analysis. The other half of the participants (those in the control condition) were told that the virus is mainly a problem for elderly people living in retirement homes. Participants in the control condition were not told that they would have the opportunity to be tested.

Next, the experimenter verbally asked the participants to indicate their agreement with four (and only four) statements about their attitudes toward the HRV-27 test: “It is important for people to be tested for HRV-27”, “The test for HRV-27 would be unpleasant”, “If people get tested for HRV-27, then it is unlikely to spread”, and “There are no good reasons to avoid the HRV-27 test.” After appropriate reverse scoring, the four items were combined to form a composite measure of how favorably participants rated the test. Participants responded on a 10-point scale from “strongly disagree” to “strongly agree.” Then, participants completed the brief mood introspection scale (BMIS; Mayer & Gaschke, 1988) on a computer. The BMIS consists of 16 mood adjectives that participants respond to on a 7-point scale from “definitely do not feel” to “definitely feel.” Finally, all participants were fully debriefed and thanked.

Results and Discussion

A chi-square analysis revealed that participants were more likely to report getting a flu shot each year if they were in the self-relevant condition (68.4%) rather than the control condition (31.6%), $\chi^2 (1, N = 45) = 3.94, p = .047$. This indicated a failure of

random assignment, so we controlled for whether participants typically get a flu shot in our primary analyses.

ANOVA revealed that participants in the self-relevant condition ($M = 25.35$, $SD = 6.85$) rated the HRV-27 less favorably than those in the control condition ($M = 28.59$, $SD = 5.76$), $F(1, 43) = 5.74$, $p = .021$, Cohen's $d = 0.51$ ¹. ANOVA did not reveal a significant difference between the two conditions in terms of mood assessed by the pleasant-unpleasant scale of the BMIS, $F(1, 43) = 0.66$, $p = .422$, ns.

We predicted that people who thought they were candidates for an unpleasant medical screening would experience dissonance associated with feeling disinclined to go through with the screening despite knowing that the screening could be in their best interest. This dissonance was expected to lead to unfavorable views of the screening. Participants who were told that they were not candidates were not expected to experience any dissonance, and thus were expected to have relatively favorable views about the screening. Consistent with these expectations, participants who were told that they were candidates for the screening reported less favorable views of the screening compared to participants who were told that they were ineligible for the screening.

Study 2

In Study 2, we sought to extend the findings of Study 1. In addition to manipulating whether participants regarded a medical test as self-relevant, we manipulated whether participants were presented with an invasive or relatively innocuous

¹ The same pattern of results was observed without controlling for whether participants typically get a flu shot, $F(1, 44) = 2.94$, $p = .094$.

test. As in study 1, the screening test was fictitious. We predicted that only participants who regarded the test as self-relevant and invasive would experience dissonance. Therefore, the hypothesis was that the self-relevance of the test would interact with the invasiveness of the test to predict participants' attitudes toward the test. The hypothesis was that the invasiveness of the screening would predict participants' attitudes toward the test, but only among candidates for the test (i.e., those for whom the screening was self-relevant). Participants who thought they were candidates and that the screening was invasive were expected to have less favorable attitudes toward the screening than participants in any of the other conditions.

Method

Participants. One-hundred and four people (46 female) from the United States participated in this study on Amazon's Mechanical Turk website. Participants' ages ranged from 18 to 75 years ($M = 34.19$, $SD = 12.12$).

Procedure. As in Study 1, participants signed up for a study titled "Attitudes about Public Health." First, participants completed a questionnaire containing demographic items and health-related questions (e.g., Do you have a latex allergy?). Then, participants were informed that they would be answering questions about a new type of health screening. Participants were told that the test could be administered by a physician and could screen for various disorders and vulnerabilities. The test was described as a "general assay." We purposefully provided the participants with minimal, vague information about the test so that aspects of the test unrelated to those that we manipulated would not affect participants' responses. Half of the participants were told

that, based on their answers to the health questions, they were good candidates for this type of health screening; half of the participants were told that they were ineligible for this type of health screening. In addition to manipulating whether the participants regarded the test as self-relevant, we manipulated whether the test was described as invasive or innocuous. Half of the participants were told that the test involved inserting a swab deep into one's nose (similar to Study 1; this was meant to make the test seem invasive). The other half of the participants were told that test involved spitting into a cup (this was meant to make the test seem innocuous). Thus, this study had a 2 (self-relevant vs. not self-relevant) X 2 (invasive vs. innocuous) factorial design.

Following the manipulation, participants were asked: "How favorable is your impression of the screening tool?" and "To what degree do you think physicians should encourage those eligible to be tested?" Participants responded to these questions on a 100-point, sliding scale from "not at all" to "very much." Finally, all participants were fully debriefed and thanked.

Results and Discussion

Regression revealed that the self-relevance of the test interacted with whether the test was invasive to predict the degree to which participants thought that physicians should encourage people to be tested, $\beta = -18.45$, $t(100) = -2.00$, $p = .048$, semi-partial $r^2 = .04$ (see Figure 1). If participants were told that they were eligible for the test, the invasiveness of the test predicted whether they thought that physicians should encourage people to be tested, $\beta = 20.82$, $t(100) = 3.22$, $p = .002$, semi-partial $r^2 = .09$; those who

were led to believe that the test was innocuous ($M = 74.81$, $SD = 18.65$) reported that physicians should encourage people to get the test to a greater extent than those who were led to believe that the test was invasive ($M = 54.00$, $SD = 28.23$). If participants were told that they were ineligible for the test, the invasiveness of the test did not predict whether they thought that physicians should encourage people to be tested, $\beta = 2.37$, $t(100) = 0.36$, $p = .720$, ns (innocuous condition $M = 66.48$, $SD = 17.80$; invasive condition $M = 64.12$, $SD = 27.31$). A planned comparison using ANOVA revealed that participants who were led to believe that the test was both self-relevant and invasive reported lower agreement with the idea that physicians should encourage the test compared to the other three conditions, $F(1, 100) = 7.39$, $p = .008$.

Similarly, regression revealed that the self-relevance of the test interacted with whether the test was invasive to predict how favorably participants rated the test, $\beta = -20.87$, $t(100) = -2.00$, $p = .048$, semi-partial $r^2 = .03$ (see Figure 2). If participants were told that they were eligible for the test, the invasiveness of the test predicted how favorably they rated the test, $\beta = 47.39$, $t(100) = 6.49$, $p < .001$, semi-partial $r^2 = .27$; those who were led to believe that the test was innocuous ($M = 71.85$, $SD = 25.33$) reported more favorable attitudes toward the test than those who were led to believe that the test was invasive ($M = 24.46$, $SD = 26.97$). If participants were told that they were ineligible for the test, the invasiveness of the test predicted how favorably they rated the test, $\beta = 26.52$, $t(100) = 3.57$, $p = .001$, semi-partial $r^2 = .08$; those who were led to believe that the test was innocuous ($M = 60.52$, $SD = 17.35$) reported more favorable attitudes toward the test than those who were led to believe that the test was invasive ($M = 34.00$, $SD = 33.73$). However, the results of the interaction (reported at the beginning of

this paragraph) revealed that the effect of the invasiveness of the test was greater for those who thought they were eligible for the test compared to those who thought they were ineligible. A planned comparison using ANOVA revealed that participants who were led to believe that the test was both self-relevant and invasive rated the test less favorably than the other three conditions, $F(1, 100) = 26.56, p < .001$.

People were only expected to experience dissonance if they thought that they were candidates for the screening and that the screening was unpleasant. These results support that prediction in that people who thought they were candidates and that the screening was unpleasant reported less favorable attitudes toward the screening compared to all other participants. In addition, candidates' attitudes toward the screening were more affected by the unpleasantness of the test than non-candidates' attitudes.

General Discussion

People who thought they were candidates for an unpleasant medical screening reported less favorable attitudes toward the screening than people who thought that they were ineligible for the screening (Study 1). The degree to which a medical screening was described as unpleasant affected candidates' attitudes toward the test to a greater extent than non-candidate's attitudes (Study 2). These results suggest that cognitive dissonance may lead people to adopt negative attitudes toward beneficial, yet uncomfortable, medical procedures.

At times, people may simultaneously feel: a) obligated to endure unpleasant medical procedures for the sake of their health, and b) reluctant to go through with such

procedures due to fear of discomfort or embarrassment. People are motivated to reconcile these types of dissonant cognitions (Festinger, 1957). They could do so by overcoming their reluctance and going through with the procedure, or by adjusting their attitudes toward the procedure so that they feel no obligation to go through with it. In the present research, we manipulated whether participants faced a situation designed to induce cognitive dissonance related to a medical procedure. Our results suggest that at least some people dealt with this dissonance-inducing situation by adopting unfavorable views of the medical procedure.

Previous research suggests that cognitive dissonance can lead to health-promoting behavior change as a means to reduce dissonance (e.g., Aronson, Fried, & Stone, 1991; Stone, Aronson, Crain, Winslow, & Fried, 1994). The present research focused on another dissonance reduction strategy – our results suggest that cognitive dissonance can also lead people to adopt *unfavorable* attitudes toward health-promoting behaviors. To our knowledge, this is the first evidence to suggest that cognitive dissonance could negatively affect health-related decision making.

As mentioned in the introduction, dissonance has typically been induced by making people aware of circumstances in which their past behavior did not match their current attitudes, or their previously espoused attitudes did not match their current behavior. In the present research, we induced dissonance by creating circumstances designed to make people experience a mismatch between their current attitudes and their *anticipated* behavior. The type of pre-behavioral dissonance reduction outlined in this paper is novel and warrants future research.

The present findings have important implications for introducing medical testing procedures to patients. If people are presented with information regarding an unpleasant medical procedure without initially being told that they are candidates, then they may be relatively unbiased in forming their attitudes toward the procedure. This could lead people to have favorable views of unpleasant, yet beneficial, procedures. Further, if people express favorable attitudes toward an unpleasant medical procedure prior to being told that they are candidates, then they may be willing to go through with the procedure to avoid the dissonance that could result from expressing favorable views of the procedure only to later refuse the procedure. Perhaps, people would be more acquiescent to an unpleasant medical procedure if they formed their attitudes about it before being told that they are candidates (as opposed to after being told that they are candidates). Future research should address this possibility.

Limitations

We would like to emphasize the preliminary nature of the current research. Although we found that our dissonance induction affected participants' attitudes toward medical screenings, the extent to which participants' attitudes were affected specifically by dissonance is unclear. It is possible that factors we did not measure, such as the perceived seriousness of the fictitious illness, could have affected participants' attitudes. In addition, participants who thought that they were candidates for the screening may have processed information about the screening more carefully than non-candidates. Despite the purposefully vague nature of the information that we provided about the screenings, differences in the degree to which participants processed information related

to the test may have affected participants' attitudes independently of cognitive dissonance.

Although dissonance research tends to focus on the consequences of dissonance (i.e., attitude or behavior change), some studies have found physiological arousal and negative affect associated with dissonant cognitions (Croyle & Cooper, 1983; Elliot & Devine, 1994). In such studies, researchers could point to arousal or negative affect as the proximal cause of dissonance reduction strategies. We did not measure arousal or negative affect prior to having participants report their attitudes. However, in the present research, we focused on pre- (as opposed to post-) behavioral dissonance reduction. In our studies, participants could have reduced dissonance by adopting negative attitudes toward the screening immediately upon hearing about its invasiveness. Thus, the period of time in which participants would have experienced dissonance prior to attitude change was likely too short to allow for measurement of any physiological or affective markers of dissonance.

Another limitation is the fictitious nature of the screening tests used in the present research. We selected a fictitious test to minimize preconceived beliefs and to manipulate whether participants regarded the screening as self-relevant. Nevertheless, additional research is needed to examine cognitive dissonance processes for decisions concerning real medical procedures.

Conclusion

Cognitive dissonance can affect people's health-related attitudes and behaviors. The present research suggests that people may engage in dissonance reduction strategies when they perceive that their future health behaviors may be at odds with their current attitudes. Although previous research has found that people's dissonance reduction strategies can promote health, the present research suggests that people may also attempt to reduce dissonance by adopting unfavorable attitudes toward health-promoting medical procedures.

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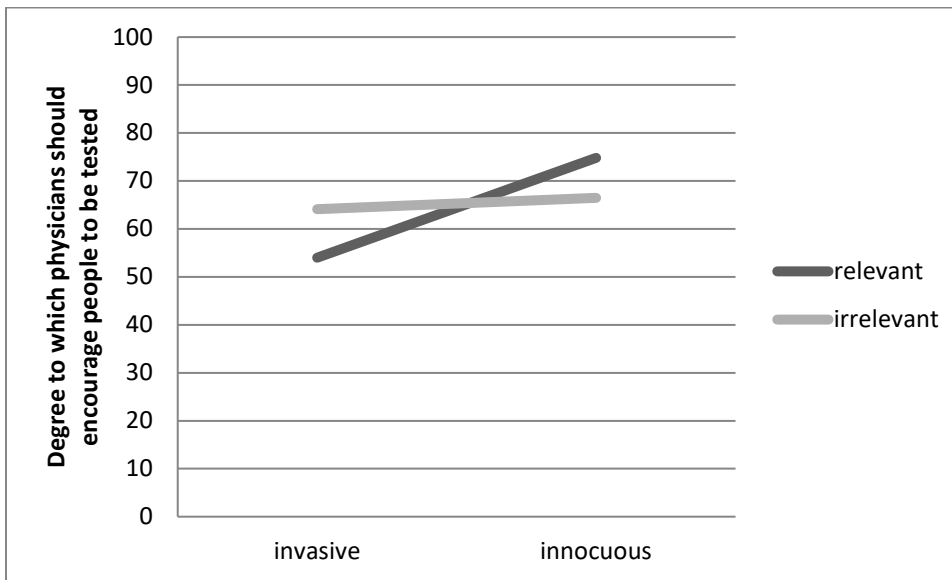


Figure 1. The self-relevance of the test interacted with the invasiveness of the test to predict the degree to which participants thought that physicians should encourage people to be tested (higher values indicate greater agreement).

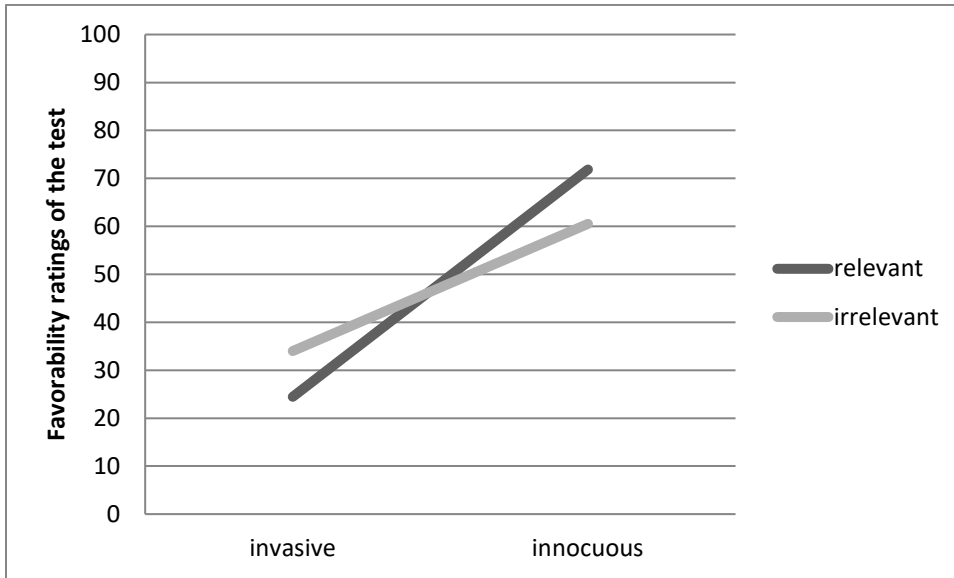


Figure 2. The self-relevance of the test interacted with the invasiveness of the test to predict how favorably participants rated the test (higher values indicate greater agreement).