

Influence of Social Desirability on Age Differences in Self-Reports of Mood and Personality

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ABSTRACT Increased age has been found to be associated with differences in affect and personality that have been interpreted in terms of better emotional regulation and increased maturity. However, these findings have largely been based on self-report data, and the primary goal of the current research was to investigate the hypothesis that age-related differences in affect and in certain desirable personality traits might, at least partially, reflect age differences in social desirability. As expected, increased age was associated with lower levels of negative affect and Neuroticism and higher levels of positive affect, life satisfaction, Agreeableness, and Conscientiousness, and scores on the social desirability scale were positively related to age and to desirable self-report characteristics but negatively related to undesirable self-report characteristics. Importantly, controlling for the variance in the social desirability measure resulted in less positive age trends in both types of self-report measures.

Advancing age has been found to be associated with a decrease in self-reported negative affect (e.g., Charles, Reynolds, & Gatz, 2001; Gross et al., 1997; Kobau, Safran, Zack, Moriarty, & Chapman, 2004; Teachman, 2006), although possibly with an increase in later years of adulthood (e.g., Teachman, 2006). Furthermore, positive affect and other indicators of subjective well-being such as life satisfaction have been found either to remain stable with advancing age or to increase slightly (e.g., Carstensen, Pasupathi, Mayr, & Nesselrode, 2000; Charles et al., 2001; Mroczek & Kolarz, 1998; Siedlecki,

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Tucker-Drob, Oishi, & Salthouse, 2008). Finally, a number of studies have reported age-related decreases in Neuroticism but age-related increases in Agreeableness and Conscientiousness (e.g., Bleidorn, Kandler, & Spinath, 2009; McCrae, Martin, & Costa, 2005; Roberts & Mroczek, 2008; Srivastava, John, Gosling, & Potter, 2003; Terracciano, McCrae, Brant, & Costa, 2005). Various combinations of these results have been interpreted as reflecting age-related increases in maturity (e.g., Roberts & Mroczek, 2008) or adjustment (Staudinger & Kessler, 2009), and better emotion regulation (e.g., Carstensen, Fung, & Charles, 2003; Carstensen et al., 2000; see also Labouvie-Vief, Diehl, Jain, & Zhang, 2007).

The findings indicating age-related increases in aspects of affect and personality are intriguing because they are in contrast to results on cognitive functioning, which present a less positive picture of aging (e.g., for reviews, see Craik & Salthouse, 2008; Salthouse, 2010).

However, many of the relationships between age and both affect and personality are based on self-reports, and it is possible that they might at least partially reflect aspects of self-presentation bias or social desirability rather than true shifts in affect and personality traits. In fact, several empirical findings are consistent with this response bias interpretation. For example, Chen, Dai, Spector, and Jex (1997) found that items designed to assess positive affect were much more likely to be endorsed by people who score high on a measure of social desirability. Furthermore, personality traits judged more desirable are also much more likely to be endorsed by people who score high on measures of social desirability (e.g., Bäckström, Björklund, & Larsson, 2009; DeYoung, Peterson, & Higgins, 2002; Edwards, 1966; Konstabel, Aavik, & Allik, 2006; see also Kuncel & Tellegen, 2009). There are also several reports that simple instructions to fake good can distort the factor structure of Big Five personality measures (e.g., Ellingson, Sackett, & Hough, 1999; Hirsch & Peterson, 2008) and reduce the predictive validity of the personality questionnaire to insignificance (Hirsch & Peterson, 2008).

One possible method of investigating the influence of response bias on age relations in self-reported measures of personality and affect consists of administering a social desirability questionnaire designed to assess people's tendency to present themselves in an overly positive manner, and then partialling social desirability variation from measures of personality and affect. If social desirability scales truly assess a favorable response style, removal of variance

due to social desirability in personality and affect scales could be hypothesized to lead to more accurate assessments of personality and affect variables.

However, there has been controversy regarding whether social desirability scales assess a response style or bias that may distort self-reports, or whether they assess a substantively meaningful trait closely related to certain personality traits (e.g., McCrae & Costa, 1983; Nicholson & Hogan, 1990; Smith & Ellingson, 2002). To the extent that social desirability scales measure a stable disposition to behave in a particular manner, and not merely to produce favorable self-report responses, partialling variance associated with social desirability scales may be removing meaningful variance from the relevant trait and may not increase the validity of personality measures or subjective well-being measures (e.g., see Diener, 1994, for a review on relations between subjective well-being and social desirability scales; Diener, Sandvik, Pavot, & Gallagher, 1991; Kozma & Stones, 1988; Kurtz, Tarquini, & Iobst, 2008; Li & Bagger, 2006; McCrae & Costa, 1983; Ones, Vieswesvaran, & Reiss, 1996). For example, the Marlowe-Crowne scale used in the current project has been interpreted as measuring a trait of defensiveness (e.g., Paulhus, 1984; Thomsen, Mehlsen, Viidik, Sommerlund, & Zachariae, 2005; Weinberger, 1990; Weinberger, Schwartz, & Davidson, 1979), in which case it would represent a stable coping style rather than merely a self-presentation bias.

Regardless of the interpretation of social desirability scales, it is of interest to examine the relation of age with personality and affect measures after removing the contribution of the Marlowe-Crowne social desirability measure. If the age relations remained unchanged, then it could be inferred that neither a self-presentation bias nor a stable disposition to think or behave in a socially desirable manner distorts the age trends in those characteristics. In contrast, if age differences in personality or affect are altered by control of scores on the social desirability scale, two alternative interpretations are possible. One interpretation is that self-presentation biases distort the relations between age and various self-report measures. However, an alternative interpretation is that there could be considerable overlap in the disposition to think and behave in a socially desirable manner and the self-report measure under consideration. A discovery of significant mediation would be interesting in both cases, but in the former it would reflect the operation of a response bias and in the latter it would indicate the presence of covarying dispositions.

The primary goal of the current project was to investigate the hypothesis that some of the age differences on personality and affect are mediated through social desirability, as assessed with the Marlowe-Crowne scale. Several studies have investigated the overall relation of this particular social desirability scale to personality and affect variables (e.g., Kurtz et al., 2008; Lewinsohn, Seeley, Roberts, & Allen, 1997; McCrae & Costa, 1983; Tanaka-Matsumi & Kameoka, 1986). Furthermore, there is evidence that social desirability scores tend to be higher at older ages (e.g., Erskine, Kivavilashvili, Conway, & Myers, 2007; Kozma & Stones, 1988; Ray, 1988; see also Ray & Lovejoy, 2003; Stöber, 2001; Thomsen et al., 2005). However, there have apparently not been any prior investigations of possible age differences in the role of social desirability in personality and affect assessments.

Specifically, we examined the role of social desirability as a potential mediator of the relations between age and the Big Five personality traits and self-ratings of positive and negative affect (mediation model). Because correlation does not necessarily reflect causality, an overlap between social desirability and self-reports of personality and affect would be consistent either with the possibility that age-related differences in social desirability contribute to age differences in personality and affect measures, or with the idea that age-related differences in personality and affect contribute to age differences in levels of social desirability. Although it is not possible to determine causal direction between the two sets of variables in the current study, the degree of overlap of the variables can be examined after controlling influences of the other variable. The primary goal of the current project was therefore to decompose the age relations in self-report measures of personality and affect by examining age trends before and after statistical control of social desirability.

Based on prior studies, we expected significant relations of social desirability to Neuroticism, Agreeableness, Conscientiousness, and to positive and negative affect (e.g., Diener et al., 1991; Ones et al., 1996; Thomsen et al., 2005), in the direction of lower levels of Neuroticism and negative affect, and higher levels of Agreeableness, Conscientiousness, and positive affect for people who score higher on social desirability scales. Only weak relations of social desirability have been reported with Extraversion and Openness (e.g., Ones et al., 1996), but these traits were also examined in the current project for comparison purposes.

Second, we expected that increased age would be associated with more positive, or less negative, self-reports, in the form of a decrease in measures of negative affect and Neuroticism, and an increase in measures of positive affect, life satisfaction, Agreeableness, and Conscientiousness. (Although this relation could be obscured if a suppressor variable were operating, significant age relations were evident on most of the variables in the current study.) Third, advancing age was expected to be associated with higher levels of social desirability. Fourth, and most important, if social desirability is functioning as a mediator, the relation of age to self-reports of affect and personality was predicted to be reduced after controlling the variation in social desirability measure.

To determine whether the mediational results were specific to people's tendency to present themselves in a particular manner, and therefore to self-report variables, similar analyses were carried out with objective composite measures of cognitive ability as potential mediators of the age differences in the self-report variables, and with social desirability as a potential mediator of the age differences in the cognitive measures.

The predictions were investigated in a moderately large sample of adults across a wide age range who each completed several questionnaires assessing aspects of affect and personality in addition to the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960). The sample size of over 1,100 provided sufficient power to examine moderate and small effect sizes.

METHOD

Participants

The sample consisted of 1,175 adults, 63% female, ranging from 18 to 93 years of age, who all had scores on the Mini-Mental State Examination (MMSE; Folstein, Folstein, & McHugh, 1975) of 27 or higher. Participants were recruited through newspaper advertisements, flyers, and referrals from other participants. Further descriptions of the participants, and the methods of recruitment, are provided elsewhere (e.g., Salthouse, Pink, & Tucker-Drob, 2008). Most of the participants had at least some college education, and the correlation between age and amount of education was .24 ($p < .01$). Self-reported health status and health-related limitations were somewhat lower with increased age, with correlations of .08 ($p < .01$) and .22 ($p < .01$), respectively, on scales from 1 (*excellent or none*) to 5 (*poor or a great deal*).

Materials and Procedure

Social Desirability Measure

The Need for Approval Scale (Crowne & Marlowe, 1960) was administered to assess social desirability. This scale consists of 33 true-false statements to which the participants indicated whether they agreed or not. Items in the scale relate to behaviors that are “culturally sanctioned or approved but which are improbable of occurrence” (Crowne & Marlowe, 1960, p. 350). Examples of items are “I have never deliberately said something that hurt someone’s feelings” or “I have never been irked when people expressed ideas very different from my own.” The coefficient alpha reliability for the total scale in this sample was .83.

Paulhus (1984) proposed distinguishing two components of social desirability—self-deceptive enhancement (SDE), related to an honest but overly positive view of oneself, and impression management (IM), referring to the deliberate distortion of responses to create a more positive social image. Earlier studies (e.g., Leite & Beretvas, 2005) with the Marlowe-Crowne questionnaire have considered these two subscales separately, and therefore they were examined in the current project along with the total score. In the current sample, the SDE subscale had a coefficient alpha reliability coefficient of .74, and the IM scale had a reliability coefficient of .70. However, the two subscales were correlated .69, and because they had nearly identical correlations with the affect and personality variables and with age, only the total score was considered in subsequent analyses.

Affect Measures

Measures of affect or mood included the Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977), which had a coefficient alpha reliability of .90 in this study; the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) with a coefficient alpha reliability of .94; the Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988), with coefficient alpha of .90 for the Positive Affect subscale and .88 for the Negative Affect subscale; and the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985; Pavot & Diener, 1993), which had a coefficient alpha reliability of .91.

Personality Measures

The participants also completed the International Personality Item Pool questionnaire (Goldberg, 1999; 50-item version). All five factors had good reliability: Neuroticism ($\alpha = .89$), Extraversion ($\alpha = .87$), Openness ($\alpha = .79$), Agreeableness ($\alpha = .78$), and Conscientiousness ($\alpha = .79$).

Cognitive Measures

Composite cognitive scores of fluid intelligence, perceptual speed, and episodic memory were used in some analyses. Fluid intelligence was assessed with tests of reasoning and spatial visualization. Reasoning was assessed with the Raven's Advanced Progressive Matrices (Raven, 1962), Shipley Abstraction (Zachary, 1986), and Letter Sets (Ekstrom, French, Harman, & Dermen, 1976) tests. Spatial visualization was assessed with the Spatial Relations test from the Differential Aptitude Test Battery (Bennett, Seashore, & Wesman, 1997), the Paper Folding test from the Educational Testing Service Kit of Factor-Referenced Cognitive Tests (Ekstrom et al., 1976), and the Form Boards test (Ekstrom et al., 1976). Speed was measured with Digit Symbol (Wechsler, 1997a), Letter Comparison (Salthouse & Babcock, 1991), and Pattern Comparison (Salthouse & Babcock, 1991) tests. Episodic memory was assessed with Logical Memory from the Wechsler Memory Scale–Third Edition (Wechsler, 1997b), the Word List Test from the Wechsler Memory Scale–Third Edition (Wechsler, 1997b), and a Paired Associates test developed locally (Salthouse, Fristoe, & Rhee, 1996). The cognitive variables were converted into z scores, and composite cognitive scores were created by averaging z scores of cognitive variables assumed to measure the same ability.

RESULTS

We first examined whether our data replicated previous findings regarding the relations of age, social desirability, and self-report variables of personality and affect. Advancing age (the independent variable) was expected to be associated with higher levels of social desirability (the mediator). Higher levels of social desirability (the mediator) were expected to be associated with lower levels of undesirable characteristics such as negative affect and Neuroticism, and with higher levels of desirable characteristics such as positive affect, life satisfaction, Agreeableness, and Conscientiousness (dependent variables).

To determine the magnitudes of the mediated, or indirect, effects, we examined the relations of age to affect and personality after controlling the variation in the social desirability measure. Indirect effects were estimated with the bootstrap procedure described by Preacher, Rucker, and Hayes (2007; see also Hayes, 2009). Information from the bootstrap sampling distribution was used to generate confidence intervals for the indirect effects (Preacher et al., 2007).

Relations of Age to Personality and Affect Measures

The correlations among age, affect, and personality variables are displayed in Table 1. It can be seen that there were significant correlations of age with all of the affect and personality variables, except Extraversion and Openness. Increased age was negatively related to variables assessing negative affect (i.e., depression, anxiety, negative affect and Neuroticism) and positively related to positive affect, life satisfaction, Agreeableness, and Conscientiousness. These results replicate earlier findings in that increased age was related to higher scores in all of the desirable characteristics (i.e., positive affect, life satisfaction, Agreeableness, Conscientiousness) and to lower scores in all of the undesirable characteristics (i.e., negative affect and Neuroticism).

The slight negative relation of age to Openness was also consistent with previous reports (e.g., Roberts & Mroczek, 2008; Srivastava et al., 2003), although the trend was not significant in the current study. There was no relation between age and Extraversion, and prior research has been inconsistent as there are reports of both positive (e.g., Roberts & Mroczek, 2008) and negative (e.g., Srivastava et al., 2003) age relations.

Nonlinear age relations on the affect and personality measures were also examined. The quadratic relation of age to Conscientiousness was significant ($\beta = -.09$, $t[1131] = -2.87$, $p < .01$) and accounted for .07% of variance ($R^2 = .007$, $F[1, 1131] = 8.211$, $p < .01$). The cubic relation of age to CES-D was significant ($\beta = .18$, $t[1149] = 2.68$, $p < .01$) and accounted for 0.6% of variance ($R^2 = .006$, $F[1, 1149] = 7.16$, $p < .01$). Both quadratic ($\beta = .14$, $t[1166] = -4.72$, $p < .01$) and cubic ($\beta = -.21$, $t[1166] = -3.06$, $p < .01$) age relations were significant with the life satisfaction variable, accounting for 1.8% ($R^2 = .018$, $F[1, 1166] = 22.23$, $p < .01$) and 0.8% ($R^2 = .008$, $F[1, 1165] = 9.34$, $p < .01$) of variance, respectively. Because the R^2 values associated with the nonlinear terms were very small, and because inclusion of these terms had very little effect on the conclusions, only the linear relations were considered in subsequent analyses.

Relation of Age to Social Desirability

The correlation between age and the social desirability total score was .23, indicating higher levels of social desirability with increased

Table 1
Correlations Between Age, Social Desirability, Personality, and Affect Measures (N = 1,175)

	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	1											
2. Social desirability	.23*	1										
3. Neuroticism	-.21*	-.42*	1									
4. Extraversion	.01	.11*	-.17*	1								
5. Openness	-.06	-.03	-.04	.24*	1							
6. Agreeableness	.11*	.29*	-.21*	.31*	.19*	1						
7. Conscientiousness	.21*	.30*	-.30*	.04	-.04	.26*	1					
8. CES-D	-.21*	-.32*	.64*	-.21*	-.02	-.23*	-.37*	1				
9. PANAS negative	-.17*	-.22*	.49*	-.11*	-.06	-.18*	-.25*	.59*	1			
10. Trait anxiety	-.28*	-.41*	.76*	-.26*	-.03	-.25*	-.39*	.82*	.56*	1		
11. PANAS positive	.16*	.30*	-.32*	.31*	.20*	.27*	.22*	-.34*	-.12*	-.40*	1	
12. Life Satisfaction	.17*	.26*	-.47*	.24*	.01	.22*	.25*	-.61*	-.38*	-.65*	.31*	1
Mean	51.8	16.6	25.6	31.8	36.7	40.8	36.9	11.4	12.9	35.0	30.5	23.1
SD	17.7	6.1	8.2	7.7	6.2	5.5	6.2	8.7	4.6	10.6	7.8	7.3

* $p < .01$.

age. Nonlinear age trends were also examined in regression analyses, but neither the quadratic nor the cubic age terms were significant, suggesting that the relation of age to social desirability was primarily linear.

Relations of Social Desirability to Self-Reported Affect and Personality

The second column in Table 1 contains correlations between social desirability and the self-reported affect and personality variables. It can be seen that all of the correlations were significant, in a negative direction for the variables related to negative affect, depression, anxiety, and Neuroticism, and in a positive direction for self-reported positive affect, life satisfaction, Agreeableness, and Conscientiousness. Extraversion was also slightly related to social desirability, in a positive direction. Nonlinear trends between social desirability and affect and personality were also examined. There was a significant quadratic relation of social desirability on Neuroticism ($\beta = -.07$, $t[1127] = -2.75$, $p < .01$), but the quadratic term was associated with only 0.6% of the variance ($R^2 = .006$, $F[1, 1127] = 7.58$, $p < .01$), and thus it was ignored in subsequent analyses.

Relation of Age to Self-Reported Affect and Personality Before and After Controlling for Social Desirability

Analyses were conducted to formally test whether at least some of the age-related decrease in negative affect and Neuroticism and some of the age-related increase in positive affect, life satisfaction, Agreeableness and Conscientiousness might be attributable to an age-related increase in social desirability.

The indirect effect was quantified as the product of its constituent paths, which is equivalent to the difference between the total effect of the independent variable on the dependent variable and the effect of the independent variable on the dependent variable after the statistical control of the mediator (e.g., Hayes, 2009; Preacher et al., 2007). Results of mediation analyses, in the form of age correlations before and after controlling for social desirability (from regression analyses), are reported in the second and third columns of Table 2. It can be seen that all of the negative age correlations were less negative, and all of the positive correlations were less positive, after controlling the variance in the social desirability score. Results were

Table 2

Relations of Age to Personality, Affect, and Cognitive Variables Before and After Control of Social Desirability, and Estimated Indirect Effects

	Age	Age After SD	Stand. IE	Boot. Unstand. IE	Boot. 95% CI	Age Variance Explained by SD (%)	<i>N</i>
Social desirability	.23*						
Self-report variables							
Neuroticism	-.21*	-.12*	-.10*	-0.04	[-0.05, -0.03]	67.4	1,130
Extraversion	.01	-.02	.03*	0.01	[0.00, 0.02]	NA	1,136
Openness	-.06	-.06	-.01	0.00	[-0.01, 0.00]	NA	1,139
Agreeableness	.11*	.04	.07*	0.02	[0.01, 0.03]	86.8	1,139
Conscientiousness	.21*	.15*	.07*	0.02	[0.02, 0.03]	49.0	1,134
PANAS positive	.16*	.09*	.07*	0.03	[0.02, 0.04]	68.4	1,167
PANAS negative	-.17*	-.13*	-.05*	-0.01	[-0.02, -0.01]	41.5	1,170
CES-D	-.21*	-.14*	-.07*	-0.03	[-0.04, -0.02]	55.6	1,153
Anxiety trait	-.28*	-.19*	-.09*	-0.05	[-0.07, -0.04]	54.0	1,158
Life satisfaction	.17*	.12*	.06*	0.02	[0.03, 0.02]	50.2	1,169
Cognitive variables							
Fluid ability	-.45*	-.42*	-.05	0.00	[0.00, 0.00]	NA	694
Memory	-.43*	-.41*	-.04	0.00	[0.00, 0.00]	NA	709
Speed	-.59*	-.57*	-.04	0.00	[0.00, 0.00]	NA	711

Note. The relations of age to each personality, affect, and cognitive variable before (column 1 of the table) and after (column 2 of the table) controlling for social desirability variation were examined in regression analyses. Percentages of age variance associated with social desirability are reported in column 6. Age After SD = age relations after controlling for the variance in social desirability (SD) score; Stand. IE = standardized indirect effects; Boot. Unstand. IE = bootstrapped unstandardized indirect effects; Boot. 95% CI = bootstrapped 95% confidence intervals for the indirect effect.

* $p < .01$.

unchanged after also controlling for sex, self-reported health, and education. Moreover, similar patterns were obtained when the Self-Deception and Impression Management subscales were used as separate indicators of social desirability.

The bootstrapping procedure described by Preacher et al. (2007) was used to estimate indirect effects and generate 95% confidence intervals for those effects. The indirect effects are reported in the fourth and fifth columns of Table 2, with the confidence intervals reported in the sixth column. The mediation effect of social desirability on the age relations was significant ($p < .01$) for all self-report variables except for Openness. Percentages of age-related variance in the self-report variables that were explained by social desirability are reported in the seventh column of Table 2. They varied from 41.5% for the PANAS Negative scale to 86.8% for Agreeableness.

Because it is possible that the relations between social desirability and self-reports of mood and personality vary as a function of age, interactive effects of age and social desirability on self-reports were examined. None of the interactions was significant, and thus there was no evidence that the relations between social desirability and the self-report measures were moderated by age.

We also tested moderated mediation models (Hayes, 2009; Preacher et al., 2007) in which age was both an independent variable and a moderator variable. In none of the models was there evidence that the mediation relations were contingent on age, and thus there was no evidence that the relations between social desirability and the self-report measures were moderated by age.

Because many studies on age effects involve a contrast of only young and old adults, the self-report measures were compared before and after controlling for social desirability in young adults (under age 30) and older adults (over age 65) to provide an indication of the amount of distortion in comparisons of self-reported affect and personality between these two age groups. The d values for the differences between the young and older adults before and after controlling for social desirability were, respectively, .70 and .38 for Neuroticism, .68 and .39 for CES-D, .99 and .62 for Anxiety, .64 and .44 for Negative Affect, $-.50$ and $-.26$ for Positive Affect, $-.49$ and $-.27$ for Life Satisfaction, $-.28$ and $-.05$ for Agreeableness, $-.65$ and $-.42$ for Conscientiousness, $-.05$ and .05 for Extraversion, and .22 and .20 for Openness. The percentage reductions in the d value after controlling for the social desirability score were

therefore 45% for Neuroticism, 42% for CES-D, 38% for Anxiety, 31% for Negative Affect, 48% for Positive Affect, 45% for Life Satisfaction, 80% for Agreeableness, 36% for Conscientiousness, 12.5% for Extraversion, and 10.1% for Openness.

Two sets of control analyses with objective cognitive ability measures were also carried out to examine the specificity of the social desirability mediational results. In one set of analyses, composite scores of fluid intelligence, episodic memory, and perceptual speed were used as potential mediators of the age differences in the self-report variables. Our rationale was that mediation of the relation of age to self-report variables should be limited to social desirability. Objective composite measures of cognitive ability were not expected to mediate age differences in the self-report variables. Results of the analyses showed few significant changes in age relations to personality and affect variables after controlling the variance in cognitive variables. And, unlike the social desirability variable, controlling the variance in these cognitive variables resulted in a slight increase in the magnitude of the age relations in self-report variables (with the exception of the relations between Age and Extraversion and Age and the PANAS Positive scale, which resulted in a slight decrease after control of fluid ability). Bootstrapped indirect effects and 95% confidence intervals are reported in Table 3. It is noteworthy that there were significant indirect effects of the cognitive measures in the relations of age to Openness, and controlling for the level of the cognitive abilities resulted in slightly positive age-Openness relations. These results suggest that the lower levels of the cognitive abilities with age tend to mask small positive relations between age and Openness.

In the second set of analyses, social desirability was used as a potential mediator of age relations on the composite cognitive scores. The purpose of these analyses was to determine whether the mediational results were specific to people's tendency to present themselves in a particular manner, and therefore to self-report variables. Bootstrap indirect effects and 95% confidence intervals are reported in the bottom of Table 2. None of the age trends in the cognitive scores were significantly changed after controlling for the variance in the social desirability scale. Taken in combination, these results suggest that the reduction of the age trends is specific to the social desirability measure and its relations with self-reported personality and affect variables.

Table 3

Relations of Age to Personality and Affect Variables Before and After Control of Cognitive Variables, and Estimated Indirect Effects

	Age	Age After Cognition	Stand. IE for Gf/Memory/Speed	Boot. Unstand IE for Gf/Memory/Speed	Boot. 95% CI	N
Neuroticism	-.23*					
After Gf		-.26*	-.02	0.02	[0.00, 0.03]	668
Memory		-.25*	-.03	0.01	[-0.01, 0.02]	681
Speed		-.26*	-.06	0.02	[-0.01, 0.04]	711
Extraversion	.00					
After Gf		-.06	.05*	0.03*	[0.01, 0.04]	671
Memory		.01	-.01	0.00	[-0.02, 0.01]	686
Speed		.04	-.02	-.01	[-0.03, 0.01]	688
Openness	.01					
After Gf		.11	-.08*	-.04*	[-0.05, -0.02]	673
Memory		.09	-.07*	-.03*	[-0.05, -0.02]	686
Speed		.12	-.07*	-.04*	[-0.06, -0.02]	688
Agreeableness	.11*					
After Gf		.08	.05	0.01	[0.00, 0.02]	669
Memory		.13*	.00	-.01	[-0.02, 0.00]	684
Speed		.19*	-.02*	-.02*	[-0.04, -0.01]	685
Conscientiousness	.22*					
After Gf		.23*	.04	0.01	[0.00, 0.02]	669
Memory		.21*	.04	0.00	[-0.01, 0.01]	685

(Continued)

Table 3 (Cont.)

	Age	Age After Cognition	Stand. IE for Gf/Memory/Speed	Boot. Unstand IE for Gf/Memory/Speed	Boot. 95% CI	N
Speed		.30*	.03*	-.03*	[-0.04, -0.01]	687
PANAS positive After Gf	.17*	.11*	.09*	0.03*	[0.01, 0.05]	688
Memory		.13*	.07	0.02	[0.00, 0.04]	703
Speed		.18*	.06	0.00	[-0.02, 0.02]	705
PANAS negative After Gf	-.22*	-.24*	-.02	0.01	[-0.01, 0.02]	691
Memory		-.24*	-.02	0.01	[0.00, 0.01]	706
Speed		-.26*	-.04	0.01	[0.00, 0.03]	708
CES-D After Gf	-.24*	-.27*	-.02	0.02	[-0.01, 0.04]	681
Memory		-.26*	-.02	0.01	[-0.01, 0.03]	696
Speed		-.26*	-.07	0.01	[-0.01, 0.04]	698
Anxiety trait After Gf	-.30*	-.33*	-.04	0.02	[-0.01, 0.04]	684
Memory		-.32*	-.04	0.01	[-0.01, 0.03]	699
Speed		-.34*	-.08	0.03	[-0.01, 0.06]	701
Life satisfaction After Gf	.18*	.22*	.00	0.02	[-0.03, 0.00]	691
Memory		.22*	.00	0.02	[-0.03, 0.00]	706
Speed		.25*	-.01	0.03	[-0.04, 0.00]	708

Note. Gf = fluid ability. Boot. Unstand. IE = bootstrapped unstandardized indirect effects; Boot. 95% CI = bootstrapped 95% confidence intervals for the indirect effect.

* $p < .01$.

DISCUSSION

The major goal of this study was to investigate the role of social desirability in the relations between age and several measures of affect and personality. Previous research has led to a positive view of aging regarding emotional functioning and personality, with increased age associated with lower levels of negative affect, stability and a slight increase in positive affect, and increases in Agreeableness and Conscientiousness. However, these findings have primarily been based on self-reports, and there have been a number of studies suggesting that social desirability may alter the patterns in self-reported data. We were therefore interested in investigating the possibility that age-related decreases in negative affect and age-related increases in positive affect and some desirable personality traits such as Agreeableness and Conscientiousness might, at least partially, reflect age differences in social desirability.

As expected from past research, increased age was associated with lower levels of negative affect and Neuroticism and higher levels of positive affect, life satisfaction, Agreeableness, and Conscientiousness. Increased age was also related to higher scores on the social desirability scale. Importantly, social desirability was significantly associated with the self-report variables, in a positive direction for desirable characteristics and in a negative direction for undesirable characteristics.

Our key hypothesis, that some of the age-related differences in self-reported affect and personality might be attributable to the age-related increase in social desirability, was supported. We found that social desirability is an important and significant factor accounting for some of the age variation in self-reported personality and affect measures. That is, statistically controlling the variance in the social desirability measure reduced the magnitude of the age-related variance in the self-report variables by between 41% and 87%. These results indicate that the age trends in a variety of self-report measures are somewhat less positive after controlling for influences associated with social desirability.

Control analyses with objective cognitive ability measures were carried out to examine whether the reduction in age trends was specific to the social desirability measure and its relations with self-reported personality and affect variables. In one set of analyses, composite scores of cognitive abilities were used as potential medi-

ators of the age differences in the self-report variables. In the second set of analyses, social desirability was used as a potential mediator of the age relations on the composite cognitive scores. The results revealed few significant changes in the relations of age to personality and affect variables after controlling the variance in cognitive variables, with the exception of Openness. In addition, none of the age trends in the cognitive scores were significantly changed after controlling for the variance in the social desirability scale, suggesting that the reduction of the age trends is specific to the social desirability measure and its relations with self-reported personality and affect variables.

Although the findings supported in the current project are clear and consistent and were specific to the relations between the social desirability scale and self-reports, there are at least two alternative interpretations of the results. One interpretation is based on the idea that the Marlowe-Crowne scale assesses a response bias that distorts “true” trends in self-report measures. According to this interpretation, advancing age is associated with a stronger tendency to present oneself in a positive light, and adjusting the self-report scores for social desirability results in more valid evaluations of the relations between age and self-reported personality and affect.

In contrast, a second interpretation is that social desirability is a substantively meaningful disposition, and not simply a bias to respond in a particular way. From the perspective of this interpretation, the statistical control results indicate that there is overlap between this disposition and certain self-report measures. To the extent that the social desirability scale reflects another stable disposition or personality trait, possibly related to defensiveness (e.g., Paulhus, 1984; Thomsen et al., 2005; Weinberger, 1990; Weinberger, Schwartz, & Davidson, 1979), and that age trends in self-report variables reflect true developmental changes and not birth cohort effects (see Charles et al. [2001], Roberts & Mroczek [2008, and Twenge & Im [2007] for analyses of affect, personality, and need for approval longitudinal data, respectively), our results suggest that people who score higher on social desirability scales may experience more positive age-related changes in other personality traits and affect than people with lower scores on these scales. Higher levels of this social desirability disposition might therefore be associated with age-related increases in maturity and emotional functioning.

Regardless of how the social desirability scale is interpreted, the major finding of this project is that when everyone is effectively compared at the same level of social desirability, at least as measured by this particular instrument, the age differences in a variety of self-report measures are not as large as they are without this control. In fact, social desirability was found to account for 50% or more of the age-related variance in many of the self-report variables. Researchers interested in relations between age and self-report measures with an evaluative dimension may therefore need to consider the role of social desirability when interpreting their results, since at least some of the age differences in the self-report measures may be associated with age differences in this characteristic.

To the best of our knowledge, there have not been any prior studies in which the role of social desirability in the age differences in self-report variables has been investigated. Furthermore, this study has a number of strengths, including a moderately large sample, with powerful analyses and fairly precise estimates of the relevant relations. In addition, all of the variables had acceptable levels of internal consistency reliability.

However, there are also some limitations. For example, several personality and affect variables were examined, but only one social desirability scale. The Marlowe-Crowne scale had acceptable reliability and in analyses not reported here was found to have similar structure at different ages, but inclusion of alternative measures (e.g., Balanced Inventory of Desirable Responding Scale; Paulhus, 1998) may have resulted in a broader assessment of this construct. Second, several of the effects in the project were rather small, with most of the variables having less than 5% of the variance associated with age. Nevertheless, the results were consistent across eight different self-report variables, and control analyses indicated that the mediational patterns were specific to the relations of the Marlowe-Crowne scale and self-reported variables.

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