Psychology of Aesthetics, Creativity, and the Arts

The Role of Passion and Persistence in Creativity

Magdalena G. Grohman, Zorana Ivcevic, Paul Silvia, and Scott Barry Kaufman

Online First Publication, July 24, 2017. http://dx.doi.org/10.1037/aca0000121

Psychology of Aesthetics, Creativity, and the Arts

1931-3896/17/$12.00 http://dx.doi.org/10.1037/aca0000121

The Role of Passion and Persistence in Creativity

Magdalena G. Grohman
University of Texas at Dallas

Zorana Ivcevic
Yale University

Paul Silvia
University of North Carolina at Greensboro

Scott Barry Kaufman
University of Pennsylvania

We examined the predictive power of 2 different conceptualizations of passion and persistence in relation to creative behavior. Specifically, we examined predictive power of the self-reported grit subscales (defined as a combination of passion/consistency of interests and perseverance) and teacher-reported passion and persistence (based on lay definitions of these constructs). In 3 studies of college and high school students, self-reported passion/consistency of interests and perseverance (grit subscales) did not predict creative behavior and achievement. Openness to Experience (Studies 1–3) and teacher nominations of passion and persistence predicted creativity (Study 3). Finally, we found support that teacher-nominated passion and persistence remained significant predictors of creativity above the Big Five personality traits.

Keywords: creativity, passion, persistence, consistency of interests, openness to experience

How should we define and assess passion and persistence that are important for creative achievement? Both interviews with eminently creative individuals (Csikszentmihalyi, 1996) and long-term longitudinal studies of professional creativity (Helson, Roberts, & Agronick, 1995) point to the importance of passion and persistence for creativity. Recently, a new construct has been introduced that is defined as a combination of passion and perseverance for long-term goals—grit (Duckworth, Peterson, Matthews, & Kelly, 2007). Grit has captured the popular imagination with bestselling books such as *How Children Succeed: Grit, Curiosity and the Hidden Power of Character* (Tough, 2013) and *Grit to Great: How Perseverance, Passion, and Pluck Take you From Ordinary to Extraordinary* (Thaler & Koval, 2014). Grit facets are commonly assessed as self-reported traits and they predict a host of achievement outcomes, from performance on the National Spelling Bee (Duckworth et al., 2007; Duckworth & Quinn, 2009) to professional achievement (Abuhassàn & Bates, 2015). The present paper examines the incremental predictive power of passion and persistence as assessed by the grit subscales and lay conceptions of passion and persistence in relation to creativity.

Creative individuals are persistent. Depending on the domain, it can take multiple months or even years to complete a creative project, often in spite of obstacles or opposition (e.g., from the idea conception through multiple revisions of a scientific paper). Wilson (1990) studied poets through interviews, observations, and psychological tests and found that they persisted in writing even in times of prolonged economic deprivation and long periods without critical acceptance for their work. Similarly, women described by observers as not giving up under conditions of adversity in college achieved higher occupational creativity 30 years later (Helson et al., 1995).

Creative individuals are also commonly described as passionate about their work (Fisher & Amabile, 2009; Csikszentmihalyi, 1988, 1996). When passion is defined as autonomous internalization of an activity (i.e., a person who enjoys making art defines herself as an artist; Vallerand et al., 2003), it predicts individual creativity in the workplace measured by employees' team leader ratings (Liu, Chen, & Yao, 2011) and creativity in performing arts students assessed by instructors and program directors (Vallerand et al., 2007). Creative individuals describe their relation to work as: "You could say that I worked every day of my life, or with

Magdalena G. Grohman, Center for Values in Medicine, Science, and Technology, University of Texas at Dallas; Zorana Ivcevic, Center for Emotional Intelligence, Yale University; Paul Silvia, Department of Psychology, University of North Carolina at Greensboro; Scott Barry Kaufman; Positive Psychology Center, University of Pennsylvania.

This research was supported by grant RFP-15-16 from the Imagination Institute (http://www.imagination-institute.org), funded by the John Templeton Foundation. The opinions expressed in this article are those of the authors and do not necessarily reflect the views of the Imagination Institute or the John Templeton Foundation. Paul Silvia's contribution was supported in part by a William Evans Fellowship from the University of Otago, New Zealand, and Zorana Ivcevic's contribution was supported in part by the Emotion Skills in High School Students award from Brewster Academy.

Correspondence concerning this article should be addressed to Magdalena G. Grohman, Center for Values in Medicine, Science, and Technology, The University of Texas at Dallas, 800 W Campbell Road, JO 31, Richardson, TX 75080. E-mail: mggrohman@utdallas.edu

equal justice you could say that I never did any work in my life" (Csikszentmihalyi, 1999, p. 330).

A combination of passion and perseverance in the service of long-term goals has recently been integrated in the construct of grit. As such, it can be hypothesized that grit facets should predict creativity. However, we consider this question exploratory in nature because of the specific way the components of grit are defined. In particular, the theoretical component labeled passion by Duckworth and colleagues (2007) is operationally defined as consistency of interests (and assessed with reversed-scored items such as: "I become interested in new pursuits every few months" and "New ideas and new projects sometimes distract me from previous ones"). The passion component of grit is akin to commitment. Indeed, commitment is an important component of passion (Moeller, 2014; Moeller et al., 2015). However, passion also includes intense affective investment in an activity and identification with the activity (Fredricks, Alfeld, & Eccles, 2010; Moeller, 2014; Moeller et al., 2015; Vallerand et al., 2003), which are not captured by the construct of grit.

Interviews with creators suggest these emotional and identity components of passion are central to creativity (Csikszentmihalyi, 1996). In contrast to the aspect of passion included in the construct of grit, when someone is described as passionate in the everyday discourse, their intense emotional desire to engage in the passion activity and the enjoyment of the activity are very prominent (Fisher & Amabile, 2009; Fredricks et al., 2010). This passion is observable; behavioral indicators of enthusiasm (e.g., animated facial expressions, energetic body movements) predict perceived passion in entrepreneurs, which in turn predicts interest in potential funders (Cardon, Sudek, & Mitteness, 2009). In the present investigation, we assess perceived passion through teacher reports based on their observations of student behavior across multiple courses.

Although a level of commitment to goals is necessary for creative achievement, creativity is also associated with exploring different avenues of work and a delay in committing to a single goal (Csikszentmihalyi, 1988; Csikszentmihalyi & Getzels, 1971). This process of problem finding is facilitated by wide interests (Barron & Harrington, 1981; Feist, 1998). Individuals described as having wide interests at ages 21 and 43 were more creative in their occupations at age 52 (Helson et al., 1995). Moreover, creative individuals are open to change and report that their personality changed in college (Helson et al., 1995). Wide interests and changes in personality suggest fluid instead of consistent interests. It might not be surprising if a creative individual agrees that he or she becomes interested in new pursuits every few months, which would describe them as low on the component of passion included in the construct of grit.

Thus far, grit components of passion and perseverance in the service of the long-term goals have been primarily investigated in well-structured achievement settings (Duckworth et al., 2007; Duckworth & Quinn, 2009; Duckworth, Kirby, Tsukayama, Berstein, & Ericsson, 2011). For instance, achievement in the National Spelling Bee, studied by Duckworth and colleagues (2007), requires commitment and focused practice on a single task (studying word spellings), and success at the U.S. Military Academy is based on performance on well-defined tasks (e.g., specific requirements and criteria of success, clear feedback). This research points to the importance of habitual hard work and persistence, and commitment to long-term goals in these domains.

However, creativity typically involves ill-defined goals without a clear pathway for goal attainment (Lubart, 2001; Simonton, 2014). Creativity requires finding a worthwhile problem (original, but useful or appropriate in a particular domain), generating ideas to address the problem, often redefining or changing goals, evaluating and selecting the best ideas, and finally executing these ideas in a product or performance that is sensitive to the audience. This whole process is often messy, and involves casting a broad net of possibilities and forms of knowledge.

Indeed, Openness to Experience—reflecting the tendency toward exploration of inner and outer experience—is the most consistent personality predictor of creativity (DeYoung, 2014; Feist, 1998; Kaufman et al., 2016). Numerous studies show that Openness to Experience lies at the core of the creative personality; it predicts creativity outcomes ranging from divergent thinking test scores (e.g., Batey, Chamorro-Premuzic, & Furnham, 2010; Furnham, Zhang, & Chamorro-Premuzic, 2006; McCrae, 1987; Silvia, Martin, & Nusbaum, 2009), to laboratory writing and art tasks (e.g., Ivcevic, Brackett, & Mayer, 2007; Wolfradt & Pretz, 2001), to self-reported creative behavior (e.g., Carson, Peterson, & Higgins, 2005; Hong, Peng, & O'Neil, 2014; Ivcevic & Mayer, 2009) to professional creative achievement (e.g., Feist, 1998; Feist & Barron, 2003; Helson et al., 1995; Kaufman, 2013; Kaufman et al., 2016). Openness to Experience is also related to creativity longitudinally, predicting creative achievement as much as 50 years later (George, Helson, & John, 2011; Helson et al., 1995; Feist & Barron, 2003; Soldz & Vaillant, 1999).

Under the Big Five framework, grit is most closely associated with Conscientiousness (Ivcevic & Brackett, 2014; MacCann, Duckworth, & Roberts, 2009; Roberts, Lejuez, Krueger, Richards, & Hill, 2014). Persistence is often identified as a facet of Conscientiousness (e.g., Hough & Ones, 2001; MacCann et al., 2009). In fact, Roberts et al. (2014) went so far as to suggest that the consistently high correlations between grit and Conscientiousness (e.g., $r = .77$; Duckworth & Quinn, 2009) indicate that the grit scales are "a direct measure of the broader domain" of Conscientiousness (Roberts et al., 2014, p. 1321). A recent meta-analysis (Credé, Tynan, & Harms, 2016) examined the relation between grit and performance and found stronger evidence for predictive validity of perseverance than passion/consistency of interests. Although grit is highly correlated with Conscientiousness, the meta-analysis showed that the perseverance component predicts academic achievement even after controlling for Conscientiousness. It might be that grit is best described as a facet of Conscientiousness, but a facet that is not fully represented in common Big Five measures and therefore showing incremental validity for some outcomes.

Passion/consistency of interest and perseverance as components of grit have not been studied in relation to creativity. One study came close to investigating the relationship between grit and creative achievement. Abuhassàn and Bates (2015) measured achievement with the modified Creative Achievement Questionnaire (CAQ; Carson et al., 2005) and found that perseverance (but not passion/consistency of interests) was significantly correlated with achievement, above and beyond IQ, Conscientiousness, and Neuroticism. The study modified the CAQ to include a mix of creative and well-structured domains (e.g., military). This modification does not allow us to interpret the results as indicating creativity. Indeed, the paper does not discuss creativity per se, but

rather it focuses on more general real-life achievement across creative and not creative domains.

The present paper measures creativity both in terms of public achievement (measured by the CAQ) and in terms of everyday creative behavior. The primary aim of the current investigation was to examine incremental validity of two assessments of passion and persistence for creativity above the Big Five personality traits. In Studies 1 and 2 we assessed passion and persistence using subscales of self-reported grit (Duckworth et al., 2007), and in Study 3 through teacher reports of these constructs based on their lay definitions. This is the first set of studies to examine facets of grit as measures of passion and persistence in relation to creativity outcomes. While there is an established relationship between creativity and passion and persistence, the literature offers multiple definitions of these constructs. In this paper we test whether the definitions in the model of grit have incremental validity in prediction of creativity beyond Big Five personality traits (all three studies). We compare predictive validity of grit facets of passion/consistency of interests and perseverance with passion and persistence based on lay conceptions of these constructs (Study 3).

Study 1

Study 1 was an initial test of the role of passion and persistence as measured by the self-reported grit scale in creativity. Creativity was measured in terms of public and observable accomplishments in creative domains, such as publishing a short story or performing with a recognized ensemble.

Method

Participants. The sample included 131 participants (85 women, 46 men) enrolled at the University of North Carolina at Greensboro (UNCG). Most people received credit toward a voluntary research participation option in a psychology class; five received $10 in cash. Self-reported racial and ethnic identifications revealed a diverse sample: 58% Caucasian/White, 28% African American, 12% Hispanic/Latino, and 6% Asian/Pacific Islander. The sample was primarily young adults (M age = 19.37, SD = 1.85, range from 18 to 30).

Procedure and measures. People took part in the study individually as part of a broader project on autonomic psychophysiology and motivation (see Silvia, Nusbaum, Eddington, Beaty, & Kwapil, 2014). People completed a broad range of self-reported measures related to personality, emotion, and creativity, and they completed some cognitive tasks related to effort (see Silvia et al., 2014, for details). For the present purposes, the relevant variables were measures of self-reported grit facets, personality, and creative achievement.

Passion and persistence were measured with the subscales of the eight-item short Grit Scale (Duckworth & Quinn, 2009): perseverance of effort (4 items, e.g., "I have overcome setbacks to conquer an important challenge") and passion/consistency of interests (4 items, e.g., "My interests change from year to year"). People responded to each item on a 5-point scale (1 = *not like me at all*, 5 = *very much like me*). Internal consistency was $\alpha = .67$ for perseverance, and $\alpha = .79$ for passion/consistency of interests.

The Big Five personality traits—Extraversion ($\alpha = .80$), Agreeableness ($\alpha = .78$), Conscientiousness ($\alpha = .85$), Neuroticism ($\alpha = .85$), and Openness to Experience ($\alpha = .78$)—were measured with the NEO FFI 3 (McCrae & Costa, 2010), a 60-item scale that measures each factor with 12 items. Participants completed each item on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*).

Creative achievement was measured with the Creative Achievement Questionnaire (CAQ; Carson et al., 2005), which is one of the most popular self-reported measures of observable, public achievements (Silvia, Wigert, Reiter-Palmon, & Kaufman, 2012). The CAQ assesses achievements in 10 different creative domains. Because the CAQ focuses on high-level accomplishments, most young adults have low scores (Silvia, Kaufman, & Pretz, 2009). To address this positive skew, raw scores were log-transformed (see psychometric analyses and discussion of transformations in Silvia et al., 2012). People received a score in each domain, and the 10 domain scores were then averaged ($\alpha = .58$) and log-transformed to create an overall creative achievement score.

Results and Discussion

Table 1 presents descriptive statistics and intercorrelations among all study variables. As in previous research, creativity was significantly correlated with Openness to Experience, $r = .39$, $p < .001$. The grit facets of passion/consistency of interests and persistence did not correlate with creative achievement ($r = .00$ and .01, respectively). Rather, passion/consistency was negatively related to Openness (indicating greater conventionality; $r = -.21$, $p = .002$) and Neuroticism, $r = -.40$, $p < .001$, and positively correlated with Conscientiousness, $r = .56$, $p < .001$. This sug-

Table 1
Descriptive Statistics and Correlations Among Study Variables (Study 1)

	M	*SD*	1	2	3	4	5	6	7
Big Five traits									
1. Extraversion	3.56	.53							
2. Agreeableness	3.71	.54	.32***						
3. Conscientiousness	3.51	.55	.20*	.27**					
4. Neuroticism	3.14	.68	−.20*	−.10	−.30***				
5. Openness to experience	3.70	.54	−.02	.05	−.16	.13			
Grit									
6. Passion/Consistency	2.73	.86	.04	.13	.56***	−.40***	−.21*		
7. Perseverance	3.76	.62	.21*	.11	.57***	−.28***	.10	.38***	
8. *Creative achievement (CAQ, log)*	.34	.68	.01	.14	.02	.14	.39***	.00	.01

* $p < .05$. ** $p < .01$. *** $p < .001$.

gests that the passion/consistency facet of grit might be described as indicating conventional adjustment. The grit facet of perseverance was negatively correlated with Neuroticism, $r = -.28$, $p < .001$ and positively with Conscientiousness, $r = .57$, $p < .001$.

Because the zero-order correlations between grit subscales and creative achievement were not significant, we did not proceed to conduct planned hierarchical multiple regression analyses to test incremental validity of persistence and passion to predict creativity beyond the Big Five personality traits.

Study 2

Study 2 sought to expand upon Study 1. First, Study 2 recruited a substantially larger sample, thus increasing statistical power and the precision of effect size estimates (Schönbrodt & Perugini, 2013). Second, Study 2 included a broader range of creativity assessment. In addition to the CAQ, Study 2 included the Creativity Life-Space Scales, which assess everyday creative behavior (Ivcevic & Mayer, 2009).

Method

Participants. A total of 325 students (247 women, 74 men, and 4 who declined to state) from the University of Texas at Dallas took an online survey distributed through Qualtrics and received credit toward a research option in an introduction to psychology course. The students' age ranged from 17 to 55 ($M = 23.25$ years, $SD = 6.08$). The sample consisted of the following self-reported ethnic and racial identifications: 50.5% Caucasian/White, 22.5% Asian/Pacific Islander, 18.2% Hispanic/Latino, 7.1% African American, 2.2% Native American/Alaskan, and 3.7% Unspecific or Multiracial.

Procedure and measures. Persistence and passion were measured by the 12-item version of the grit scale (Duckworth et al., 2007). We administered the longer version of the grit scale because the shorter version administered in Study 1 had low internal consistency of one of the facets ($\alpha < .70$). However, internal consistency of this measure was also rather low—$\alpha = .60$ for passion/consistency and $\alpha = .70$ for perseverance.

Personality traits were measured with the 120-item version of the International Personality Item Pool (IPIP) Big Five questionnaire (Goldberg, 1999): Extraversion ($\alpha = .86$), Agreeableness ($\alpha = .83$), Conscientiousness ($\alpha = .88$), Neuroticism ($\alpha = .90$), and Openness to Experience ($\alpha = .80$). The students responded to each item on 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*).

We used two self-reported measures to assess creativity. First, as in Study 1, we included the Creative Achievement Questionnaire (Carson et al., 2005). This measure was used in attempt to replicate the results of Study 1. Second, we measured everyday engagement in creative activities using the Creativity Life-Space Scales (Ivcevic & Mayer, 2009). The measure includes 170 items assessing creative behavior in everyday arts and crafts activities, writing, performing arts, interpersonal creativity, and clubs. The students rated the frequency with which they engaged in certain activities within a given timeframe (e.g., "In the last month how often did you . . .").

The scores were standardized and two scores were computed according to guidelines in Ivcevic and Mayer (2009). Everyday Creativity assessed leisure and self-expressive creative activities, as well as artistic and intellectual interests and was a composite of the following scales: crafts activities (e.g., made photo collages, made scrapbooks; $\alpha = .85$), visual arts (e.g., number of completed paintings, time spent on art projects; $\alpha = .84$), cultural activities (e.g., visiting art museums, having a conversation about art; $\alpha = .84$), sophisticated media use (e.g., reading music magazine, watching movies in a theater; $\alpha = .85$), interpersonal creativity (e.g., surprising friend with a gift, writing a love letter; $\alpha = .84$), self-expressive creativity (e.g., painting clothes, wearing self-designed jewelry; $\alpha = .84$), and creative writing (e.g., reading one's writing in a recital, entering writing in a contest; $\alpha = .83$). Performing Arts Creativity was a composite of music (e.g., playing music in public, composing music; $\alpha = .84$), theater (e.g., acting on stage, staging a play; $\alpha = .85$), and dance (e.g., dancing in a ballet, choreographed a dance; $\alpha = .85$). Scores were positively skewed for performing arts creativity and therefore log transformed for data analyses. The Creativity Life-Space Scales complement the Creative Achievement Questionnaire: the scales primarily capture engagement in creativity at the everyday creativity level through hobbies and extracurricular activities (Kaufman & Beghetto, 2009).

Results and Discussion

Table 2 shows descriptive statistics and intercorrelations among all study variables. As in Study 1, creativity was significantly correlated with Openness to Experience (rs = .39 for everyday creativity, .25 for performance creativity, and .40 for creative achievement; all ps $< .001$). The grit facets of passion/consistency of interests and perseverance did not correlate with the creativity measures. Both passion/consistency and perseverance were negatively correlated to Neuroticism (rs = $-.46$ and $-.30$, $p < .001$), and positively correlated with Extraversion (rs = .40 and .31, $p < .001$) and Conscientiousness (rs = .65 and .60, $p < .001$), suggesting they tap into adjustment-relevant variables (Soldz & Vaillant, 1999).

Because the zero-order correlations between grit perseverance and passion/consistency and creativity were not significant, we did not conduct planned regression analyses to examine incremental validity beyond the Big Five personality traits.

Study 3

Studies 1 and 2 did not offer support for a significant role of self-reported passion/consistency of interests and perseverance in creativity. Study 3 collected data on teacher-observed passion and persistence. While Studies 1 and 2 were largely exploratory, this study tests two hypotheses. First, we hypothesize that the grit facet theoretically defined as assessing passion does not capture passion as commonly defined in everyday lay discourse. Second, we hypothesize that teacher nominations of passion and persistence predict creativity. We based this hypothesis on previous research employing interview methods and observer descriptions in samples including talented youth, professional adults, and eminent creators (Csikszentmihaly, 1996; Fredricks et al., 2010; Helson et al., 1995). Finally, we test the incremental validity of observed passion and persistence on creativity beyond Big Five personality traits.

Table 2
Descriptive Statistics and Correlations Among Study Variables (Study 2)

	M	*SD*	1	2	3	4	5	6	7	8	9
Big Five traits											
1. Extraversion	3.23	.51									
2. Agreeableness	3.73	.44	.14**								
3. Conscientiousness	3.68	.51	.30***	.35***							
4. Neuroticism	2.94	.62	−.55***	−.33***	−.38***						
5. Openness	3.40	.44	.26***	.29***	.03	−.15**					
Grit											
6. Passion/Consistency	3.35	.60	.40***	.18***	.65***	−.46***	−.02				
7. Perseverance	3.45	.70	.31***	.16**	.60***	−.30***	.02	.73***			
Creativity											
8. Everyday creativity	.00	.36	.28***	.07	.01	−.08	.39***	.05	.02		
9. Performance creativity (log)	−.03	.15	.20***	.05	−.02	−.13*	.25***	.05	−.04	.52***	
10. Creative achievement (CAQ, log)	1.96	1.03	.18***	.01	−.01	−.04	.40***	−.06	−.04	.52***	.49***

* $p < .05$. ** $p < .01$. *** $p < .001$.

Method

Participants. Participants were 215 students at a private high school in the Northeast (53% male; median age = 17). The sample was from middle-class families (82.1% of mothers and 81.4% of fathers had at least a college degree). Students self-identified as 73.7% White/Caucasian, 13.6% Asian or Asian American, 4.7% Black or African American, 3.8% Hispanic and 2.8% as mixed race.

Measures. The 12-item Grit Scale (Duckworth et al., 2007) was used to assess perseverance ($\alpha = .71$) and passion/consistency of interests ($\alpha = .77$). Participants rated each item on a 5-point scale.

Self-reported personality traits were measured using the 44-item Big Five Inventory (John, Naumann, & Soto, 2008). This scale was deemed the most appropriate for the present sample, as the wording of some items was adapted for greater comprehension in adolescent samples (see Soto, John, Gosling, & Potter, 2008 for evidence of construct validity and comparison with longer measures of Big Five traits). Students rated each item on a 5-point scale. Reliability of all scales was high, ranging from .74 for Agreeableness to .83 for Extraversion.

Peer nominations were solicited to assess creativity, and teacher nominations were obtained for persistence and passion. Students were asked to nominate approximately 10% of their classmates who they would describe as: (a) most creative and (b) best at coming up with original ideas in class/assignments. Following Amabile's (1996) definition of creativity that is the basis for the consensual assessment technique, students were not given an explicit definition of creativity. Creativity nominations were commonly used in prominent historical studies of creativity (e.g., MacKinnon, 1975), as well as studies of preprofessional and professional creativity (Helson et al., 1995). The validity of nomination measures stems from them being based in observed behavioral evidence of creativity.

Students in this school are organized into six teams and they spend most of their time at school with their team members. Because of this, students were asked for nominations only within their teams. The number of nominations for each student was z-scored within class teams and the nominations for creativity and originality were averaged to create a single criterion measure, $r = .70$, $p < .001$.

Lay conceptions of persistence and passion were assessed through teacher reports. Teachers were presented a list of all students they taught (across different courses) in alphabetical order and then asked to select approximately 10% of students for the low and high end of two descriptors: (1) most persistent versus tending to give up when facing obstacles, and (2) most versus least passionate about the subject matter. Teachers were asked to base their nominations on what they observed in their interactions with students in the classes they teach. Nominations for low end of the descriptors were assigned the value −1 and nominations for high end of the descriptors were assigned the value 1; students who were not nominated were assigned the value 0. Z-Scores were computed for each teacher and scores were averaged across all teachers.

Similar measures by observers were previously successfully used in creativity research (e.g., Helson et al., 1995). Furthermore, teacher nominations have important practical relevance, as teachers are often asked to recommend students for college, contests, or program participation based on similar judgments.

Procedure. Study measures were administered as a part of a larger investigation of social and emotional development in high school students, which included measures of self-control, motivation, and emotional intelligence. Teachers administered all student measures in small groups (10–15 students), and teacher nominations were collected during a faculty meeting using Qualtrics software.

Results

Table 3 presents descriptive statistics and intercorrelations among all study variables. As in Studies 1 and 2, creativity was significantly correlated with Openness to Experience, $r = .24$, $p < .001$. The grit facet of passion/consistency of interests was not significantly correlated with teacher-nominated passion, supporting our hypothesized conceptual difference between these two constructs. Rather, consistency of interests was negatively related to Openness, $r = -.21$, $p = .002$ and Neuroticism, $r = -.18$, $p = .007$, and positively correlated with Conscientiousness, $r = .16$, $p = .020$. As in Study 1, this suggests that passion/consistency facet of grit taps conventional adjustment. The grit facet of perseverance was significantly correlated with nominations of persistence in the face of obstacles, $r = .26$, $p < .001$.

Table 3
Descriptive Statistics and Correlations Among the Study Variables (Study 3)

	M	*SD*	1	2	3	4	5	6	7	8	9
Big Five traits											
1. Extraversion	3.29	.71									
2. Agreeableness	3.56	.59	.29***								
3. Conscientiousness	3.34	.61	.08	.37***							
4. Neuroticism	2.84	.66	−.24***	−.30***	−.13						
5. Openness to experience	3.52	.60	.26***	.19**	.15*	−.10					
Grit											
6. Passion/Consistency	2.89	.75	−.02	.02	.16*	−.18**	−.21**				
7. Perseverance	3.60	.65	.11	.28***	.54***	−.32***	.19**	.13			
Teacher nominations											
8. Passion	.07	.66	.00	.21**	.31***	−.04	.22***	−.07	.22**		
9. Persistence	.07	.60	.02	.20**	.35***	−.05	.21**	−.04	.26***	.50***	
10. *Creativity nominations*	.16	1.00	.12	.09	.07	−.09	.24***	−.01	.14*	.25***	.27***

* $p < .05$. ** $p < .01$. *** $p < .001$.

Teacher reported passion and persistence were both correlated with Conscientiousness, $r = .31$ and .35, $p < .001$, Agreeableness, $r = .21$ and .20, $p < .001$, and Openness, $r = .22$ and .21, $p < .001$. This pattern is similar to previously reported correlations between passion and personality traits (Balon, Lecoq, & Rime, 2013; Wang & Yang, 2007). Previous research largely examined persistence as part of Conscientiousness (e.g., using items such as "perseveres until the task is finished" on the BFI) or as single items (e.g., "gives up under conditions of adversity" rated by observers; Helson et al., 1995), making it difficult to make comparisons with our results.

Unlike in Studies 1 and 2, self-reported perseverance predicted creativity, $r = .14$, $p = .043$. Furthermore, creativity was predicted by both teacher nominated passion, $r = .25$, $p < .001$, and persistence in the face of obstacles, $r = .27$, $p < .001$, replicating previous research assessing these variables through informant reports (Cardon et al., 2009; Helson et al., 1995).

Next, we performed a multiple regression analysis to examine the incremental validity of teacher-reported passion and persistence in predicting creativity. We entered Big Five personality traits in Step 1, grit scales of passion/consistency and perseverance in Step 2, and teacher reports of passion and persistence in Step 3 (see Table 4 for summary).

Step 1 variables significantly predicted creativity, $\Delta R^2 = .06$, $F(5, 205) = 3.01$, $p = .012$; Openness to Experience was the only significant trait predictor of creativity, $\beta = .22$, $p = .002$. Grit subscales entered in Step 2 did not significantly predict creativity above the Big Five traits. Reports of passion and persistence in the face of obstacles entered in Step 3 significantly added to the prediction of creativity, $\Delta R^2 = .06$, $F(2, 201) = 7.60$, $p = .001$; nominations of persistence were significant independent predictor, $\beta = .18$, $p = .021$, and nominations of passion approached significance, $\beta = .15$, $p = .058$.

General Discussion

When do passion and persistence predict creativity? We assessed passion and persistence as defined by the construct of grit and as defined by lay conceptions expressed in teachers ratings. In three studies employing samples of college and high school students, self-reported facets of grit did not predict creative achievement or peer-rated creativity. However, creativity was predicted by teacher nominations of passion and persistence in the face of obstacles. Furthermore, whereas teacher-nominated passion was not significantly correlated with the passion/consistency of interests facet of grit, teacher-nominated perseverance was moderately related to the perseverance subscale of grit. In other words, it seems that lay understanding of passion is different from the conceptualization of passion within the construct of grit. On the other hand, grit facet of perseverance is similar to lay conceptions of persistence.

In the present studies, as in previous research, passion/consistency and perseverance facets highly correlate with Conscientious-

Table 4
Multiple Regression Predicting Creativity Nominations (Study 3)

	β	Lower bound	Upper bound	ΔR^2	Δp
Step 1				.07	.012
Extraversion	.05	−.14	.26		
Agreeableness	.00	−.25	.26		
Conscientiousness	.02	−.20	.28		
Neuroticism	−.06	−.31	.12		
Openness to experience	.22**	.14	.60		
Step 2				.01	.522
Extraversion	.05	−.13	.27		
Agreeableness	.00	−.25	.26		
Conscientiousness	−.02	−.31	.23		
Neuroticism	−.03	−.28	.18		
Openness to experience	.22**	.12	.61		
Grit: Passion/Consistency	.03	−.15	.22		
Grit: Perseverance	.09	−.12	.39		
Step 3				.06	.001
Extraversion	.07	−.10	.30		
Agreeableness	−.02	−.29	.21		
Conscientiousness	−.11	−.45	.09		
Neuroticism	−.04	−.28	.16		
Openness to experience	.17*	.05	.53		
Grit: Passion/Consistency	.05	−.11	.25		
Grit: Perseverance	.07	−.14	.35		
Teacher nominations: Passion	.15+	−.01	.46		
Teacher nominations: Persistence	.18*	.05	.56		
Final model	$R^2 = .14$ $F(9, 201) = 3.62$***				

+ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

ness. Similar to our present results, overall Conscientiousness does not predict creativity (e.g., Batey et al., 2010; Furnham, Batey, Anand, & Manfield, 2008; Ivcevic et al., 2007; McCrae, 1987; Reiter-Palmon, Illies, & Kobe-Cross, 2009). However, specific facets of Conscientiousness are significantly related to creativity; achievement striving facet correlates positively with creative accomplishment and creative problem solving, while dependability facet correlates negatively with creativity (Reiter-Palmon et al., 2009). If grit facets can be described as components of Conscientiousness, they do not appear to be components that could be creativity-relevant.

These findings have implications for conceptualization of passion and persistence in predicting creativity. In prior research, grit predicted achievement-related outcomes, such as GPA and retention in the United States Military Academy (Duckworth et al., 2007), highest educational degrees obtained, and rankings in the National Spelling Bee (Duckworth & Quinn, 2009; Duckworth et al., 2011), as well as academic success after controlling for educational aspirations and prior achievement (Strayhorn, 2013). While the perseverance facet predicts academic achievement beyond Conscientiousness (meta-analysis: Credé et al., 2016), when other predictors are included in the regressions grit scales do not have unique predictive power for academic achievement (e.g., intelligence, motivation, test anxiety: Dumfart & Neubauer, 2016; emotion regulation: Ivcevic & Brackett, 2014). The question examined in the present paper concerns the utility of grit facets in predicting creativity outcomes, which differ in important ways from previously examined academic achievement and retention outcomes.

Achievement outcomes predicted by grit facets of passion/consistency of interests and perseverance pertain to well-structured domains with clear criteria for success (e.g., performance at the U.S. Military Academy) that require focused practice on a well-defined set of tasks (e.g., achievement in the National Spelling Bee; Duckworth et al., 2011). As such, grit research so far points to the importance of habitual hard work and persistence, and commitment to long-term goals.

Unlike achievement in well-structured settings, creativity is based on loosely structured tasks (Ivcevic & Nusbaum, 2017; Lubart, 2001). Creativity requires finding a worthwhile problem (original, but useful or appropriate), generating multiple ideas, evaluating and selecting most promising ideas, reframing the problem and goals, and executing ideas in a product or a performance. A scientist, for instance, has to identify an important area of research, select a theoretical approach, decide on assessment strategies, run pilot studies, and finally analyze and write up the study. At each decision point, a person is facing multiple options and often has to make decisions based on incomplete or ambiguous information (e.g., lack of previous research when starting a new area of inquiry). Such decision points involve weighing different options and often redefining goals and even abandoning what one has started in favor of a new approach or idea. Consequently, it might not be surprising that predictors of achievement in well-structured domains, especially consistency of interests and goals, do not predict creativity.

Theoretically, grit is defined as "perseverance and passion for long-term goals" (Duckworth et al., 2007; p. 1087). However, the passion-relevant facet of grit is operationally defined as consistency of interests. As such, passion/consistency of interests is akin to the narrower construct of commitment (e.g., "I often set a goal but later choose to pursue a different one"). This definition of passion does not include a strong emotional component (desire) for an activity and personal investment in an activity (as other conceptualizations of passion in the literature: Cardon et al., 2009; Fredricks et al., 2010; Vallerand et al., 2003). Our analyses offer the initial evidence that the grit facet of passion/consistency of interests does not capture passion as commonly used by relevant lay judges such as teachers—no significant correlation was observed between grit passion/consistency of interest facet and teacher nominations of passion. Based on its observed correlations with Big Five personality traits, it appears that the passion/consistency of interest facet involves adjustment and commitment to conventional or relatively narrow interests (e.g., negative correlations with Openness to Experience and positive with Conscientiousness and Neuroticism).

Creativity is associated with curiosity and wide interests, not consistency of interests (Barron & Harrington, 1981; Feist, 1998). B. F. Skinner famously encapsulated the nature of creativity in a piece of advice to creators to drop everything else when they run into something interesting (Skinner, 1982). Individuals described as having wide interests, but also not reluctant to commit to a course of action, at ages 21 and 43 were more creative in their occupations at age 52 (Helson et al., 1995). Moreover, creative individuals are open to change and report that their personality changed in college (Helson et al., 1995). Thus, the creative process has to balance the breadth of interests and changes in interests with commitment to one's goals. Staying the course in the face of boredom when others tend to change course (Duckworth et al., 2007) can be helpful to a student having to complete required coursework, some of which is bound not to fit the student's interests. However, creativity is fueled by intrinsic motivation—enjoyment and challenge in an activity (Amabile, 1996). Creative individuals are thus likely to seek new interests within a broader domain of work when intrinsic motivation is diminished.

The results of the present studies replicate and extend previous research that shows the crucial role of Openness to Experience in creativity (Feist, 1998; Ivcevic & Mayer, 2009; Kaufman, 2013; Kaufman et al., 2016; McCrae, 1987; Nusbaum & Silvia, 2011) and support research on passion and persistence in creativity. Creativity is not successfully predicted by the passion/consistency of interests facet of grit, conceptually related to the commitment component of passion (cf. Moeller, 2014). Rather, what predicts creativity is passion defined in terms of interests and lay conceptions that emphasize the emotional desire for an activity (Fredricks et al., 2010). Previous research shows that harmonious passion mediates the effects of autonomy in the workplace on individual creativity, measured by supervisor ratings (Liu et al., 2011). This passion also predicts deliberate practice, which in turn predicts creativity in performing arts students assessed by instructors and program directors (Vallerand et al., 2007).

The present set of studies have an important limitation. The samples in our studies were young—high school and college students—and thus not likely to have reached a level of mature professional creativity. Because of this, we can primarily make conclusions about everyday creativity or little-c creativity (Kaufman & Beghetto, 2009). We believe that creativity research should address all levels of creativity, from mini-c creativity that is inherent in personally meaningful insights, little-c creativity that is

evident in everyday nonexpert creative acts, to pro-c creativity of socially recognized professional creative achievements and Big-C creativity characteristic of eminent creativity that changes a domain of work. Thus, these studies take the first step in charting how to assess passion and persistence in relation to creativity, at least at the little-c creativity level.

The limitations of the present studies suggest two alternative hypotheses. First, it is possible that self-reported perseverance and passion/consistency of interests contribute to professional creativity. The demands of professional creativity require perseverance to bring to lifelong projects and labor through tedious, but necessary tasks without losing intrinsic motivation for the larger project. For instance, a scientist needs to maintain intrinsic motivation for the research topic and study question, but also make it through periods of slogging through boring but necessary tasks. Helson et al. (1995) found that persistence in the face of obstacles observed when women were in their 20s predicted their occupational creativity 30 years later. Similarly, Abuhassàn and Bates (2015) examined grit facets in relation to scholastic and professional achievements in adults past college age. While conscientiousness and verbal intelligence predicted scholastic achievement, perseverance facet of grit predicted professional achievements. It is important to note, however, that professional achievements included both domains that likely require creativity (e.g., artistic and scientific domains) and others that are less likely to be creative (e.g., military, sports).

The second hypothesis about the role of passion/consistency of interests and perseverance as defined in the study of grit concerns the domain-specific nature of creative achievement. Grit facets are described as trait-like—relatively consistent across time and situations and assessed accordingly in terms of one's agreement with statements that do not refer to a specific set of tasks or a domain of work (e.g., "I finish whatever I begin"; Duckworth et al., 2007). Most often, creative achievement is domain-specific (Ivcevic & Mayer, 2009; Silvia et al., 2009), and different types of creative achievement are predicted by somewhat different sets of traits (Ivcevic & Mayer, 2006). It is conceivable that a creative scientist is passionate, has consistent interests and perseveres on long-term goals when working on their research, but not when dealing with home improvement projects. Future research can thus measure passion/consistency of interests and perseverance in relation to a specific domain of work (e.g., considering a domain in which a person is most creative).

When do passion and persistence predict creativity? The results of our studies suggest that adolescents and young adults who are creative in their everyday lives are not necessarily described by self-reported passion defined as consistency of interests and perseverance on the way to long-term goals. The aspect of passion included in the definition of grit is focused only on the commitment and not the affect intensity and identity components of passion. A study of talented high school and college students showed the centrality of affect intensity and integration of the activity in one's identity for passionate adolescents (Fredricks et al., 2010). Research on passion assessed to include components of affect and identity show its value in predicting creativity (Vallerand et al., 2007), although the existing research did not examine incremental validity of passion above the Big Five personality traits. When passion and persistence in the face of obstacles were assessed through teacher reports, they could take into account the affect intensity component of passion, as well as social and developmental context of students (e.g., passion for art, but changing projects and goals in exploring media and techniques).

The presented studies suggest that creative individuals are perceived as passionate and persistent, but they might have different strategies for engaging with lower-level interests, either being consistent or variable in the interests they pursue—the correlation with consistency of interests aspect of passion is not significant. Being not fully consistent in one's goals might facilitate creativity—creative people might be able to give up when others would stay the course on a middle-of-the-road project and they may pursue new ideas when appropriate. Thus, creative individuals might be those who are truly able to follow Skinner's (1982) advice and at times drop everything else when they run into something interesting.

References

Abuhassàn, A., & Bates, T. C. (2015). Grit: Distinguishing effortful persistence from conscientiousness. *Journal of Individual Differences, 36,* 205–214. http://dx.doi.org/10.1027/1614-0001/a000175

Amabile, T. M. (1996). *Creativity in context*. Boulder, CO: Westview Press.

Balon, S., Lecoq, J., & Rimé, B. (2013). Passion and personality: Is passionate behavior a function of personality? *European Review of Applied Psychology/Revue Européenne de Psychologie Appliquée, 63,* 59–65. http://dx.doi.org/10.1016/j.erap.2012.06.001

Barron, F. X., & Harrington, D. M. (1981). Creativity, intelligence, and personality. *Annual Review of Psychology, 32,* 439–476. http://dx.doi.org/10.1146/annurev.ps.32.020181.002255

Batey, M., Chamorro-Premuzic, T., & Furnham, A. (2010). Individual differences in ideational behavior: Can the Big Five and psychometric intelligence predict creativity scores? *Creativity Research Journal, 22,* 90–97. http://dx.doi.org/10.1080/10400410903579627

Cardon, M. S., Sudek, R., & Mitteness, Ch. (2009). The impact of perceived entrepreneurial passion on angel investing. *Frontiers of Entrepreneurship Research, 29*(2), Article 1. Retrieved from http://digitalknowledge.babson.edu/fer/vol29/iss2/1

Carson, S. H., Peterson, J. B., & Higgins, D. M. (2005). Reliability, validity, and factor structure of the Creative Achievement Questionnaire. *Creativity Research Journal, 17,* 37–50. http://dx.doi.org/10.1207/s15326934crj1701_4

Credé, M., Tynan, M. C., & Harms, P. D. (2016). Much ado about grit: A meta-analytic synthesis of the grit literature. *Journal of Personality and Social Psychology*. Advance online publication. http://dx.doi.org/10.1037/pspp0000102

Csikszentmihalyi, M. (1988). Motivation and creativity: Toward a synthesis of structural and energistic approaches to cognition. *New Ideas in Psychology, 6,* 159–176. http://dx.doi.org/10.1016/0732-118X(88)90001-3

Csikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention*. New York, NY: Harper Collins.

Csikszentmihalyi, M. (1999). Implications of a systems perspective for the study of creativity. In R. Sternberg (Ed.), *Handbook of creativity* (pp. 313–335). New York, NY: Cambridge University Press.

Csikszentmihalyi, M., & Getzels, J. W. (1971). Discovery-oriented behavior and originality of creative products: A study with artists. *Journal of Personality and Social Psychology, 19,* 47–52. http://dx.doi.org/10.1037/h0031106

DeYoung, C. G. (2014). Openness/intellect: A dimension of personality reflecting cognitive exploration. In M. L. Cooper & R. J. Larsen (Eds.), *APA handbook of personality and social psychology: Personality pro-*

cesses and individual differences (Vol. 4, pp. 369–399). Washington, DC: American Psychological Press.

Duckworth, A. L., Kirby, T. A., Tsukayama, E., Berstein, H., & Ericsson, K. A. (2011). Deliberate practice spells success: Why grittier competitors triumphs at the National Spelling Bee. *Social Psychological and Personality Science, 2,* 174–181. http://dx.doi.org/10.1177/1948550610385872

Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology, 92,* 1087–1101. http://dx.doi.org/10.1037/0022-3514.92.6.1087

Duckworth, A. L., & Quinn, P. D. (2009). Development and validation of the Short Grit Scale (Grit-S). *Journal of Personality Assessment, 91,* 166–174. http://dx.doi.org/10.1080/00223890802634290

Dumfart, B., & Neubauer, A. C. (2016). Conscientiousness is the most powerful noncognitive predictor of school achievement in adolescents. *Journal of Individual Differences, 37,* 8–15. http://dx.doi.org/10.1027/1614-0001/a000182

Feist, G. J. (1998). A meta-analysis of personality in scientific and artistic creativity. *Personality and Social Psychology Review, 2,* 290–309. http://dx.doi.org/10.1207/s15327957pspr0204_5

Feist, G. J., & Barron, F. X. (2003). Predicting creativity from early to late adulthood: Intellect, potential, and personality. *Journal of Research in Personality, 37,* 62–88. http://dx.doi.org/10.1016/S0092-6566(02)00536-6

Fisher, C. M., & Amabile, T. (2009). Creativity, organization and improvisation. In T. Rickards, M. A. Runco, & S. Moger (Eds.), *The Routledge companion to creativity* (pp. 13–24). Oxford, UK: Routledge.

Fredricks, J. A., Alfeld, C., & Eccles, J. S. (2010). Developing and fostering passions in academic and nonacademic domains. *Gifted Child Quarterly, 54,* 18–30. http://dx.doi.org/10.1177/0016986209352683

Furnham, A., Batey, M., Anand, K., & Manfield, J. (2008). Personality, hypomania, intelligence and creativity. *Personality and Individual Differences, 44,* 1060–1069.

Furnham, A., Zhang, J., & Chamorro-Premuzic, T. (2006). The relationship between psychometric and self-estimated intelligence, creativity, personality and academic achievement. *Imagination, Cognition and Personality, 25,* 119–145. http://dx.doi.org/10.2190/530V-3M9U-7UQ8-FMBG

George, L. G., Helson, R., & John, O. P. (2011). The "CEO" of women's work lives: How Big Five Conscientiousness, Extraversion, and Openness predict 50 years of work experiences in a changing sociocultural context. *Journal of Personality and Social Psychology, 101,* 812–830. http://dx.doi.org/10.1037/a0024290

Goldberg, L. R. (1999). A broad-bandwidth, public-domain, personality inventory measuring the lower-level facets of several Five-Factor models. In I. Mervielde, I. J. Deary, F. De Fruyt, & F. Ostendorf (Eds.), *Personality psychology in Europe* (Vol. 7, pp. 7–28). Tilburg, the Netherlands: Tilburg University Press.

Helson, R., Roberts, B., & Agronick, G. (1995). Enduringness and change in creative personality and the prediction of occupational creativity. *Journal of Personality and Social Psychology, 69,* 1173–1183. http://dx.doi.org/10.1037/0022-3514.69.6.1173

Hong, E., Peng, Y., & O'Neil, H. F., Jr. (2014). Activities and accomplishments in various domains: Relationships with creative personality and creative motivation in adolescence. *Roeper Review, 36,* 92–103. http://dx.doi.org/10.1080/02783193.2014.884199

Hough, L. M., & Ones, D. S. (2001). The structure, measurement, validity, and use of personality variables in industrial, work, and organizational psychology. In N. Anderson, D. S. Ones, H. K. Sinangil, & C. Viswesvaran (Eds.), *Handbook of industrial, work, and organizational psychology* (Vol. 1, pp. 233–277). London, UK: Sage. http://dx.doi.org/10.4135/9781848608320.n13

Ivcevic, Z., & Brackett, M. (2014). Predicting school success: Comparing conscientiousness, grit and emotion regulation ability. *Journal of Research in Personality, 52,* 29–36. http://dx.doi.org/10.1016/j.jrp.2014.06.005

Ivcevic, Z., Brackett, M. A., & Mayer, J. D. (2007). Emotional intelligence and emotional creativity. *Journal of Personality, 75,* 199–236. http://dx.doi.org/10.1111/j.1467-6494.2007.00437.x

Ivcevic, Z., & Mayer, J. D. (2006). Creative types and personality. *Imagination, Cognition and Personality, 26,* 65–86. http://dx.doi.org/10.2190/0615-6262-G582-853U

Ivcevic, Z., & Mayer, J. D. (2009). Mapping dimensions of creativity in the life-space. *Creativity Research Journal, 21,* 152–165. http://dx.doi.org/10.1080/10400410902855259

Ivcevic, Z., & Nusbaum, E. C. (2017). From having an idea to doing something with it: Self-regulation for creativity. In M. Karwowski & J. C. Kaufman (Eds.), *The creative self: Effects of beliefs, self-efficacy, mindset, and identity* (pp. 343–365). Cambridge, MA: Academic Press. http://dx.doi.org/10.1016/B978-0-12-809790-8.00020-0

John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative Big-Five trait taxonomy: History, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (pp. 114–158). New York, NY: Guilford Press.

Kaufman, J. C., & Beghetto, R. A. (2009). Beyond big and little: The Four C Model of Creativity. *Review of General Psychology, 13,* 1–12. http://dx.doi.org/10.1037/a0013688

Kaufman, S. B. (2013). Opening up openness to experience: A four-factor model and relations to creative achievement in the arts and sciences. *The Journal of Creative Behavior, 47,* 233–255. http://dx.doi.org/10.1002/jocb.33

Kaufman, S. B., Quilty, L. C., Grazioplene, R. G., Hirsh, J. B., Gray, J. R., Peterson, J. B., & DeYoung, C. G. (2016). Openness to experience and intellect differentially predict creative achievement in the arts and sciences. *Journal of Personality, 84,* 248–258. http://dx.doi.org/10.1111/jopy.12156

Liu, D., Chen, X. P., & Yao, X. (2011). From autonomy to creativity: A multilevel investigation of the mediating role of harmonious passion. *Journal of Applied Psychology, 96,* 294–309. http://dx.doi.org/10.1037/a0021294

Lubart, T. I. (2001). Models of the creative process: Past, present and future. *Creativity Research Journal, 13,* 295–308. http://dx.doi.org/10.1207/S15326934CRJ1334_07

MacCann, C., Duckworth, A. L., & Roberts, R. D. (2009). Empirical identification of the major facets of Conscientiousness. *Learning and Individual Differences, 19,* 451–458. http://dx.doi.org/10.1016/j.lindif.2009.03.007

MacKinnon, D. W. (1975). IPAR's contribution to the conceptualization and study of creativity. In I. A. Taylor & W. Getzels (Eds.), *Perspectives in creativity* (pp. 60–89). Chicago, IL: Aldine.

McCrae, R. R. (1987). Creativity, divergent thinking, and openness to experience. *Journal of Personality and Social Psychology, 52,* 1258–1265. http://dx.doi.org/10.1037/0022-3514.52.6.1258

McCrae, R. R., & Costa, P. T., Jr. (2010). *NEO Inventories: Professional manual*. Lutz, FL: Psychological Assessment Resources.

Moeller. (2014). *Passion as concept of the psychology of motivation. Conceptualization, assessment, inter-individual variability and long-term stability (Doctoral dissertation)*. Retrieved from http://www.db-thueringen.de/servlets/DerivateServlet/Derivate-29036/DissJuliaMoeller.pdf

Moeller, J., Eccles, J. S., Salmela-Aro, K., Dietrich, J., Schneider, B., & Grassinger, R. (2015). Passion and motivation. In J. D. Wright (Ed.), *International encyclopedia of the social & behavioral sciences* (2nd ed., Vol. 17, pp. 570–576). Oxford, UK: Elsevier. http://dx.doi.org/10.1016/B978-0-08-097086-8.26101-1

Nusbaum, E. C., & Silvia, P. J. (2011). Are intelligence and creativity really so different? Fluid intelligence, executive processes, and strategy use in divergent thinking. *Intelligence, 39,* 36–45. http://dx.doi.org/10.1016/j.intell.2010.11.002

Reiter-Palmon, R., Illies, J. J., & Kobe-Cross, L. M. (2009). Conscientiousness is not always a good predictor of performance: The case of creativity. *The International Journal of Creativity & Problem Solving, 19,* 27–46.

Roberts, B. W., Lejuez, C., Krueger, R. F., Richards, J. M., & Hill, P. L. (2014). What is conscientiousness and how can it be assessed? *Developmental Psychology, 50,* 1315–1330. http://dx.doi.org/10.1037/a0031109

Schönbrodt, F. D., & Perugini, M. (2013). At what sample size do correlations stabilize? *Journal of Research in Personality, 47,* 609–612. http://dx.doi.org/10.1016/j.jrp.2013.05.009

Silvia, P. J., Kaufman, J. C., & Pretz, J. E. (2009). Is creativity domain-specific? Latent class models of creative accomplishments and creative self-descriptions. *Psychology of Aesthetics, Creativity, and the Arts, 3,* 139–148. http://dx.doi.org/10.1037/a0014940

Silvia, P. J., Martin, C., & Nusbaum, E. C. (2009). A snapshot of creativity: Evaluating a quick and simple method for assessing divergent thinking. *Thinking Skills and Creativity, 4,* 79–85. http://dx.doi.org/10.1016/j.tsc.2009.06.005

Silvia, P. J., Nusbaum, E. C., Eddington, K. M., Beaty, R. E., & Kwapil, T. R. (2014). Effort deficits and depression: The influence of anhedonic depressive symptoms on cardiac autonomic activity during a mental challenge. *Motivation and Emotion, 38,* 779–789. http://dx.doi.org/10.1007/s11031-014-9443-0

Silvia, P. J., Wigert, B., Reiter-Palmon, R., & Kaufman, J. C. (2012). Assessing creativity with self-report scales: A review and empirical evaluation. *Psychology of Aesthetics, Creativity, and the Arts, 6,* 19–34. http://dx.doi.org/10.1037/a0024071

Simonton, D. K. (2014). Creative performance, expertise acquisition, individual differences and developmental antecedents: An integrative research agenda. *Intelligence, 45,* 66–73. http://dx.doi.org/10.1016/j.intell.2013.04.007

Skinner, B. F. (1982). A case study in scientific method. In R. Epstein (Ed.), *Skinner for the classroom: Selected papers* (pp. 73–97). Champaign, IL: Research Press.

Soldz, S., & Vaillant, G. E. (1999). The Big Five personality traits and the life course: A 45-year longitudinal study. *Journal of Research in Personality, 33,* 208–232. http://dx.doi.org/10.1006/jrpe.1999.2243

Soto, C. J., John, O. P., Gosling, S. D., & Potter, J. (2008). The developmental psychometrics of Big Five self-reports: Acquiescence, factor structure, coherence, and differentiation from ages 10 to 20. *Journal of Personality and Social Psychology, 94,* 718–737. http://dx.doi.org/10.1037/0022-3514.94.4.718

Strayhorn, T. L. (2013). What role does grit play in the academic success of black male collegians at predominantly white institutions? *Journal of African American Studies, 18,* 1–10. http://dx.doi.org/10.1007/s12111-012-9243-0

Thaler, L. K., & Koval, R. (2014). *Grit to great: How perseverance, passion, and pluck take you from ordinary to extraordinary*. New York, NY: Crown Business.

Tough, P. (2013). *How children succeed: Grit, curiosity and the hidden power of character*. Boston, MA: Houghton Mifflin Harcourt.

Vallerand, R. J., Blanchard, C., Mageau, G. A., Koestner, R., Ratelle, C., Léonard, M., . . . Marsolais, J. (2003). Les passions de l'ame: On obsessive and harmonious passion. *Journal of Personality and Social Psychology, 85,* 756–767. http://dx.doi.org/10.1037/0022-3514.85.4.756

Vallerand, R. J., Salvy, S. J., Mageau, G. A., Elliot, A. J., Denis, P. L., Grouzet, F. M., & Blanchard, C. (2007). On the role of passion in performance. *Journal of Personality, 75,* 505–534. http://dx.doi.org/10.1111/j.1467-6494.2007.00447.x

Wang, C. C., & Yang, H. W. (2007). Passion and dependency in online shopping activities. *CyberPsychology & Behavior, 10,* 296–298. http://dx.doi.org/10.1089/cpb.2006.9954

Wilson, R. N. (1990). *The American poet: A role investigation*. New York, NY: Taylor and Francis.

Wolfradt, U., & Pretz, J. E. (2001). Individual differences in creativity: Personality, story writing, and hobbies. *European Journal of Personality, 15,* 297–310. http://dx.doi.org/10.1002/per.409

Received August 11, 2015
Revision received October 28, 2016
Accepted January 16, 2017 ■