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The Creative Life: A Daily Diary Study of Creativity, Affect, and Well-Being in Creative Individuals

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ABSTRACT

Participating in creative activities is associated with increased positive emotions and enhanced subjective well-being in general populations. However, these relationships are less understood in the daily lives of creative individuals who regularly engage in both professional creative behaviors and everyday creative experiences. Therefore, in this study, we recruited a sample of creative adults (*N*= 290; creative professionals, students studying creative disciplines, and hobbyists engaged in 20 + hours of creative activities per week) who provided daily responses on their creative behaviors, emotions, and flourishing over two weeks. Creative adults were found to be the most creative on days with highly activated positive emotions and increased well-being and were significantly less creative on days with negative emotions. Individuals with higher levels of openness have stronger ties between their emotions and overall daily creativity and everyday creativity than those with lower levels of openness. Increased openness does not appear to have the same moderating effects on professional creativity and emotion relationships. Finally, high conscientiousness and low neuroticism were also found to predict increased levels of creative activity. Overall, these findings provide novel insights into the links between the specific nature of daily creative activities and the personality and subjective well-being of creative individuals.

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Introduction

Creative individuals play a critical role in society by driving technological innovation, advancing scientific theories, and evolving culture. Therefore, it is essential to study creative individuals, especially how they engage most deeply in creative activities. In the words of Mihaly Csikszentmihalyi, "if I had to express in one word what makes [creative people's] personalities different from others, it would be *complexity* . . . " (1996, p. 57). This study seeks to understand aspects of this complexity by examining creative individuals' creative behavior, affect, and well-being in their daily lives and how it relates to their personality.

Creativity is a multifaceted construct with as many varying definitions as there are potential creative activities. The Four-C model provides a framework for distinguishing different forms of creativity: mini-creativity (personally meaningful insights), little-c (hobby and everyday creativity), pro-c (professional creativity), and big-C (genius-level creativity; Kaufman & Beghetto, 2009). While this framework is helpful toward differentiating various forms of creativity, there may also be insights to be gained from taking a broad measure of one's overall subjective daily creativity (we will refer to as daily-c) to understand if all daily creativity can be as discretely measured as the Four-C model suggests. Additionally measuring one's overall daily creativity is a common approach in studies considering how creativity relates to other subjective measures such as daily well-being or emotions (Conner, DeYoung, & Silvia, 2018; Conner & Silvia, 2015; Han, Feng, Zhang, Peng, & Zhang, 2019).

Participating in creative activities is often associated with positive emotions and enhanced feelings of well-being (Acar, Tadik, Myers, Sman, & Uysal, 2020; Fancourt & Finn, 2019; Papagiannaki & Shinebourne, 2016; Silvia et al., 2014). However, relative to the general population, creative professionals do not necessarily show superior well-being, despite having high levels of active creative engagement (Akinola & Mendes, 2008; Fujiwara, Lawton, & Dolan, 2015; Kyaga, 2014). Further, society holds a long-standing stereotype of the tortured artist, and research reveals associations between creative populations and a vulnerability to certain forms of psychopathology (Baas, Nijstad, Boot, & De Dreu, 2016; Greenwood, 2020; Kaufman, 2001; Simonton, 2014). There are many reasons for a well-being deficit in this population – from genetic predispositions for mood

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disorders found in creative professionals (Kyaga et al., 2011) to lower levels of trait stability associated with higher creative self-beliefs, creative achievement, and everyday creative behaviors (Karwowski & Lebuda, 2016; Silvia et al., 2009). However, little is known about the relationships between creative individuals' creative activity and their emotional states and daily well-being.

There is a growing interest in studying creativity beyond the laboratory and in daily life. Two common methods for doing so are using experience sampling methods (EMA), which typically utilize frequent random sampling of participant's subjective experiences throughout their day, and daily diaries, which typically record participant's responses once a day on their subjective experiences; both approaches collect responses for a period of days to weeks (Silvia & Cotter, 2021). In addition, ecological methods have provided new insights into the state fluctuations surrounding creative behavior and demonstrated how various states and traits could predict and moderate changes in creative behavior (Han et al., 2019; Karwowski, Lebuda, Szumski, & Firkowska-Mankiewicz, 2017; Weinberger, Wach, Stephan, & Wegge, 2018). Particular focus has been given to the interplay between affective states and creativity as it relates to forms of everyday creativity in non-specialized populations (Cotter & Silvia, 2019; Karwowski et al., 2021), and toward understanding how different emotions and workplace factors affect the creative behaviors of employees (Binnewies & Wörnlein, 2011; Zhang, Wang, & Zhang, 2020). For example, in a daily diary study with young adults, Conner and Silvia (2015) found that creative behavior was linked to same-day positive affective states and that most emotion–creativity relationships were moderated by personality traits. Similarly, Chi and colleagues (2020) found positive relationships between activating positive moods and workplace creativity.

Despite these advances toward better understanding the nuances of creativity's relationship to mental well-being, ecological perspectives on creative behavior in creative individuals remain surprisingly underexamined. To our knowledge, no previous studies have examined a diverse sample of creative individuals and how they experience creativity in their daily lives – including professional creative behaviors and everyday creative experiences.

The current study

Therefore, the present daily diary study examined the ecology of between- and within-individual predictors of creativity in creative individuals (creative professionals, creative students, and hobbyists). First, with a focus on how affective states and daily well-being relate to overall subjective daily creativity (daily-c), professional creative activities (pro-c), and everyday types of creative engagement (little-c). Second, on how personality traits affect and moderate these relationships.

The following sections briefly review the role of emotions, well-being, and personality related to everyday creativity and professional creativity, focusing on studies with a similar methodology (i.e., ecological assessment methods). We also made specific predictions in the individual sections.

Affect and creativity

Affect and creativity research has typically been interested in how varying emotional states enhance or inhibit creative thinking and behavior. Affect theories propose that emotional states provide information about one's environment, which influences how information is processed, subsequently influencing judgments and behavior (Martin, Ward, Achee, & Wyer, 1993). These affective states may be beneficial at various phases of the creative process. For example, positive emotions may signal a lack of threat in one's environment that encourages less focused attention and increases exploratory behaviors (Ivcevic & Hoffmann, 2017). On the other hand, negative emotions instigate problem-finding and problem-solving, which may help one persevere through the creative process until a solution is reached (Amabile, Barsade, Mueller, & Staw, 2005).

Research has also found that the level of activation (in addition to valence) can be important for emotions enhancing creativity, particularly emotions with a higher rather than lower level of activation (Baas, De Dreu, & Nijstad, 2008; Davis, 2009; De Dreu, Baas, & Nijstad, 2008; Nijstad, De Dreu, Rietzschel, & Baas, 2010). Daily life studies show participants report increased everyday creativity with more positive and active emotions (Conner & Silvia, 2015; Karwowski et al., 2017). Additionally, feelings of happiness and excitement are associated with increased creativity in the workplace (Chi et al., 2020; Han et al., 2019; Parke, Seo, & Sherf, 2015; Volmer, Richter, & Syrek, 2019) and in everyday life (Conner & Silvia, 2015; Karwowski et al., 2017, 2021). For example, in a sample of filmmakers, a greater advancement in their creative process was observed when participants enjoyed their work and had lower levels of work-related anxiety (Benedek, Jauk, Kerschenbauer, Anderwald, & Grond, 2017). In another daily diary study of interior architects and

designers, participants reported more work creativity on days when they felt active and enthusiastic in the morning (Binnewies & Wörnlein, 2011).

While positive affect has a beneficial impact on creativity, the effect of negative affect on creativity is more complex. In the workplace, even when in a highly activated state, negative affect is commonly an antagonist of creativity (Chi et al., 2020; Orth & Volmer, 2017). However, some have found that activating negative affect encourages engagement in creative processes at work (To et al., 2012). Studies of everyday creativity also have found conflicting relationships between negative affect and creativity. For example, some studies find negative affect to be a significant antagonist of creativity (Conner et al., 2018; Conner & Silvia, 2015; Karwowski et al., 2021), while others find non-significant relationships between negative affect and creativity (Karwowski et al., 2017, Study 1; Silvia et al., 2014), or that particular negative emotions like fear may have a weak negative relationship with creativity, while anger may have a small positive relationship with creativity (Karwowski et al., 2017, Study 2).

Finally, it is of note that while there are few studies directly examining the differences between affective relationships in both professional creative behaviors and everyday creative activities within one study, there have been small differences found in the strength of affect's relationships to creativity in these differing contexts, particularly around positive affect's relationships. Karwowski and colleagues found "pro-c-like art or science behaviors" to have weaker relationships than everyday creative behaviors with positive emotions (2017). Alternatively, to compare a few studies, correlations between positive affect and everyday creativity (.33-.35; Conner & Silvia, 2015; Karwowski et al., 2021) are higher than the correlations between positive affect and creativity in the workplace (.18-.20; Chi et al., 2020; Sun, Wang, Zhu, & Song, 2020; Volmer et al., 2019). Relationships between negative affect and creativity do not have distinct patterns between settings. Based on these above studies, we have generated three families of predictions. We consider these (1a, 1b, and 1c) as distinct families of statistical tests, each addressing a broad hypothesis (e.g., positive affect states are related to creativity).

Hypothesis 1a: Positive affective states, particularly highly activated states, will be positively related to daily-c, little-c, and pro-c creativity.

Hypothesis 1b: Negative affective states will be negatively related to daily-c, little-c, and pro-c creativity, though we anticipate these to be relatively modest relationships.

Hypothesis 1c: The relationships between affective states and creativity will be stronger for daily-c and little-c, and weaker for pro-c.

Well-being and creativity

Creativity contributes to well-being not only through its relationship with positive emotions, but it can enhance one's sense of flourishing or eudemonic well-being, an additional component of overall psychological welfare concerned with having meaning and purpose in one's life, feeling competent, and having positive relationships (Diener et al., 2010). While much research focuses on well-being outcomes after a creative engagement, both theoretical and empirical evidence suggests creativity can be both a cause and a consequence of well-being in everyday life and the workplace (Acar et al., 2020; Maslow, 1943; Richards, 2010; Tan, Chuah, Lee, & Tan, 2021). Daily life research investigating these relationships is sparse; however, one study found increases in momentary reciprocal relationships and well-being benefits the day after participating in a creative activity (Conner et al., 2018). Such relationships may be more robust in highly creative individuals as their role as creators is often central to how they perceive themselves (Karwowski & Lebuda, 2017). Further, for those with a strong sense of creative identity, engaging in creative activities can be an expression of self and a way of reinforcing one's identity and well-being, thus confirming one's sense of purpose in life (Dollinger, 2017; Helson & Pals, 2000; Jaussi, Randel, & Dionne, 2007). Therefore, we have the following prediction:

Hypothesis 2: Daily flourishing will be positively related to daily-c, little-c, and pro-c creativity.

Personality and creativity

Researchers often examine personality traits to predict outcomes beyond transient shifts in emotional states. Much research documents the relationship between openness to experience and creativity. Openness is linked to increased creative achievement (Feist, 2017; Feist & Barron, 2003; Kaufman et al., 2016), enhanced divergent thinking (Silvia, Martin, & Nusbaum, 2009), and higher creative self-beliefs (Karwowski & Lebuda, 2016). This link is also corroborated in daily life studies: those higher in openness report a higher quantity and

intensity of daily creativity (Carson, Peterson, & Higgins, 2005; Conner & Silvia, 2015). For example, one study found that those higher in openness had a 40% probability of doing something creative compared to a 12% probability for people lower in openness (Karwowski et al., 2017; Silvia et al., 2014). Openness is also found to moderate the relationship between emotions and creativity; a weekly diary study of creativity within the workplace found that openness interacted with high-activated positive moods leading to greater innovative work behavior (Madrid, Patterson, Birdi, Leiva, & Kausel, 2014).

Additionally, a two-week daily diary study of creativity in everyday life observed that openness significantly moderated most within-person creativity–affect relationships (Conner & Silvia, 2015). Those higher in openness had a more substantial impact on positive emotions, increasing their creative activity, and their creativity was lowered to a greater extent on days with more negative emotions (Conner & Silvia, 2015). However, these findings require further examination as they were not replicated in a similar study (Karwowski et al., 2017). Furthermore, the moderation effects may affect shorter timescales only, and evidence suggests they do not translate into longer-term carry-over effects between days (Conner et al., 2018). Based on these studies, we have the following sets of predictions:

Hypothesis 3a: Individuals higher in openness will report more daily-c, little-c, and pro-c creativity than individuals lower in openness.

Hypothesis 3b: Openness will moderate the positive relationship between positive affect and creativity (daily-c, little-c, pro-c) increase creativity even further as positive affect increases. On the other hand, it will also moderate the negative relationship between negative affect and creativity (daily-c, little-c, pro-c), thereby decreasing creativity even further as negative affect increases.

Beyond openness, the four remaining Big five personality traits show inconsistent and nuanced relationships with creativity. Conscientiousness is not typically thought to be related to creative thinking or performance. However, as a trait characterized by a high level of achievement motivation and enhanced self-control, it may aid in goal orientation, industriousness, competency to strive toward creative achievements, perseverance through creative problem solving, and help one adhere to regimented daily creative practice (Hornberg & Reiter-Palmon, 2017; Reiter-Palmon et al., 2009; Taylor, McKay, & Kaufman, 2017). However, this relationship is not entirely straightforward, with conflicting findings at the sub-trait level (Feist, 1998; Karwowski et al., 2017; Kaufman et al., 2016) and differing relationships dependent on the domain of creativity. Daily life studies find that those higher in conscientiousness report more daily creativity (Karwowski et al., 2017; Silvia et al., 2014). Conscientiousness also appears to moderate the affect and creativity relationship in everyday creativity and the workplace. A daily diary study found that people higher in conscientiousness report more everyday creativity on days with positive emotions and less on days characterized by feeling sad or unhappy than those lower in conscientiousness (Conner & Silvia, 2015). In the workplace, this trait appeared to be a protective factor against negative emotions reducing task performance; negative emotions impaired task performance more in those lower on conscientiousness (Chi, Chang, & Huang, 2015). Therefore, regarding conscientiousness, we have the following sets of predictions:

Hypothesis 4a: Individuals higher in conscientiousness will report more daily-c, little-c, and pro-c creativity than individuals lower in conscientiousness.

Hypothesis 4b: Conscientiousness will moderate the positive relationship between positive affect and creativity (daily-c, little-c, pro-c) increase creativity even more as positive affect increases. It will also moderate the negative relationship between negative affect and creativity (daily-c, little-c, pro-c), thereby reducing the decrease in creativity related to negative affect.

Extraversion – a personality trait characterized by positive emotionality, gregariousness, and assertiveness – has an unreliable and conflicting relationship within creativity as the relationship appears to be dependent on the creativity measurement, with differing relationships observed across extraversion's facets (Batey, Chamorro-Premuzic, & Furnham, 2009; Furnham, Batey, Anand, & Manfield, 2008; Silvia et al., 2009). For example, positive relationships are found specifically, for the extraversion facets of confidence and dominance, with entrepreneurial creativity (Lee & Tsang, 2001; Marcati, Guido, & Peluso, 2008; Sun et al., 2020); creative achievement (Carson et al., 2005; Feist, 1998; Ivcevic & Hoffmann, 2017); creative self-beliefs (Karwowski & Lebuda, 2017); and science-related creative activity (Karwowski et al., 2017). On the other hand, positive associations are found specifically for the extraversion facets of enthusiasm and sociality with everyday creativity (Conner & Silvia, 2015; Ivcevic, 2007); performing arts (Silvia et al.,

2009), plus self-expressive and interpersonal creativity (Karwowski et al., 2017).

Agreeableness, characterized by cooperative, friendly social relationships and a caring and warm emotional disposition, also has conflicting relationships with creativity. It is typically thought to be either unrelated or negatively related to creativity (Benedek et al., 2017; Feist, 1998), especially within artist populations. However, higher agreeableness has been associated with having more creative hobbies in studies of creativity in everyday life (Ivcevic & Mayer, 2009), and a recent EMA study found its sub-facet politeness (rather than compassion) predicted increased time devoted to daily creative activities (Karwowski et al., 2017).

Lastly, neuroticism is higher in some studies of artistic populations (Feist, 1998; Haller & Courvoisier, 2010; Sheldon, 1995). However, the trait's relationship with creativity is primarily negative, as evidenced across divergent thinking measures, creative achievement, self-assessed creativity, and artistic and everyday creative behavior (Carson et al., 2005; Ivcevic, 2007; Silvia, Kaufman, & Pretz, 2009). Neuroticism is characterized by negative emotionality and difficulties in self-regulation. Some researchers have suggested a theory of trait-consistent affect moderation for those high in neuroticism in which unpleasant but trait-consistent negative states such as feeling worried may benefit creative thinking (Robinson & Tamir, 2005; Tamir, 2005). Evidence is sparse to support this in daily life research, although one study found an increase in creative behavior for those higher in neuroticism when they felt sad or unhappy (Karwowski et al., 2017). More typically, this pattern is not observed in most ecological studies that find those higher in neuroticism less likely to engage in everyday creative activities, especially when they feel anxious (Conner & Silvia, 2015; Ivcevic, 2007). Thus, our final hypothesis follows:

Hypothesis 5: Individuals higher in extraversion and agreeableness and lower in neuroticism will report less daily-c, little-c, and pro-c creativity than individuals lower in extraversion and agreeableness and higher in neuroticism.

Materials & methods

Participants

Our final sample consisted of 290 creative adults. An additional 139 participants were excluded from this sample and all subsequent analyses as they failed to complete seven out of thirteen diary records – a common minimum inclusion criterion for daily life research (Conner & Silvia, 2015). The participants were either creative professionals (33.4%), hobbyists self-reporting participating in at least twenty hours of creative activities in a typical week (18.6%), students in creative disciplines (10.3%), or a combination of professional/hobbyist (21.0%), student/hobbyist (10.7%), professional/student (4.1%), professional/hobbyist/student (1.7%). Participants' ages ranged from 18 to 70 years ($M = 31.85$, $SD = 1.98$) with 174 women, 92 men, and 24 undisclosed. Participants came from 22 countries with the following ethnicity breakdown: White (51.20%), Hispanic/Latinx (21.30%), Asian (9.97%), Black (7.56%), Mixed or Other Ethnicity (9.97%). Participants spent an average of 35.6 hours (SD = 34.88) engaged in their chosen domains of creativity across the length of the study

(see Table A1 for creative background demographics).

All participants were recruited online, most (88%) through recruitment advertisements on social media (i.e., Instagram, Facebook, Twitter, Reddit), creative platforms, universities, and listservs. A small raffle incentive was offered for participation (four £50 Amazon gift cards). In addition, 12% were recruited via Prolific (www.prolific.co, 2021) and paid a small cash incentive for their participation.

Procedure

Participants were digitally briefed, gave informed consent, completed measures of demographic characteristics, creative background, personality, and additional individual difference measures. Participants provided an e-mail address to receive links for the daily diary portion of the study and could opt-in to SMS reminders.

The daily diary collection period occurred over 13 days. A link for each daily survey was sent via e-mail at 5:00 pm, and participants who opted in for SMS were sent reminders at 8:00pm. Surveys were accessible between 5:00p.m. and 11:59pm in each participant's local time zones, and the median completion time was 3.7 min. Participants who completed at least seven daily surveys were entered into a raffle for one of four £50 Amazon gift cards. Participants recruited via Prolific were paid a £10 completion bonus and were not entered into the raffle. After completing the daily diaries, participants were digitally debriefed. The study protocol was approved by the Local Ethics Committee of the Department of Psychology at [Goldsmiths, University of London].

Between-person measures

Personality

The initial survey included the Short 15-item Big Five Inventory (BFI-S; Lang et al., 2011) to assess the big five personality traits. Participants rated each statement on a 5-point Likert scale (1 = *strongly disagree*, to 5 = *strongly agree*). Responses were averaged across each 3-item subscale. The reliability coefficients, as estimated by McDonald's omega, ω (Revelle & Condon, 2019), for the five traits (extraversion – .81; openness – .56; conscientiousness – .49; agreeableness – .56; neuroticism – .77) fell within the expected range for 3-item scales in samples scoring high on openness (Hughes et al., 2013).

Within-person measures

Creativity

Each participant's daily creativity was measured overall (daily-c) using a single item after Conner and Silvia (2015), "*Overall, how creative were you today?*" followed by a brief definition of creativity with examples. This question was adapted to measure pro-c creativity, followed by little-c daily creativity. The pro-c item asked, "*How creative were you for work today?*" and provided a brief definition of pro-c creativity and examples of pro-c creative activities. The little-c item asked, "*Outside of work, how creative were you today? This includes any non-work/hobby/extracurricular creative activities.*" and provided a brief definition of little-c creativity and examples of little-c creative activities. Participants responded to each question on a 5-point Likert scale (0 = *none*, 1 = *a little*, 2 = *a moderate amount*, 3 = *a lot*, 4 = *a great deal*). Participants who indicated being at least "a little" creative for the daily-c item were shown the pro-c and little-c items. Participants who reported no overall (daily-c) creativity were assigned scores of 0 for pro-c and little-c creativity.

Affect

Daily positive (PA) and negative (NA) affect was measured with an 18-item scale based on the circumplex model of affect (Barrett & Russell, 1999) previously adapted for daily use (Conner & Silvia, 2015). The scale includes nine items covering three levels of activation for PA and another nine items for NA. Positive affect: *high activation* (PA High): energetic, excited, enthusiastic; *medium activation* (PA Med): cheerful, happy, pleasant; *low activation* (PA Low): relaxed, content, calm. Negative affect *high activation* (NA High): irritable, angry, hostile; *medium activation* (NA Med): anxious, tense, nervous; *low activation* (NA Low): unhappy, sad, dejected. Participants rated the degree they felt each emotion on a 5-point Likert scale (1 = not at all, to 5 = extremely). PA and NA responses were averaged across the 9-items and 3-item subscales of PA (ω_{within} = .91; $\omega_{between}$ = .98), PA High (ω_{within} = .83; $\omega_{between}$ = .97), PA Med (ω_{within} = .85; $\omega_{between}$ = .97), PA Low (ω_{within} = .78; $\omega_{between}$ = .95), and NA (ω_{within} = .87; $\omega_{between}$ = .97), NA High (ω_{within} = .79; $\omega_{between}$ = .95), NA Med (ω_{within} = .78; $\omega_{between}$ = .97), NA Low (ω_{within} = .83; $\omega_{between}$ = .96). McDonald's omega reliabilities for each daily domain scale were calculated using a multilevel approach as suggested by (Geldhof, Preacher, & Zyphur, 2014).

Eudemonic well-being

Socio-psychological well-being was measured using the eight-item Flourishing Scale (Diener et al., 2010), previously adapted for daily use (Conner & Silvia, 2015). The Flourishing scale assesses social-psychological prosperity, such as one's feeling of meaning in life, competence, social connectedness, and optimism about one's future. Sample items include "*Today, I led a purposeful and meaningful life*" and "*Today, I was engaged and interested in my daily activities.*" Participants responded to how much they felt each item on a 7-point Likert scale (1 = disagree, to 7 = strongly agree). Responses were averaged each day for a single measure of daily flourishing (ω_{within} = .89; $\omega_{between}$ = .97).

Data analysis

As diary data is nested in multiple levels, day-level observations within people, analyses are possible for individual differences between-subjects, within-subject differences, and the interplay of these differences over time (Silvia & Cotter, 2021).

The daily measures for PA, NA, and flourishing were aggregated into a single mean for each participant, and this was correlated with similarly aggregated means for each of the three creativity measures (daily-c, pro-c, little-c). These measures were also each correlated with participant personality scores. Intraclass correlation coefficients (ICCs) indicated a large portion of within-person variability for both creativity and affect variables, indicating a multilevel approach was appropriate (Hox et al., 2010; Kreft & de Leeuw, 1998). Multilevel models were conducted for within-person differences using the *lme4* package in *R* (Bates et al., 2015; RStudio Team, 2020).

Separate models ran with each individual flourishing/affect state as a level 1 predictor of the level 1 outcome variables (daily-c, pro-c, or little-c) to generate the within-person slopes. Each day-level predictor was person-mean centered around each participant's mean, so

the model indicated changes in each person's emotions from their average across days (Kreft & de Leeuw, 1998). In all models, testing controlled for weekend differences in creativity and emotion (Czerwonka, 2019) and participant's creative background. The "weekend" level 1 predictor was entered as a dummy-coded variable (0 for Monday–Friday, 1 for Saturday or Sunday). In addition, dummy-coded variables for participant backgrounds indicating professional creatives (0 for nonprofessional, 1 for professional), creative students (0 for non-student, 1 for student), and/or hobbyists (0 for non-hobbyist, 1 for hobbyist) were tested separately as level 2 predictors to control for any differences in average creative activity. In cases where effects were not statistically significant, control variables were excluded for more parsimonious models.

Next, whether personality contributed to within-person creativity fluctuations was tested by adding each personality measure as an individual level 2 predictor to the multilevel models maintaining the previously significant control level 2 predictors. Between-person predictors were grand-mean centered. Using the "build-up" strategy (Raudenbush, 2001), multilevel models were constructed for the three dependent variables (daily-c, pro-c, little-c) with separate models for each affect and flourishing predictor plus the significant personality trait predictors and control variables.[1] Interaction terms were added for openness and conscientiousness to assess if they moderated within-person relationships.

Results

Descriptive statistics

Participants completed, on average, 11 of the 13 possible diaries (85% response rate, M = 11.07, SD = 1.86, *range* = 7–13), yielding 3211 surveys in total. Table 1 shows the descriptive statistics for daily and personality variables. Participants reported between "a little" and "a moderate amount" of daily-c creativity (M = 1.46), with slightly lower averages for pro-c (M = 1.11) and little-c (M = 1.03). All participants reported at least a small amount of daily-c during the study (*min* = .083), although some participants reported either no pro-c or no little-c (*min* = 0). The maximum levels of creativity in the sample were similar across categories (daily-c *max* = 3.46, pro-c *max* = 3.54, little-c *max* = 3.69). The ICCs for all the creativity and affect measures indicated a majority of the variability was due to daily changes within-participants rather than more stable individual differences between participants (we can conclude this because ICCs ranged from .33 to .50), and flourishing's ICC indicated that variability was roughly equal within- and between-participants (ICC = .51) (Luke, 2020).

Between-person associations

Figure 1 shows the between-person correlations for participants' average daily flourishing, affect, and creativity (daily-c, pro-c, little-c) and the correlations between the creativity measures. Individuals reported more creativity (across all creativity variables) when they experienced more positive affect, more flourishing, and less negative affect. The numerically strongest relationships were observed between highly activated positive affect and creativity and between flourishing and creativity, supporting *Hypotheses 1a* and *2*. *Hypothesis 1b* anticipating NA to relate to lower levels of creativity (daily-c, pro-c, little-c) was not significantly supported, although there was generally a slightly negative trend to the relationships.

Hypothesis 1c predicted stronger relationships for daily-c and little-c with affect and weaker relationships between pro-c and affect. While daily-c's relationship with affect was the strongest, little-c and pro-c creativity showed similar strengths in relationships with affect. Steiger's (1980) tests of significance for the difference between two related correlations found flourishing's positive correlation with daily-c was significantly stronger than its relationship with both pro-c ($\bar{Z}_1{}^* = 2.872$, $p = .004$) and little-c ($\bar{Z}_1{}^* = 4.314$, $p < .001$). PA's positive correlation with daily-c was also significantly stronger than its relationship with both pro-c ($\bar{Z}_1{}^* = 3.654$, $p < .001$) and little-c ($\bar{Z}_1{}^* = 2.882$, $p < .004$). NA's negative correlations with daily-c was numerically stronger (i.e., more negative) than those for pro-c or little-c, however Steiger's tests indicated that the differences were not statistically significant (daily-c vs pro-c: $\bar{Z}_1{}^* = 1.327$, $p = .185$, daily-c vs little-c: $\bar{Z}_1{}^* = 1.047$, $p = .295$).

Correlations between the three categories of creativity and personality traits are also in Figure 1, with values listed in Table 1. Openness, conscientiousness, extraversion, and agreeableness were positively correlated with creativity, supporting *Hypotheses 3a* and *4a*. Extraversion and agreeableness were positively correlated with creativity, but the relationships did not reach statistical significance. Neuroticism was negatively correlated with creativity, supporting *Hypothesis 5a*. As predicted, our sample scored highly on trait openness (M = 4.47, SD = .48).[2] The strength and size of openness and creativity relationships observed relative to other personality traits should be considered with this in mind. Openness was the strongest personality predictor of little-c creativity – accounting for 3.65% of its

Table 1. Descriptive statistics for the state and trait measures and the between-person correlations for Daily-C, Pro-C, and Little-C with state and trait measures.

					Daily-C Creativity		Pro-C Creativity		Little-C Creativity	
	Min	*Max*	*M*(*SD*)	ICC	*r*	% Var.	*r*	% Var.	*r*	% Var.
Daily-C	.08	3.46	1.46(.74)	.325	–	–				
Pro-C	.00	3.54	1.11(.79)	.350	.794***	63.04	–	–		
Little-C	.00	3.69	1.02(.75)	.348	.755***	57.00	.412***	16.97	–	–
Flourish	1.66	6.89	5.18(.88)	.508	.561***	31.47	.470***	22.09	.401***	16.08
PA	1.03	4.48	2.83(.69)	.495	.567***	32.15	.451***	20.34	.468***	21.90
PA: High	1.00	4.56	2.67(.74)	.433	.621***	38.56	.518***	26.83	.480***	23.04
PA: Med	1.00	4.62	2.94(.74)	.476	.553***	30.58	.452***	20.43	.438***	19.18
PA: Low	1.08	4.51	2.87(.71)	.478	.424***	17.98	.300***	9.00	.402***	16.16
NA	1.00	4.09	1.82(.58)	.473	−.119	1.42	−.069	.48	−.076	.58
NA: High	1.00	3.82	1.60(.52)	.352	−.034	.12	−.010	.01	.023	.05
NA: Med	1.00	4.64	2.13(.73)	.475	−.094	.88	−.031	.09	−.097	.94
NA: Low	1.00	4.69	1.74(.65)	.431	−.184*	3.39	−.140	1.96	−.111	1.23
O	2.67	5.00	4.47(.48)	–	.211***	4.45	.145*	2.10	.191**	3.65
C	1.67	5.00	3.69(.68)	–	.258***	6.65	.262***	6.86	.138	1.90
E	1.00	5.00	2.99(.96)	–	.061	.37	.105	1.10	.024	.05
A	1.67	5.00	3.95(.68)	–	.102	1.04	.059	.35	.075	.56
N	2.00	5.00	3.48(.55)	–	−.217**	4.71	−.178*	3.17	−.181**	3.28

Min = minimum; Max = maximum; ICC = intraclass correlation coefficient (indicates the proportion of variance attributable to between-person differences); *r* = Pearson's correlation coefficients; % Var. = Percent Variance (R^2); PA = positive affect; NA = negative affect; High = high activation; Med = medium activation; Low = low activation; O = Openness; C = Conscientiousness; E = Extraversion; A = Agreeableness; N = Neuroticism. Familywise type 1 error rates after adjusting for multiple comparisons *$p < .05$, **$p < .01$, ***$p < .001$. Different adjustments occurred for correlations depending on how many tests were conducted for the hypothesis to which each correlation relates (see Appendix B for details).

variance. Conscientiousness was the strongest personality predictor of both daily-c and pro-c – accounting for 6.65% and 6.86% of their variance, respectively. Neuroticism was also a significant negative predictor of all three creativity variables with an effect size similar to that for openness, accounting for 4.71% of the variance in daily-c, 3.28% of the variance in little-c, and 3.17% of the variance in pro-c. Extraversion and agreeableness had weaker non-significant relationships with all three categories of creativity, varying slightly in strength between each.

Within-person associations

Table 2 shows the results of multilevel analyses for within-person predictors of daily-c, pro-c, and little-c. The results of these multilevel models provide correlation-like relationships for within-person measures, commonly reported in daily life studies (Conner et al., 2018; Conner & Silvia, 2015; Karwowski et al., 2017). On days when people felt more flourishing (i.e., psychological well-being), more positive emotions, or lower levels of negative emotions, they rated their day as more creative, supporting *Hypotheses 1a, 1b*, and *2. Hypothesis 1b* also anticipated that the negative relationships between NA and creativity variables would be quite modest, and indeed we found that NA accounts for 50% or less of the variance accounted for by PA. *Hypothesis 1c* predicted that pro-c to have the weakest affect relationships was generally supported at the within-person level; however, daily-c showed much stronger relationships with affect than both little-c and pro-c, which was not as predicted from Hypothesis 1c.

Flourishing was the strongest predictor of daily-c (*B*(*SE*) = .473 (.020), $p < .001$), followed by pro-c (*B*(*SE*) = .358 (.021), $p < .001$), and little-c (*B*(*SE*) = .350 (.020), $p < .001$). Days when people felt more positive affect, they also rated their day as more creative. PA High states such as feeling energetic were the strongest predictors of both daily-c (*B*(*SE*) = .516 (.021), $p < .001$) and pro-c (*B*(*SE*) = .359 (.022), $p < .001$). PA Med states such as feeling happy were the strongest predictors of little-c (*B*(*SE*) = .405 (.023), $p < .001$). PA Low states such as feeling calm were the weakest positive predictors of all three creativity measures. Days when people felt more negative emotions were universally detrimental to their creativity. NA Low states such as feeling sad were the strongest negative predictors across all creativity variables (daily-c: *B*(*SE*) = −.326(.025), $p < .001$, pro-c: *B*(*SE*) = −.217 (.026), $p < .001$, little-c: *B*(*SE*) =−.257(.025), $p < .001$). NA Med states such as feeling anxious or nervous were the weakest negative predictors of creativity.

Personality predictors and moderators in multilevel models

Trait openness was a significant predictor of within-person differences in daily-c (*B*(*SE*) = .329(.090), $p < .001$) and little-c (*B*(*SE*) = .312(.086), $p< .001$) giving support to *Hypothesis 3a*. It is worth noting that although openness was a significant predictor of pro-c when tested in models independently (*B*(*SE*) = .200

(.094), p= .034), once entered simultaneously with other independently significant trait predictors (Neuroticism and Conscientiousness), it was no longer a significant predictor of pro-c creativity (see Tables C1, C2, C3).

In support of *Hypothesis 3b*, openness moderated flourishing, PA, and NA's relationships[3] with daily-c and little creativity. The hypothesis was not supported concerning pro-c. Regarding daily-c creativity – analyses showed a significant moderating effect of openness on the flourishing and daily-c relationship (*B(SE)* = .160 (.042), p < .001), PA and daily-c relationship (*B(SE)* = .258(.054), p < .001), and NA and daily-c relationship (*B(SE)* = −.166(.065), p < .001). Simple slopes were plotted for the openness interaction effect for PA and NA on daily-c in Figure 2. Multilevel simple slope analyses showed people high on openness (+1*SD*) reported significantly more daily-c on days with more positive emotions (*B(SE)* = .676(.034), p < .001) than people low on openness (−1*SD; B(SE)* = .428(.039), p < .001). People high on openness (+1*SD*) reported significantly less daily-c on days with more negative emotions (*B(SE)* = −.432(.042), p < .001) than people low on openness (−1*SD; B(SE)* = −.272(.045), p < .001).

Openness also showed a significant moderating effect on the flourishing and little-c relationship (*B(SE)* = .130 (.043), p=.002), PA and little-c (*B(SE)* = .204(.054), p < .001), and NA and little-c relationship (*B(SE)* = −.156 (.064), p= .015). However, the NA relationship was non-significant after correcting for multiple tests. Simple slopes were plotted for the openness interaction effect for PA and NA on little-c in Figure 3. Multilevel simple slope analyses showed that people high on openness (+1*SD*) reported significantly more little-c during days with more positive emotions (*B(SE)* = .571(.032), p<.001) than people low on openness (−1*SD; B(SE)* = .375(.037), p<.001). Likewise, people high on openness (+1*SD*), reported significantly less little-c during days with more negative emotions (*B(SE)* = −.397(.039), p<.001) than people low on openness (−1*SD; B(SE)* = −.247(.042), p<.001).

Trait conscientiousness was a significant predictor of within-person differences in daily-c (*B(SE)* = .283(.063), p < .001) and pro-c (*B(SE)* = .260(.066), p< .001), supporting *Hypothesis 4a*. While conscientiousness was a significant predictor of little-c when tested in models independently (*B(SE)* = .210(.065), p = .001), once entered simultaneously with other independent predictors (Openness and Neuroticism), it was not a significant predictor of little-c creativity (see Tables C1, C2, C3). Counter to *Hypothesis 4b*, conscientiousness did not significantly moderate the affect and pro-c creativity relationships. Conscientiousness moderated NA High's relationship with pro-c (*B(SE)* = .083 (.040), p= .036), however when applying a Bonferroni family-wise correction of p < .005 (0.05/9 tests), the moderation no longer reached significance.

Trait neuroticism was a significant negative predictor of within-person differences in daily-c (*B(SE)* = −.182 (.048), p < .001) and little-c (*B(SE)* = −.157(.040), p = .001), supporting *Hypothesis 5*. While neuroticism was a significant predictor of pro-c when tested in models independently (*B(SE)* = −.118(.051), p = .020), once entered simultaneously with other independent predictors (Openness and Conscientiousness), it was not a significant predictor of pro-c creativity (see Tables C1, C2, C3). Trait extraversion and agreeableness were not significant predictors of within-person differences in daily-c, pro-c, or little-c, counter to *Hypothesis 5*.

Discussion

The current research examined the relationships between creativity, affect, and well-being in highly creative individuals in their daily lives. We found patterns similar to those previously observed in non-specialized populations (Conner & Silvia, 2015; Karwowski et al., 2017), but often with greater intensity and several nuances.

Supporting our initial state-level hypotheses (*Hypotheses 1a and 2a*), creative individuals were most creative on days with higher levels of flourishing and positive activated emotions, and they were least creative on days with higher levels of negative emotions. These patterns persist within and between-person differences regardless of creativity measure (daily-c, pro-c, and little-c creativity). Supporting our initial trait-level hypotheses (*Hypotheses 3a, 4a, 5a*), creative individuals reporting the highest levels of creativity (on all measures) were more open, conscientious, and less neurotic. Higher openness, conscientiousness, and lower neuroticism also predicted within-individual differences in increased daily-c and little-c. Higher levels of openness appeared to intensify an individual's relationship between their emotions and their creativity endorsements – further enhancing the positive relationships between positive emotions and creativity and exacerbating the negative relationships between negative emotions and creativity. Higher conscientiousness, alone amongst the personality traits, significantly predicted within-individual differences in pro-c. Finally, countering our initial hypothesis, this trait did not further modify the relationship between one's emotions and pro-c.

These findings stand firmly on the side of theories (Csikszentmihalyi, 1991; Richards, 2010), meta-analyses of laboratory studies (Baas et al., 2008; Davis, 2009), and previous ecological research, that supports creativity's

links to positive emotions, well-being, positive traits and adaptability (Benedek et al., 2017; Binnewies & Wörnlein, 2011; Conner & Silvia, 2015; Karwowski et al., 2017). Moreover, the present study extends these findings to a new sample of highly creative individuals. Additionally, the present findings contradict existing stereotypes of the tortured artist suffering for their art (Becker, 2014; Jamison, 1989; Kaufman, 2001; Silvia & Kaufman, 2010).

Emotions and multifaceted creativity

In line with previous research, our study finds that not all relationships between emotions and creativity are equivalent (Conner & Silvia, 2015; Han et al., 2019; Karwowski et al., 2017). At a more general level, participants' daily-c showed substantial ties with both emotions and well-being. The relationships with their levels of little-c were more modest, and even smaller links were observed between their emotions and levels of pro-c. The relationships between daily-c and emotions found amongst the current participants were also much stronger than those observed in similar research using mainly university student samples, indicating that highly creative individuals may have stronger ties between their emotions, flourishing, and creativity (Conner et al., 2018; Conner & Silvia, 2015). For example, in Conner et al. (2018), PA, NA, and flourishing accounted for 12.0%, .4%, and 7.2% of the variance in creativity, respectively. In our creative sample, PA, NA, and flourishing accounted for 32.1%, 1.4%, and 1.5% of the variance in daily-c,[4] respectively.

Negative emotions were primarily antagonistic to creativity, albeit not reaching statistical significance and therefore having much weaker effects than those observed for positive emotions, and the relationships varied across creativity measures. The lower the activation level of the negative emotion between participants, the larger the decrease in creativity. For example, emotions such as feeling sad or unhappy (low activation) were the most detrimental to creativity, while feeling irritable or angry (high activation) showed almost no adverse effect on creativity (and even a positive but non-significant relationship with little-c creativity). These patterns of negative affect, activation, and creativity are most similar to trends observed in diary studies of workplace creativity (Chi et al., 2020; 2020; Han et al., 2019; To et al., 2012). More common in daily life studies of everyday creativity are small positive relationships (Conner & Silvia, 2015) or non-significant relationships (Karwowski et al., 2017) between negative emotions and creativity. At the within-participant level, medium activation negative emotions such as feeling anxious, tense, or nervous had the least detrimental effects on creativity for all measures compared to higher activated negative states such as feeling angry) and lower activated negative states such as feeling sad. These findings indicate that creative individuals' little-c creativity functions similarly to those observed in more general samples (Conner & Silvia, 2015; Karwowski et al., 2017).

Flourishing, our measure of psychological well-being, had strong positive relationships with creativity, especially relating to endorsements of daily-c, and it was a stronger predictor of pro-c than little-c creativity. Well-being is less commonly considered within ecological creativity research; however, the relationship observed between flourishing and little-c creativity mirrors a similar study with a non-specialized sample (Conner et al., 2018), indicating that little-c creativity and well-being have similar relationships among general students or adult samples and creative individuals. Interestingly, the overall creativity measure (daily-c) showed a relationship with flourishing approximately twice that seen with little-c (31.5% variance explained, c.f. 16.1% variance explained for little-c). This outcome suggests that creativity is important to a creative individual's sense of well-being. However, as our measures were taken simultaneously, the direction of the causality cannot be assumed. Therefore, it is unclear if the strength of this relationship is due to an enhanced desire to be more creative when one already feels a greater sense of flourishing or if there is a significant boost to one's feeling of well-being during or immediately following engagement in a creative activity (Acar et al., 2020). Previous research indicates that this is likely a bi-directional relationship (Bujacz et al., 2016; Helson & Pals, 2000; Tan et al., 2021).

Individual differences

As expected, our sample of creative individuals scored high on the trait openness – the archetypal personality trait of the creative person (Feist, 1998; Silvia et al., 2009; Kaufman, 2013). Openness was the most significant trait predictor of little-c creativity and predicted daily-c and pro-c creativity between participants. It was also a significant predictor of within-person differences in daily-c and little-c creativity. These findings align with previous daily life studies of everyday and workplace creativity (Carson et al., 2005; Conner & Silvia, 2015). Openness also played a key role in moderating nearly all the within-person relationships examined for daily-c as well as the relationships between positive emotions and little-c creativity, a finding that has found inconsistent support in studies with more general samples (Conner & Silvia, 2015; Karwowski et al., 2017; Madrid et al., 2014). Emotions and creativity appear to be more tightly bound

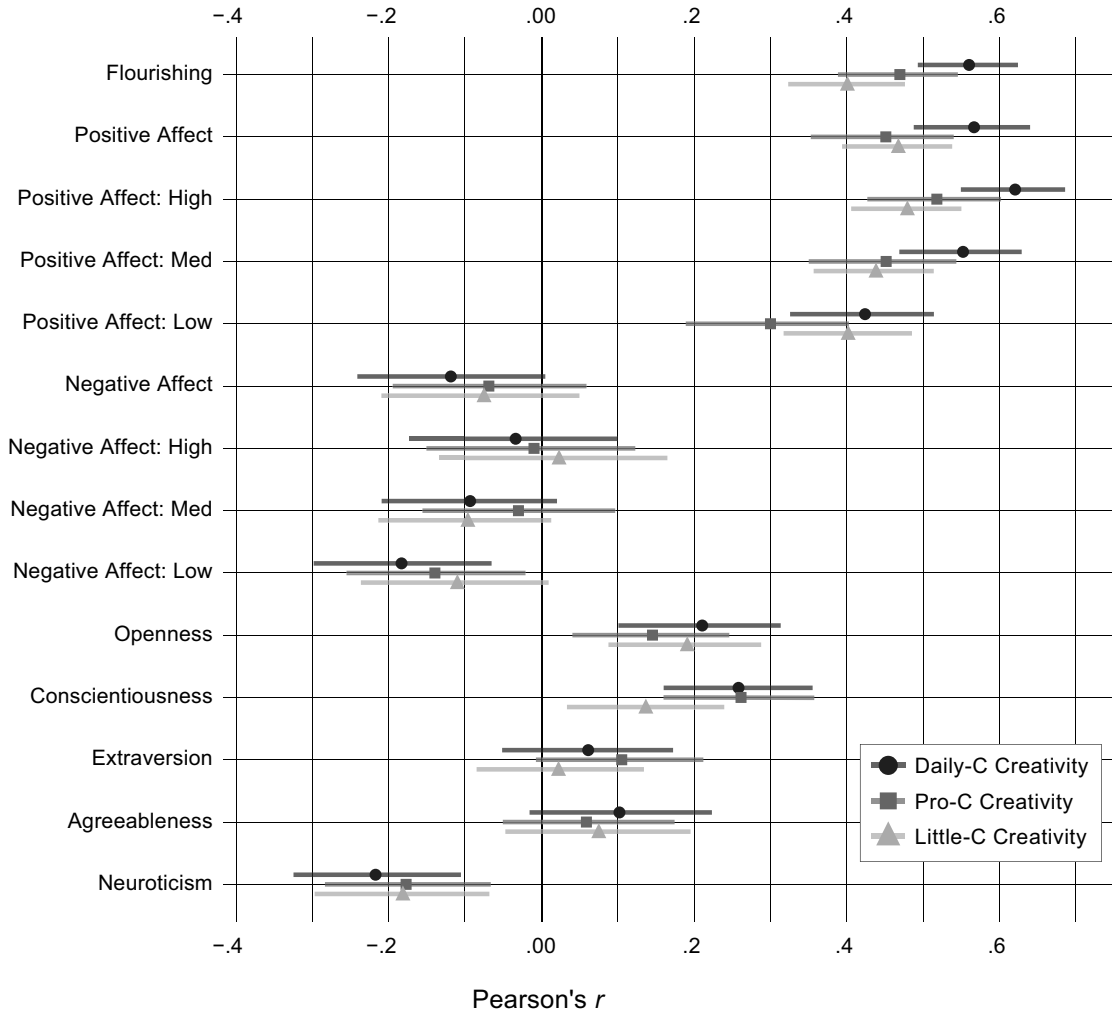

Figure 1. Daily-c, pro-c, and little-c Pearson's r correlations (dots) and their unadjusted 95% confidence intervals (bars) with.

Table 2. Within-person well-being and emotion predictors of same-day creativity.

	Daily-C Creativity				Pro-C Creativity				Little-C Creativity			
	B	*SE*	*p*	% Var.	*B*	*SE*	*p*	%Var.	*B*	*SE*	*p*	% Var.
Flourishing	.473	.020	<.001	9.6%	.358	.021	<.001	5.0%	.350	.020	<.001	5.4%
PA	.569	.025	<.001	9.6%	.339	.027	<.001	3.5%	.486	.025	<.001	6.8%
PA: High	.516	.021	<.001	8.1%	.359	.022	<.001	5.0%	.389	.021	<.001	6.3%
PA: Med	.468	.023	<.001	3.9%	.275	.024	<.001	2.8%	.405	.023	<.001	5.9%
PA: Low	.328	.025	<.001	3.0%	.134	.026	<.001	.8%	.340	.024	<.001	3.8%
NA	−.358	.031	<.001	4.0%	−.192	.031	<.001	.9%	−.328	.030	<.001	2.3%
NA: High	−.283	.027	<.001	2.3%	−.151	.028	<.001	.6%	−.243	.026	<.001	1.6%
NA: Med	−.143	.025	<.001	.9%	−.038	.025	.003	.1%	−.182	.024	<.001	1.1%
NA: Low	−.326	.025	<.001	3.4%	−.218	.026	<.001	1.4%	−.257	.025	<.001	2.1%

B = unstandardized regression coefficients; *SE* = Standard Error; PA = positive affect; NA = negative affect; High = high activation; Med = medium activation; Low = low activation; % Var = percentage of variance in daily creativity accounted for by each emotion. Flourishing and affect variables are participant-centered. Pro-c models control for professional creative background (*B*(*SE*) = .387 (.092), *p*< .001), little-c models control for hobbyist creative background (*B* (*SE*) = .325(.086), *p*< .001.

for creative individuals higher on trait openness. Our sample of creative participants reported significant boosts in daily-c and little-c creativity on days when they felt positive emotions and greater detriments in creativity on days with negative emotions, especially when sad or unhappy.

It is also of note that openness played a role in the link between flourishing and creativity. Not only do the emotions of a highly open creative sample relate more strongly to their creativity than those of their less creative counterparts, but their daily creativity is also more tightly linked to their degree of optimism about the

future, meaning in life, and felt social connectedness (as measured by the flourishing scale). Owing to the correlational nature of daily diary research, it is unclear whether these effects imply emotions and well-being were stronger drivers of creativity for those higher in openness or whether creativity drives emotions and fuels a sense of well-being more intensely amongst highly open creatives. Both of these possible mechanisms may be operative. Previous studies suggest these relationships may occur within a short timescale – within-days rather than between-days (Amabile et al., 2005; Conner et al., 2018); therefore, future research may seek to examine this relationship more closely and may benefit from using more frequent EMA methods rather than daily diaries.

Conscientiousness also played a crucial role in creative activity. It was a strong predictor of daily-c and pro-c creativity both between- and within-participants. Over half of the current sample identified as a professional creative, which may have contributed to the strong associations between the daily-c and pro-c creativity measures, given that higher conscientiousness has been found to increase workplace creativity (Chi et al., 2015; Reiter-Palmon et al., 2009). Conscientiousness was also a positive predictor of little-c creativity between participants and – as the sample was skewed more toward artistic professions rather than scientific – this stands counter to some previous research (Feist, 1998; Karwowski et al., 2017; Kaufman et al., 2016; Reiter-Palmon et al., 2009).

It is worth noting that – as a trait – conscientiousness may aid in adhering to a regular schedule of creative practice as well as helping a participant adhere to the consistency of responses required for daily diary research. However, researchers have cautioned that

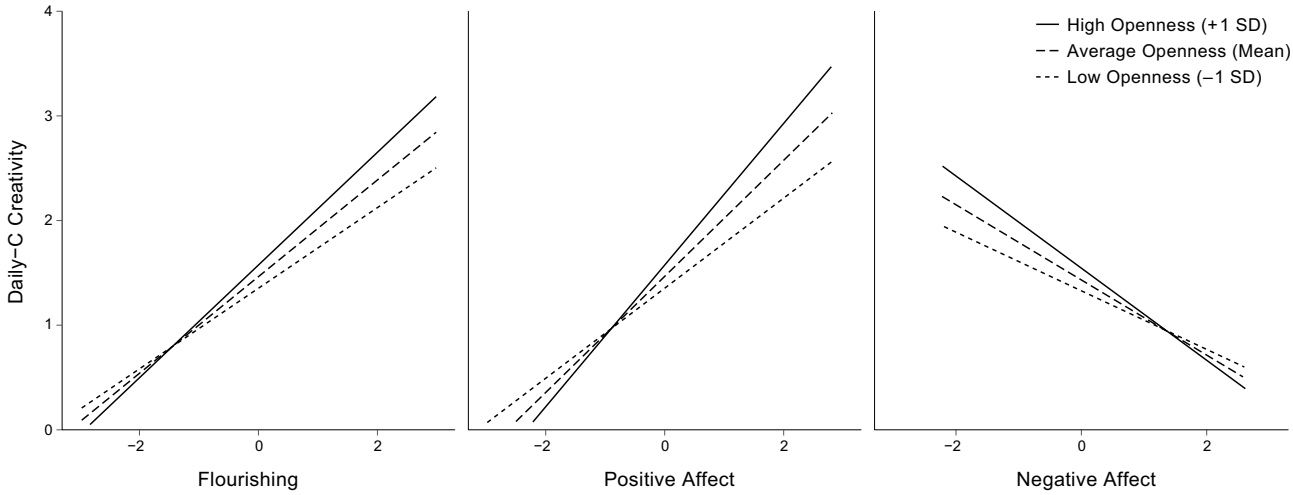

Figure 2. Individual differences in trait openness moderating the within-person relationship between daily flourishing, positive affect, negative affect.

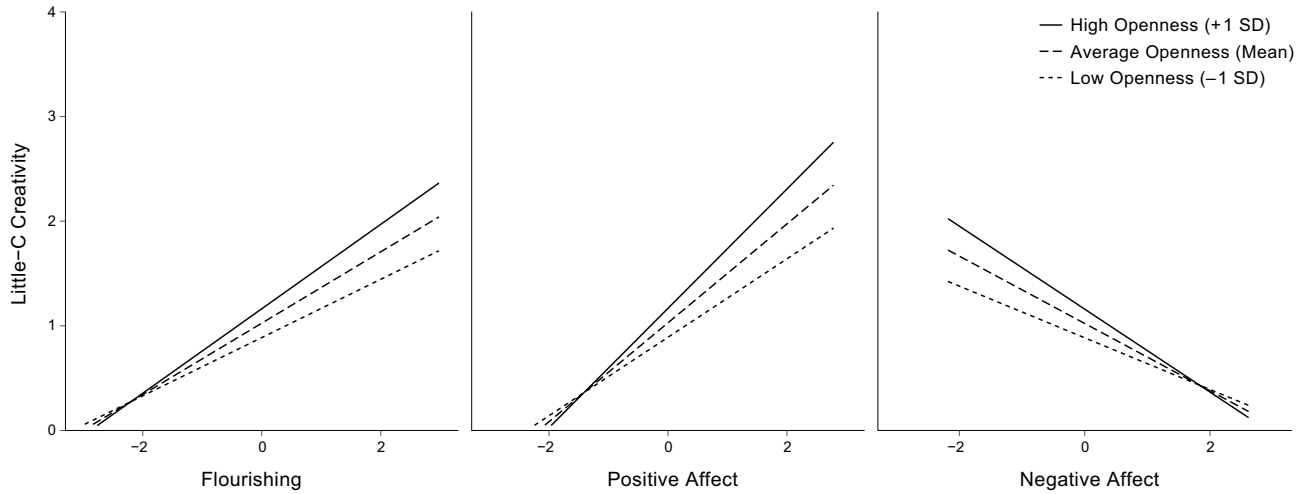

Figure 3. Individual differences in trait openness moderating the within-person relationship between daily flourishing, positive affect, negative affect.

experience sampling may show slight biases toward recruiting participants with higher levels of conscientiousness and agreeableness (Scollon, Kim-Prieto, & Scollon, 2003).

Other personality traits also played important roles in daily creativity to slightly lesser effects. Neuroticism was a significant antagonist of creativity, having an almost universally detrimental effect on all types of self-reported creativity between and within participants. These results not only make logical sense, as neuroticism is a trait reflecting proneness to feeling negative emotions, and such emotions were also found to be a nearly universal antagonist of creativity, and it aligns with previous daily life creativity research (Conner & Silvia, 2015; Ivcevic, 2007; Karwowski et al., 2017). These findings stand in stark contrast to the idea of creatives as neurotic individuals (Perkins, Arnone, Smallwood, & Mobbs, 2015), a view that has been challenged elsewhere (Pickering, Smillie, & DeYoung, 2016). Agreeableness and extraversion were slight positive predictors of creativity within and between participants; however, the relationships did not reach significance for either trait.

Creativity measurement

How one asks about a creative activity is worth considering when conducting the analyses. This study found higher endorsements of creative activity and stronger statistical relationships for the more general daily-c creativity measure than those observed for work or everyday creativity endorsements. This discrepancy appears to be more than a simple summation of work and non-work creativity in the participant's mind. A similar effect was observed by Karwowski and colleagues (2017) when asking participants more generally about their creativity (where they were perhaps over-endorsing what qualified as creative activity) compared to when asked about specific everyday biographical categories. However, the suggestion that a discrepancy may arise from laypeople having more generous definitions of personal creativity (Karwowski et al., 2017) would not translate to our study because the categorizations were broad (work-related versus non-related), and it is unclear what the third category would exist beyond this dichotomy. Our sample was also high in creative expertise and should identify their creative and non-creative activity when provided a working definition at each measurement. One possibility is that individuals may over-endorse judgments of their felt daily creativity before applying more stringent categorical criteria, thus lowering the later measures.

A second possible factor may be the effects of affect or flourishing states on creativity endorsements when asked more generally. Mood-congruent effects have been observed with higher self-reported creativity endorsements when a participant is experiencing positive moods (Ivcevic & Hoffmann, 2017). Additionally, if one has a higher creative self-concept, behaving creatively aligns closely with one's sense of self and identity (Beghetto & Karwowski, 2017), and this has shown to be predictive of increased creative behavior (Dollinger & Dollinger, 2017; Jaussi et al., 2007). Therefore, it is plausible that someone with a strong creative identity may be more likely to endorse behaviors that align with their sense of self on days that they feel positive and have a strong sense of well-being (Beghetto & Karwowski, 2017; Dollinger, 2017).

Limitations and future directions

Historically – and persisting through the present day – creativity is most commonly researched and assessed as it relates to divergent and convergent thinking tasks within laboratory environments (Plucker, Makel, & Qian, 2019). While this allows for a high degree of control for experimental conditions, creativity, as it exists in the world beyond the lab, is a much larger, multifaceted, and complex construct. Not only is the creative process complex as it goes through phases of development during the creation of an innovative product (Ivcevic & Hoffmann, 2017), but engaging in creative behaviors also play a role in one's positive psychological development (Richards, 2018). Such a small portion of our understanding of creativity has been explored for replication outside the laboratory, and we are only beginning to gain deeper insights into how behaving creatively through hobbies or in one's workplace relates to other complex constructs such as emotions and well-being. When moving studies into the real world, one necessary limitation is reliance on more subjective methods of measuring creativity, such as a self-report.

Additionally, questionnaires are kept as brief as possible when using daily diaries or EMA methods to maintain participant compliance (Silvia & Cotter, 2021). However, this brevity optimization led to somewhat low reliability for the personality measures (measured with 3-items per subscale) and meant relying primarily on a single self-report question per our daily-c, pro-c, and little-c measures. Differentiating between these three creativity measures adds color compared to studies relying on a single overall measure (i.e., Conner et al., 2018). However, it does not yet elucidate if particular aspects of creativity such as originality, fluency, convergent, or divergent thinking are most beneficial to psychological well-being or have differing affective relationships in the real world.

Beyond the complications of measuring creativity in everyday life, additional issues arise when seeking to study highly creative people and their daily creativity. To recruit diverse types of creative people, the sample included self-reported creative individuals ranging from artists with several decades-long careers to early-career scientists to serious hobbyists working on their passions after they finish their day jobs. Inherent to these participants are diverse sources and interpretations of creativity and creative environments. Qualifying a participant as a creative professional, hobbyist, or student revealed that many creatives self-identify across multiple categorizations. Various participants throughout the study expressed difficulty categorizing their primary creative industry or hobbies and had trouble differentiating the boundaries between work-related and leisure creativity.

After asking about daily creativity more generally in the current study, participants differentiated between work-related and non-work-related creative behaviors. Future studies may examine more detailed measures of daily creativity and observe reciprocal relationships between affective states and well-being. Understanding how the benefits and detriments of affect-creativity-well-being relationships interact and reciprocate may help illuminate how creatives can further benefit from their life's work and help answer common questions such as whether employees should be encouraged to have extra-curricular creative outlets or channel their resources into the workplace. It may also be of interest to better understand how different domains of creativity interact with affect and how differently motivated creativity arises from affective states and relates to individuals' well-being (Benedek et al., 2017).

It is also worth considering how different phases of the creative process – from inspiration-seeking to ideation and flow – unfold in daily life and if patterns observed in experimental studies replicate outside the lab (Acar et al., 2020; Baas et al., 2008; Thrash, Elliot, Maruskin, & Cassidy, 2010). Studying these relationships using ecological assessment methods may help deepen the understanding of the natural state fluctuations surrounding diverse creative behaviors and whether measuring at varying timescales can aid in resolving causality limitations. Studying these relationships within creative samples may be particularly fruitful as they may be more adept at identifying such phases on their own in contrast to general samples (Benedek et al., 2017).

Conclusion

The current study reveals the links between emotions, well-being, and creative behavior in highly creative people and shows that they are similar to – and at times more robust than – those seen in general populations. Creative individuals are more creative in their work and everyday lives when they feel a strong sense of well-being, increased high activation, positive emotions, and a lack of negative emotions. Furthermore, they exhibit the strongest relationships when they rate their overall daily-c creativity rather than pro-c or little-c creativity. Creative individuals also exhibit a highly adaptive psychological trait profile consisting of higher openness, higher conscientiousness, and lower neuroticism. These findings replicate and extend previous creativity daily life research and further refute the negative stereotypes of creative individuals as troubled people. Instead, our findings align creative behaviors as a reciprocally beneficial tool which may increase well-being.

Notes

1. Pro-c models control for professional creative background, little-c models control for hobbyist creative background.
2. For a point of reference, Conner and Silvia (2015)'s student sample in a similarly structured study had openness scores of $M(SD) = 3.47(.53)$ on a 5pt scale.
3. Openness's moderation of NA was no longer a significant predictor of little-c after applying a Bonferroni family-wise correction of $p < 0.008$ to account for multiple hypothesis testing (0.05/6 tests).
4. The same question was used to measure creativity in Conner et al. (2018) as our daily-c measure "*Overall, how creative were you today?*" Additionally, the same PA, NA, and flourishing scales were used between studies.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Author contributions

K.S. and J.B designed the research; K.S. collected and analyzed the data; A.P. provided data analysis expertise; J.B. provided overall research supervision; K.S. wrote the first draft, and all authors contributed to the final version.

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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APPENDIX A

Table A1. Creative background demographics.

	N	%		N	%
Creative Background †			*Preferred Little-C Creative Activity*		
Hobbyist	54	18.6	Comedy	2	.8
Professional	97	33.4	Craft Arts	38	15.2
Student	30	10.3	Creative Writing	24	9.6
Professional & Hobbyist	61	21	Culinary Arts	27	10.8
Professional & Student	12	4.1	Dance	14	5.6
Student & Hobbyist	31	10.7	Design	30	12.0
Professional, Student, & Hobbyist	5	1.7	Music	37	14.8
Primary Creative Industry			Theater and Film	12	4.8
Advertising and Marketing	22	9.4	Visual Arts	63	25.2
Architectural Design	8	3.4	Other	3	1.2
Comedy	1	.4	*Education in Primary Creative Field*		
Creative Writing	18	7.7	Current Student	37	12.8
Culinary Arts	2	.9	Some schooling	44	15.2
Dance	2	.9	Associate Degree	8	2.8
Design	65	27.8	Bachelor's Degree	119	41.0
Engineering	1	.4	Master's Degree	32	11.0
Entrepreneurial Ventures	5	2.1	Doctoral Degree	3	1.0
Inventions	5	2.1	None	37	12.8
Museums, Galleries and Libraries	2	.9	Other	10	3.4
Music	17	7.3	*Years of Experience in Primary Creative Field*		
Scientific Inquiry	5	2.1	0–4 years	79	27.2
Theater and Film	34	14.5	5–9 years	107	36.9
Visual Arts	46	19.7	10–19 years	71	24.5
Other	1	.4	20–30+ years	33	11.4

$N = 290$. † Professional = "*I work in a creative field/industry*." Student = "*I am a student studying a creative discipline*." Hobbyist = "*I spend around 20+ hours a week doing creative hobbies*."

APPENDIX B

Hypotheses 1a and *1b* correlations (PA and NA with Daily-C, Pro-C, and Little-C) were corrected for six tests. *Hypothesis 2* (Flourishing with Daily-C, Pro-C, and Little-C) was corrected for three tests. *Hypothesis 3a* (Openness with Daily-C, Pro-C, and Little-C) was corrected for three tests. *Hypothesis 4a* (Conscientiousness with Daily-C, Pro-C, and Little-C) was corrected for three tests. *Hypothesis 5* (Agreeableness, Extraversion, and Neuroticism with Daily-C, Pro-C, and Little-C) was corrected for nine tests. 3-test corrections: * $p < .017$, ** $p < .003$, *** $p < .0003$. 6-test corrections: * $p < .008$, ** $p < .0017$, *** $p < .00017$. 9-test corrections: * $p < .0025$, ** $p < .001$, *** $p < .0001$.

APPENDIX C

Table C1. Within-person flourishing, personality traits, and openness moderation of flourishing predicting same-day creativity.

	Daily-C Creativity			Pro-C Creativity			Little-C Creativity		
Predictors	*B*	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
Intercept	1.464	.041	**<.001**	.918	.071	**<.001**	.834	.061	**<.001**
Flourishing	.462	.020	**<.001**	.353	.021	**<.001**	.342	.020	**<.001**
Openness	.231	.090	**.010**	.113	.095	.233	.245	.091	**.007**
Conscientiousness	.200	.065	**.002**	.219	.069	**.001**	.126	.067	.060
Neuroticism	−.135	.047	**.004**	−.080	.051	.117	−.123	.048	**.010**
Openness*Flourishing	.160	.042	**<.001**	.084	.045	.061	.130	.043	**.002**
Creative Background	–	–	–	.313	.071	**<.001**	.330	.084	**<.001**
Random Effects									
σ^2	.81			.90			.83		
τ_{00}	.42 $_{ID}$			.47 $_{ID}$			.43 $_{ID}$		

B = unstandardized regression coefficients; *SE* = Standard Error; Openness*Flourishing = Interaction term for trait openness moderation of state flourishing; Creative Background = Pro-c model controls for professional creative background, little-c model controls for hobbyist creative background. σ^2 = Residual variance/within-subject variance, τ_{00} = Random intercept variance/between-subject variance.

Table C2. Within-person positive affect, personality traits, and openness moderation of positive affect predicting same-day creativity.

	Daily-C Creativity			Pro-C Creativity			Little-C Creativity		
Predictors	*B*	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
Intercept	1.464	.041	**<.001**	.918	.071	**<.001**	.834	.061	**<.001**
Positive Affect	.554	.025	**<.001**	.331	.027	**<.001**	.474	.025	**<.001**
Openness	.231	.090	**.010**	.113	.095	.233	.245	.091	**.007**
Conscientiousness	.200	.065	**.002**	.219	.069	**.001**	.126	.067	.060
Neuroticism	−.135	.047	**.004**	−.080	.051	.117	−.123	.048	**.010**
Openness*PA	.258	.054	**<.001**	.139	.058	.016	.204	.054	<.001
Creative Background	–	–	–	.313	.071	**<.001**	.363	.086	**<.001**
Random Effects									
σ^2	.81			.93			.81		
τ_{00}	.42 $_{ID}$			.47 $_{ID}$			.43 $_{ID}$		

B = unstandardized regression coefficients; *SE* = Standard Error; PA = positive affect; Openness*PA = Interaction term for trait openness moderation of state positive affect; Creative Background = Pro-c model controls for professional creative background, little-c model controls for hobbyist creative background. σ^2 = Residual variance/within-subject variance, $\tau_{00\ =}$ Random intercept variance/between-subject variance.

Table C3. Within-person negative affect, personality traits, and openness moderation of negative affect predicting same-day creativity.

	Daily-C Creativity			Pro-C Creativity			Little-C Creativity		
Predictors	*B*	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
Intercept	1.464	.041	**<.001**	.918	.071	.918	.834	.061	**<.001**
Negative Affect	−.353	.031	**<.001**	−.189	.031	**<.001**	−.323	.030	**<.001**
Openness	.231	.090	**.010**	.113	.095	.233	.245	.091	**.001**
Conscientiousness	.200	.065	**.002**	.219	.069	**.002**	.126	.067	.060
Neuroticism	−.135	.047	**.004**	−.080	.051	.117	−.123	.048	**.010**
Openness*NA	−.166	.065	**.011**	−.100	.067	.138	−.156	.064	**.015**
Creative Background	–	–	–	.313	.071	**<.001**	.363	.086	**<.001**
Random Effects									
σ^2	.92			.97			.88		
τ_{00}	.41 $_{ID}$			.46 $_{ID}$			.43 $_{ID}$		

B = unstandardized regression coefficients; *SE* = Standard Error; NA = negative affect; Openness*NA = Interaction term for trait openness moderation of state negative affect; Creative Background = Pro-c model controls for professional creative background, little-c model controls for hobbyist creative background. σ^2 = Residual variance/within-subject variance, $\tau_{00\ =}$ Random intercept variance/between-subject variance.