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Ronald A. Beghetto

Maciej Karwowski

Roni Reiter-Palmon

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# Intellectual Risk Taking: A Moderating Link Between Creative Confidence and Creative Behavior?

Ronald A. Beghetto Arizona State University

Maciej Karwowski University of Wroclaw

Roni Reiter-Palmon University of Nebraska at Omaha

Having confidence in one's creative ability seems necessary for creative behavior. The relationship, however, may not be as direct as creativity researchers have initially posited. Previous research on the relationship between creative confidence (CC) and creative behavior (CB) has yielded mixed findings. Moreover, emerging theoretical and empirical work suggests that the CC–CB relationship is moderated by other beliefs. In this exploratory study, we examined the relationship among intellectual risk taking (IRT), CC, and CB. Specifically, we tested 2 theoretical propositions. The first involved examining the posited relationship between creative confidence and creative behaviors. Consistent with our expectations, our preliminary results indicate positive, albeit somewhat modest correlations between creative confidence and creative achievements ( $r = .33$ ), creative achievements in the arts ( $r = .17$ ), creative achievements in science ( $r = .27$ ), and participation in creative activities ( $r = .35$ ). The second proposition involved examining whether IRT moderates the relationship between CC and CB. Our results indicate that IRT did serve as a moderator in the relationship between CC and CB. Specifically, our preliminary results indicate that willingness to take intellectual risks enhances the relationship between CC and CB. Moreover, our findings also indicate that at very low levels of IRT, there is no relationship between CC and CB. In sum, our results suggest that even if people have high levels of confidence in their creativity, they may also need to be willing to take the creative risks in order for creative confidence to develop into creative behavior. Theoretical and research implications of these findings are also discussed.

## Keywords:

intellectual risk taking, creative confidence, creative activity, achievement, exploratory study

## Supplemental materials:

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What personal factors influence creative behavior? Some version of this question has occupied creativity researchers for more than half a century. Indeed, some of the earliest work exploring the nature of human creativity focused on understanding why people demonstrate creative behaviors (Barron, 1969). Much of this early work focused on identifying individual differences in highly accomplished creators.

Although work on eminent creators has yielded interesting insights (Simonton, 2019), creativity is not restricted to legendary creative accomplishments (Kaufman & Beghetto, 2009). Indeed, scholars have long recognized that creative behavior can and does manifest in the everyday experiences of everyday people (Richards, 2007; Stein, 1953). Within this line of work there has been growing interest in creative self-beliefs (Hass, Katz-Buonincontro, & Reiter-Palmon, 2016; Karwowski & Kaufman, 2017) and whether such beliefs are related to creative behavior. In particular, a great deal of research has focused on the association between creative confidence beliefs (i.e. confidence in one's creative performance) and creative behavior.

Previous research on the relationship between creative confidence<sup>1</sup> (CC) and creative behavior (CB) has yielded mixed findings (see Beghetto & Karwowski, 2017; Karwowski & Beghetto, 2019 for an overview). Although having confidence in one's creative ability seems necessary (at least theoretically) for creative behavior, the relationship may not be as clear as creativity researchers have initially posited. Indeed, there is emerging evidence that the CC–CB relationship is moderated by other beliefs, such as valuing creativity (Karwowski & Beghetto, 2019).

In addition to valuing creativity, the willingness to take adaptive risks is often evoked by creativity researchers as another important factor related to creative behavior (Kaufman, 2016; Simmons & Ren, 2009). Indeed, successfully taking creative action requires taking the risk of making mistakes and even failing (Sternberg & Lubart, 1995; von Thienen, Meinel, & Corazza, 2017). This type of a risk is adaptive because the potential benefits outweigh the potential costs (Beghetto, 2019; Byrnes, 2013). Moreover, a general willingness to take such risks can be thought of as a more stable and general self-belief that develops from more dynamic and situational experiences with risk-taking behaviors (see Beghetto & Karwowski, 2017, for a related discussion).

Although the willingness to take sensible risks is important to creative behavior, most people tend to be risk adverse (Blair & Mumford, 2007). Prior work, however, suggests that confidence in one's ability is associated with the willingness to take

<sup>1</sup> Creative confidence beliefs refer to one's confidence to engage in creative thought and action. CC beliefs can range from more general, stable, and retrospective confidence beliefs (e.g., creative self-concept beliefs) to more specific, dynamic, and prospective confidence beliefs (e.g., creative self-efficacy beliefs). CC beliefs represent a particular type of creative self-beliefs, which are part of a broader constellation of self-beliefs that comprise of one's creative identity. We refer interested readers to more detailed accounts (Beghetto & Karwowski, 2017; Karwowski & Beghetto, 2019; Karwowski et al., 2019).

adaptive risks (Bandura, 1997; Beghetto, 2009; Beghetto & Baxter, 2012; Krueger & Dickson, 1994). Indeed, as Bandura (1997), has explained “Turning visions into realities is an arduous process with uncertain outcomes. Societies enjoy the considerable benefits of the eventual accomplishments in the arts, sciences and technologies of its persisters and risk takers” (p. 71).

The specific relationship among adaptive risk taking, creative confidence and creative behavior remains unclear. In this exploratory study, we aim to examine this relationship. More specifically, we first outline our theoretical assertions. We then report on our effort to examine the associations among risk taking, CC, and CB. We close with a brief discussion of implications for future theory and research.

## **Theoretical Assertions**

A first step in understanding the relationship among adaptive risk taking, CC, and CB requires clarifying how risk taking is conceptualized and measured. In what follows, we briefly describe the way we conceptualize adaptive risk taking in this study and its asserted relationship with CC–CB.

### **Conceptualizing the Role of Adaptive Risk Taking**

Having the ability to behave creatively is no guarantee that a person will take creative action. Indeed, ability alone is not sufficient for action. There are various factors that come into play when people decide to take action (e.g., the person’s psychological and physiological state, the task, and the situation). As Bandura (1997) has demonstrated, one key factor in whether people decide to act is if they believe they can be successful doing so.

In the case of creative behavior, confidence in one’s belief to successfully take action seems to have an important and somewhat nuanced relationship with actually taking action. That is, ability is a necessary but not sufficient condition for creative action. Such an assertion makes sense both logically and theoretically. Logically speaking, if a person has the ability to act creatively, but for whatever reason does not feel confident in taking creative action, then it is likely that this person will choose not to act (Karwowski & Beghetto, 2019). In this way, we posit that indicators of creative confidence will have a positive relationship with measures of creative action.

We further assert that people who have creative ability and confidence in their ability may still choose not to act if they believe the potential costs of taking action outweigh the potential benefits (Beghetto, 2019). Creative behavior is risky behavior. Taking creative action therefore requires a person’s willingness to take adaptive risks, which includes viewing the potential hazards involved in taking action as being outweighed by the potential benefits. Intellectual risk taking (IRT) represents one form of adaptive risk, which has also been found to be related to creative confidence beliefs. IRT refers to a person’s willingness to engage in adaptive behaviors (e.g., sharing

tentative ideas, attempting to do and learn new things) that place a person at risk of making mistakes or failing (Beghetto, 2009, p. 210).

As mentioned, the willingness to take adaptive risks can be conceptualized as a more general, stable, and trait-like self-belief, which develops from more situationally determined and dynamic experiences taking risks. In the context of creative endeavors, IRT can thereby be posited as being related to creative confidence beliefs and behavior. More specifically, people who have confidence in their creativity and are willing to try out new things and make mistakes would likely engage in more creative activities and enjoy more creative accomplishments. At this point, such an assertion is somewhat speculative and warrants empirical testing. We therefore aim to test this assertion in the present study.

### **IRT as Mediator or Moderator?**

Creativity researchers face a key question when empirically examining the association among IRT, CC and CB, specifically: Should it be treated as a mediator or moderator? This question is not easy to address because, theoretically speaking, a case can be made for IRT playing both a mediating role (i.e. the relationship between creative confidence and creative performance works through IRT) and moderating role (i.e. the relationship between confidence and behavior is conditional based on IRT). It may seem that this issue can be resolved empirically by simultaneously treating IRT as a mediator and moderator. Jacoby and Sassenberg (2010), however, present a persuasive case why this should not be done in a three-variable model because it poses serious logical contradictions that result in misspecified and inadequate models.

Another way to approach this issue is to consider situations where it might make sense for IRT to be posited as a mediator and when it might be more appropriately specified as a moderator. We offer that in situations where IRT, CC, and CB are conceptualized and measured in dynamic and task specific way, it may be more appropriate to treat IRT as a mediator. Conversely, when conceptualized and measured in a more stable and global way, it may be more appropriate to treat IRT as a moderator. In what follows, we discuss our rationale for these recommendations.

IRT represents a self-belief, and like other self-beliefs, the stability of such beliefs can vary depending on the specific situation or task (Beghetto & Karwowski, 2017). Specifically, IRT pertains to people's beliefs about their willingness to take risks necessary for learning and improvement. People who hold a somewhat global and stable perception of their risk taking (e.g., "I am willing to take sensible risks") can, at the same time, have a much more dynamic willingness to take risks in a particular activity domain (e.g., taking risks while learning to cook vs. learning to fly a plane) and specific activities or situations within a domain (e.g., taking risks while frying with high temperature oils vs. baking with a stove). The same can be said for people's CC.

Moreover, measures of IRT, CC, and CB can also vary in terms of specificity. Researchers can design and use more global IRT measures (e.g., "I try to learn new

things, even if I might make mistakes”), domain specific IRT measures (e.g., “I try to learn new things when cooking, even if I might make mistakes”), and even design and use task specific IRT measures (e.g., “I will try to learn new things on this particular cooking task, even if I might make mistakes”). The same can be said for measures of creative confidence and measures of creative behavior.

When IRT, CC, and CB are conceptualized and measured in a more tailored and temporally tight way, it seems likely that people’s confidence in their ability to perform creatively would be more tightly aligned with their willingness to take the intellectual risks necessary to convert their confidence into creative performance. Indeed, measures that assess a person’s confidence to perform a particular task, then immediately assess that person’s willingness to take the risk, and finally assess the creative performance on the task would be positioned to test a model that posits IRT as mediator of the relationship between CC and performance. In this situationally-dependent design, task-specific CC could be posited as having a more direct effect on situationally specific IRT, which in turn influences creative performance on that particular task. This assertion aligns with previous work that has conceptualized confidence beliefs as being predictive of adaptive risk taking (Bandura, 1997; Beghetto, 2009; Beghetto & Baxter, 2012; Krueger & Dickson, 1994).

Conversely, when the three variables of interest are conceptualized and measured in a more global way (as they are in the present study), the relationships among creative confidence, IRT, and creative performance likely would be less tightly coupled. Indeed, global measures of confidence tend to be weaker predictors of specific behavior (Bandura, 2012; Karwowski, Han, & Beghetto, 2019). It is therefore possible IRT would operate in a more conditional way (as a moderator). Specifically, the strength of the relationship between CC and creative performance would be moderated by the level of IRT. Moreover, it is further possible that a certain threshold of IRT is necessary for CC to result in creative performance (i.e. people who have general confidence in their creative abilities would also need to be generally willing to take adaptive risks in order to observe a relationship between CC and creative performance). The primary aim of this study is to explore whether IRT moderates the relationship between CC and CB.

## **Indicators of CB**

Prior to discussing the present study, we feel it is important to briefly discuss the kinds of indicators that seem most appropriate for exploring the relationship among creative self-beliefs and CB. The good news for creativity researchers is that there is no shortage of options when it comes to selecting indicators of creative behavior (Plucker, Makel, & Qian, 2019; Reiter-Palmon, Beghetto, & Kaufman, 2014). This embarrassment of assessment riches comes with the potential downside of providing researchers with too many choices, some of which may be more or less suitable for this type of work. We thereby discuss some general considerations (adapted from Karwowski & Beghetto, 2019) when selecting indicators of CB.

CB, in the context of this work, can be thought of as participating in any action or achievement that is judged by oneself or others as original (i.e. new, different, unique) and meeting task constraints (i.e. useful, solves a problem, meaningful). In addition to aligning with standard conceptions of creativity (Runco & Jaeger, 2012), this conception helps to differentiate indicators of CB from indicators of creative potential (e.g., divergent thinking tests). Along these lines, indicators of CB can thereby range from subjectively judged and retrospectively reported participation in creative activities and achievements (as used in this study; i.e. Carson, Peterson, & Higgins, 2005; Diedrich et al., 2018) to less ambiguous, externally and expertly judged products and performances (Karwowski & Beghetto, 2019). The selection of a particular indicator to be included in a study depends on a variety of factors, including time and cost (e.g., impaneling a team of judges to score products or performances), benefits (e.g., ease of use and scoring), and limitations (e.g., kinds of inferences that can and cannot be drawn based on them).

Although indicators of CB that rely on subjective and retrospectively reported participation in activities and achievements (like the those used in the present study) may be limited by self reporting and are, by definition, temporally situated in the past, they can still serve as a potentially useful indicator when used in conjunction with more global assessments of IRT and CC beliefs (as such, CC indicators are also posited to be informed by past behaviors). In sum, we assert that whatever indicator is selected, it should be clearly aligned with generally agreed upon definitions of creativity, sufficiently differentiated from indicators of creative potential or creative self-beliefs, and clearly outline limitations (Karwowski & Beghetto, 2019). T

## **The Present Study**

In this exploratory study, we endeavor to provide preliminary empirical findings from examining two theoretical propositions:

P1: People who have higher levels of CC will tend to demonstrate higher levels of demonstrated CB.

We assert that CC will be positively related to levels of creative activity and achievements because people who have confidence in their creative abilities will be more likely to engage in creative endeavors (and vice versa)<sup>2</sup>. We further assert that the intensity of this relationship will be moderated by their willingness to take adaptive risks (see P2).

P2: The relationship between global CC and CB will be moderated by a person's willingness to take adaptive risks.

<sup>2</sup> Given the exploratory and correlational nature of the present study, the opposite can also be argued (i.e. people who are willing to engage in creative endeavors will be more likely to have confidence in their creative abilities). Future research is needed to further untangle the potential chicken-and-egg and reciprocal relationships among these variables.

Theoretically speaking, if people are willing to take adaptive risks, then the relationship between their CC and their CB will be strengthened because willingness to take risks is often necessary for successfully taking creative action (see Figure 1). We further posit that lack of willingness to engage in adaptive risk taking may help explain why some people who otherwise have high levels of CC do not demonstrate similar levels of participation in creative activities or creative achievements.

## Method

### Participants

Participants (N = 803, 51% women) were recruited from a research agency panel. They had average age  $M = 40.00$ ,  $SD = 13.10$  (range 19–79), and tended to hold a higher education degree (54%) or a high-school diploma (34%). All participants provided informed consent to participate and received a gift voucher (equivalent to 10 US dollars).

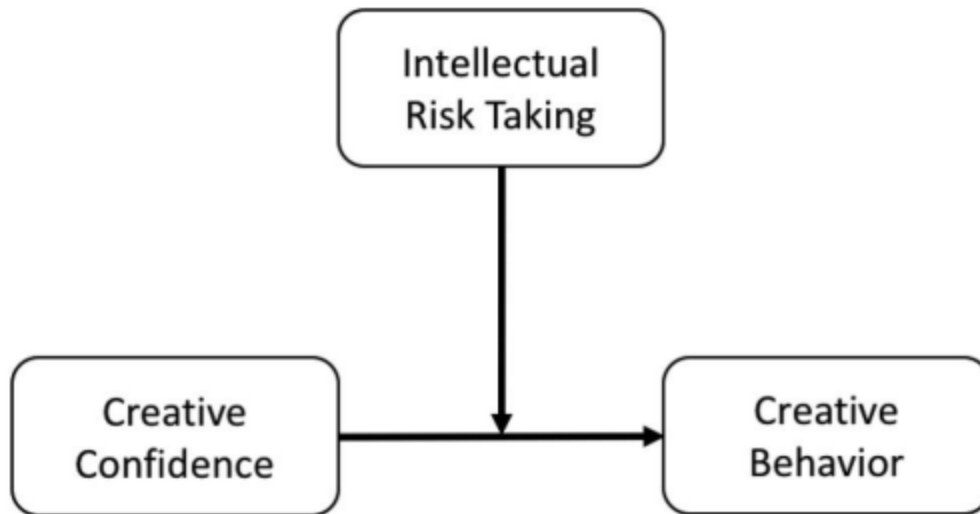
### Measures

**Global CC.** Global CC was measured using six items ( $\alpha .91$ , e.g., “I trust my creative abilities”) from the Short Scale of Creative Self (SSCS; Karwowski, Lebeda, & Wisniewska, 2018). Participants answered using a 7-point scale (1 = *definitely not*, 7 = *definitely yes*).

**IRT.** Participants responded to six items ( $\alpha .87$ ) from an IRT scale (Beghetto, 2009) used to measure a person’s general tendency to engage in beneficial risk taking activities. Sample items included: “I like doing new things, even if I’m not very good at them” and “I try to learn new things even if I might make mistakes.” Participants answered using 5-point Likert scale (1 = *definitely not*, 5 = *definitely yes*).

**Creative achievement.** Participants completed the Creative Achievement Questionnaire (Carson et al., 2005) to report on lifetime creative achievements in 10 different creative domains. The total score was skewed ( $M = 6.09$ ,  $SD = 7.91$ , skewness = 3.49), so we log-transformed it for multivariate analyses (skewness = 0.22). Following Kaufman et al. (2016), apart from the overall creative achievement, we also created two domain-specific subscales: CAQ Art (visual arts, music, dance, writing, humor and theater) and CAQ Science (scientific achievement and inventions). More specifically, we log-transformed the results in separate scales and then created summative scores for CAQ Art and CAQ Science domains. The skewness of such log-transformed scales was appropriate for regression analyzes ( $z = 2$  in the case of CAQ ART and  $z = 1.69$  in the case of CAQ Science).





*Figure 1.* The moderating role of intellectual risk taking in the relationship between creative confidence and creative behavior.

**Creative activity.** Participants completed a modified, 33-item version of the ICAA (Diedrich et al., 2018, sample item: created an original decoration) to report on whether they engaged in a specific creative activity (0 = *no*, 1 = *yes*) over the past year ( $\alpha = .81$ ). ICAA covers creative activity in literature, music, cooking, arts and crafts, sports, visual arts, performing arts, and science and engineering. The creative activity scale we used resulted in acceptable distribution for multivariate analyses (skewness  $z = 1.57$ ) and covered activity rather than accomplishments as measured by CAQ.

### Procedure

The study was conducted online. Participants completed the instruments in a random order, altogether with other measures that are outside the scope of this study. The whole process took between 20 and 40 min to complete.

### Results

Two of our constructs of interest — CC and IRT — were measured using brief self-report scales, both consisting of 6 items. To ensure that the common method variance did not influence the validity of the measurement, we compared two models obtained with confirmatory factor analysis conducted in lavaan for R (Rosseel, 2012), using maximum likelihood estimator with robust standard errors. First, we examined the model with one general factor loaded by all 12 items. If this factor was fitted well, it would have indicated that the validity of the CC and IRT measurement is compromised. This, however, was not the case: The model fit of this one-factor solution was poor, much below usually recommended cut-offs as present in the literature (e.g., Hu & Bentler, 1999), with comparative fit index ( $CFI$ ) = .67, Tucker-Lewis Index ( $TLI$ ) = .59, root mean square error of approximation ( $RMSEA$ ) = .20, 90% confidence intervals ( $CI$ )

= .20, .21 and standardized root-mean-square residual (*SRMR*) = .16. Then we examined our theorized model with two correlated latent factors. This model was characterized by the good fit, *CFI* = .966, *TLI* = .958, *RMSEA* = .065, 90% CI: .056, .075, *SRMR* = .038, with all factor loadings being statistically significant and strong (all loadings > .70). The two latent variables were significantly, yet moderately correlated (latent  $r = .45$ ,  $p < .001$ ). Therefore, although both CC and IRT were measured using short self-report scales, we conclude that it is unlikely that common method variance threatened the validity of our measurement.

Descriptive statistics and correlations between variables are presented in Table 1. All reported correlations were positive and statistically significant, ranging from  $r = .16$  ( $p < .001$ ) in the case of relationship between creative achievements in arts and intellectual risk taking and  $r = .57$  ( $p < .001$ ) in the case of relationships between CAQ and creative activity as measured by ICAA. Consistent with our assumption, CC and IRT were positively related when analyzed as observed variables,  $r = .42$ ,  $p < .001$ . Interestingly, CC and IRT exhibited a similar relationship with overall creative achievement as measured by CAQ (CC:  $r = .33$ , IRT:  $r = .29$ , both  $ps < .001$ ), creative achievement in arts (CC:  $r = .17$ , IRT:  $r = .16$ , both  $ps < .001$ ), science (CC:  $r = .27$ , IRT:  $r = .23$ , both  $ps < .001$ ), and the overall score of creative activity (CC:  $r = .35$ , IRT:  $r = .28$ , both  $ps < .001$ ).

**Table 1**  
*Descriptive Statistics and Intercorrelations*

Variables	<i>M</i>	<i>SD</i>	2	3	4	5	6
1. CC	5.08	0.97	.42	.33	.17	.27	.35
2. IRT	3.18	0.80		.29	.16	.23	.28
3. CAQ	1.56	0.88			.80	.69	.57
4. CAQ arts	1.59	1.76				.44	.46
5. CAQ science	0.69	0.90					.43
6. Creative activity	.12	.12					

*Note.*  $N = 803$ . CC = creative confidence; IRT = intellectual risk taking; CAQ = creative achievement questionnaire. CAQ, CAQ arts, and CAQ science scores are log-transformed. All correlations are significant at  $p < .001$ .

Does IRT moderate<sup>3</sup> the relationships between CC and creative activity or creative achievement? To answer this question, we introduced CC, IRT, and their cross-products into regression models predicting the overall CAQ scores, as well as creative achievements in the arts, science, and creative activity. A summary of regression results is provided in Table 2<sup>4</sup>.

Consistently with our expectations, in all four cases we observed significant effects of CC and IRT and significant effects of their interactions. Although the effect size was small (CAQ Arts,  $R^2 = .05$ ) to moderate ( $R^2$  between .10 and .16), the interactive effects were stable, providing evidence in support of moderation.

To untangle more specific patterns of the interactions (i.e. assuming the relationship between CC and creative activity or achievement may differ at very low or very high levels of IRT), we used the Johnson-Neyman conditioning technique (Hayes, 2013) to estimate potential cut-offs of IRT that serve as breakpoints below and above that can identify where the relationship between CC and achievement changes.

As illustrated in Figure 2, our results indicate that moderation of IRT in the relationship between CC and CB was nonlinear. More specifically, there was no relationship between CC and activity and achievement among participants who were characterized by very low level of IRT. Conversely, the relationship between CC and CB was strengthened in people with higher levels of IRT.

Figure 3 depicts the effects of CC on total creative achievement as measured by CAQ and creative activity conditioned by IRT. Consistent with the Johnson-Neyman breakpoint, there was no significant relationship between CC and CAQ among

3. For the interested reader, we also tested mediational models (as we recognize an alternative case can be made for the indirect role of IRT even though we assert that testing moderation is more appropriate for the reasons already discussed). In testing mediational models, we observed statistically significant indirect effects in each of the models tested. Specifically, not only was there a link between CC and IRT and IRT and creative activity or achievement, but also the indirect effects, CC– creative activity and CC– creative achievement via IRT, were statistically significant. We estimated all models using Hayes (2013) Process (model 4), using 5,000 bootstrap samples. More details on these mediation models can be found in online supplementary material.

4. As our study was cross-sectional, the possibility of reverse causality cannot be refuted. Therefore, following the suggestion of an anonymous reviewer, we have also regressed creative confidence on IRT, creative activity, and creative achievement. In the first model, we included IRT, CAQ total score, and creative activity as predictors. The model explained 24% of the variability in CC ( $R^2 = .239$ ), with all predictors being statistically significant: IRT  $.33, p = .001$ , CAQ  $.13, p = .001$  and creative activity  $.18, p = .001$ . In the second model, we included CAQ Arts and Science scores together with IRT and creative activity. This model obtained the same  $R^2$  (.24); however, the only significant predictors of CC were IRT  $.34, p = .001$ , creative activity  $.22, p = .001$  and creative achievement in science  $.11, p = .003$ , while creative achievement in the arts was not related to creative confidence ( $.04, p = .28$ ). In both models, variance inflation factors (VIF) did not indicate any problems with potential predictors' collinearity (all VIFs 1.6).

participants whose IRT was very low (about 2 standard deviations below the mean, or equivalent of 3rd percentile):  $r = -.22$ ,  $p = .21$ . Above this point the CC-CAQ relationship was statistically significant and increased with IRT,  $r = .35$ ,  $p < .001$  among participants whose IRT was above the estimated threshold. A similar pattern was obtained in the case of relationships between CC and creative activity.

In the case of creative achievement in the arts, the Johnson-Neyman algorithm suggested a breakpoint below the average IRT level ( $z = -0.61$ ). Below this point the link between CC and achievement was not significant,  $r = .07$ ,  $p = .33$ , while above it differed from 0,  $r = .17$ ,  $p < .001$ . In the case of creative achievements in science, the relationship with CC was not significant below IRT – 1.3. Figure 3 summarizes the obtained moderation effects.

## Discussion

The aim of this study was to explore the relationship among willingness to take intellectual risks, CC, and CB (i.e. activities and achievements). Specifically, we tested two theoretical propositions. The first involved examining the posited relationship between CC and CB. Consistent with our expectations, we found positive, albeit modest correlations between CC and creative achievements ( $r = .33$ ), creative achievements in the arts ( $r = .17$ ), creative achievements in science ( $r = .27$ ), and creative activities ( $r = .35$ ). These findings align with previous work, which has found positive and somewhat weak links between CC and CB.

Although there is strong theoretical support for this relationship, previous empirical findings tend to be somewhat disappointing. One reason for not finding stronger relationships may be due to the use of more general and static measures, rather than using more domain and task specific confidence measures (see Bandura, 2012; Beghetto & Karwowski, 2017, for a discussion). Indeed, domain differences in creativity have been long noted as an important factor in understanding potential differences in creative activity and achievement (Baer, 2015). Although our exploratory findings do demonstrate differences in the patterns of relationship between our domain general CC and creative achievements in the arts and creative achievements in the sciences, it is likely that the relationships and differences would have been more pronounced if all of our measures were more situationally focused and pertained to performance on a task presented to participants (rather than rely on more global and retrospective self-report measures). Studies designed to include more sensitive measures and creative performance tasks are needed in order to test out and further explore the nature of the relationships reported in this preliminary work.

Another reason, which we empirically test in our second theoretical proposition, is that prior empirical work has not sufficiently examined the nuanced nature of this relationship, including the moderating relationship of other variables. Specifically, our second theoretical proposition focused on examining whether IRT serves as a moderator in the relationship between CC and CB. Our results provide evidence that

IRT plays a moderating role in the association between CC and CB. We found this conditional role in all measures of creative achievement and creative activity. Moreover, our results indicate that willingness to take intellectual risks not only strengthened the relationship between CC and creative activities and achievements but also seemed to be a necessary factor in this relationship. Specifically, our results indicate that if people are not willing to take intellectual risks, then there is no significant relationship between CC and CB.

Table 2  
A Summary of Four Regression Models Testing

	CAQ		CAQ arts		CAQ science		Creative activity	
	<i>B</i> ( <i>SE</i> )	$\beta$	<i>B</i> ( <i>SE</i> )	$\beta$	<i>B</i> ( <i>SE</i> )	$\beta$	<i>B</i> ( <i>SE</i> )	$\beta$
CC	.24 (.03)	.26***	.26 (.07)	.14***	.21 (.04)	.23***	.036 (.004)	.31***
IRT	.21 (.04)	.19***	.25 (.08)	.12**	.17 (.04)	.15***	.024 (.005)	.17***
CC × IRT	.08 (.03)	.09**	.23 (.07)	.12**	.11 (.03)	.12**	.018 (.004)	.15***
<i>R</i> <sup>2</sup>	.14		.05		.10		.16	
Interaction <i>R</i> <sup>2</sup>	.01		.015		.013		.022	

Note. CC = creative confidence; IRT = intellectual risk taking; CAQ = creative achievement questionnaire.  
\*\*  $p < .01$ . \*\*\*  $p < .001$ .

This finding provides important new insights into the association between creative beliefs and behaviors. Specifically, this finding highlights that willingness to take intellectual risks moderates the relationship between CC and creative activities and accomplishments. This finding, albeit preliminary, makes sense as it suggests that people need to have confidence in their ability to persist and take calculated risks when engaging in creative endeavors and attaining creative accomplishments (Bandura, 1997). Our preliminary results provide direction for subsequent research, including the potential value of researchers looking more closely at the possible patterns of relationship between CC and achievement when moderated and mediated by IRT. This includes exploring possible negative relationships between CC and creative achievement at low levels of IRT as well as the potentially mediating role situationally specific IRT can play in the link between CC and creative performance.

Finally, additional work is needed to tease out the role that creative potential and other indicators of creative competence play in the link between CC, risk-taking, and creative performance. Recent research has suggested that self-belief plays a nontrivial role in converting creative potential into CB (Karwowski & Beghetto, 2019), and our findings add to this line of work by further clarifying the role that risk can play. Testing a full model from potential to performance, which includes the willingness to take adaptive risks, is an important and needed direction to further clarify research into the question of how creative potential develops into creative activity and achievement. Researchers could, for instance, contribute to this line of research by designing studies that assess participants' creative potential (e.g., relevant skills and abilities, divergent thinking, openness to experience); use a set of creative performance tasks (e.g., represent

different domains of creative performance); assess participants' confidence to creatively perform on each task (e.g., 0 to 100) before, during, and after completing the task; assess participants' willingness to take adaptive risks (i.e. trying new approaches and things that may not work) before, during, and after completing the task; and have participants' creative performance scored by external judges.

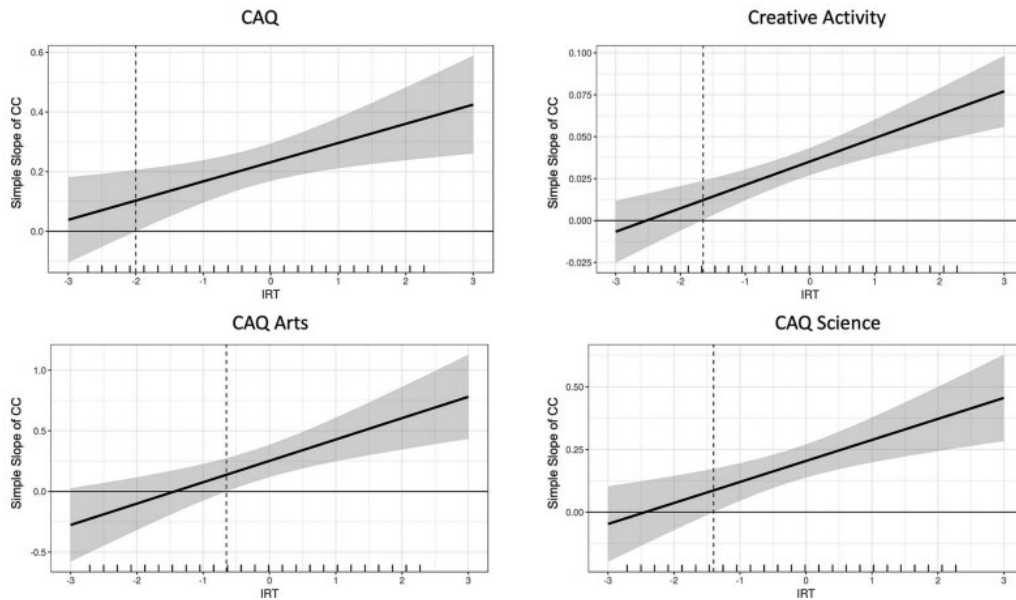


Figure 2. Simple slopes of CC as moderated by the level of IRT.

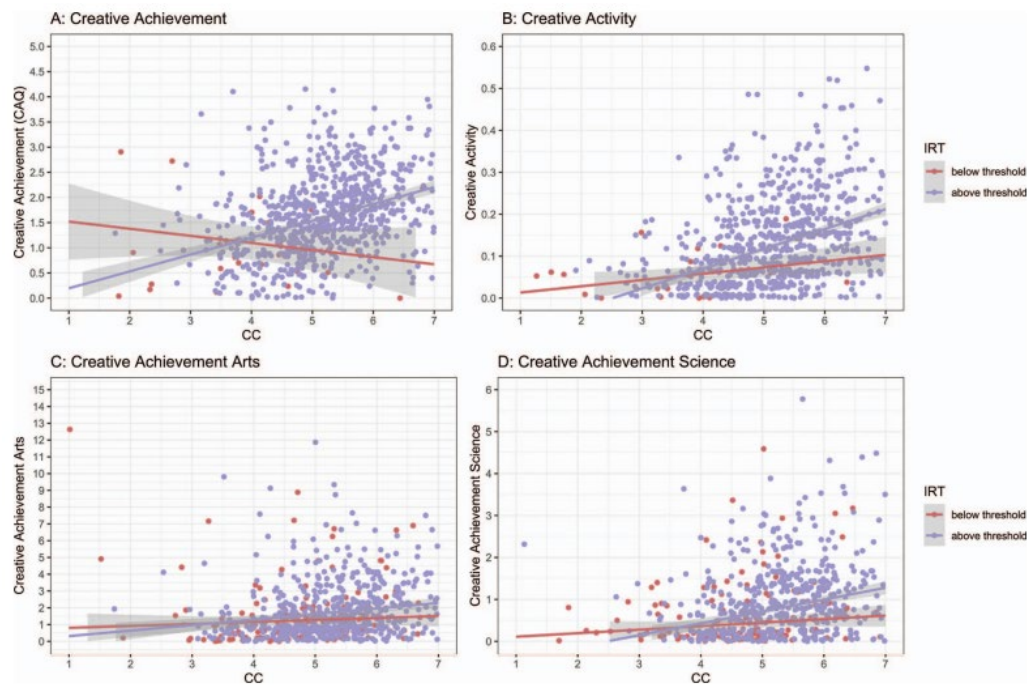


Figure 3. The relationships between CC and CAQ (Panel A), creative activity (Panel B), CAQ Arts (Panel C) and CAQ Science (Panel D) as moderated by IRT. See the online article for the color version of this figure.

Although our preliminary findings are promising, we also recognize that they are limited given the cross-sectional and correlational design of our study and somewhat

modest findings of this preliminary effort. As mentioned, the size and strength of the relationships we observed were small to moderate. Additional research is needed in an effort to replicate and test the consistency and generalizability of these findings. Indeed, studies using more dynamic and task-specific measures may help address some of these limitations. Consequently, caution should be used in making causal inferences and strong claims about our findings.

Still, our results do provide preliminary evidence in support of the positive association between CC and CB across different measures and domains. Moreover, our results shed new light on the relationship among adaptive risk taking, CC, and CB. Given the preliminary and correlational nature of this work, it is not appropriate to make strong claims about implications of our findings for practice based on this study alone. However, this work does provide some initial evidence that people who report that they participate in creative activities and achievements have also developed a positive level of CC and a willingness to take adaptive risks. Perhaps the biggest takeaway from our preliminary study is that our findings suggest that even if people have confidence in their creativity, they seem to also need to be willing to take creative risks. Otherwise even high levels of CC may show little to no relationship with creative activity or achievement.

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