

# Joking about cancer as an avoidance strategy among US adults

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## Summary

Findings from years of research on fear appeals suggest that individuals with low efficacy utilize avoidance strategies when they perceive a significant threat—a process called fear control. Some research suggests that joking could be an avoidance strategy. The current study identifies conditions in which people are more likely to joke about colorectal cancer and explores how this behavior may be associated with screening avoidance. Older adults ( $N = 209$ ) recruited from eight different worksites completed a survey measuring fear appeal constructs and enactment of colorectal cancer-related joking. Results of a moderated mediation analysis suggest that men were more likely to joke about colorectal cancer than women, particularly if they perceived significant threat but had limited self-efficacy, signifying fear control. Results support prior fear appeal research, suggesting that an increase in joking behavior concerning colorectal cancer may be indicative of screening avoidance, and describe belief-based mechanisms that explain differences between biological sex and joking.

**Key words:** fear appeals, humor, joking, avoidance

## INTRODUCTION

As in many situations, people occasionally tell jokes when talking about health. Previous research has investigated how people use humor to cope with the outcomes of disease diagnosis, treatment and rehabilitation (Handberg *et al.*, 2014). While the majority of research on health and humor focuses on the potential for humor to positively impact health outcomes, there is a growing body of literature that highlights the complex relationship between humor and health (Martin, 2004). For example, Martin (2001) argued that sarcasm could be used as an avoidance strategy and others have shown that there is no straightforward relationship between sense of humor and health (Kerkkänen *et al.*, 2004; Svebak *et al.*,

2004). In the case of self-deprecating humor, much research suggests that self-deprecation can be a maladaptive coping technique, whereas some show that exaggerated self-disparagement can be used by patients as a rhetorical device to indirectly challenge caregivers or pose questions in non-threatening ways (du Pré and Beck, 1997; Kirsch and Kuiper, 2006). This mixed evidence suggests that researchers should take a more nuanced look at the relationship between humor and health.

Theorizing on humor suggests that one major communicative function of humor is relief, where joking is utilized to diffuse potentially stressful situations and reduce states of negative arousal (Meyer, 2000). This often

results in beneficial coping behaviors, where joking diffuses tension and can facilitate further interaction during otherwise difficult conversations (O'Donnell-Trujillo and Adams, 1983). However, joking may also instigate deleterious coping functions for health. To illustrate, recent research observed that older adults who joked about colorectal cancer were less likely to screen (McQueen et al., 2014). This finding is reminiscent of fear control from the extended parallel process model (EPPM; Witte, 1994). The EPPM postulates that people who perceive that an illness or outcome is threatening but lack the efficacy to manage that threat will engage in avoidance strategies to cope, a process referred to as fear control. Though reminiscent of fear control, the McQueen et al. (2014) findings do not explicitly test the EPPM as they did not examine whether humor usage was more common for individuals with high threat/limited efficacy.

The current study tests whether joking is consistent with fear control as outlined by the EPPM in the context of colorectal cancer screening among older adults. If so, researchers would have empirical evidence that humor might be used as an avoidance strategy when employed by high threat/low efficacy individuals. Additional research suggests that males may joke about health situations as a way of distancing themselves from specific health concerns (Chapple and Ziebland, 2004). Taking this into consideration, the present study first seeks to determine whether males are more likely to communicate about colorectal cancer in a joking manner than females. Next, theoretical mediators of this relationship are proposed and assessed with a focus on understanding a myriad of ways adults might utilize (or not utilize) joking as an avoidance strategy.

Although colorectal cancer screening rates have declined in recent years (Siegel et al., 2013), it remains the second leading cause of cancer mortality in the United States (USCS, 1999–2009). When caught early through screening, precancerous polyps can be removed and early stage cancers more effectively treated (CDC, 2013). This speaks to the importance of prevention and early detection and prioritizes health promotion research that identifies theoretical factors that may lead to the performance or avoidance of colorectal cancer screening behaviors. Another challenge to increasing colorectal cancer screening rates is that many women tend to believe colorectal cancer impacts men more than women (Weitzman et al., 2001), although it is the third leading cause of cancer mortality among both sexes (Siegel et al., 2013). The present study attempts to address these challenges to determine demographic and belief-based factors that impact the likelihood of

colorectal cancer screening. The following paragraphs will describe the relationships between humor, biological sex and avoidance.

### **Humor, biological sex and avoidance**

Research on humor posits that it can have both adaptive and maladaptive functions (Kuiper et al., 2004); suggesting it may be used both as an avoidance mechanism to deal with the threat of developing an illness and as a way to cope with current illness treatment and recovery. Some have found that both men and women can use humor to deal with sensitive issues accompanying cancer treatment and survival (Adamsen et al., 2001; Schwarzer et al., 2005; Oliffe et al., 2009). Others have shown that higher scores in humor orientation are associated with increased perceptions of coping and higher emotional expressivity (Wanzer et al., 2009). It has been postulated that using humor in health settings functions as a cognitive reappraisal, reframing a negative situation to reduce stress and facilitate emotional coping (Gross and John 2003; Szasz et al., 2011), although other research does suggest that certain types of humor can be negatively associated with adaptive coping (Lockwood and Yoshimura, 2014).

While the relationship between humor and coping with disease treatment and survival has been given much attention in previous research, fewer studies have looked specifically at humor use in response to fear of developing cancer. This is of particular interest, as some suggest that humor can foster emotional distance from the immediate experience of a perceived threat (Atkinson, 2006). In short, people could use humor as an avoidance mechanism to avoid dealing with the threat of developing cancer and avoid taking appropriate preventive action.

This presents a stark contrast between the use of humor to cope with disease management and joking to minimize the threat of disease diagnosis. To illustrate, the research on humor and coping post-diagnosis focuses on using humor as a beneficial mechanism to deal with the emotional toll of diagnosis and treatment. However, recent evidence suggests that when dealing with the threat of cancer, individuals can use humor as an avoidance strategy, as a recent study on colorectal cancer and humor found a significant relationship between the use of humor and likelihood of opting out of colorectal cancer screening (McQueen et al., 2014). Essentially, some people may use humor as an avoidance mechanism to downplay the threat of colorectal cancer and the necessity of screening. These findings are supported by rhetorical studies on doctor/patient interactions. du Pré (1997) found that some patients use humor as a way to express anxiety about a

medical examination, prompting medical professionals to engage in comforting communication prior to examination. In this regard, humor use functions as an avoidant strategy that doctors need to manage prior to enacting care. However, these face to face interactions have the benefit of instantaneous tailored feedback to address patient concerns and facilitate compliance.

While previous research has shown that both men and women tend to use humor when coping with illnesses (Williams *et al.*, 1999; Adamsen *et al.*, 2001), several studies suggest that utilizing humor as an avoidance technique is closely linked to perceived threats against masculinity (Bullen *et al.*, 2009; Oliffe *et al.*, 2009). In fact, persuasive health appeals may be more effective among high-masculinity audiences when they are framed using humor (Conway and Dube, 2002). Perhaps because those high in masculinity generally hold distress-avoidant predispositions and are motivated to avoid experiencing negative emotions (Conway *et al.*, 1990, 1991). Further, some suggest that beyond characteristics of masculinity-femininity, biological sex could influence the effectiveness of humor-based health appeals (Turner, 2011). It appears that high-masculinity audiences, who are more likely to be males, may be more inclined to use using humor as an avoidant technique. As such, the following hypothesis is put forth:

H1: Males will be more likely to joke about colorectal cancer than females.

### Humor and the fear control process of the EPPM

Although previous work suggests that men may be more likely to joke about colorectal cancer than women, little work has been conducted to understand the mechanisms responsible for this difference. A starting point for investigation is to assess constructs that are predictive of health attitudes, intentions and behavior across a variety of health topics, like those found in the EPPM (Witte, 1994; Maloney *et al.*, 2011). Briefly, the EPPM suggests that four constructs—susceptibility, severity, response efficacy and self-efficacy—are influential in decisions to enact preventive or avoidant behaviors. These outcomes are referred to as the danger control process and the fear control process, respectively (Witte, 1994).

The danger control process is the outcome associated with fear appeals that evoke high perceptions of some threat (susceptibility and severity) and high perceptions of efficacy (self-efficacy and response efficacy) to counteract that threat. The fear control process is engaged when people perceive high threat, but inadequate efficacy to deal with that threat (Witte and Allen, 2000). Previous research suggests that people may use humor as

an avoidance strategy to control their fear of diagnosis and downplay the need for colorectal cancer screening (McQueen *et al.*, 2014), which is consistent with the enactment of fear control. McQueen *et al.*, however, did not examine whether humor was more common for individuals engaged in fear control—high perceived threat and low perceived efficacy. As such, no study to date has tested whether humor is a byproduct of fear control. Moreover, if humor is an indicator that one is enacting the fear control process, then the predictor variables in the EPPM may function to explain the hypothesized association between biological sex and joking about colorectal cancer. Accordingly, the current study examines whether EPPM variables mediate the relationship between biological sex and joking.

RQ1: Do susceptibility (RQ1a), severity (RQ1b), self-efficacy (RQ1c), and response efficacy (RQ1d) mediate the relationship between biological sex and joking about colorectal cancer?

The EPPM postulates that fear control occurs when one has high perceptions of threat but inadequate efficacy to deal with the threat. Thus, the current study also examines whether males with high levels of threat, but low efficacy, are more likely to joke.

RQ2: Is there evidence of fear control such that males with high perceived threat and low efficacy are more likely to joke?

## METHODS

### Participants and procedure

A sample of adults ( $N = 209$ ) was recruited from eight different worksites through their human resources departments. Recruitment occurred at six different hospitals and two manufacturing plants. Healthcare and manufacturing workers were targeted because previous research has demonstrated that these groups tend to have lower colonoscopy adherence rates than the general population (Vidal *et al.*, 2009). Only people who fell within the recommended screening guidelines for colorectal cancer (ages 50–75; Smith *et al.*, 2009) and were not currently compliant with screening recommendations (based on insurance claims data) were recruited for this study. On average, participants were 55.56 years old ( $SD = 4.24$ ), ranging from 50 to 71. The majority of participants were female (71.8%) and Caucasian (97.1%). Almost half of participants (45.0%) had received a bachelor's degree or higher, other education levels include: associates degree (19.1%), some college (8.6%) and high school diploma (27.3%). The overwhelming majority of participants

(96.0%) were due to be screened based on current recommendations.

Recruitment began when HR representatives at each worksite sent out recruitment emails to employees on behalf of the research team. The research team spent 1–2 days at each worksite. Participants met the research team at the site, were provided study details, provided informed consent, and completed a brief survey questionnaire measuring joking about colorectal cancer and constructs of the EPPM before being given stimulus materials for a larger, separate intervention to encourage colonoscopy uptake. The data from the current study represent a subset of responses from the pretest of this larger intervention (Authors 2013). All participants received \$15 for completing the survey. This investigation was approved by the University's institutional review board.

### Measures

Susceptibility, severity, self-efficacy and response efficacy were measured in relation to colorectal cancer screening. Four items taken from the literature by Tiro *et al.* (2005) were used to measure susceptibility, however one item was dropped to increase reliability ( $\alpha=0.84$ ). Examples of items include: "It is very likely that I will develop colorectal cancer or polyps" and "The chance that I might develop colorectal cancer is high." Consistent with the original measure, these items were measured on a 5-point scale ranging from *strongly disagree* to *strongly agree*. Severity was measured using an adapted version of Witte *et al.* (1996) validated, 3-item, perceived severity scale, which demonstrated acceptable reliability ( $\alpha=0.87$ ). Severity items were all measured on 5-point scales ranging from *strongly disagree* to *strongly agree*. Examples of items include: "I believe that colorectal cancer is severe/significant." Self-efficacy was measured using an 8-item scale developed to measure self-efficacy regarding colon cancer screening (McQueen *et al.*, 2008). Consistent with the original measure, a 4-point scale ranging from *not confident at all* to *very confident* was utilized. The scale demonstrated acceptable reliability ( $\alpha=0.95$ ). Examples of items include: "How confident are you that you can complete colon cancer testing?" and "How confident are you that you can carry out any necessary preparation for colon cancer testing?" Response efficacy was measured using a 2-item scale taken from Tiro *et al.* (2005). The items were, "When found early, colorectal cancer can be cured" and "When colorectal polyps are found and removed, colorectal cancer can be prevented." Both items were measured on a 4-point scale ranging from *strongly disagree* to *strongly agree*. The scale

**Table 1:** Means, standard deviations and bivariate correlations

	M (SD)	1	2	3	4	5
1. Susceptibility	2.74(0.88)	—				
2. Severity	4.38(0.87)	0.09	—			
3. Response efficacy	3.96(1.16)	-0.14*	0.01	—		
4. Self-efficacy	3.67(0.51)	0.14*	0.08	0.12	—	
5. CRC joking	1.76(1.25)	0.12	0.02	0.01	0.03	—

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

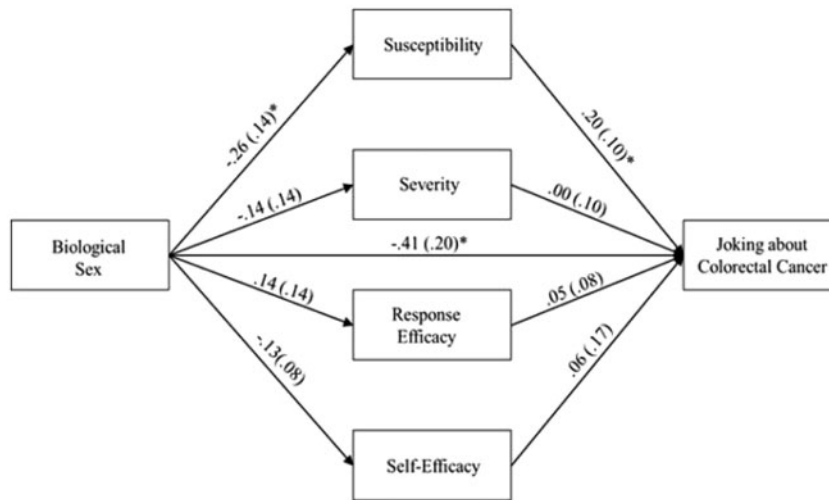
demonstrated acceptable reliability ( $\alpha=0.91$ ). Joking was operationalized using the following 1-item measure, "I have joked or told jokes about colon cancer screening in the last four months." This item was measured on a 5-point scale ranging from *not at all* to *very much*. The explicit time frame of four months was chosen to provide a realistic representation of current joking practices.

### RESULTS

Approximately 3% of the data were missing at random and replaced using expectation maximization (Schafer and Olsen, 1998). Means, standard deviations and bivariate correlations among all quantitative variables are shown in Table 1. H1 posited that males would be more likely to joke about CRC. Consistent with H1, a *t*-test (equal variances not assumed) revealed that males ( $M=2.09$ ,  $SD=1.43$ ) were significantly more likely to joke about colorectal cancer than females ( $M=1.64$ ,  $SD=1.16$ ),  $t(206)=-2.11$ ,  $p=0.04$ , Cohen's  $d=-0.29$ .

RQ1 queried whether EPPM variables (severity, susceptibility, response efficacy and self-efficacy) mediated the relationship between biological sex and joking. A conditional process modeling program, PROCESS, was utilized to test for mediation. PROCESS employs an ordinary least squares- or logistic-based path analytic framework to test for both direct and indirect effects (Hayes, 2013). PROCESS is ideal for analyzing the current data because it allows researchers to explore parallel mediation models. Specifically, the current analysis employed PROCESS Model 4. All indirect effects were subjected to follow-up bootstrap analyses with 1000 bootstrap samples and 95% bias corrected confidence intervals.

Parallel mediation allows researchers to test whether any of the EPPM constructs mediate the relationship between biological sex and joking. To test this model, joking was entered as the outcome variable, biological sex



**Fig. 1:** Parallel mediation modeling potential mediators of the relationship between biological sex and joking about colorectal cancer. \* $p < 0.05$ . For biological sex, male = 0, female = 1.

as the predictor variable and all four EPPM variables as potential mediators. Parallel mediation analysis revealed that perceived susceptibility partially mediated the relationship between biological sex and joking,  $B = 0.05$ ,  $SE = 0.04$ , 95%  $CI = 0.0009, 0.1813$ , lending support for RQ1a (see Figure 1). Men had greater perceived susceptibility ( $B = 0.26$ ,  $SE = 0.14$ ,  $p = 0.05$ ) and those with greater perceived susceptibility were more likely to joke ( $B = 0.21$ ,  $SE = 0.10$ ,  $p = 0.05$ ). The mediation was only partial, however, as biological sex was still significantly related to joking in the direct effects model,  $B = 0.41$ ,  $SE = 0.20$ ,  $p = 0.04$ .

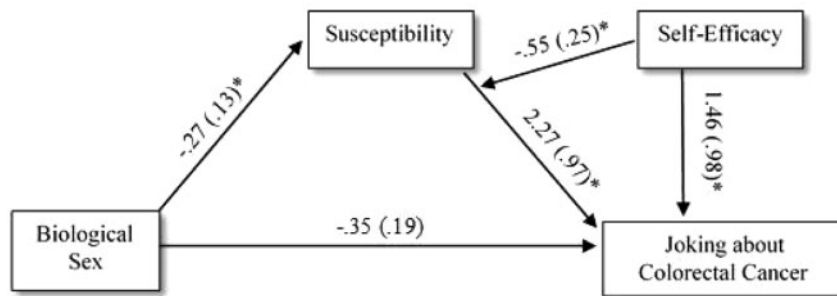
Parallel mediation analysis revealed that perceived susceptibility mediated the relationship between biological sex and joking. RQ2 queried whether there was evidence of fear control such that males who perceived higher threat would be more likely to joke if they had lower efficacy. Once again, PROCESS was utilized to test indirect effects. To examine RQ2, Model 16 was examined which tests whether two variables moderate the  $b$ -path (Hayes, 2013). Given the results of the parallel mediation model, perceived susceptibility was entered as the mediator variable. Self-efficacy and response-efficacy were entered as potential moderators of the  $b$ -path. In this model, self-efficacy moderated the relationship between perceived susceptibility and joking,  $B = -0.52$ ,  $SE = 0.10$ , 95%  $CI = -1.0182, -0.0147$  (see Figure 2). Consistent with a fear control explanation, the indirect effect of perceived susceptibility was larger for males with lower self-efficacy (see Table 2). Response efficacy was not a significant moderator of the relationship between susceptibility and joking.

## DISCUSSION

The current study sought to understand the mechanisms that explain the association between biological sex and joking about colorectal cancer identified in previous research (i.e. McQueen *et al.*, 2014). As predicted, men in this study were more likely than women to joke about colorectal cancer, extending the McQueen *et al.*'s finding by identifying theoretical pathways underlying the gender effect. Consistent with the EPPM, males joked about colorectal cancer when they perceived themselves to be susceptible to the disease but lacked the efficacy—specifically self-efficacy—to enact a response.

The gender findings contribute to the growing evidence demonstrating that men are more likely to joke about colorectal cancer than women. Taken by itself, this finding could have implications for campaign and intervention research. For instance, if women are less likely to use humor when talking about colorectal cancer screening, how, if at all, does that influence the success of popular colorectal cancer screening campaigns that use humor appeals to attract audience attention (e.g. Lyzun and McMullen, 2008; Nanin *et al.*, 2009; Vega and Roland, 2005)?

From a mechanism standpoint, the results provide an explanation for why men use humor to deal with colorectal cancer risk. Generally, men were more likely to feel susceptible to colorectal cancer and as feelings of susceptibility increased likelihood of joking increased. Moreover, and consistent with the EPPM, men who perceived themselves to be susceptible to colorectal cancer, but had limited self-efficacy, were more likely to report



**Fig. 2:** Moderated mediation model with self-efficacy moderating the indirect effect of susceptibility. \* $p < 0.05$ . As the mediating relationship between susceptibility  $\rightarrow$  response efficacy  $\rightarrow$  joking was not significant, it was not included in this graphic. For biological sex, male = 0, female = 1.

**Table 2:** Probe of the conditional indirect effect of susceptibility

	Self-efficacy	b (SE)	95% CI
Susceptibility	3.15 (-1 SD)	-0.15 (.08)*	-0.3398, -0.0166
Susceptibility	3.67 (Mean)	-0.06 (.04)*	-0.1927, -0.0084
Susceptibility	4.00 (+1 SD)	-0.01 (.04)	-0.1384, 0.0411

Indirect effect of susceptibility at  $\pm 1$  standard deviation (SD) of the moderator variable (self-efficacy). \* $p < 0.05$ .

joking about the disease. The EPPM postulates that this enactment of humor is an example of fear control (Witte, 1994). The model suggests that when perceptions of threat exceed perceptions of efficacy to deal with that threat, people will take steps to manage their fear (Witte, 1994; Witte and Allen, 2000). It is possible that for men, joking functions as an outlet to control their fear of colorectal cancer. Unfortunately, this form of fear control seems to be negatively related to preventive behaviors, as jokers are less likely to engage in colorectal cancer screening (McQueen et al., 2014).

Previous research has investigated how different ratios of threat-to-efficacy present in EPPM messages can impact persuasive outcomes of health intervention materials (Carcioppolo et al., 2013). Although the authors found that no specific ratio performed better than the standard one-threat to one-efficacy ratio, this finding did not account for distinct sub-populations of the audience, such as those who may have existing high or low perceptions of threat to a particular disease. As such, it may be possible that certain types of message ratios may be more successful among people who tend to joke about colorectal cancer. Joking suggests that people are enacting the fear control process (i.e. high perceptions of threat, inadequate efficacy to counteract that threat). Perhaps high-efficacy message ratios can function better to encourage these audience members to enact

prevention behaviors, whereas a high-threat ratio may only function to push them further into fear control.

A logical extension of this research is to investigate whether the observed relationships are moderated by type of humor. It has been suggested that sarcasm could reflect avoidance and other types of humor (e.g. self-deprecation, rude humor and aggressive humor) may lead to similarly maladaptive outcomes (Martin, 2001; Kuiper et al., 2004), but other forms of humor-use may yield different screening outcomes. Humor is a complex emotional response and the enactment of humor may prove to be equally nuanced. A good first step would be the development of a multi-dimensional measure of humor use in the context of colorectal cancer screening. This measure would facilitate further research on humor and cancer as well as allow for the development and testing of more sophisticated theoretical postulates.

Particular attention should be paid to how this research could inform campaigns and interventions that utilize humor appeals. It should be noted that the present results speak to this issue only tangentially, and future research should be done to fully understand how people who joke about colorectal cancer are impacted by humorous intervention messages. Research has demonstrated that humorous intervention messages are more successful at triggering attention to the message and enhancing source liking (Weinberger and Gulas,

1992). Of course, the current research raises concerns about the use of humor with populations that enact humor as a form of avoidance. One possibility is that humor appeals may amplify males' inclinations to joke about the health concerns, encouraging avoidant strategies and the discounting of explicit health recommendations. If true, humor appeals could boomerang for avoidant populations by encouraging and cultivating avoidance behaviors. However, it is also possible that humor appeals mitigate avoidance by redirecting high threat/low efficacy populations. For instance, a recent study in advertising found that humorous messages can keep people from developing negative associations about a particular brand (Strick *et al.*, 2012). If this association translates to health interventions, then it may be possible that humorous messages keep people from developing negative associations about a particular health behavior. Future research should focus on determining how people who joke about health concerns respond to health messages that utilize humor. Lastly, it may be important for these interventions to include bolstered efficacy appeals to instigate beneficial coping behaviors among those who joke to avoid screening.

#### Limitations and future research

One limitation of the present investigation was that the sample was composed predominantly of women and the overwhelming majority of participants were Caucasian. Future research should account for this by assessing the relationships tested here with a more balanced and representative sample. Second, joking about colorectal cancer was operationalized as the extent to which one joked, rather than the explicit type of humor utilized. This is problematic as previous research suggests that specific humor types—such as self-defeating or aggressive humor—are more associated with maladaptive outcomes (Kuiper *et al.*, 2004). Likewise, some research suggests that humor appeals that reduce anxiety can increase cancer screening outcomes (Nabi, 2016). Future research should focus on exploring not only the frequency of joking but also the types of jokes utilized to better understand the relationship between humor and health outcomes. Another limitation of the present investigation is that avoidance measures were not included. To validate findings in the current study, future investigations should look for a positive relationship between joking behavior and avoidance. Additionally, biological sex was used as a proxy variable for masculinity/femininity. Past research has demonstrated relationships between humor and masculinity rather than humor and biological sex, a relationship that should be investigated by researchers looking to extend research in this area.

## CONCLUSION

The current study looked to determine why men are more likely to joke about colorectal cancer than women. Results revealed that as perceived susceptibility to colorectal cancer increased and self-efficacy decreased, people, particularly men, were more likely to joke about colorectal cancer. From a theoretical perspective, these results suggest that joking may be included in future tests of fear appeals as an indicator of someone actively avoiding screening for colorectal cancer.

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