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Norming the Muses: Establishing the Psychometric Properties of the Kaufman Domains of Creativity Scale

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Abstract

The Kaufman Domains of Creativity Scale (K-DOCS; Kaufman, J. C. (2012). Counting the muses: Development of the Kaufman domains of creativity scale (K-DOCS). Psychology of Aesthetics, Creativity, and the Arts, 6(4), 298-308. doi:10.1037/a0029751) is a self-report assessment of five creative domains: Everyday, Scholarly, Performance, Scientific, and Artistic. This investigation was designed to reassess the factor structure of the K-DOCS, examine its measurement invariance across men and women, and develop norms across the five domains. Data on 22,013 American participants who had completed the assessment as part of past or ongoing studies between 2012 and 2020 were collated across multiple samples. Confirmatory factor analyses indicated that both five- and nine-factor solutions had superior fit compared to a one-factor solution. The models were also gender invariant, indicating that creative domains were assessed similarly across male and female samples. Norms across gender and age-groups were provided to enable future comparisons in research settings; it is not recommended to use these norms in clinical or diagnostic contexts. The investigation concluded that the K-DOCS is a robust psychometric tool for the self-assessment of creativity across domains.

Keywords

creativity, creative domains, measurement invariance, norms, self-assessment

The value of creativity in schools and in the workplace has been a consistent topic of debate and investigation (Beghetto & Kaufman, 2014; 2016; Reiter-Palmon et al., 2014). Many aspects of the current educational system, from its focus on standardized testing (Ravitch & Kohn, 2014) to its emphasis on meeting expectations over taking risks (Beghetto, 2013, 2019), have been accused of suppressing creativity. Similarly, within the workplace, organizations have only recently started to focus on the value of creativity over routinization and standardization of work practices (Gilson et al., 2005). Some have suggested that creativity can be enhanced within current constraints by

seeing it as a way to enhance student or employee engagement (Beghetto et al., 2014; Wigert, 2018) and motivation (Hennessey, 2015, 2019).

We will start with a brief background review on creativity. We adhere to the definition posed by Plucker et al. (2004), which states that "[c]reativity is the interaction among aptitude, process, and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context" (p. 90). It can range from miniature, personal creativity (Beghetto & Kaufman, 2007) to large-scale works of genius that last for generations (Kaufman & Beghetto, 2009).

When viewed as a cognitive ability, creativity is associated with *Glr* (long-term storage and retrieval) of the CHC theory (Schneider & McGrew, 2012), and empirical investigations have lent support for this connection (e.g., Avitia & Kaufman, 2014). More recently, *Glr* has been split into *Gl* (learning efficiency) and Gr (retrieval fluency); creativity is considered to align with *Gr* (Kaufman et al., 2019). When viewed as a trait, creativity is strongly linked with openness (Feist, 1998). Openness to experience is specifically associated with artistic creativity, whereas openness to intellect is specifically associated with scientific creativity (Kaufman et al., 2016).

There are many obstacles to the wider spread and nurturance of student or employee creativity. Beyond obvious issues such as sufficient time and resources, there are a number of implicit beliefs about creativity that can make it seem harder to improve. Some are untrue myths, such as thinking that creativity is largely reserved for people who are geniuses (Plucker et al., 2004) or who have mental illness (Kaufman et al., 2006). Other beliefs are on more nuanced concepts, such as whether creativity is domain-specific or domain-general.

Perhaps the most extreme aspect of this question can be seen in the relationship of creativity to the arts. Many people demonstrate an arts bias, seeing performance (Hass, 2014; Hass & Burke, 2016) or membership in an artistic domain (such as drawing; Glăveanu, 2014) as more creative than in other domains (such as science). One reason why people may hold these implicit beliefs is that creativity is often seen as a general construct. This perspective holds that someone who is highly creative in one area (such as cooking) is more likely to demonstrate exceptional creativity in other areas (such as science or music) due to similar underlying abilities, traits, and skills (Kaufman & Baer, 2002). The domain-specific argument is that creativity in different areas derives from notably distinct origins; being creative in one domain does not make you significantly more likely to be creative in another one (Baer, 2015).

In recent years, there has been a convergence toward the middle of the debate, acknowledging that there are both domain-specific and domain-general aspects to creativity (i.e., Amabile & Pratt, 2016; Baer & Kaufman, 2017), although most overviews of the field tend to lean toward specificity (Kaufman, 2016; Sawyer, 2012). This shift has manifested itself in creativity assessment. Divergent thinking tests, which take a largely domain-general perspective (Plucker, 2004), are still commonly used. Such

assessments, say, require participants to generate as many novel ideas as they can when prompted to enlist uses for a brick. However, tests that allow participants to demonstrate creativity across different areas that can then be rated (i.e., Carson et al., 2005; Cseh & Jeffries, 2019; Kaufman & Baer, 2012) are becoming more popular (Forgeard & Kaufman, 2016).

Although performance-based tests are preferable, self-report assessments are nonetheless one of the most common ways of measuring creativity (Batey & Hughes, 2017; Forgeard & Kaufman, 2016). There are many caveats and cautions about their use, particularly in any high-stakes context (e.g., Kaufman et al., 2008; Reiter-Palmon et al., 2012). These range from concerns about a person's insights into their actual creativity (Kaufman & Beghetto, 2013b), the potential for deceit or dishonesty (Kyllonen et al., 2005), or a lack of understanding about the nature of the construct itself (Baas et al., 2015). However, the simplicity, ease, and low cost of administration ensure that self-report assessments will continue to be frequently used in creativity research. One type of self-assessment asks people to evaluate their own creativity; scores can be used to examine someone's metacognition (i.e., Kaufman & Beghetto, 2013a), creative self-efficacy (Beghetto, 2006), or even as a proxy for creativity (Kaufman, 2019).

In this context, a frequently used self-report measure is the Kaufman Domains of Creativity Scale (K-DOCS); Kaufman, 2012). It is based on the Amusement Park Theoretical Model (APT Model; Baer & Kaufman, 2005, 2017), which integrates domain-specific and domain-general conceptions of creativity. The APT Model proposes a few core constructs (such as a sufficiently supportive or tolerant environment) that are needed for any type of creative activity. Beyond this aspect, creativity begins to grow more and more specific, from general thematic areas to domains to microdomains. A general thematic area might be visual art, with underlying domains including painting and sculpting. Domains would then have numerous underlying microdomains; painting might include oil and acrylic. A series of instruments were then developed to attempt to measure creativity at the general thematic area level (Kaufman, 2006; Kaufman & Baer, 2004; Kaufman et al., 2009), with the K-DOCS being the most recent (and most popular) iteration.

The K-DOCS consists of 50 items that tap into creative domains across five larger areas (see for example, Baer & Kaufman, 2005, 2017). These are Everyday, Scholarly, Performance, Scientific, and Artistic domains of creativity. Everyday encompasses the type of problem solving and social interactions that might occur on a daily basis. Scholarly includes academic research and nonfiction writing. Performance includes acting, singing, and lyrical writing. Scientific taps into all components of STEM creativity (such as technology, engineering, and mathematics). Artistic includes the visual arts as well as aesthetic appreciation (Appendix 1). T

he K-DOCS has demonstrated evidence of both convergent and discriminant validity (Kaufman, 2012; McKay et al., 2017). For example, McKay et al. (2017) found that actual creative behavior in each of the five factors was associated with the relevant

factor (i.e., the Artistic factor was related to self-reported activities and accomplishments in visual art, but not in science, music, or other domains); Snyder et al. (2020) obtained similar results. Kandemir and Kaufman (2019) found that academic majors largely were consistent with K-DOCS score patterns. The instrument has been frequently used in creativity research that takes a domain-specific approach (e.g., Dostal´ et al., 2017; Jonason et al., 2015; Lee & Russ, 2018). In addition, it has been translated and adapted into several different languages, such as Chinese (Tu & Fan, 2015), Czechoslovakian (Plhakov ´ a´ et al., 2015), and Turkish (Kandemir & Kaufman, 2019).

McKay et al. (2017) found that the five-factor solution initially proposed by Kaufman (2012) was a better fit than a single-factor (i.e., a domain-general) solution. Kandemir and Kaufman (2019) similarly found support for the five-factor solution but found a nine-factor solution that was a better fit. In this nine-factor solution, everyday was split into Interpersonal and Intrapersonal; Scholarly stayed the same; Performance split into an additional factor of Poetry/Music; Scientific split into a Mechanical/Scientific and Mathematical factor; and Artistic split into an Artistic Ability and Aesthetic factors.

The K-DOCS was designed such that individual scores would be given meaning by their comparison to a larger sample. Similar to the International Personality Item Pool (IPIP) scales (e.g., Goldberg et al., 2006), the ideal approach would be to administer the K-DOCS to a sizable group of people and make individual judgments for a specific participant based on how their scores compare to the group average. However, it is also useful to have mean scores for each domain on the K-DOCS much as other self-report research instruments offer, such as the Big Five Aspect Scale (DeYoung et al., 2007) or the Big Five Inventory–II (Soto et al., 2011). Therefore, the aim of this investigation was to establish the construct validity of the K-DOCS using a large sample of American participants across numerous studies using the instrument. Further, this study presents overall norms for the five K-DOCS domains as well as norms for men and women. Given the importance of the malleability of creative skills and interests over the lifespan (e.g., Lubart & Sternberg, 1998), cross-sectional norms across age-groups[1] are also provided.

Method

Participants

Data[2] were collated across 16 datasets that included the K-DOCS as part of their respective studies. Although many of these datasets have not been written up yet, some have resulted in published or submitted articles (Kaufman, 2012; McKay et al., 2017; Snyder et al., 2020; Taylor & Kaufman, under review). The total sample consisted of 22,013 participants (Mage = 25.74, SD = 9.21, range: 13–85 years); age data were available for 92.44% of the sample. About 66% of the sample was female, 29% was male, and the remainder identified with another gender or preferred not to disclose this information; gender data were available on 94.9% of the sample. Data were primarily collected through online surveys (the remainder were paper-and-pencil; unfortunately, it

was not possible to distinguish between the two methods) distributed in universities in the United States from 2012 to 2020.

Measure

K-DOCS. The K-DOCS was used in its 50-item 5-point Likert scale format (1 = much less creative to 5 = much more creative). The measure assesses creativity in five domains: (a) Everyday, (b) Scholarly, (c) Performance, (d) Science, and (e) Art. Eleven items each assess everyday and Scholarly creativity; 10 items assess Performance creativity; and nine items each assess Scientific and Artistic creativity. The instructions require participants to rate how creative they consider themselves to be across different acts, compared to others of a similar age and life experience. For instance, an item assessing the scientific domain reads “Writing a computer program,” and one examining the performance domain is “Composing an original song.” The internal consistency for all domains was high: Everyday α = .86 (n = 20,077), Scholarly α = .88 (n = 20,026), Performance α = .90 (n = 20,005), Science α = .89 (n = 20,132), and Art α = .87 (n = 20,186).

Results

Content Validity

To establish the content validity of the K-DOCS, its semantic overlap with other psychological inventories and instruments was determined using the Semantic Scale Network (Rosenbusch et al., 2020). The K-DOCS obtained the highest similarity indices between .417 and .458 with the creativity subscales of the Oregon Avocational Interest Scales (ORAIS; Goldberg, 2010) and with the culture subscale of the IPIP items similar to the Hogan Personality Inventory (Goldberg et al., 2006). The items in these scales overlapped only with the performance and artistic domains in the K-DOCS and were sufficiently distinct from the rest of the creativity domains.[3]

Construct Validity

K-DOCS CFA. Confirmatory factor analysis (CFA) was conducted using the R package lavaan (Rosseel, 2012) to compare one-factor, five-factor (Kaufman, 2012), and nine-factor (47 items; Kandemir & Kaufman, 2019) models for the K-DOCS scale. The CFA data were not normally distributed (Kolmogorov–Smirnov test statistics = .037 to .058, ps < .001); thus, in addition to the conventional maximum likelihood estimation, diagonally weighted least squares was used to estimate model parameters, in order to achieve the best overall fit indices. To determine optimal fit, the following absolute and incremental fit indices were used: root-mean square error of approximation, where values below .08 indicate good fit; standardized root mean square residual, for which values below .09 indicate good fit; comparative fit index (CFI), for which values above .90 typically indicate good fit; and the Tucker-Lewis index for which values above .95 suggest good fit (Hair et al., 2010; Hooper et al., 2008). Table 1 presents a summary of the one-, five-, and nine-factor CFA models using both estimation methods. Notably, the

nine-factor model had a relatively better fit than the five-factor one, which in turn had better fit as compared to the one-factor model.

Table 1. One-, Five-, and Nine-Factor CFA Fit Indices for the K-DOCS.

Model	*N*	Estimation	χ^2	Df	χ^2/df	CFI	TLI	RMSEA	SRMR
1-factor	17,441	ML	227669.74***	1175	193.76	.460	.437	.105	.115
		DWLS	652824.22***	1175	555.60	.806	.798	.178	.137
5-factor	17,441	ML	87842.24***	1165	75.40	.793	.783	.065	.068
		DWLS	189440.85***	1165	162.61	.944	.941	.096	.076
9-factor	17,536	ML	53686.10***	998	53.79	.868	.857	.055	.059
		DWLS	102365.27***	998	102.57	.968	.965	.076	.061

Note. ML = maximum likelihood; DWLS = diagonally weighted least squares; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA= root-mean square error of approximation; SRMR= standardized root mean square residual; K-DOCS = Kaufman Domains of Creativity Scale; CFA = Confirmatory factor analysis.
***$p < .001$.

Measurement Invariance. In addition to CFAs, the measurement invariance of the K-DOCS across genders (male and female) was computed (Table 2a). For one-, five-, and nine-factor models, configural invariance (baseline model assessing whether the constructs have the same factor structure across groups), metric invariance (whether item loadings on the factors are equivalent across groups), scalar invariance (equivalence on item intercepts across groups), and structural invariance (equivalence of item residuals across groups) were computed. In general, if ΔX2 is significant when models are compared to the baseline configural invariance, it suggests evidence of non-invariance between groups; however, relying on only this cutoff is likely to be misleading when sample sizes are large (Chen, 2007; Cheung & Rensvold, 2002), as in the current study. Other research has suggested using a criterion of .01 change in CFI (Cheung & Rensvold, 2002) or a more conservative .002 change in CFI (Meade et al., 2008). Based on these cutoffs, the K-DOCS is invariant across male and female samples.

However, the data had nearly twice as many female participants as male; Yoon and Lai (2018) suggest that measurement invariance computations can become complicated with severely unbalanced samples. Therefore, a subsequent analysis (Table 2b) sampled 50% of the female participant data randomly (female = 6923; male = 6331) for a more representative comparison. Here too, the models were invariant based on the .01 criterion, with fewer models meeting the more stringent .002 cutoff of ΔCFI.

Table 2a. Measurement Invariance across Men (n = 6331) and Women (n = 13,818) for the K-DOCS.

1-Factor	χ^2 (df)	$\Delta\chi^2$	RMSEA	ΔRMSEA	CFI	ΔCFI
Model 1 (configural invariance)	220715 (2350)		.103		.474	
Model 2 (metric invariance)	222179 (2399)	1464.7***	.102	.001	.471	.003
Model 3 (scalar invariance)	237943 (2448)	15763.7***	.105	.003	.433	.038
Model 4 (structural invariance)	239375 (2498)	1432.2***	.104	.001	.429	.003
5-Factor	χ^2 (df)	$\Delta\chi^2$	RMSEA	ΔRMSEA	CFI	ΔCFI
Model 1 (configural invariance)	88067 (2330)		.065		.793	
Model 2 (metric invariance)	88715 (2375)	647.5***	.065	0	.792	.001
Model 3 (scalar invariance)	94103 (2420)	5387.9***	.065	.001	.779	.013
Model 4 (structural invariance)	95627 (2470)	1524.7***	.065	0	.776	.004
9-Factor	χ^2 (df)	$\Delta\chi^2$	RMSEA	ΔRMSEA	CFI	ΔCFI
Model 1 (configural invariance)	54390 (1996)		.055		.868	
Model 2 (metric invariance)	54674 (2034)	284.0***	.054	0	.867	.001
Model 3 (scalar invariance)	59423 (2072)	4749.3***	.056	0.002	.855	.012
Model 4 (structural invariance)	60857 (2119)	1434.1***	.056	0	.852	.004

Note. CFI = comparative fit index; RMSEA= root-mean square error of approximation; K-DOCS = Kaufman Domains of Creativity Scale.
Note. ***p < .001.

Table 2b. Measurement Invariance across Men (n = 6331) and Women (n = 6923) for the K-DOCS.

1-Factor Model	χ^2 (df)	$\Delta\chi^2$	RMSEA	ΔRMSEA	CFI	ΔCFI
Model 1 (configural invariance)	146128 (2350)		.103		.477	
Model 2 (metric invariance)	147093 (2399)	965.0***	.102	.001	.474	.003
Model 3 (scalar invariance)	159661 (2448)	12567.6***	.106	.003	.428	.046
Model 4 (structural invariance)	160185 (2498)	523.9***	.105	.001	.426	.002
5-Factor Model	χ^2 (df)	$\Delta\chi^2$	RMSEA	ΔRMSEA	CFI	ΔCFI
Model 1 (configural invariance)	59395 (2330)		.065		.792	
Model 2 (metric invariance)	59858 (2375)	463.3***	.065	0	.791	.002
Model 3 (scalar invariance)	63955 (2420)	4096.8***	.066	.002	.776	.015
Model 4 (structural invariance)	65115 (2470)	1159.6***	.066	0	.772	.004
9-Factor Model	χ^2 (df)	$\Delta\chi^2$	RMSEA	ΔRMSEA	CFI	ΔCFI
Model 1 (configural invariance)	37351 (1996)		.055		.865	
Model 2 (metric invariance)	37561 (2034)	210.3***	.055	0	.865	.001
Model 3 (scalar invariance)	41110 (2072)	3548.4***	.057	.002	.851	.013
Model 4 (structural invariance)	42196 (2119)	1086.5***	.057	0	.847	.004

Note. CFI = comparative fit index; RMSEA= root-mean square error of approximation; K-DOCS = Kaufman Domains of Creativity Scale.
Note. ***p < .001.

K-DOCS Norms

Table 3 presents a summary of the stanine norms for the K-DOCS creative domain subscales, with respect to total scores and average scores.[4] Stanine transformations retained the underlying distribution and have been used to enable interpretations between below average (1, 2, and 3), average (4, 5, and 6), and above average scores (7, 8, and 9). As the K-DOCS should not be used in high-stakes situations, small differences between the domain scores obtained are less meaningful. Therefore, stanines have been presented to enable general comparisons with normative responses.

Age and gender. To determine the relationships between creative domains, age and gender (male = 1, female = 2) multiple regressions (ordinary least squares) were computed (Table 4). Results showed that higher scholarly creativity was associated with being older, whereas higher performance and artistic creativity were associated with being younger; age did not matter for Everyday or Scientific creativity. With respect to gender, higher Scholarly, Performance, and Scientific creativity were associated with being male, whereas higher everyday and Artistic creativity were associated with being female. Owing to the large sample size, the effect sizes of all models were small (R2 = .005 to .089), suggesting that age and gender explained between 0.5% and 8.9% of the variance in self-reported creativity across domains.

Table 3. Norms for the K-DOCS Domains based on Total and Average Subscale Scores.

	Total Scores						Average Scores				
Stanine	Self	Sch	Perf	Mech	Art	Stanine	Self	Sch	Perf	Mech	Art
S1	28	21	12	11	15	S1	2.55	1.91	1.20	1.22	1.67
S2	33	26	16	14	19	S2	3.00	2.36	1.60	1.56	2.11
S3	36	31	21	18	23	S3	3.27	2.82	2.10	2.00	2.56
S4	39	34	26	22	27	S4	3.55	3.09	2.60	2.44	3.00
S5	43	38	31	27	31	S5	3.91	3.45	3.10	3.00	3.44
S6	45	42	36	31	35	S6	4.09	3.82	3.60	3.44	3.89
S7	49	45	40	36	38	S7	4.45	4.09	4.00	4.00	4.22
S8	52	50	45	40	42	S8	4.73	4.55	4.50	4.44	4.67
S9	55	55	50	45	45	S9	5.00	5.00	5.00	5.00	5.00
N	20,792	20,791	20,782	20,791	20,803	N	20,792	20,791	20,782	20,791	20,803
M	40.70	35.83	28.58	24.64	28.78	M	3.70	3.26	2.86	2.74	3.20
Median	41	36	29	25	29	Median	3.73	3.27	2.90	2.78	3.22
SD	6.87	8.07	9.35	8.42	7.57	SD	.62	.73	.93	.94	.84
Skewness	−.55	−.32	.02	.14	−.22	Skewness	−.55	−.32	.02	.14	−.22
Kurtosis	1.05	.30	−.63	−.65	−.23	Kurtosis	1.05	.30	−.63	−.65	−.23

Note. Self = Self/Everyday; Sch = Scholarly; Perf = Performance; Sci = Scientific; Art = Artistic; K-DOCS = Kaufman Domains of Creativity Scale.

Table 4. Multiple Regressions (OLS) with Age and Gender as Predictors of the K-DOCS Domains.

Variable	Self/Everyday	Scholarly	Performance	Scientific	Artistic
Age	−.007	.073***	−.061***	−.003	−.021***
Gender	1.54***	−1.23***	−.860***	−5.41***	1.69***
N	19,505	19,505	19,495	19,503	19,516
F	109.83***	126.40***	50.23***	955.66***	117.37***
R^2	.011	.013	.005	.089	.012

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

Discussion

The K-DOCS is a well-established measure of self-reported creativity across five domains: Everyday, Scholarly, Performance, Scientific, and Artistic. This study collated data on the KDOCS from numerous past and ongoing studies with American participants to meet three key objectives: (a) to confirm the factor structure of the K-DOCS; (b) to determine the equivalence of this structure across gender; and (c) to provide norms for the K-DOCS subscales to inform future research (or in-class demonstrations). Although earlier research has investigated the scale's underlying structure, even across its translations (Awofala & Fatade, 2015; Faletic & Avsec, 2019 ˇ ; Susanto et al., 2018; Tan et al., 2016), the number of observations in the present dataset was the largest to date. The size of the sample permitted a thorough analysis of the K-DOCS and assisted in establishing norms for the instrument.

Among the three models compared, the original five-factor model displayed good fit and continues to be the recommended way to use the K-DOCS. The 50-item scale had good reliability and construct validity, comparable to McKay et al. (2017). The nine-factor model (47 items; Kandemir & Kaufman, 2019) is recommended to be used when researchers are interested in sub-domains of creativity. Specifically, this factor structure identifies nine sub-domains (Everyday Interpersonal, Everyday-Intrapersonal, Scholarly, Performance-Literary, Performance-Music, Mechanical/Scientific, Mathematical, Artistic-Drawing, and Artistic-Activity). Using the KDOCS items in this manner provides a more granular assessment of creative domains. That said, the one-factor model displayed the poorest fit on all indices and is not recommended to be used; specifically, it is not recommended to administer the K-DOCS and summate scores on all items leading to a unitary "creativity" score. This statistical analysis provided further credence to the notion that creativity, as measured by this assessment, is not domain-general. Instead, based on the specificity of the research questions being asked, a five-factor (domains) or nine-factor (subdomains) model is preferred. Results also indicated that the five- and nine-factor models were gender invariant. This implies that the K-DOCS assesses self-reported creativity in a similar manner across men and women, with few discrepancies in the latent factor structure.

There were significant but small gender differences, with men self-reporting higher scores on Scholarly, Performance, and Scientific creativity and women self-reporting higher scores on Everyday and Artistic creativity. Past studies have similarly shown men rating themselves higher on Scientific creativity and women on Artistic creativity (Kaufman, 2006; Kaufman et al., 2009) Given, however, the general finding that men are more likely to overestimate their own abilities and women are more likely to underestimate them (e.g., Furnham, 2001), combined with the relatively small strength of the differences, we do not believe that gender differences on the KDOCS are particularly notable.

General population norms were established for the K-DOCS domain subscales; data were provided for male and female samples across age-groups as well. It is recommended to use these norms in academic research and intervention settings when comparisons are to be made against a reference group. For instance, in a study implementing a creative thinking module in a before– after design, these norms can help determine changes in self-reported creativity in targeted domains. Thus, intra- and interindividual comparisons can be made against norms. Similarly, when a study involves a specific population, such as gifted students, K-DOCS norms can provide relative standings to a college student population on the same domains. However, it is not recommended to use K-DOCS norms for high-stakes situations; that is, these metrics should not be used for clinical, diagnostic, or employment purposes. In addition, it is important to remember that these norms are primarily based on college students. As such, researchers should be careful when comparing other populations to these norms.

The primary strength of this study was its large sample size and representativeness across age and to a smaller extent, across gender. A major limitation was that norms were based on data collected from Americans responding to the English form of the K-DOCS. As the scale has been translated into several other languages, future research can access and analyze data from other linguistic samples to establish other language norms. Further, the primary population sampled in this investigation was composed college of students, thereby limiting the generalizability of the obtained norms. Future work can aim to collect data on the K-DOCS from more diverse and cross-cultural samples to mitigate this limitation. In sum, the present study indicates that the K-DOCS is psychometrically sound and can be used as a reliable and valid measure of self-reported creativity.

Appendix 1. Paraphrased Kaufman Domains of Creativity Scale Items.

Item No	Paraphrased Item Statement
1	Having fun for no money
2	Helping others cope
3	Teaching others
4	Balancing work and personal life
5	Making myself feel happy
6	Solving personal problems
7	Helping people in different ways
8	Picking best way to solve problem
9	Coordinating a trip for many people
10	Helping resolve conflicts
11	Helping others feel calm
12	Writing nonfiction
13	Crafting letters to a newspaper
14	Researching an issue across multiple sources
15	Debating an issue with my personal views
16	Resolving an issue in a useful way
17	Gathering many sources to help an argument
18	Taking part in a debate (not my personal views)
19	Critiquing literature
20	Editing a paper based on feedback
21	Offering suggestions on how someone should edit their work
22	Thinking of a new position for an old debate
23	Poetry writing
24	Funny lyric writing
25	Coming up with rhymes
26	Writing a new song
27	Learning to play music
28	Filming a YouTube video
29	Harmony vocalization
30	Improvising a rap
31	Publically performing music
32	Performing theatrically
33	Sculpting/whittling (wood)
34	Repairing/fixing computers
35	Writing/programming computer code
36	Mathematical problem-solving
37	Mechanical tinkering
38	Building a machine
39	Constructing/doing a science experiment
40	Solving a mathematical proof
41	Sculpting/constructing (metal/stone)
42	Drawing open-ended picture
43	Drawing a person
44	Random doodling
45	Scrapbooking
46	Photography
47	Sculpting/casting pottery
48	Aesthetic enjoyment
49	Analyzing art
50	Appreciating art in a museum

Note. These items are paraphrased from the original for the purpose of understanding the content.

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Supplemental Material

Supplemental material for this article is available online.

Notes

1. Age bands were determined on the basis of data availability as the K-DOCS has largely been used with college student samples. That said, future work can use the K-DOCS with younger and older samples to extend the norms reported in this article.

2. The data and code that support the findings of this study are available from the corresponding author, HK, upon request.

3. The Everyday subscale displayed the highest similarity index of .415 with the cognitive empathy (happy) subscale of the Emotion Specific Empathy Questionnaire (Olderbak et al., 2014). The Scholarly subscale items overlapped with the Information Source Importance (Mass Media Sources) scale (similarity index = .527); however, this was a list of nine information sources such as newspapers (Bruner, 2012). The Performance domain items obtained the highest similarity index of .742 with the creativity subscale of the ORAIS, whereas Scientific creativity items overlapped with general statements about computer questionnaire (similarity index = .775; Zoltan & Chapanis, 1982). Last, the Artistic subscale obtained a similarity index of .76 with a Verbal Anxiety subscale, owing to the repeated term “verbal arts” in all items (Skaalvik & Rankin, 1995). As item content overlapped at a rudimentary level, with little regard to the higher construct being examined, we concluded that the K-DOCS displayed sufficiently distinct content from other related scales in creativity.

4. Please refer to the online supplementary materials for subgroup norms for men and women and for norms based on age and gender interactions (Tables S1–S5) in the Supplementary Material.

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