Preventive Medicine 126 (2019) 105763

Contents lists available at ScienceDirect

Preventive Medicine

journal homepage: www.elsevier.com/locate/ypmed

Personality traits and preventive cancer screenings in the Health Retirement Study

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ARTICLE INFO

Keywords:
Personality
Preventive cancer screenings
Older age

ABSTRACT

The Five-Factor model of personality has been associated with a wide range of health behaviors and health outcomes. However, few studies have examined whether personality traits are related to cancer screening in older adults. The present study investigated the cross-sectional associations between personality traits and the probability of obtaining a recent preventive screening for breast, cervical, prostate, and colorectal cancer.

Participants from the Health and Retirement Study (N = 14,394, M_{age} = 68.14 years, range = 50–102 years, 58.6% female) completed a personality inventory and reported on cancer screenings in the 2010–2012 assessment. Logistic regression models were used to analyze the data, including age, race, ethnicity, gender, education, income, and wealth as covariates.

Higher conscientiousness was associated with a higher likelihood of obtaining breast, cervical, and prostate screening. Higher extraversion was related to higher odds of breast, cervical, and colorectal screening. Higher neuroticism was linked to higher odds of colorectal screening, and conscientiousness moderated the link between neuroticism and cervical screening. These associations were significant in models that accounted for demographic and socioeconomic factors. The effect sizes were in the range of a 10–20% higher likelihood of cancer screening for 1 *SD* difference in personality.

The present findings suggest that conscientiousness and extraversion were related to preventive cancer screenings, whereas neuroticism, openness and agreeableness were largely unrelated to the likelihood of such screenings. If these results are further replicated, health policy makers may consider personality traits when planning and implementing screening recommendations to improve preventive medicine.

1. Introduction

Cancer is a leading cause of death in the United States and across the world (United States Cancer Statistics, 2018; see also Ferlay et al., 2015). Death rates for cancer have declined steadily in the US since the 1990s, including for commonly diagnosed cancer sites, such as breast, lung, prostate, and colorectal (Cronin et al., 2018; Ferlay et al., 2015). Early detection and improved treatments are in part responsible for this decline. Deaths from cervical cancer, for example, declined substantially after screening with the Papanicolaou (Pap) test became common practice, and screening for colorectal as well as breast cancer have also been shown to reduce mortality from these cancers (National Cancer Institute, 2018). Survival rate is linked strongly to the cancer stage at diagnosis. For example, the five-year survival rate was 100% for stage I and 26.5% for stage IV of female breast cancer diagnosed in the US from 2007 through 2013 (Cronin et al., 2018). For colorectal cancer over the same period, the five-year survival rate was 88.1% for stage I and only 12.6% for stage IV (Cronin et al., 2018). These survival rates highlight the importance of cancer screening and early detection to reduce cancer-related morbidity and mortality.

The success of early detection has led to recommendations for regular cancer screening from organizations such as the United States Preventive Services Task Force (USPSTF) and the American Cancer Society. For example, the USPSTF recommends biennial mammography for women aged 50–74 years (USPSTF; "Final Update Summary: Breast Cancer Screening", 2018). Nevertheless, despite these recommendations, a substantial proportion of eligible individuals do not obtain the preventive screenings (Lemogne et al., 2018). As of 2015, the Centers for Disease Control and Prevention (CDC) estimated that the cancer screening rate was 71.5% for breast, 83.0% for cervical, and 62.4% for

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https://doi.org/10.1016/j.ypmed.2019.105763
Received 4 March 2019; Received in revised form 27 May 2019; Accepted 28 June 2019
Available online 29 June 2019
0091-7435/

colorectal (White et al., 2017). Further, screening rates vary significantly across demographic groups, with substantial disparities based on race, ethnicity, income, and education (White et al., 2017).

In addition to financial costs and gaps in insurance coverage, psychological factors figure prominently among the barriers to cancer screening. For colorectal cancer screening, a mixed-methods study found that fear was the top patient-reported barrier, followed by the unpleasant preparation, lack of knowledge, and pain (Jones et al., 2010). Fear, discomfort, inconvenience, information deficits, and skepticism are common barriers for other cancer screenings as well (Glasgow et al., 2000). Individual differences in general patterns of thoughts, feelings, and behaviors – that is, personality – are likely to contribute to such barriers and ultimately to the likelihood of undertaking cancer screening.

1.1. Personality and health

Personality traits can be organized in a conceptual framework that consists of five basic trait clusters: conscientiousness, neuroticism, openness to experience (hereafter, openness), extraversion, and agreeableness (Costa Jr & McCrae, 1992). Briefly, conscientiousness reflects the propensity to be self-controlled, task- and goal-directed, planful, and rule-following. Neuroticism contrasts even-temperedness with the experience of anxiety, worry, anger, and depression. Openness refers to the proneness to be original, complex, creative, and open to new ideas. Extraversion refers to the propensity to be sociable, active, assertive, and to experience positive affect. Finally, agreeableness refers to the propensity to be altruistic, trusting, modest, and warm.

A growing literature has linked personality to overall health (for a meta-synthesis, see Strickhouser et al., 2017), including chronic diseases (for reviews, see Chapman et al., 2011; Hampson & Friedman, 2008), objective markers of health status (e.g., Sutin et al., 2018), and mortality (e.g., Hill et al., 2011). Furthermore, personality traits have been associated with health-risk behaviors related to cancer, such as physical inactivity, cigarette smoking and other drug use, inadequate sunscreen use, and unhealthy diet (for reviews, see Bogg & Roberts, 2004; Chapman et al., 2011; Hampson et al., 2007). In the health care domain, previous research examined the role of personality in behaviors revolving around (non-)adherence to medication (e.g., Axelsson et al., 2011; Eustace et al., 2018; Jerant et al., 2011; Molloy et al., 2014; Wu & Moser, 2014) or therapies (e.g., airway pressure therapy, Copur et al., 2018), emergency department utilization (e.g., Chapman et al., 2009), and general health screenings such as blood sampling, anthropometric measurements, physical examination, urinalysis, and electrocardiogram (e.g., Armon & Toker, 2013; Iwasa et al., 2009). Among the five basic traits, conscientiousness and neuroticism emerge as the most relevant predictors. Higher conscientiousness, for example, is linked to adherence to treatment across a range of chronic health conditions (see Molloy et al., 2014, for a meta-analysis). For neuroticism, the results are less consistent (e.g., Jerant et al., 2011; Hagger-Johnson et al., 2012), with both high and low in neuroticism associated with a lower health screening rate (Armon & Toker, 2013). These findings illustrate that there might be two paths through which neuroticism is related to health (Friedman, 2000). Whereas neuroticism may lead to poorer health due to anxiety-provoked avoidance of preventive screenings, it could also lead to better health outcomes because of anxiety-provoked vigilance and better adherence to recommended screenings. Furthermore, it has been suggested that conscientiousness moderates the association between neuroticism and health. In combination with high conscientiousness, high neuroticism can be associated with better health (also known as “healthy neuroticism”, e.g., Turiano et al., 2013; Weston & Jackson, 2015).

1.2. Personality and cancer screenings

Although there is evidence for an association between personality and health-related behaviors, relatively few studies have investigated the association between personality and cancer screenings (e.g., Lemogne et al., 2018; Neeme et al., 2015; Schwartz et al., 1999). In a large Japanese sample (N = 21,911, aged 40–64), high extraversion and low neuroticism were associated with regular participation in a gastric cancer screening program (Arai et al., 2009). However, this study did not assess conscientiousness. In a sample of older adults from the UK (N = 2681, aged 60–75) that assessed all five personality traits, only conscientiousness was associated with an increased likelihood of participation in colorectal cancer screening (Gale et al., 2015). In an Irish sample (N = 5500, aged 50+), only higher openness was associated with a higher likelihood of mammography, and only increased conscientiousness was associated with an increased likelihood of prostate examination (Nolan et al., 2019). In a US study of women younger than 50 (N = 754), higher conscientiousness and extraversion were associated with higher likelihood of breast cancer screening, but the associations were no longer significant after adjusting for a variety of covariates (Siegler et al., 1995). In another study of young women (N = 257), higher conscientiousness and extraversion were associated with lower Pap test barriers (Hill & Gick, 2011). Finally, in a large US sample (N = 3748 women), higher conscientiousness was associated with higher likelihood of mammography (Pandhi et al., 2016). Taken together, these studies suggest that higher conscientiousness, extraversion, openness and lower neuroticism may be related to cancer screening.

1.3. The present study

This study examined the associations between personality traits and the likelihood of obtaining a recent preventive cancer screening (breast, cervical, prostate, and colorectal) in a large sample of older adults. We aimed to contribute to existing literature by including all five traits, four common cancer screenings, and investigating a large sample across the age range that is critical for cancer detection. In a first model, we included demographic covariates and in a second model, we added education, income, and wealth to examine whether the associations between personality and cancer screening were independent or attenuated by socioeconomic factors. Based on previous findings on personality and health screenings (e.g., Arai et al., 2009; Gale et al., 2015) as well as the broader literature on personality and health (e.g., Strickhouser et al., 2017), we expected that individuals with higher conscientiousness and lower neuroticism would be more likely to acquire a cancer screening. Given that conscientious individuals tend to be organized, dutiful, and self-disciplined (Costa Jr & McCrae, 1992), they may be more likely to adhere to cancer screening recommendation. Our hypothesis for neuroticism is more tentative given the contradictory findings of past research (e.g., Connor-Smith & Flachsbart, 2007; Friedman, 2000). In line with the notion of maladaptive avoidance, we hypothesized that high neuroticism would be associated with a lower likelihood to obtain a cancer screening. However, to explore potential differential and non-linear effects of neuroticism, we tested whether low, medium or high neuroticism were predictors of cancer screening. Moreover, we considered the possible interaction between neuroticism and conscientiousness.

Lastly, some studies found an association between extraversion and cancer screening (e.g., Arai et al., 2009; Siegler et al., 1995). Nevertheless, given the paucity of research evidence, no specific hypotheses were formulated for extraversion, openness or agreeableness. The associations between these traits and the odds of obtaining cancer screening were explored to form the basis for more conclusive research.

2. Methods

2.1. Participants

Participants were drawn from the Health and Retirement Study

(HRS), an ongoing longitudinal study on the health and economic circumstances of adults over age 50. The sample is designed to be representative of the non-institutionalized older adults in the United States. The study is supported primarily by the National Institute of Aging and data is collected by the University of Michigan. The research protocol was approved by the University of Michigan Institutional Review Board.

In the present analyses, participants with information on personality and preventive cancer screenings were included. A small proportion of participants is younger than 50 years because spouses are enrolled regardless of their age. We limited the analyses to individuals over the age of 50 since this is the recommended age to begin screening for most cancer types (except for cervical cancer, which is recommended for women beginning at age 21). At the time of data analyses, the 2012 wave of assessment was the latest available with data on cancer screenings for the full sample. Given that HRS employed a half-sample strategy for personality measures (i.e., half of the sample completed the questionnaire in 2010, whereas the other half completed it in 2012), we used the combined 2010/2012 personality data for the analyses. A total of 14,394 participants had data on all personality traits, but the number of participants included in the analyses varied depending on which cancer screening was examined. For women, 8404 (99.6% of the female participants with personality data) had data on breast screening, and 8392 (99.5%) had data on cervical screening. For men, 5859 (98.4%) had data on prostate screening. Across both genders, 14,306 participants (99.4%) had data on colorectal screening.

2.2. Measures

2.2.1. Personality

Personality traits were assessed using the Midlife Development Inventory (MIDI; Lachman & Weaver, 1997). Participants were asked how well 31 adjectives described them on a Likert-type scale ranging from 1 (not at all) to 4 (a lot). The MIDI includes ten items for conscientiousness (e.g., organized; $\alpha = 0.72$), four for neuroticism (e.g., moody; $\alpha = 0.71$), seven for openness (e.g., imaginative; $\alpha = 0.79$), five for extraversion (e.g., outgoing; $\alpha = 0.75$), and five for agreeableness (e.g., helpful; $\alpha = 0.78$).

2.2.2. Preventive cancer screenings

The health survey in HRS asked about six preventive measures recommended by either the USPSTF or CDC. Four of the six preventive measures were cancer screenings (breast, cervical, prostate, and colorectal), and the other two measures were preventive health behaviors (i.e., flu shot and cholesterol screening; see Kim et al., 2014). Participants were asked about preventive screenings over the last two years for breast, cervical, and prostate cancer or four years for colon cancer. Specifically, women were asked whether they had a "mammogram or X-ray of the breast to search for cancer" and whether they had a "Pap smear" in the last two years. Men were asked whether they had a "PSA blood test or other examination to screen for prostate cancer" in the last two years. Both women and men were asked whether they had a "colonoscopy, sigmoidoscopy, or other screening for colon cancer" in the last four years. Participants stated "yes" (1) or "no" (0) for each screening to indicate whether they undertook it. The HRS preventive cancer screenings were evaluated by benchmarking them against other national surveys and have shown high reliability and validity (Jenkins et al., 2008).

2.3. Statistical analysis

We used logistic regression to predict each of the screenings from personality traits in two models. Model 1 includes demographic (age, race, ethnicity, and gender [for colorectal screening]) and Model 2 further includes socioeconomic covariates (education, income, and wealth). For colorectal screening, we tested interaction effects between personality traits and gender. Personality, income, and wealth scores were converted into *z*-scores to facilitate the comparison between different scales and to help future meta-analyses. In additional analyses, we contrasted those aged 50 to 64 and 65 to 75 years because Medicare covers the costs of these screenings for individuals older than 65 years. Analyses in these two age groups are also informative because USPSTF does not recommend routine screening for cervical cancer after age 65 and for breast and colorectal cancer after age 75. In follow-up analyses, we tested (a) whether the odds of cancer screenings were different in participants with low, medium or high scores in neuroticism, and (b) the interaction between neuroticism and conscientiousness, using the covariates of Model 2. Analyses were conducted in R (R Core Team, 2018) and RStudio (RStudio Team, 2016) using the package sjPlot (Lüdecke, 2018).

Table 1
Descriptive statistics for total sample, women and men.

	Total sample (N = 14,394)	Women (N = 8438)	Men (N = 5956)
Variables	*M (SD)*	*M (SD)*	*M (SD)*
Conscientiousness	3.26 (0.41)	3.30 (0.40)	3.20 (0.42)
Neuroticism	2.02 (0.62)	2.07 (0.62)	1.95 (0.60)
Openness	2.92 (0.57)	2.92 (0.57)	2.92 (0.56)
Extraversion	3.17 (0.57)	3.21 (0.56)	3.12 (0.57)
Agreeableness	3.51 (0.50)	3.61 (0.45)	3.36 (0.53)
Age	68.14 (10.60)	67.94 (10.73)	68.41 (10.40)
Race (African American)	16.0%	17.7%	13.5%
Race (other)	6.6%	6.3%	6.9%
Ethnicity (Hispanic)	10.5%	10.5%	10.6%
Education (in years)	12.89 (3.00)	12.79 (2.90)	13.03 (3.13)
Income (in USD)	69,019 (109,746)	61,879 (92,663)	79,441 (130,039)
Wealth (in USD)	496,917 (1,239,338)	451,119 (1,120,549)	563,759 (392,077)
Screenings	Yes (*N*, %)	Yes (*N*, %)	Yes (*N*, %)
Breast	–	5917 (70.1%)	–
Cervical	–	3900 (46.2%)	–
Prostate	–	–	3905 (65.6%)
Colorectal	4814 (33.4%)	2761 (32.7%)	2053 (34.5%)

Note. *M* = Mean; *SD* = Standard Deviation. USD = US Dollar. Income refers to the total income in 2011. Wealth represents the value of assets minus debts. The bottom part of the table (Screenings) informs about the number and percentage of individuals who obtained the preventive screening.

3. Results

Table 1 presents the descriptive statistics for the demographic variables, personality traits, and proportion of participants who obtained each screening.

Table 2 presents the results of logistic regressions with personality traits as predictors of each type of cancer screening. Women who scored higher on conscientiousness and extraversion were more likely to obtain breast and cervical cancer screening. Men who scored higher on conscientiousness were more likely to obtain prostate cancer screening. Extraversion and neuroticism, but not conscientiousness, were associated with colorectal screening, and these associations were not moderated by gender (see Table S3 in the Supplementary Material). The contrast between Model 1 and 2 suggest that the associations were only reduced slightly accounting for socioeconomic conditions (i.e., education, income, and wealth) and most remained significant. The effect sizes ranged between a 10% to 20% higher likelihood of cancer screening for 1 *SD* difference in personality.

For breast and prostate cancer screening, the significant associations were slightly stronger in the group of 65–75 year-olds compared to the 50–64 year-olds, suggesting that personality traits are slightly more consequential in the age group covered by Medicare.

In follow-up analyses, we found no evidence that odds of cancer

Table 2
Summary of odds ratios (OR) and 95% confidence intervals (CI): personality and cancer screenings by age groups.

Age group	Model 1						Model 2					
	50–64		65–75		50 +		50–64		65–75		50 +	
	OR	CI	OR	CI	OR	CI	OR	CI	OR	CI	OR	CI
Breast screening (N)	3623		2625		8404		3381		2435		7673	
Conscientiousness	1.16	1.06–1.26	1.19	1.07–1.33	1.16	1.09–1.22	1.14	1.05–1.25	1.17	1.04–1.32	1.13	1.07–1.20
Neuroticism	1.03	0.95–1.11	1.01	0.92–1.12	1.01	0.96–1.06	1.06	0.98–1.15	1.04	0.94–1.15	1.03	0.98–1.09
Openness	1.09	0.99–1.19	0.96	0.85–1.08	1.02	0.97–1.09	1.03	0.93–1.13	0.86	0.75–0.98	0.96	0.90–1.02
Extraversion	1.09	0.99–1.20	1.23	1.08–1.39	1.15	1.08–1.23	1.08	0.98–1.19	1.21	1.06–1.39	1.14	1.06–1.22
Agreeableness	0.92	0.83–1.02	0.87	0.76–1.00	0.93	0.87–1.00	0.95	0.86–1.06	0.91	0.79–1.05	0.96	0.89–1.03
Cervical screening (N)	3623		2616		8392		3381		2426		7658	
Conscientiousness	1.18	1.09–1.28	1.09	0.99–1.20	1.13	1.07–1.20	1.15	1.06–1.25	1.11	1.01–1.23	1.14	1.07–1.20
Neuroticism	0.96	0.89–1.03	1.07	0.98–1.16	1.00	0.95–1.05	0.98	0.91–1.06	1.08	0.99–1.17	1.01	0.96–1.07
Openness	1.09	1.00–1.18	0.97	0.88–1.07	1.05	0.99–1.11	1.02	0.93–1.12	0.94	0.84–1.04	1.00	0.94–1.07
Extraversion	1.18	1.08–1.29	1.23	1.10–1.38	1.18	1.11–1.26	1.19	1.08–1.30	1.21	1.08–1.36	1.17	1.10–1.25
Agreeableness	0.90	0.82–0.99	0.93	0.83–1.05	0.93	0.87–0.99	0.93	0.84–1.03	0.92	0.82–1.04	0.94	0.87–1.00
Prostate screening (N)	2419		1844		5859		2217		1669		5175	
Conscientiousness	1.10	1.00–1.20	1.22	1.07–1.38	1.10	1.04–1.18	1.06	0.96–1.18	1.15	1.00–1.33	1.08	1.01–1.16
Neuroticism	1.03	0.94–1.12	0.91	0.80–1.03	0.98	0.92–1.04	1.06	0.96–1.17	0.94	0.82–1.07	1.00	0.94–1.07
Openness	1.06	0.96–1.18	0.99	0.86–1.14	1.04	0.97–1.11	0.97	0.87–1.09	0.94	0.80–1.10	0.97	0.90–1.05
Extraversion	0.98	0.88–1.10	1.04	0.90–1.20	1.05	0.97–1.13	1.02	0.90–1.14	1.03	0.88–1.21	1.07	0.99–1.16
Agreeableness	1.04	0.94–1.15	1.11	0.97–1.28	1.05	0.98–1.12	1.06	0.96–1.18	1.19	1.02–1.38	1.06	0.99–1.14
Colorectal screening (N)	6067		4472		14,306		5616		4111		12,887	
Conscientiousness	1.03	0.97–1.09	0.97	0.90–1.04	1.00	0.96–1.04	1.03	0.97–1.10	0.99	0.92–1.07	1.01	0.96–1.05
Neuroticism	1.07	1.01–1.14	1.04	0.98–1.12	1.05	1.01–1.09	1.07	1.01–1.14	1.05	0.98–1.13	1.05	1.01–1.09
Openness	1.03	0.96–1.11	1.08	1.00–1.17	1.04	1.00–1.09	1.02	0.95–1.09	1.06	0.98–1.15	1.03	0.98–1.08
Extraversion	1.07	1.00–1.15	1.08	0.99–1.17	1.07	1.02–1.12	1.06	0.99–1.15	1.07	0.98–1.17	1.06	1.01–1.12
Agreeableness	0.97	0.91–1.04	0.98	0.90–1.07	1.00	0.95–1.04	0.96	0.90–1.04	0.98	0.90–1.07	0.98	0.94–1.03

Note. Model 1 includes age, race, ethnicity, and gender (for colorectal screening) as covariates. Model 2 further includes socioeconomic covariates (education, income, and wealth). These results were based on regression with all five traits entered simultaneously in one model, but results were mostly similar when separate regression were run for each trait (see Supplementary Material, Tables S8–S11).

screenings differed systematically by low, medium or high levels of neuroticism (Supplementary Tables S4–S7). Moreover, we found no significant interaction between neuroticism and conscientiousness for breast, prostate, and colorectal screening. However, conscientiousness moderated the link between neuroticism and cervical cancer screening. The interaction suggested that at higher levels of conscientiousness, higher levels of neuroticism were associated with greater odds of Pap smear (Supplemental Fig. S1).

4. Discussion

The present study examined the associations between personality traits and preventive cancer screenings. Consistent with our hypotheses, the main analyses demonstrated that higher conscientiousness was associated with a higher likelihood of obtaining breast, cervical, and prostate cancer screening. Contrary to expectation, conscientiousness was not associated with colorectal screening and extraversion emerged unexpectedly as a significant predictor in breast, cervical, and colorectal screenings. Finally, higher neuroticism was linked to higher odds of colorectal screening but was unrelated to the other screenings.

Individuals high on conscientiousness were more likely to obtain three out of the four cancer screenings examined. These findings are consistent with the general literature on personality and health behaviors (Bogg & Roberts, 2004; Molloy et al., 2014) as well as previous studies examining personality and cancer screenings (Hill & Gick, 2011; Nolan et al., 2019; Pandhi et al., 2016; Siegler et al., 1995). As being organized, dutiful, and self-disciplined are key attributes of this personality trait, individuals higher in conscientiousness may be more likely to follow health-care recommendations, including for preventive cancer screenings. Surprisingly, however, there was no association between conscientiousness and the likelihood of acquiring a colorectal screening (but see Gale et al., 2015). As described in the methods' section, however, participants were asked whether they had a colonoscopy, sigmoidoscopy, or other screening for colon cancer over the last four years. This broad question is not ideal given the different frequency recommendations for different types of colorectal screening. For instance, colonoscopy is recommended every 10 years, sigmoidoscopy every 5 years, and fecal occult blood test every year (USPSTF; "Final Update Summary: Colorectal Cancer Screening", 2019). This latter type of screening was not explicitly mentioned, and the time frame of the question may have contributed to the null finding for conscientiousness. Further work is required to understand whether this result is indeed masked by a methodological issue or whether the predictive power of conscientiousness varies by different preventive cancer screenings due to different mechanisms underlying these links.

Consistent with previous studies (Chaitchik & Kreitler, 1991; Gale et al., 2015; Nolan et al., 2019; Pandhi et al., 2016), neuroticism was largely unrelated to cancer screenings, with two exceptions. On the one hand, individuals high on neuroticism were more likely to obtain a colorectal screening. This outcome is contrary to previous studies linking neuroticism negatively to past prostate testing (Neeme et al., 2015) and gastric cancer compliance (Arai et al., 2009). Rather, it supports the idea that in some cases neuroticism might be "good" for health, with higher likelihood of screening driven by anxiety and worry. On the other hand, conscientiousness moderated the association between neuroticism and cervical cancer screening: Women with high scores on both neuroticism and conscientiousness were more likely to undertake a Pap smear. This finding is consistent with the "healthy neuroticism" hypothesis (Turiano et al., 2013; Weston & Jackson, 2015). Nevertheless, it is difficult to explain why these two associations are found only for some and not for all cancer screenings. Overall, the current study indicates that the evidence is inconclusive for the association between neuroticism and cancer screening.

Of further note, older adults high on extraversion were also more likely to obtain breast, cervical, and colorectal screening. These findings are in accord with previous studies (Arai et al., 2009; Chaitchik & Kreitler, 1991; Hill & Gick, 2011; Nolan et al., 2019) and might be explained by positive emotions as one primary characteristic of

extraversion. This characteristic means that positive expectations and belief in personal benefit may be motives for extraverted individuals to obtain cancer screenings (Neeme et al., 2015). Nevertheless, the association of extraversion with cancer screening seems limited to women: It was not found for prostate cancer and was much weaker in the colorectal as compared to breast and cervical cancer screening.

We found no large differences between age groups in the pattern of associations. The associations, however, were slightly stronger in the older age group for breast and prostate cancer screening. This finding indicates that conscientiousness and extraversion are more crucial in 65–75 year-olds whose screening costs are covered by Medicare. In addition, some associations were slightly attenuated in Model 2, which included socioeconomic indicators. Although the results from Model 1 suggest that agreeable women were less likely to get screened, this relation may be explained in part by socioeconomic factors (Judge et al., 2012; Nyhus & Pons, 2005). Future research should test whether this pattern replicates in other samples. Overall, though, the pattern of associations between personality and cancer were not altered substantially by education or economic factors.

Taken together, conscientiousness and extraversion were associated with adherence to different cancer screenings. Considerably more work will need to be done to determine the links between personality traits and different cancer screenings. Then, as an essential next step, a meta-analysis could be conducted, helping to make practical implications about the incorporation of personality traits in screening recommendations. Knowing the personality traits of a patient may facilitate active participation of both the physician and the patient in the decision-making process of undertaking a cancer screening beyond biomedical and demographic profiles (Bowen et al., 2011; Neeme et al., 2015).

In terms of strengths, this study benefits from a large sample of older adults in the United States, the assessment of all five major dimensions of personality, and data on four common cancer screenings. However, it has also limitations that need to be addressed. First, potentially important variables were omitted as they were not available in the data. Factors such as family history of cancer (e.g., Katapodi et al., 2004) or the belief in the efficacy of screenings (e.g., Myers et al., 2000) are important motives for screening behaviors. Likewise, the awareness of screening recommendations and/or the persistence of physicians regarding recommendations might additionally influence adherence to preventive screenings. Second, given that HRS assesses multiple life domains, questions regarding cancer screening were rather broad and self-reported. In future investigations, more information on cancer screening (e.g., frequency, screening type, and objective medical data) could help refine knowledge on the role of personality in cancer screenings.

The present study supports theory and research that point to the relation between personality and health and contributes to the literature on preventive screenings. If these results are replicated in future studies, health policy makers seeking to improve preventive medicine may wish to take personality traits into account when planning and implementing screening recommendations.

Declaration of Competing Interest

The authors declare no potential conflicts of interest concerning the research, the authorship, and publication of this article.

This research was supported in part by the National Institute on Aging of the National Institutes of Health grant R21AG057917 and R01AG053297. The Health and Retirement Study (HRS) is supported by the National Institute on Aging (NIAU01AG009740).

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ypmed.2019.105763.

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