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Age, Creativity, and Wellbeing: Benefits of Creative Behavior Among Younger and Older Artists and Nonartists

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Benefits of Creative Behavior Among Younger and Older Artists and Nonartists

by

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Abstract

Researchers have proposed that creative engagement positively impacts physical and mental health (Cohen et al., 2006; Fisher & Specht, 1999). It is theorized that the creative process facilitates self-discovery and encourages individuals to find purpose and meaning in life (Hickson & Housely, 1997). Aims of the current study were to examine the reliability of standard measures of creativity among older adults and to investigate the associations between creativity and domains of wellbeing. Standard measures of creativity and wellbeing were administered to older adult artists, older adult nonartists, young adult artists, and young adult nonartists. Results from this study indicate that standard creativity measures are valid for use in older adults, but do not necessarily help to distinguish between artist and nonartists groups.

The creativity measures examined were not significantly correlated with each other and therefore do not appear to be measuring the same aspects of creativity. There does appear to be an association between some standard measures of creativity and some aspects of wellbeing.

Introduction

The identification of personal and contextual factors that help older adults to live healthy, successful lives is particularly important as we prepare for record growth in the older segment of our population. By 2030, it is estimated that adults aged 65 and older will comprise 20% of the United States population (Federal Interagency Forum on Age-Related Statistics, 2010). While a large proportion of this group will live with at least one chronic disease or injury that limits their functional abilities, their psychological wellbeing need not be compromised. One area that warrants further study is the influence of an individual's creativity on wellbeing in old age. In their study that examined older professional artists' perceived benefits of creativity, Lindauer, Orwoll, and Kelley (1997) suggest that creative achievement has a positive impact on artists' perceived ability to adapt to age-related changes.

After decades of research, a consensual definition of creativity remains elusive (Hennessey & Amabile, 2010; Kerr & Gagliardi, 2003; Sawyer, 2003). Plucker, Beghetto, and Dow (2004) arrived at this definition after reviewing articles published in highly regarded creativity journals: "Creativity is the interaction among aptitude, process, and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context" (p.90).

As this definition indicates, multiple aspects of this construct can be measured to help researchers distinguish between more and less creative people. Tests of divergent thinking and self-reports of creative ideation and personality are among the most common methods of assessing creativity (Kerr & Gagliardi, 2003). I will provide a

description of each type of assessment approach category and explain why I believe these characteristics are related to wellbeing.

Divergent thinking refers to the ability to generate a variety of ideas (Runco, 1999). As described by Kauffman, Plucker and Baer (2008), the four aspects of divergent thinking include fluency, originality, elaboration, and flexibility. Fluency refers to the number of responses generated in a divergent thinking exercise. Originality is the uniqueness of each response (i.e., it is original if it diverges from responses given by others). Elaboration involves the addition of details to an idea. Finally, flexibility refers to number of different categories into which an individual's response falls (Kauffman, Plucker & Baer, 2008).

The Torrance Test of Creative Thinking (TTCT), which is among the most commonly used standardized measures of creativity ability, assesses fluency, originality, elaboration, and flexibility. Because the administration of the TTCT requires approximately 75 minutes, shortened forms of the TTCT are available (Goff & Torrance, 2002; Torrance, Wu, & Ando, 1980). While reviews of the TTCT and its construct validity in younger adult samples are plentiful (e.g., Almeida, Prieto, Ferrando, Oliveria, & Ferrandiz, 2008; Kim, 2006), there has been little research on use of the TTCT with older adults. Goff (1992) administered a shortened version of the TTCT (Torrance, Wu, & Ando, 1980) to community dwelling older adult nonartists before and after an experimental group participated in a creative curriculum at local senior centers. This study documented an increase in creativity scores following the intervention. This study established preliminary validity for an early version of the shortened TTCT. However, to my knowledge, the more recent shortened version, the Abbreviated Torrance Test of

Creative Thinking (ATTA; Goff & Torrance, 2002) has not been validated in an older adult sample.

Another measure of divergent thinking is the Remote Associates Test (RAT; Bowden & Jung-Beeman, 2003; Mednick, 1962). Respondents are given three weakly related words and are asked to produce a fourth word that serves as an associated connective link. The RAT can be used to assess the ability to make associations between dissimilar concepts, a skill in which creative persons are believed to excel (Kaufman, Plucker, & Baer, 2008; Mednick, 1962). Although the RAT has been used in experiments with older adults (e.g., Kim, Hasher, & Zacks, 2007), I found no studies that looked at older adult performance on the RAT as a measure of their creativity. Because I suspect that age-related deficits in word retrieval might negatively impact RAT scores (Horn & Cattell, 1967), I will include an assessment of fluid intelligence in my design. The Wechsler Adult Intelligence Scale – IV is a clinical instrument that is widely used to measure intelligence, and the Matrix Reasoning subtest provides a good estimate of fluid intelligence (Wechsler, 2008) that is appropriate for use in older and younger adults.

A simple, straightforward approach to measuring divergent thinking is to ask people to rate their own creativity. On the Runco Ideational Behavior Scale (RIBS; Runco, Plucker, & Lim, 2000), participants respond to a list of behaviors that describe their ability to come up with unique ideas and solutions. While self-report measures of creativity correlate highly with each other, they are not consistently associated with more objective measures of creativity, such as the TTCT (Kaufman, Plucker, & Baer, 2008).

Researchers also have investigated the relationship between creativity and personality. Evidence that one of the Big Five personality traits, Openness to Experience,

is positively associated with creativity has been consistent across research studies (Dollinger, Urban, & James, 2004; Feist, 1998; George & Zhou, 2001). Additional studies also found evidence to support the positive relationship between creativity and neuroticism (Burch, Pavelis, Hemsley, & Corr, 2006; Haller & Courvoisier, 2010). Despite the growing literature on personality traits in older adults, no empirical studies have examined the relationship between creativity, personality, and wellbeing among older adults.

Previous research on creativity and wellbeing has focused on the impact of creative activities as an intervention for socially isolated older adults. This type of work is driven by the theory that engagement in creative processes leads to self-discovery because people who create make choices in a way that is most meaningful and purposeful to them. Realizing that they can make those decisions is confirmation that they are capable of doing and contributing to the world (Fisher & Specht, 1999; Hickson & Housely, 1997). While there is some preliminary evidence that participation in art, music, and theater programs is related to better health and wellbeing, associations between creativity and these constructs has been inconsistent. For instance, Cohen et al. (2006) found that older adults who participated in a weekly singing group for one year demonstrated better mental health, physical health, and higher levels of social activity as compared to older adults who were not involved in a structured creative activity. While physical and mental health declined for both groups after one year, declines in health were less severe for the intervention group. Therefore, it appears as if creative engagement tempered declines in these domains. Contrary to Cohen et al.'s findings, Flood & Scharer (2006) reported no relationship between creative engagement and life

satisfaction or functional performance following a creative enhancement intervention program.

Other studies have used qualitative methods to explore the hypothesis that creative activities have a beneficial effect on wellbeing. One common method is to conduct interviews with artists and use content analysis to identify common themes. In her case study of 20 winners of a local art show featuring older adults, Lorenzen-Huber (1991) found that creative involvement increased life satisfaction among participants. Fisher and Specht (1999) conducted a similar study in which they interviewed 36 contributors to an exhibition that featured the work of older adult artists. Content from their interviews suggested that creative involvement was positively associated with self-acceptance, a sense of purpose, autonomy, and better health. Lindauer, Orwoll, and Kelley's (1997) study of 88 older graphic artists revealed the artists' belief that age-related changes in physical and mental health were irrelevant or overcome through their creative involvement.

The studies reviewed above have several limitations. If we are to understand the relationship between creativity and wellbeing, it is important to look at their association across the lifespan. It would be informative to compare individuals who are immersed in the creative process (e.g., visual artists) to those without a background or interest in making art as hobby or professionally at early and late stages in their lives. To examine the relationship between creativity and wellbeing further, it would be beneficial to include more objective measures of creativity and wellbeing and to compare the relationship between objective and subjective measures.

The purpose of this study is to examine creativity and its relationship with physical and mental health, among professional artists and nonartists, in both young adult and older adult samples. The study has two aims:

1) To collect normative data to assess the reliability and validity of standardized creativity measures across four groups: younger adult artists, younger adult nonartists, older adult artists, and older adult nonartists.

2) To investigate associations between creativity and wellbeing across these four groups.

Regarding Aim 1, I expect measures of creativity to exhibit acceptable psychometric properties, although several of the creativity measures I use have not been used before with older adults in any systematic manner. In addition, I hypothesize that artists will score higher than nonartists on the Runco Ideational Behavior Scale (RIBS), the Remote Associates Test, and the Abbreviated Torrance Tests for Adults (ATTA). Regarding Aim 2, I predict that greater creativity will be associated with better wellbeing, and the magnitude of this effect will be greater for older adult artists than younger adult artists.

Methods

Participants

A total of 171 individuals participated in this study, recruited through university undergraduate and older adult subject pools, local art schools, local artist guilds, art galleries, and businesses. Individuals were recruited in the following groups: younger artist (n = 45), older artist (n = 43), younger nonartist (n = 41), and older nonartist (n =

42). Younger artists were eligible if they were between 18 and 29 years old and had completed at least two semesters of studio art or design coursework in college. Older artists were eligible if they were age 65 or older and if their artwork had been chosen for at least one juried art show, had been awarded a prize in at least one competition, or had been commissioned for a public or private venue. Most of the older artists were participants in an art exhibition that featured older adults or acquaintances of the artists. Younger nonartists were eligible if they were between ages 18 and 29 and had not completed any college-level studio art coursework, did not make art as a hobby, and had not earned awards for creative endeavors in college. Older nonartists were eligible if they were age 65 or older and had not engaged in any of the professional visual artistic activities outlined for the older artists. Sociodemographic characteristics of participants are presented in Table 1. Participants ranged in age from 18 to 90 ($M = 48.25$, $SD = 28.51$). The majority were women (70.2%), and a large proportion were White (82.7%) and of non-Hispanic origin (97.6%). The sample was highly educated, with 94% having completed at least some college.

Procedure

Following informed consent, participants completed a series of self-report measures including demographic information and health questionnaires. Participants then completed a sequence of creativity, personality, intelligence, and health and wellbeing measures, the order of which was counterbalanced. Younger adult nonartists received credit in their current class for research participation. Older adult artists received a copy of the DVD from the exhibition in which they had recently participated. Younger adult artists, older adult nonartists, and older artists who were not in the exhibition were

paid $10.

Measures

Abbreviated Torrance Test for Adults (ATTA; Goff & Torrance, 2002). This three-activity shortened form of the Torrance Test for Creative Thinking is a standardized measure of creative abilities and strengths. Administered by a research assistant, participants generate a list of problems associated with a hypothetical scenario (Activity 1) and draw and name pictures on a series of predrawn figures (Activities 2 and 3). Our administration of the ATTA deviated slightly from the standard instructions. For Activity 2, when participants inadvertently began to copy the figure in the blank space outside of the box, participants were instructed to draw on the incomplete figure. For Activities 2 and 3, experimenters reminded participants to include titles with their pictures when one minute remained. To score responses to each activity, a team of 2-3 research assistants independently used the ATTA scoring manual to award points on the following scales: fluency (number of responses/drawings) for all activities, originality (number of unusual responses/drawings) for all activities, elaboration (number of embellishments, such as color, on drawings) for Activities 2 and 3, and flexibility (number of meaningful categories of drawings) for Activity 3. All research assistants were blind to the condition (i.e., age and artist status) of the activities they scored. The research assistants met to compare raw scores and reach consensus on scoring for each activity. Raw scores for each scale (i.e., fluency, originality, elaboration, and flexibility) were summed across activities and converted to normalized standard scores. Scaled scores were summed to yield a Creative Ability score that ranges from low to high ability, 44 to 76. Research assistants use the same process to award points (i.e., 0 =

absence, 1 = *moderate presence*, or 2 = *strong presence*) on 15 criterion-referenced creativity indicators (e.g., Verbal: future orientation, emotions/feelings, richness and colorfulness of imagery; Figural: resistance to premature closure, movement, different perspective). The sum of points awarded for these indicators was added to the Creative Ability score to make a Creativity Index (CI) score that ranges from 44 to 106. Internal consistency was calculated using scaled norm-referenced scores (fluency, originality, elaboration, and flexibility) and scaled criterion-referenced indicator scores (verbal and figural). Cronbach's alpha, for the CI was 0.77.

Remote Associates Test (RAT; Bowden & Jung-Beeman, 2003; Mednick, 1962). In this verbal test of divergent thinking, participants are given three weakly related words (e.g., sleeping, bean, trash) and are asked to produce a fourth word (e.g., bag) that serves as an associated connective link. To reduce time of administration in the current study, we used a random number table to select 10 items from each performance tercile from the Bowden and Jung-Beeman sample, for a total of 30 items. Respondents are given 450 seconds to complete as many items as possible. Correct responses are summed to yield a total score. Cronbach's alpha reliability was 0.86 in the current study.

Runco Ideational Behavior Scale (RIBS; Runco, Plucker, & Lim, 2000). This 23-item scale of creative ideation measures the extent to which respondents feel their behaviors reflect original, fluid, and flexible thought. Participants rate their agreement with each statement (e.g., "I like to play around with ideas for the fun of it.") using a five-point scale, ranging from 1= *strongly disagree* to 5 = *strongly agree*. Higher total scores are indicative of greater self-perceived creative ideation. Cronbach's alpha was 0.92 in the current sample.

International Personality Item Pool (IPIP; Goldberg, 1999). This instrument measures personality based on the Big Five model (Costa & McCrae, 1992). The Openness to Experience and Neuroticism subscales were used in this study. Respondents rated how accurately each statement describes them on a 5-point scale, from 1 = *very inaccurate* to 5 = *very accurate*. In the current sample, Cronbach's alpha was 0.69 for the 10-item Openness to Experience scale and 0.86 for the 10-item Neuroticism scale. Because of its low internal consistency, I chose not to included Openness to Experience in subsequent analyses.

Ryff's Scales of Psychological Well-Being (RPWB; Ryff, 1989). Select subscales were chosen to measure autonomy, purpose in life, and self-acceptance according to respondents' agreement with statements on a six-point scale (e.g., "In general, I feel confident and positive about myself."), from 1 = *strongly disagree* to 6 = *strongly disagree*. High scores on autonomy indicate that one is independent and is able to resist social pressures to think or act in certain ways. High scores on purpose in life indicate that one has a sense of his/her goals and a sense of directedness. High scores on self-acceptance indicate a positive attitude towards oneself and one's past life. Questions from each subscale were randomly sorted and verbally presented to respondents by the experimenter. Reponses for each subscale were reverse coded, if necessary, and summed. Higher total scores indicate greater self-acceptance, autonomy, and purpose in life. The version used contains 14 -items per scale (Ryff, Lee, Essex, Schmutte, 1994) rather than the original 20-items per scale (Ryff, 1989). Internal consistency reliabilities in the current sample were 0.84 for the self-acceptance and autonomy scales, and 0.85 for the purpose in life scale.

General Self-Efficacy Scale (GSES; Schwarzer & Jerusalem, 1995). This 10-item scale measures beliefs about one's ability to perform new tasks and to create change in life. Individuals respond to statements (e.g., "I can always manage to solve difficult problems if I try hard enough.") on a four-point scale (1 = *not at all true* to 4 = *exactly true*). Ratings for each item are summed, with higher scores indicating greater self-efficacy. Cronbach's alpha in the current study was 0.85.

Matrix Reasoning (Wechsler, 2008). This 26-item subtest from the Wechsler Adult Intelligence Scale-Fourth Edition is a measure of fluid intelligence. Respondents are presented with related graphics and are given 30 seconds to choose the graphic that completes the sequence. One point is earned for each correct answer. A higher total score indicates higher aptitude for abstract problem solving.

Physical Component Summary of the 12-Item Short-Form Health Survey (PCS; Ware, Kosinksi, & Keller, 1996). This 12-item self-report health survey assesses physical health factors that contribute to quality of life. Physical Health Component Summaries were calculated for each participant; participants with missing data were excluded. Scores for each scale range from 0, worst health, to 100, best health.

Revised UCLA Loneliness Scale, Version-3 (RULS-V3; Russell, 1996). On this 20-item questionnaire, respondents indicate how often (0 = *never* to 3 = *always*) they feel different facets of loneliness (e.g., "How often do you feel outgoing and friendly?"; "How often do you feel that there is no one your can turn to?"). Reponses are summed and scores range from 20-80, with a higher score indicating more loneliness. The RULS-V3 is internally consistent, with a Cronbach's alpha in the current study of 0.91, reliable

over 1 year ($r = 0.73$), and has been shown to be appropriate for use with older adults (Russell, 1996)

Data Analysis

Descriptive statistics were calculated on all variables and appear in Table 1. I performed univariate tests to establish that the groups were comparable on sociodemographic and contextual factors. Because of significant group differences, race, marital status, and the Physical Component Summary were included as covariates in subsequent analyses. In order to investigate the reliability of creativity measures (Aim 1), I calculated Cronbach's alpha for the RIBS, RAT and ATTA for all participants and older and younger adult samples. Pearson product moment correlations among the RIBS, RAT, and ATTA were computed for the sample as a whole and for each group in order to investigate the convergent validity of the creativity tests. Additionally, correlations between all subscales of the ATTA were computed for each group.

I performed 2 (age group) x 2 (artist status) univariate analysis of covariance (ANCOVA) tests to examine the main effects of age and artist status and the interaction between age and artist status on creativity and wellbeing with each creativity and wellbeing measure as the dependent variable. In order to address Aim 2, I performed five multiple regression analyses, one with each wellbeing index as the dependent variable (Autonomy, Purpose in Life, Self-Acceptance, Self-Efficacy, and Loneliness). In Step 1, I entered the covariates marital status, physical health, and race. In Step 2, I entered age group and artist status. In the final step, I entered the creativity measures (RIBS, RAT, ATTA).

Results

Sample Characteristics

Younger artists were significantly older than younger nonartists, $t(85) = 52.13$, $p < .001$, which might be explained by the inclusion of graduate students in the younger artist group but not in the younger nonartist group. There was no significant difference in age between older artists and older nonartists. There was a significantly higher proportion of Caucasian participants among younger adults (64%) compared to older adults (93%), regardless of artist status, $\chi^2(1, N = 168) = 21.67$, $p = < .001$. Younger adults were more likely to be single than older adults, regardless of artist status, $\chi^2(4, N = 171) = 152.44$, $p < .001$. There were no significant group differences in the proportion of participants who were women or of Hispanic origin. Younger adults reported better health than younger adults, $F(3,162) = 17.93$, $p < .001$.

Aim 1. Reliability and Validity of Creativity Tests

Internal consistency reliabilities for the creativity measures in the entire sample ranged between .77 and .92. Additionally, inspection of alpha levels within each group generally revealed similar reliabilities (see Table 2). Regarding construct validity, contrary to expectations, the creativity measures (ATTA, RAT, and RIBS) were not significantly intercorrelated in the entire sample or within each group, ps > .18 (see Table 3).

Figure 1 illustrates mean standardized scores on the creativity measures for each group. If the tests measured creativity, significant differences should be apparent between artists and nonartists. Univariate analysis of covariance (ANCOVA) on the RIBS score was significant overall, $F(6,159) = 6.48$, $p < .001$. Further, there was a significant main effect of age group, $F(1, 160) = 4.32$, $p < .05$, such that younger adults

scored higher than older adults. There was also a main effect of than artist status, $F(1,160) = 31.66$, $p < .001$, such that artists scored higher than nonartists. There was no significant interaction.

An identical ANCOVA on the RAT score was also significant, $F(6,159) = 16.82$, $p < .001$. There was a significant main effect of age ($F(1,160) = 8.91$, $p < .01$) such that younger adults scored higher than older adults. The main effect for artist status and the interaction were not significant. Finally, the ANCOVA on ATTA score was not significant, $F(6,155) = 0.95$, $p = .47$. Identical ANCOVAs on the raw and scaled subscales of the ATTA (Fluency, Originality, Elaboration, Flexibility, Verbal, and Figural) were also not significant, $ps > .20$.

Aim 2. Associations between Creativity and Wellbeing

Regression analyses revealed few significant predictors of wellbeing across the five domains examined (see Table 5).

Autonomy. The entry of covariates in Step 1 of the model resulted in a significant effect of marital status and a significant R^2 change (7.8% variance; $F(3,151) = 4.24$, $p < .01$). Following the entry of age group and artist status in Step 2, there was no longer a significant effect of marital status. However, there was a significant effect of age and an R^2 change (6.2%; $F(5, 154) = 4.85$, $p < .001$). Further, the addition of creativity measures in the model resulted in another significant increase in R^2 (6.1%; $F(3,146) = 3.70$, $p < .05$). Significant coefficients suggested that age is positively associated with Autonomy and RAT score is negatively associated with Autonomy.

Purpose in Life. Across all models, none of the variables yielded a significant change in R^2.

Self-Acceptance. The entry of covariates produced a significant effect of race and a significant change in R^2 (7.0%; $F(3, 150) = 3.74$, $p < .05$). Entering age group and artist status eliminated the effect of race and produced a significant effect of physical health such that better health was associated with greater self-acceptance. Step 2 did not result in a significant increase in R^2. The addition of creativity measures did not produce a significant increase in R^2 . However, the significant effect of physical health remained significant in the same direction.

Self-Efficacy. The entry of covariates produced a significant change in R^2 (5.2%; $F(3, 152) = 2.79$, $p < .05$). The addition of age group and artist status resulted in a significant R^2 change (5.7%; $F(3, 150) = 4.78$, $p < .05$). In this step, artist status was a significant predictor such that being an artist was related to greater self-efficacy. The addition of creativity measures resulted in a significant change in R^2 (7.6%; $F(3, 147) = 4.54$, $p < .01$). The RIBS was the only remaining significant predictor and higher scores on the RIBS predicted greater self-efficacy.

Loneliness. The entry of covariates, age group, and artist status produced no significant changes in R^2. However, the addition of creativity measures produced a significant change in R^2 (5.1%; $F(3, 147) = 2.78$, $p < .05$) such that higher scores on the RIBS was associated with greater loneliness. The RIBS was the only significant predictor in the model.

Discussion

A major goal of my study was to see if standard creativity measures would distinguish between artists and nonartists in my novel sample. If creativity measures were good predictors of artist status, I would be able to examine associations between

creativity and wellbeing, and examine how age influences these associations. Standard creativity measures appear to have adequate internal consistency reliability in older adults; however, construct validity was questionable. Using objective criteria to distinguish artists from nonartists, artists did not possess consistently greater wellbeing. Implications of these findings will now be discussed.

Even though my sample is relatively small, results of this study indicate that the internal consistency reliability of most creativity tests is reasonable in both younger and older adults. The reliability of the RIBS in my sample of older adults was identical to the one reported by Runco, Plucker, and Lim (2001) based on their sample of university students with a mean age of 21. The reliability of the RAT in my older (Cronbach's alpha = 0.87) and younger sample (Cronbach's alpha = 0.67) was lower than that reported by Mednick (1962) for his sample of younger adults (Cronbach's alpha = 0.92). I am uncertain why internal reliability on the RAT was lower for my younger sample; perhaps my method of randomly choosing 10 problems from each tercile resulted in a combination that was less consistent among younger adults due to decreased familiarity with that combination of words. This is unlikely, however, because performance for undergraduates in the Bowden and Jung-Beeman (2008) was reliable. Finally, the ATTA appeared to be reliable in our older adult sample, though less so in my overall sample. The reliability of the ATTA in my sample was lower than that reported by Goff and Torrance (2002). Reasons for this difference will be discussed later in the paper.

While the creativity measures were internally consistent, they were uncorrelated with each other. This was surprising. My study design allowed me to compare how groups that we expected to be higher on creativity measures performed on the creativity

tests. Artists outperformed nonartists on the RIBS, but did not have higher scores on the ATTA or RAT. This might be because the RAT and ATTA are better measures of divergent thinking than the overall construct of creativity. Additionally, the RIBS is different from the RAT and ATTA because it is a self-report measure of creativity. Thus, the groups that we identified as being more creative appear to answer questions in a way that reflect their personal belief that they good at coming up with up with novel solutions and ideas. Whether this represents true differences in creativity remains to be answered. My more objective measures of creativity did not illustrate such differences between groups.

Scores on the RAT, for instance, were better predicted by age group rather than artist status. The significant correlation between RAT and the Matrix Reasoning suggests that the RAT may actually be a better measure of fluid intelligence than creativity. If this is the case, it makes sense that younger adults would outperform older adults on the task due to age-related declines in fluid intelligence (Horn & Cattell, 1967).

Regarding the ATTA, nonartists scored higher on the ATTA than artists. This finding was both unexpected and unparalleled in the literature; however, it might reflect the difficultly that my team of coders and I had when using the ATTA scoring manual. I contacted the scale's author with specific questions, asking for clarification of scoring guidelines. Even with feedback from the author, it was not clear that there was a systematic way to score responses. With much effort, our team met to establish rules for consistent scoring. While the scoring method was consistent *within this research team*, it is not certain the final scores were actually reflective of creativity. Perhaps the ATTA captures the divergent thinking aspect of creativity but does not take into other factors

(e.g., motivation) that contribute to overall creativity.

An important aspect of creativity that my tests did not assess was the intrinsic motivation for making, which encourages them attend to the task (Amabile, 1983). For the ATTA, participants are instructed to "be as creative as possible" when responding to verbal and figural activities. It is easy to comprehend that artists who use the process of creating to express their ideas and insights might find the instructions of a paper-and-pencil creativity test uninteresting and confining. In fact, one of the artists to whom I administered the task said, "If you're giving me this silly test, you clearly don't understand what creativity is at all." In hindsight, it would have been beneficial for me to ask what he believed to be a better measure of creativity. I suspect, however, that there is no one test that is the best estimate of creativity; rather, it is a complex construct that requires the inspection of many aspects, which may have different levels of influence on an individual's overall creativity.

Because of the multi-faceted nature of creativity, it is conceivable that the measures used in this study may be indicators of different aspects of the construct. The ATTA, for instance, could be seen as a measure of divergent thinking rather than a measure of the entire construct of creativity (Kaufman, Plucker, & Baer, 2008). The ATTA serves as a powerful predictor of creative achievement in children and I expected that it would differentiate between artists and nonartists. I was unsure of whether reliability would be preserved in an older adult sample that has presumably had more time to realize their creative potential and make creative contributions. However, the ATTA taps into divergent thinking, a facet that is important for types of creativity beyond the domain of visual creativity. Thus, a measure primarily of divergent thinking might

not distinguish between visual artists and nonvisual artists in a sample where people with other types of creativity were not represented. Therefore, while divergent thinking may be one aspect of creativity, it may not be particularly influential on personal wellbeing.

Before testing the effects of the creativity measures on wellbeing domains, age and artist effects were entered into the regression because those variables were measured more objectively. Despite concerns about the construct validity, there was small but significant amount of variance accounted for by creativity measures across Autonomy, Self-Efficacy, and Loneliness. Regarding Autonomy, older age and lower RAT performance accounted for a significant proportion of the variance. That older adults are more autonomous (i.e., self-determining, independent, able to resist social pressures) than younger adults is consistent with Ryff's (1989) findings. The negative relationship between Autonomy and RAT performance suggests that deficits in fluid intelligence are associated with greater autonomy. This finding is contrary to my expectation that declines in fluid intelligence would actually limit an individual's ability to remain independent. Because my sample includes community dwelling older adults, perhaps the deficits in fluid intelligence are not yet noticeable enough to affect the older adult's ability to remain autonomous.

Regarding Self-Efficacy, high scores on the RIBS were significantly predictive of the ability to perform novel or difficult tasks and adapt to life changes. This is a meaningful finding in that it suggests that subjective perception of one's creativity is associated with positive wellbeing. That there is no effect of age on this domain suggests that creative engagement is a meaningful predictor of positive wellbeing across the lifespan.

Regarding Loneliness, high scores on the RIBS were significantly predictive of increased loneliness. This supports previous findings that artists are more prone to loneliness and isolation (Dewey, Steinberg, & Coulson, 1998; Tick, 1987). Given that the RIBS is predictive of aspects of wellbeing, high loneliness scores for artists are not necessarily indicative of poor overall wellbeing. Self-endorsed strengths in creativity ideation might mitigate the negative effects of loneliness while enhancing other positive aspects of wellbeing. This protective effect could be particularly relevant for older adults who experience age-related increases in social isolation and decreased social support (Wilson & Moulton, 2010).

The current study had several limitations. My artist sample was restricted to visual artists. Future studies might include a more diverse sample, including artists across a range of disciplines and participants from a variety of racial, ethnic, and socioeconomic groups. Finally, inclusion of a more objective measure of creative achievement would be useful in conjunction with the measures like the ATTA.

In summary, the present results indicate that the relationships between creative behavior and domains of wellbeing are complex and warrant further study. There appears to be some relationship between creativity and wellbeing but it is inconsistent across wellbeing domains.

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Table 1.

Sample Characteristics

	Younger Adults				Older Adults			
	Artists (n = 41)		Nonartists (n = 45)		Artists (n = 45)		Nonartists (n = 42)	
Characteristic	*M*/n	*SD*/%	*M*/n	*SD*/%	*M*/n	*SD*/%	*M*/n	*SD*/%
Age	21.71	2.94	19.42	1.37	76.09	7.57	76.52	7.21
Single	38	92.7%	45	100%	6	14.0%	4	9.5%
Caucasian	31	77.5%	23	52.3%	39	90.7%	29	95.1%
PCS	54.46	5.35	54.96	5.31	46.11	10.08	43.85	12.05
RIBS	87.78	10.64	77.80	14.25	86.28	11.75	72.96	14.71
RAT	16.12	3.63	14.56	4.31	9.00	5.53	8.64	5.82
ATTA	76.64	11.65	80.62	9.55	76.48	9.29	79.98	10.60
MAT	21.73	3.12	21.18	3.79	16.19	4.67	14.71	5.05
Neuroticism	22.59	7.15	22.07	7.21	20.79	7.09	20.00	5.19
Autonomy	61.17	8.38	57.26	10.56	66.17	9.96	64.69	8.61
Purpose in Life	67.39	8.81	69.93	9.17	71.50	9.89	66.98	10.05
Self-Acceptance	66.64	11.49	65.35	11.47	69.98	9.45	68.51	9.45
Self-Efficacy	33.90	3.22	32.02	3.61	33.23	4.43	31.36	4.05
RULS-V3	36.59	8.82	34.71	7.00	37.41	8.67	36.26	7.53

Table 2.

Internal Consistency Reliabilities of the Creativity Scales

	Cronbach's Alpha				
Creativity Scale	Entire Sample (n = 167)	Younger (n = 86)	Older (n = 85)	Artists (n = 84)	Nonartists (n = 87)
RIBS	.92	.92	.92	.89	.93
RAT	.86	.67	.87	.86	.86
ATTA	.77	.74	.81	.76	.76

Table 3.

Intercorrelations Among Creativity Scales Across Groups

	Entire Sample			Younger Adults			Older Adults		
Creativity Scale	1	2	3	1	2	3	1	2	3
1. RIBS	----	.13	-.01	----	-.10	.09	----	.12	.08
2. RAT		----	-.09	.05	----	-.05	.24	----	-.07
3. ATTA			---	.03	.02	---	.06	-.19	---

Note. For younger and older adult subgroups, correlations above the diagonal represent artists and correlations below the diagonal represent nonartists. No correlations are significant.