

Thematic profile analysis reveals the explanatory power of themes in creative ideas

Supplemental Material

Method

Creative idea text corpora

Engineering design problems

Instruction script for all problems to participants:

“For this task, you'll be asked to generate solutions to design problems. The goal is to come up with ideas that are novel (i.e., original, unique, and innovative), while also being effective (i.e., practical, efficient, and feasible). Aim to balance novelty and effectiveness in your solutions. Each one will take 3 minutes. You'll be asked to generate solutions to design problems. The goal is to come up with creative solutions, on your own. Please do not use assistance of any kind. Creative ideas are novel, uncommon, or remote, while also being effective (i.e., practical, efficient, and feasible). Aim to balance novelty and effectiveness in your solutions. The goal is to produce the most creative ideas.”

Rater instructions

“The goal of this study is to improve engineering education by developing new tests of creative thinking.

With your background in engineering, we value your input and expertise. Our test asks people to think of creative solutions to engineering design problems, such as improving travel in mountain regions. Your job is to evaluate the originality of solutions to these problems. Click the arrow to continue.

You'll judge the ORIGINALITY of each solution to the problem. You can think of originality in three ways: uncommon, remote, and clever. Most original solutions score high in all three. But a low score in one doesn't mean the overall score can't be high. We'll use a scale from 1 to 5: 1: Very Unoriginal 2: Unoriginal 3: Neutral 4: Original 5: Very Original

Let's review each scoring criteria: uncommon, remote, and clever. Click the arrow to continue.

Uncommon

Original solutions are rare. If many people give the same solution, it's common.

A solution given only once can be original, but not always. For instance, a strange or unrelated idea might be rare but not truly original.

Remote

Original solutions are different – they're "far" from everyday ideas.

If a solution isn't obvious, it's likely original. But if it's too similar to common ideas, it's probably not original.

Clever

Original solutions are often seen as clever, being insightful or witty.

Unclear solutions usually aren't clever. Yet, even a common solution, if presented cleverly, can achieve a high score.

Next is a practice round. You will rate and review a set of practice items that range from LOW ORIGINALITY (1 on the scale) to HIGH ORIGINALITY (5 on the scale). You may also rate a response as N/A, for example if the solution is only a few words/letters, or it doesn't make any sense.

The responses that you will rate will be associated with one of 8 prompts. A prompt refers to the problem that was posed to the participants. For example, a prompt could be: "An original solution to assist people who have trouble waking up in the morning is..."

A response to the prompt would then be a solution inspired by this prompt, for example: "An intelligent alarm clock which brews coffee"

There will be 5 example responses that you will practice rating for each prompt, plus 4 example N/A responses, for a total of 44 practice items.

Here's a few things to keep in mind when rating the solutions:

- The solutions were written by Engineers.
- Try to use the full 1-5 scale. For example, don't rate all solutions either 1, 2, or 3.
- You don't need to agonize over each rating, just give your best expert judgment of the creativity of each solution.
- If you see any invalid solutions -- for example, the solution is only a few words/letters, or it doesn't make any sense -- just put N/A as your rating.
- Don't focus on minor spelling mistakes, only judge the general idea
- Feel free to take a break whenever you feel like it, just keep the tab open."

Everyday creative problem-solving

Roommate prompt:

Becky is a college student who works part-time at Mark's Pizzeria. Mark, the owner of the restaurant, has treated Becky very well. He gave her a job that she needs to help pay her rent when no other business would employ her because she was arrested for shoplifting three years ago. Mark also lets Becky work around her school schedule, and has asked if she wants to be a shift manager in the summers. Becky's roommate Jim also works at the pizzeria, but Jim has been causing a lot of problems at work. He always avoids doing his job, treats customers rudely, and makes a lot of mistakes with orders. Jim recently began stealing food from the pizzeria. Two days ago the pizzeria was short-staffed, so Jim and Becky were the only employees left at closing time. Jim made 10 extra pizzas and took them home to a party he was hosting without paying for them. Becky feels like she needs to do something about Jim's behavior. However, Becky is hesitant to tell Mark about Jim because Jim is a good friend to Becky. Becky also needs Jim to have a job so he can pay his portion of their rent. Becky does not know what to do.

School prompt:

Clara, a junior pre-med student, is working part-time and taking a 15 hour credit load at school. Clara enjoys her pre-med courses very much, but they are very difficult and time consuming. Her current job as a "gopher" at an architectural design firm requires her to work 25 hours a week which really cuts into her available study time. In fact, she is barely getting "C's" in two of the classes she needs for her major. The pay in her present job is good, and she enjoys the work, although she is not getting a lot of practical experience. Clara does not want to drop any of her classes as she needs them to graduate so that she can be admitted to medical school in the coming year. She also knows that she needs good grades to be admitted to medical school. Up until now, Clara has been able to work at her job and still get good grades, but the difficult courses she is taking now require much more of her time. Clara is not sure how to solve her problem.

Results

Design Problems Task

Table S1.

Predictive Validity for Design Problems Memory Prompt Test Set with All Thematic Semantic Distances as Predictors and Human Creativity Ratings as the Criterion

Predictor	b	b 95% CI [LL, UL]	β	β 95% CI [LL, UL]	sr^2	sr^2 95% CI [LL, UL]	r
(Intercept)	0.21	[-0.21, 0.63]					
topic_X1	-1.14*	[-2.10, -0.17]	-0.58	[-1.07, -0.09]	.02	[-.01, .06]	-.41**
topic_X10	0.02	[-0.74, 0.79]	0.01	[-0.38, 0.40]	.00	[-.00, .00]	-.02
topic_X11	0.14	[-0.59, 0.86]	0.07	[-0.29, 0.42]	.00	[-.01, .01]	-.12
topic_X12	0.29	[-0.30, 0.89]	0.13	[-0.13, 0.39]	.00	[-.01, .02]	-.24*
topic_X13	-0.04	[-0.65, 0.57]	-0.02	[-0.35, 0.31]	.00	[-.00, .00]	-.09
topic_X14	0.55*	[0.02, 1.08]	0.18	[0.01, 0.36]	.02	[-.01, .05]	-.03
topic_X15	0.40	[-0.13, 0.93]	0.18	[-0.06, 0.41]	.01	[-.01, .03]	-.04
topic_X2	0.99*	[0.19, 1.78]	0.46	[0.09, 0.83]	.03	[-.01, .07]	-.25*
topic_X3	1.19**	[0.42, 1.95]	0.53	[0.19, 0.87]	.04	[-.01, .09]	-.21*
topic_X4	-0.52	[-1.23, 0.18]	-0.22	[-0.51, 0.07]	.01	[-.01, .03]	.04
topic_X5	-1.30**	[-2.24, -0.36]	-0.62	[-1.07, -0.17]	.03	[-.01, .08]	-.57**
topic_X6	-1.15**	[-1.82, -0.48]	-0.66	[-1.04, -0.28]	.05	[-.00, .11]	-.49**
topic_X7	0.01	[-0.95, 0.97]	0.00	[-0.43, 0.44]	.00	[-.00, .00]	-.22*
topic_X8	0.68*	[0.02, 1.34]	0.25	[0.01, 0.50]	.02	[-.01, .05]	.07
topic_X9	0.20	[-0.44, 0.84]	0.08	[-0.18, 0.35]	.00	[-.01, .01]	-.23*

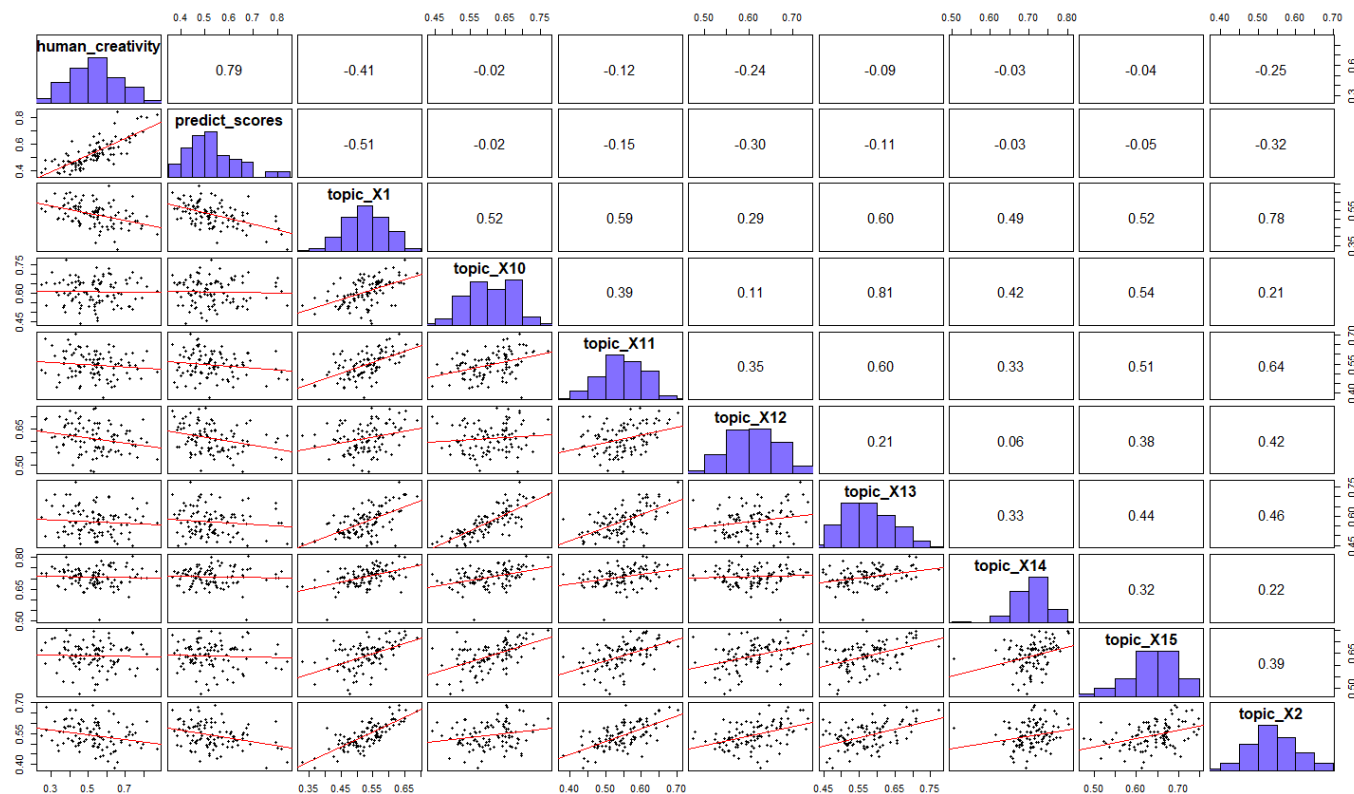
$R^2 = .629^{**}$
 95% CI

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*² represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

* indicates $p < .05$. ** indicates $p < .01$.

Figure S1.

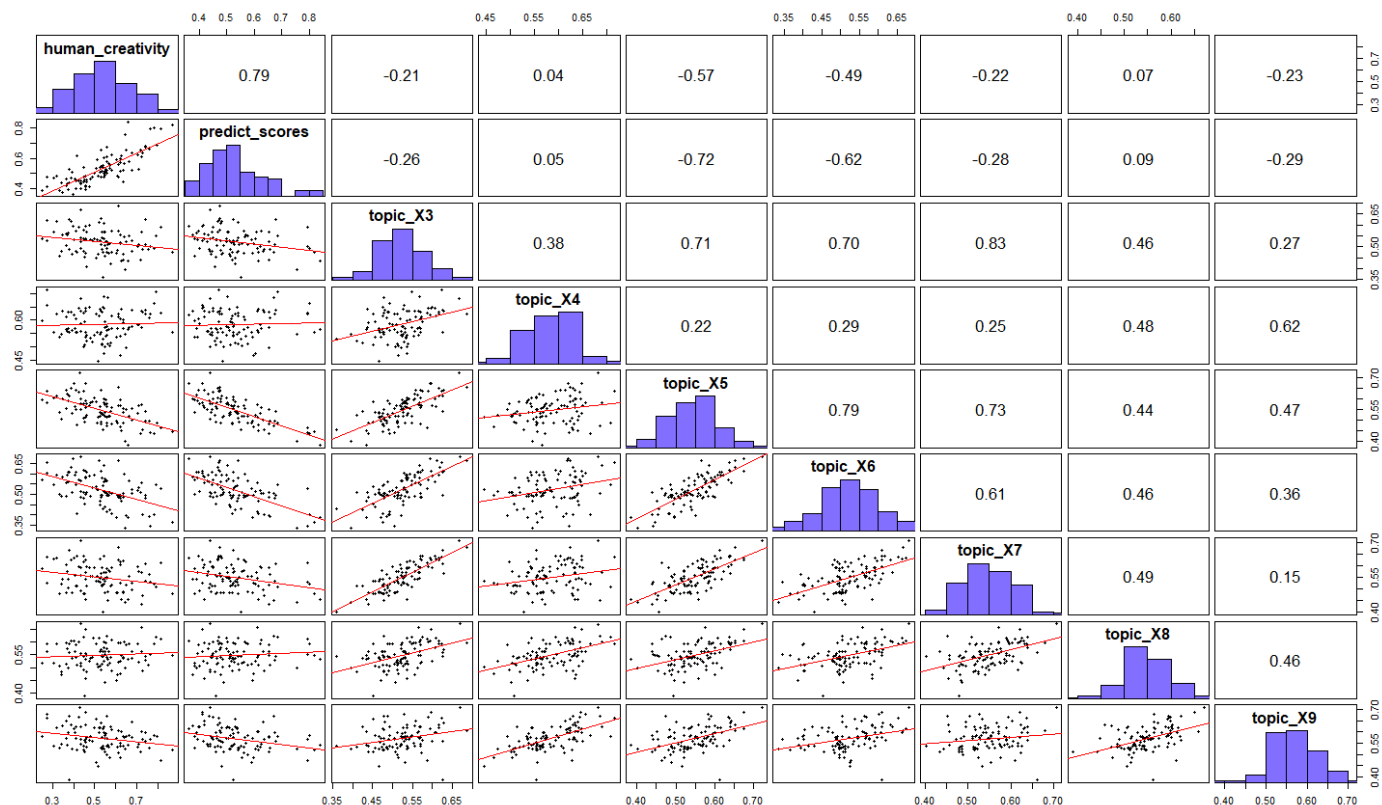
Bivariate Scatterplots, Univariate Distributions, and Raw Data Points for Thematic Semantic Distances for Thematic Profile for First Half of Topics



Note. Data from grand challenge memory task. predict_scores = thematic profile scores using regression model with all thematic semantic distances from each topic as predictors and human creativity ratings as the criterion.

Figure S2.

Bivariate Scatterplots, Univariate Distributions, and Raw Data Points for Thematic Semantic Distances for Thematic Profile for Second Half of Topics



Note. Data from grand challenge memory task. predict_scores = thematic profile scores using regression model with all thematic semantic distances from each topic as predictors and human creativity ratings as the criterion.

Influence of topic number on thematic profile analysis

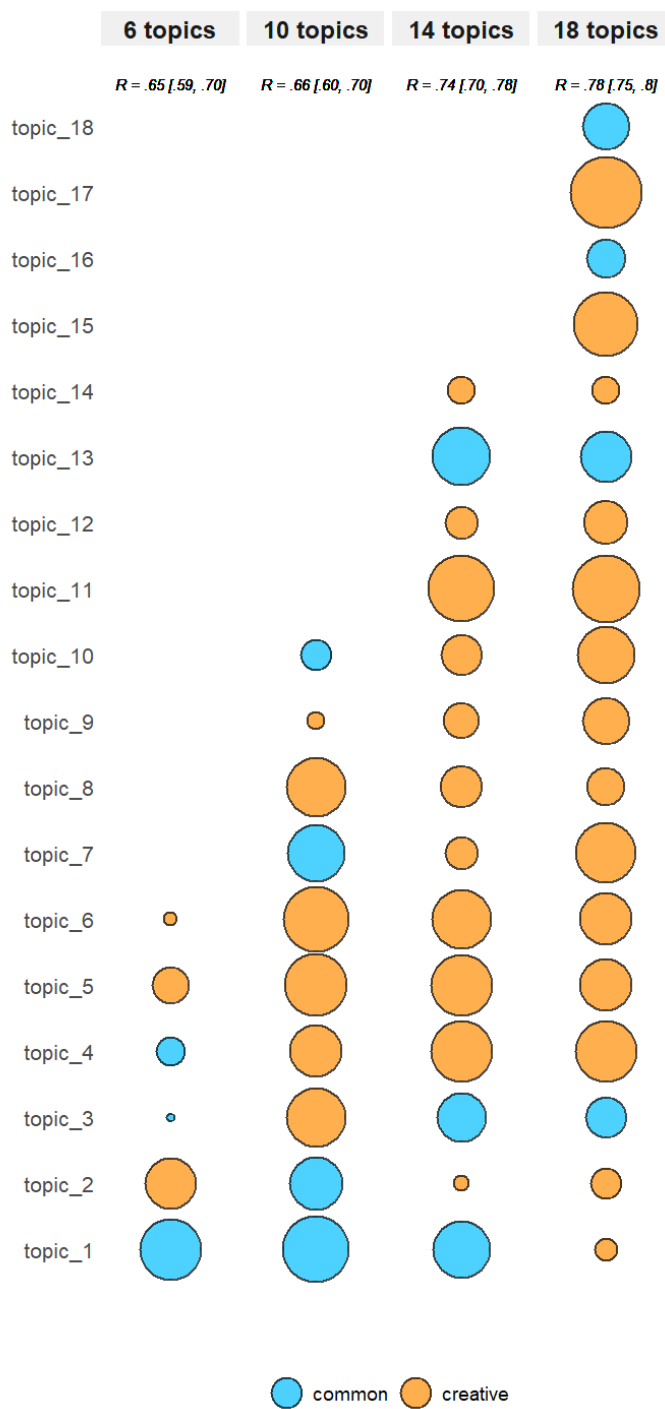
There is not a “correct” number of optimal topics for a topic model (Roberts et al., 2019; Weston et al., 2023). While the predictive validity analysis revealed 15 topics maximized the correlation between the thematic semantic distance of all themes and human creativity ratings and represented a balance of semantic coherence and exclusivity, the researcher may have alternative goals. It is

possible the researcher is more interested in uncovering the predictive power of increasingly rare and creative themes in a data set, in which case the researcher would increase the topic number. In contrast, the researcher may be primarily interested in the more common themes, in which case the researcher would decrease the topic number.

To examine the influence on topic number on a thematic profile's predictive validity, we fit 4 additional topic models of $k = 6, 10, 14, 18$ while fixing the FREX value to .70 and topic word number to 10. Like in the main text, human creativity ratings served as the criterion and each thematic semantic distances for each topic served as predictors, with the multiple R correlation coefficient indexing predictive validity. Figure S3 demonstrates that as topic number increases, the percent of creative topics (orange circles, i.e., negative predicting) increases from 50% for 6 topics to 78% for 18 topics. This reveals that the number of common topics remains fairly constant as topic number increases. This is perhaps unsurprising because as topic number increased, the topic model identified increasingly rare topics, that is, topics that fewer participants discuss. Topics that are rarely discussed are more likely to be creative topics. Consequently, if a researcher is interested in identifying increasingly rare topics, they should increase the topic number. As topic number increased, the correlation between the thematic profile and human creativity ratings also increased from $R = .65$ to $R = .78$. However, it should also be noted that the higher the topic number, the more complex the model and the more challenging it may be to interpret.

Figure S3.

Thematic Profile as a Function of Topic Number



Note. Data from design problems memory prompt. The color of the circle indicates whether the theme was common (i.e., higher semantic distance positively predicted human creativity ratings) or creative (i.e., higher semantic similarity positively predicted human creativity ratings). The size of the circles reflects the bivariate correlation between the theme's semantic distance/similarity and human creativity ratings.

Predictive and incremental validity for design problems, everyday creative problem solving, and alternate uses task

What follows is evidence for predictive and incremental validity for the design problems water prompt, everyday creative problem-solving roommate and school prompts, and the box and brick prompts for the alternative uses task. For each task and prompt, the predictive validity results are presented first, followed by incremental validity.

Figure S4.

Predictive Validity for the Design Problems Water Prompt

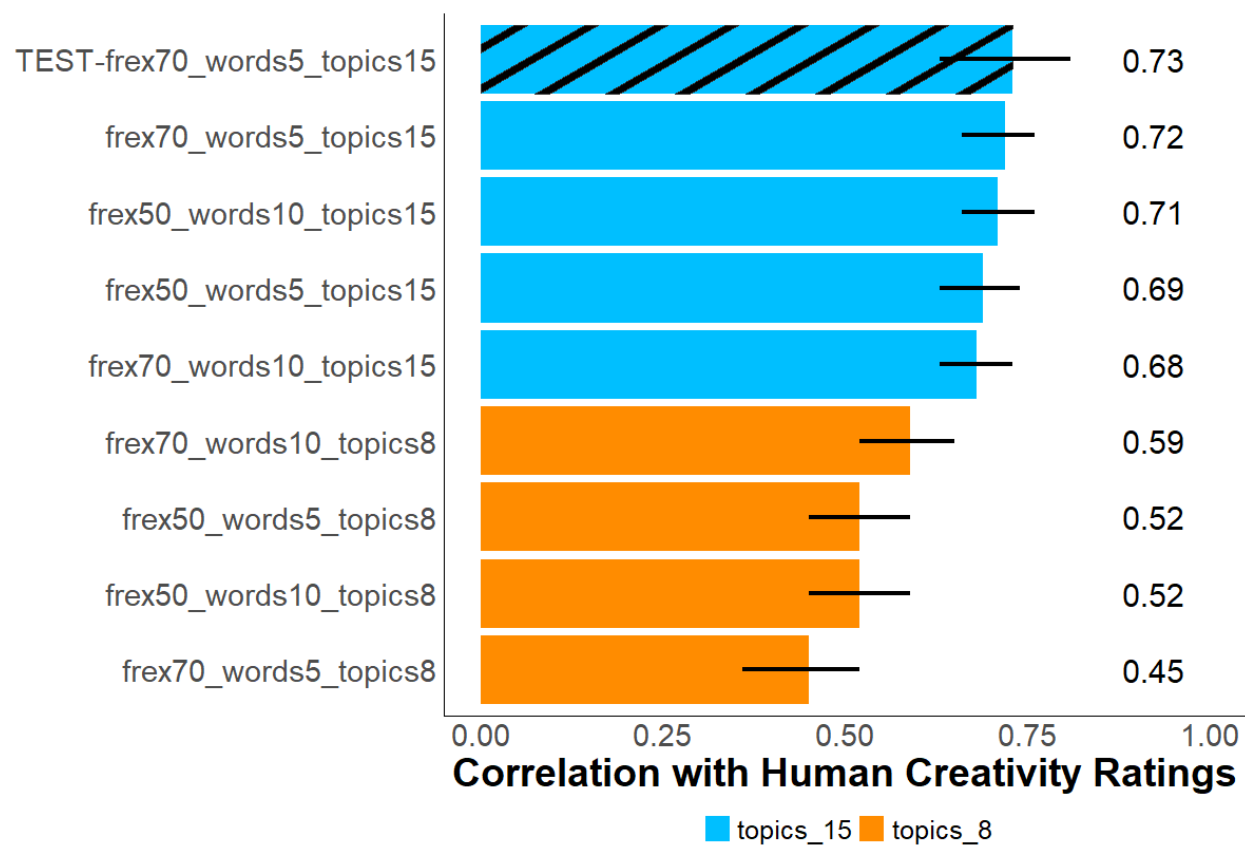


Table S2

Predictive Validity for Design Problems Water Prompt Test Set with All Thematic Semantic Distances as Predictors and Human Creativity Ratings as the Criterion

Predictor	b	β	β	β	sr^2	sr^2	r
	b	b	β	β	sr^2	sr^2	r
		95% CI		95% CI		95% CI	
		[LL, UL]		[LL, UL]		[LL, UL]	

(Intercept)	0.11	[-0.38, 0.60]					
topic_X1	0.77*	[0.10, 1.44]	0.57	[0.07, 1.07]	.03	[-.02, .07]	.11
topic_X10	-0.14	[-0.62, 0.35]	-0.10	[-0.45, 0.25]	.00	[-.01, .01]	.22*
topic_X11	-0.35	[-0.94, 0.25]	-0.20	[-0.56, 0.15]	.01	[-.02, .03]	-.38**
topic_X12	1.16**	[0.67, 1.65]	0.64	[0.37, 0.91]	.12	[.03, .22]	.34**
topic_X13	-0.54	[-1.15, 0.06]	-0.38	[-0.81, 0.04]	.02	[-.02, .05]	.11
topic_X14	-0.03	[-0.51, 0.44]	-0.02	[-0.33, 0.28]	.00	[-.00, .00]	-.07
topic_X15	-0.40	[-1.21, 0.40]	-0.21	[-0.64, 0.21]	.01	[-.01, .03]	.40**
topic_X2	-0.24	[-0.79, 0.30]	-0.12	[-0.39, 0.15]	.00	[-.01, .02]	.19
topic_X3	0.07	[-0.30, 0.43]	0.06	[-0.29, 0.41]	.00	[-.01, .01]	.06
topic_X4	-0.41	[-0.89, 0.07]	-0.23	[-0.50, 0.04]	.02	[-.02, .05]	-.11
topic_X5	0.46	[-0.22, 1.14]	0.29	[-0.14, 0.72]	.01	[-.02, .04]	-.23*
topic_X6	-0.35	[-1.18, 0.47]	-0.18	[-0.61, 0.24]	.00	[-.01, .02]	-.30**
topic_X7	0.43	[-0.11, 0.97]	0.24	[-0.06, 0.55]	.01	[-.02, .05]	.32**
topic_X8	0.91**	[0.39, 1.42]	0.58	[0.25, 0.91]	.07	[-.00, .14]	.35**
topic_X9	-0.79**	[-1.36, -0.21]	-0.48	[-0.84, -0.13]	.04	[-.01, .09]	-.12
$R^2 = .538^{**}$ 95% CI [.30, .58]							

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*² represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.
* indicates $p < .05$. ** indicates $p < .01$.

Table S3

Incremental Validity Beyond DSI and Word Count for Design Problems Water Prompt

Predictor	<i>b</i>	<i>b</i> 95% CI	<i>beta</i>	<i>beta</i> 95% CI	<i>sr</i> ²	<i>sr</i> ² 95% CI	<i>r</i>	Fit
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		[LL, UL]		[LL, UL]		[LL, UL]	
(Intercept)	-0.55**	[-0.86, -0.25]					
DSI	1.27**	[0.88, 1.66]	0.25	[0.17, 0.32]	.05	[.02, .07]	.50**
word_count	0.00**	[0.00, 0.00]	0.50	[0.42, 0.58]	.19	[.13, .24]	.62**
$R^2 = .434^{**}$ 95% CI[.37,.49]							
(Intercept)	-0.53**	[-0.84, -0.21]					
word_count	0.00**	[0.00, 0.00]	0.33	[0.26, 0.40]	.07	[.04, .10]	.62**
DSI	0.85**	[0.50, 1.21]	0.17	[0.10, 0.24]	.02	[.00, .03]	.50**
topic_X1	0.34**	[0.08, 0.59]	0.24	[0.06, 0.43]	.01	[-.00, .01]	.30**
topic_X10	0.20*	[0.01, 0.39]	0.14	[0.01, 0.27]	.00	[-.00, .01]	.34**
topic_X11	-0.35**	[-0.57, -0.13]	-0.19	[-0.30, -0.07]	.01	[-.00, .02]	-.38**
topic_X12	0.28**	[0.09, 0.47]	0.14	[0.05, 0.24]	.01	[-.00, .02]	.33**
topic_X13	-0.23*	[-0.46, -0.00]	-0.16	[-0.31, -0.00]	.00	[-.00, .01]	.19**
topic_X14	-0.09	[-0.27, 0.08]	-0.05	[-0.15, 0.05]	.00	[-.00, .00]	.09*
topic_X15	0.18	[-0.10, 0.45]	0.10	[-0.06, 0.25]	.00	[-.00, .01]	.42**
topic_X2	0.12	[-0.07, 0.31]	0.05	[-0.03, 0.14]	.00	[-.00, .00]	.29**
topic_X3	0.06	[-0.09, 0.21]	0.05	[-0.07, 0.17]	.00	[-.00, .00]	.14**
topic_X4	-0.02	[-0.19, 0.15]	-0.01	[-0.09, 0.07]	.00	[-.00, .00]	-.16**
topic_X5	-0.12	[-0.36, 0.13]	-0.08	[-0.24, 0.08]	.00	[-.00, .00]	-.16**
topic_X6	0.03	[-0.23, 0.28]	0.02	[-0.13, 0.16]	.00	[-.00, .00]	-.16**
topic_X7	-0.07	[-0.25, 0.12]	-0.03	[-0.13, 0.06]	.00	[-.00, .00]	.26**
topic_X8	0.24*	[0.05, 0.44]	0.14	[0.03, 0.25]	.00	[-.00, .01]	.30**
topic_X9	-0.19	[-0.41, 0.03]	-0.10	[-0.22, 0.02]	.00	[-.00, .01]	-.13**
$\Delta R^2 = .182^{**}$ 95% CI[.14, .23]							
$R^2 = .616^{**}$ 95% CI[.55,.65]							

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*² represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

* indicates $p < .05$. ** indicates $p < .01$.

Table S4

Incremental Validity Beyond Topic Probabilities for Design Problems Water Prompt

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> ²	<i>sr</i> ² 95% CI [LL, UL]	<i>r</i>	Fit	Difference
(Intercept)	0.53**	[0.49, 0.58]							
topic1	-0.05	[-0.12, 0.01]	-0.09	[-0.20, 0.02]	.00	[-.01, .01]	-.10*		
topic2	-0.02	[-0.08, 0.04]	-0.04	[-0.14, 0.07]	.00	[-.00, .01]	-.02		
topic3	-0.04	[-0.10, 0.03]	-0.06	[-0.17, 0.04]	.00	[-.01, .01]	-.05		
topic4	-0.04	[-0.10, 0.02]	-0.07	[-0.18, 0.04]	.00	[-.01, .01]	-.06		
topic5	0.03	[-0.03, 0.09]	0.05	[-0.06, 0.16]	.00	[-.00, .01]	.08		
topic7	-0.01	[-0.08, 0.05]	-0.02	[-0.12, 0.09]	.00	[-.00, .00]	-.01		
topic8	-0.04	[-0.10, 0.02]	-0.08	[-0.19, 0.03]	.00	[-.01, .01]	-.07		
topic9	0.13**	[0.07, 0.19]	0.24	[0.13, 0.35]	.03	[.00, .06]	.28**		
topic10	0.07*	[0.01, 0.14]	0.11	[0.01, 0.21]	.01	[-.01, .02]	.13**		
topic11	0.07*	[0.01, 0.13]	0.12	[0.01, 0.23]	.01	[-.01, .02]	.14**		
topic12	0.00	[-0.06, 0.06]	0.00	[-0.11, 0.11]	.00	[-.00, .00]	.04		
topic13	-0.06*	[-0.12, -0.00]	-0.12	[-0.23, -0.01]	.01	[-.01, .02]	-.13**		
topic14	-0.02	[-0.08, 0.04]	-0.03	[-0.15, 0.08]	.00	[-.00, .00]	-.03		
topic15	-0.17**	[-0.24, -0.09]	-0.22	[-0.31, -0.12]	.03	[.00, .06]	-.23**		
								$R^2 = .193^{**}$	
								95% CI[.11,.23]	
(Intercept)	-0.07	[-0.27, 0.13]							
topic_X1	0.59**	[0.29, 0.89]	0.43	[0.21, 0.64]	.01	[.00, .03]	.30**		
topic_X10	0.06	[-0.16, 0.28]	0.04	[-0.11, 0.20]	.00	[-.00, .00]	.34**		
topic_X11	-0.64**	[-0.89, -0.40]	-0.35	[-0.48, -0.21]	.03	[.01, .05]	-.38**		
topic_X12	0.36**	[0.13, 0.59]	0.18	[0.07, 0.30]	.01	[-.00, .02]	.33**		

topic_X13	-0.42**	[-0.69, -0.16]	-0.29	[-0.47, -0.11]	.01	[-.00, .02]	.19**
topic_X14	-0.11	[-0.31, 0.10]	-0.06	[-0.18, 0.05]	.00	[-.00, .01]	.09*
topic_X15	0.35*	[0.04, 0.67]	0.20	[0.02, 0.38]	.00	[-.00, .01]	.42**
topic_X2	0.26*	[0.04, 0.48]	0.12	[0.02, 0.22]	.01	[-.00, .01]	.29**
topic_X3	0.17*	[0.00, 0.34]	0.14	[0.00, 0.28]	.00	[-.00, .01]	.14**
topic_X4	0.06	[-0.13, 0.26]	0.03	[-0.07, 0.13]	.00	[-.00, .00]	-.16**
topic_X5	0.02	[-0.25, 0.30]	0.02	[-0.17, 0.20]	.00	[-.00, .00]	-.16**
topic_X6	0.28	[-0.01, 0.58]	0.16	[-0.01, 0.32]	.00	[-.00, .01]	-.16**
topic_X7	-0.11	[-0.33, 0.11]	-0.06	[-0.17, 0.05]	.00	[-.00, .00]	.26**
topic_X8	0.32**	[0.09, 0.55]	0.19	[0.05, 0.32]	.01	[-.00, .02]	.30**
topic_X9	-0.50**	[-0.75, -0.25]	-0.26	[-0.40, -0.13]	.02	[.00, .03]	-.13**
topic1	0.03	[-0.02, 0.08]	0.05	[-0.04, 0.15]	.00	[-.00, .01]	-.10*
topic2	0.02	[-0.03, 0.07]	0.03	[-0.05, 0.12]	.00	[-.00, .00]	-.02
topic3	-0.00	[-0.05, 0.05]	-0.00	[-0.09, 0.08]	.00	[-.00, .00]	-.05
topic4	0.01	[-0.04, 0.06]	0.02	[-0.07, 0.11]	.00	[-.00, .00]	-.06
topic5	0.02	[-0.03, 0.07]	0.03	[-0.06, 0.12]	.00	[-.00, .00]	.08
topic7	0.02	[-0.04, 0.07]	0.03	[-0.06, 0.11]	.00	[-.00, .00]	-.01
topic8	-0.01	[-0.06, 0.04]	-0.03	[-0.12, 0.06]	.00	[-.00, .00]	-.07
topic9	0.07**	[0.02, 0.12]	0.13	[0.03, 0.23]	.01	[-.00, .02]	.28**
topic10	0.02	[-0.03, 0.08]	0.04	[-0.05, 0.12]	.00	[-.00, .00]	.13**
topic11	0.06*	[0.02, 0.11]	0.12	[0.03, 0.21]	.01	[-.00, .02]	.14**
topic12	0.00	[-0.04, 0.05]	0.01	[-0.08, 0.10]	.00	[-.00, .00]	.04
topic13	0.01	[-0.04, 0.06]	0.02	[-0.08, 0.12]	.00	[-.00, .00]	-.13**
topic14	0.00	[-0.04, 0.05]	0.01	[-0.09, 0.10]	.00	[-.00, .00]	-.03
topic15	-0.07*	[-0.13, -0.01]	-0.09	[-0.17, -0.01]	.00	[-.00, .01]	-.23**

$R^2 = .527^{**}$ $\Delta R^2 = .334^{**}$
 95% CI[.44,.55] 95% CI[.27, .40]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. sr^2 represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

* indicates $p < .05$. ** indicates $p < .01$.

Figure S5.

Predictive Validity for the Everyday Creative Problem-Solving Roommate Prompt

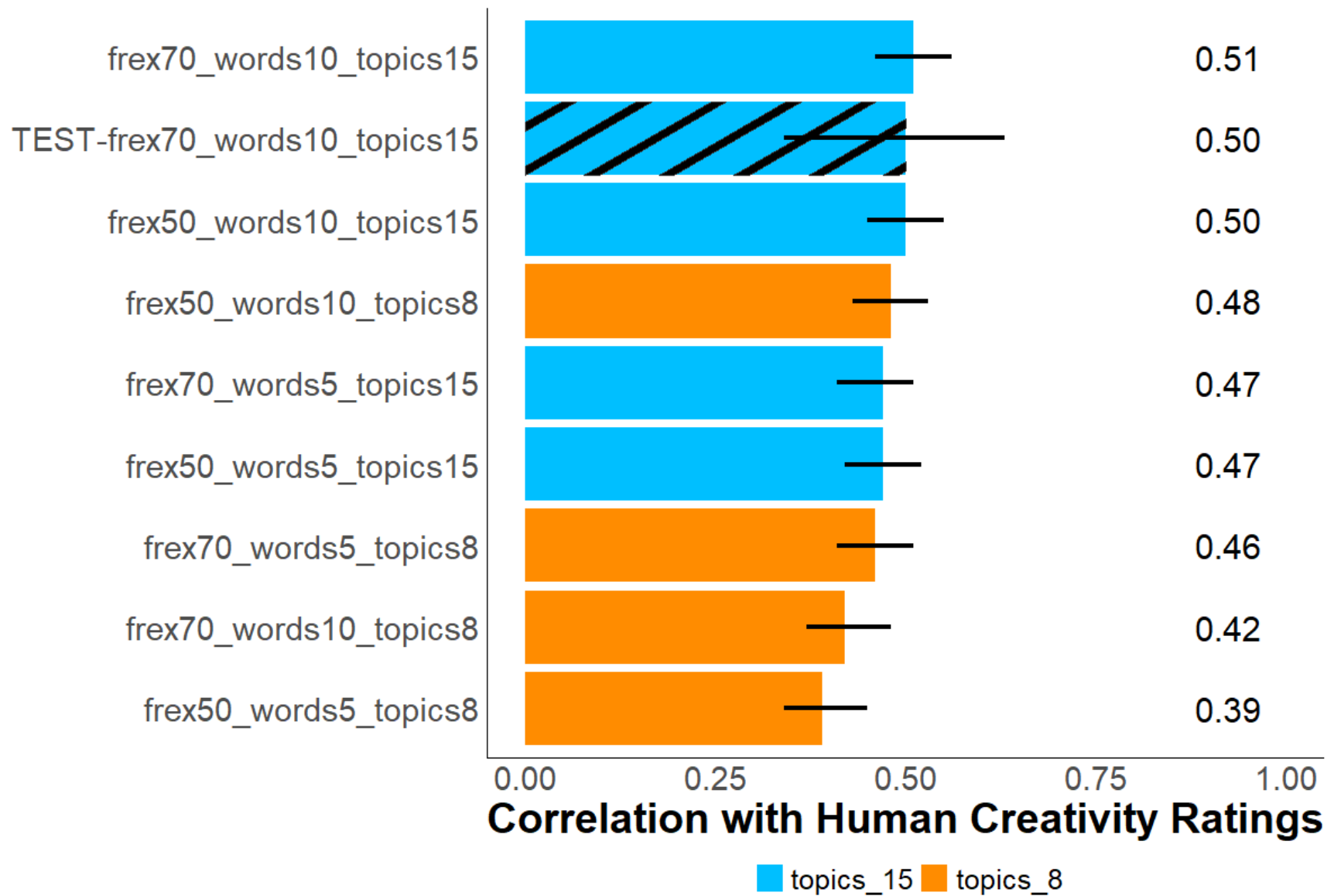


Table S5

Predictive Validity for Everyday Creative Problem-Solving Roommate Prompt for the Test Set with All Thematic Semantic Distances as Predictors and Human Creativity Ratings as the Criterion

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> ²	<i>sr</i> ² 95% CI [LL, UL]	<i>r</i>	Fit
(Intercept)	0.36	[-6.52, 7.23]						
topic_X1	7.07	[-1.04, 15.18]	0.38	[-0.06, 0.83]	.03	[-.03, .08]	.19	
topic_X10	3.08	[-2.96, 9.12]	0.22	[-0.21, 0.65]	.01	[-.02, .04]	.16	
topic_X11	0.27	[-3.89, 4.43]	0.03	[-0.40, 0.45]	.00	[-.00, .00]	-.23*	
topic_X12	-7.48	[-15.64, 0.68]	-0.34	[-0.72, 0.03]	.03	[-.03, .09]	-.02	
topic_X13	-4.23	[-12.68, 4.21]	-0.22	[-0.66, 0.22]	.01	[-.02, .04]	-.08	
topic_X14	-0.82	[-9.96, 8.32]	-0.04	[-0.46, 0.39]	.00	[-.01, .01]	.14	
topic_X15	-0.94	[-11.33, 9.45]	-0.04	[-0.53, 0.44]	.00	[-.01, .01]	.08	
topic_X2	-0.28	[-5.60, 5.04]	-0.02	[-0.42, 0.38]	.00	[-.00, .00]	.11	
topic_X3	3.92	[-5.45, 13.29]	0.17	[-0.24, 0.58]	.01	[-.02, .03]	.29**	
topic_X4	4.46	[-3.73, 12.65]	0.24	[-0.20, 0.69]	.01	[-.02, .05]	.25*	
topic_X5	3.36	[-5.72, 12.45]	0.23	[-0.39, 0.85]	.00	[-.02, .03]	.08	
topic_X6	-6.60*	[-12.57, -0.62]	-0.50	[-0.96, -0.05]	.04	[-.03, .11]	.00	
topic_X7	3.09	[-4.47, 10.64]	0.14	[-0.21, 0.49]	.01	[-.02, .03]	.11	
topic_X8	-0.94	[-6.68, 4.81]	-0.04	[-0.32, 0.23]	.00	[-.01, .01]	.05	
topic_X9	-1.35	[-9.28, 6.58]	-0.07	[-0.50, 0.36]	.00	[-.01, .01]	.01	
								$R^2 = .251^*$
								95% CI[.00,.28]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*² represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

* indicates $p < .05$. ** indicates $p < .01$.

Table S6

Incremental Validity Beyond DSI and Word Count for Everyday Creative Problem-Solving Roommate Prompt

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> ²	<i>sr</i> ² 95% CI [LL, UL]	<i>r</i>	Fit	Difference
(Intercept)	-7.57**	[-9.88, -5.27]							
DSI	12.04**	[9.09, 14.99]	0.26	[0.20, 0.33]	.05	[.03, .07]	.41**		
word_count	0.01**	[0.01, 0.01]	0.27	[0.21, 0.34]	.05	[.03, .08]	.41**		
								$R^2 = .220^{**}$	
								95% CI[.18,.26]	
(Intercept)	-4.43**	[-7.01, -1.85]							
word_count	0.01**	[0.01, 0.01]	0.28	[0.22, 0.34]	.05	[.03, .08]	.41**		
DSI	6.74**	[3.89, 9.58]	0.15	[0.08, 0.21]	.01	[.00, .02]	.41**		
topic_X1	-0.15	[-1.91, 1.61]	-0.01	[-0.13, 0.11]	.00	[-.00, .00]	.28**		
topic_X10	-1.51*	[-2.78, -0.23]	-0.10	[-0.18, -0.02]	.00	[-.00, .01]	-.09**		
topic_X11	3.53**	[2.06, 4.99]	0.19	[0.11, 0.27]	.01	[.00, .03]	.23**		
topic_X12	-3.48**	[-5.34, -1.63]	-0.36	[-0.56, -0.17]	.01	[-.00, .02]	-.26**		
topic_X13	6.43**	[4.40, 8.46]	0.58	[0.40, 0.77]	.02	[.01, .04]	.11**		
topic_X14	-1.82*	[-3.61, -0.03]	-0.15	[-0.30, -0.00]	.00	[-.00, .01]	.03		
topic_X15	-3.12**	[-5.24, -1.00]	-0.20	[-0.33, -0.06]	.01	[-.00, .01]	.13**		
topic_X2	3.49**	[1.64, 5.34]	0.36	[0.17, 0.55]	.01	[-.00, .02]	-.20**		
topic_X3	0.30	[-0.61, 1.20]	0.02	[-0.04, 0.09]	.00	[-.00, .00]	.28**		
topic_X4	4.18**	[2.66, 5.69]	0.26	[0.16, 0.35]	.02	[.01, .03]	.38**		
topic_X5	1.24	[-0.54, 3.01]	0.09	[-0.04, 0.22]	.00	[-.00, .00]	.13**		
topic_X6	0.22	[-1.33, 1.77]	0.01	[-0.07, 0.10]	.00	[-.00, .00]	-.08*		
topic_X7	-3.88**	[-5.43, -2.32]	-0.29	[-0.40, -0.17]	.01	[.00, .03]	.14**		
topic_X8	1.35	[-0.60, 3.31]	0.08	[-0.04, 0.20]	.00	[-.00, .00]	.01		
topic_X9	-4.10**	[-6.06, -2.13]	-0.28	[-0.42, -0.15]	.01	[.00, .02]	-.09**		
								$R^2 = .380^{**}$	$\Delta R^2 = .160^{**}$
								95% CI[.33,.41]	95% CI[.12, .20]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*² represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.
 * indicates $p < .05$. ** indicates $p < .01$.

Table S7

Incremental Validity Beyond Topic Probabilities for the Everyday Creative Problem-Solving Roommate Prompt

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> ²	<i>sr</i> ² 95% CI [LL, UL]	<i>r</i>	Fit	Difference
(Intercept)	2.43**	[2.00, 2.85]							
topic1	-0.22	[-0.84, 0.39]	-0.03	[-0.11, 0.05]	.00	[-.00, .00]	-.04		
topic2	-0.14	[-1.15, 0.87]	-0.01	[-0.08, 0.06]	.00	[-.00, .00]	-.01		
topic3	-0.28	[-0.97, 0.41]	-0.03	[-0.11, 0.05]	.00	[-.00, .00]	-.04		
topic4	-0.02	[-0.64, 0.59]	-0.00	[-0.09, 0.08]	.00	[-.00, .00]	-.01		
topic5	-0.39	[-1.06, 0.28]	-0.04	[-0.12, 0.03]	.00	[-.00, .01]	-.04		
topic7	0.26	[-0.66, 1.18]	0.02	[-0.05, 0.09]	.00	[-.00, .00]	.01		
topic8	-0.15	[-0.74, 0.44]	-0.02	[-0.11, 0.06]	.00	[-.00, .00]	-.02		
topic9	-0.01	[-0.60, 0.59]	-0.00	[-0.09, 0.09]	.00	[-.00, .00]	.00		
topic10	0.03	[-0.56, 0.62]	0.00	[-0.08, 0.09]	.00	[-.00, .00]	.01		
topic11	0.04	[-0.54, 0.63]	0.01	[-0.08, 0.09]	.00	[-.00, .00]	.00		
topic12	0.17	[-0.39, 0.73]	0.03	[-0.06, 0.12]	.00	[-.00, .00]	.03		
topic13	-0.05	[-0.66, 0.57]	-0.01	[-0.09, 0.08]	.00	[-.00, .00]	-.01		
topic14	0.27	[-0.27, 0.81]	0.05	[-0.05, 0.14]	.00	[-.00, .00]	.05		
topic15	0.21	[-0.84, 1.26]	0.01	[-0.05, 0.08]	.00	[-.00, .00]	.01		
									$R^2 = .009$
									95% CI[.00,.01]
(Intercept)	-0.29	[-1.89, 1.31]							

topic_X1	1.23	[-0.68, 3.14]	0.09	[-0.05, 0.22]	.00	[-.00, .00]	.28**
topic_X10	-2.39**	[-3.79, -0.98]	-0.16	[-0.25, -0.06]	.01	[-.00, .02]	-.09**
topic_X11	3.56**	[1.93, 5.18]	0.20	[0.11, 0.28]	.01	[.00, .03]	.23**
topic_X12	-3.05**	[-5.10, -1.01]	-0.32	[-0.53, -0.11]	.01	[-.00, .01]	-.26**
topic_X13	7.53**	[5.27, 9.78]	0.68	[0.48, 0.88]	.03	[.01, .05]	.11**
topic_X14	-1.86	[-3.82, 0.11]	-0.15	[-0.31, 0.01]	.00	[-.00, .01]	.03
topic_X15	-5.51**	[-7.83, -3.18]	-0.35	[-0.49, -0.20]	.02	[.00, .03]	.13**
topic_X2	3.56**	[1.52, 5.61]	0.37	[0.16, 0.58]	.01	[-.00, .02]	-.20**
topic_X3	0.56	[-0.44, 1.56]	0.04	[-0.03, 0.12]	.00	[-.00, .00]	.28**
topic_X4	4.44**	[2.75, 6.12]	0.27	[0.17, 0.37]	.02	[.01, .03]	.38**
topic_X5	3.03**	[1.09, 4.97]	0.22	[0.08, 0.36]	.01	[-.00, .02]	.13**
topic_X6	2.03*	[0.33, 3.73]	0.11	[0.02, 0.21]	.00	[-.00, .01]	-.08*
topic_X7	-2.56**	[-4.26, -0.86]	-0.19	[-0.32, -0.06]	.01	[-.00, .02]	.14**
topic_X8	-0.00	[-2.13, 2.13]	-0.00	[-0.13, 0.13]	.00	[-.00, .00]	.01
topic_X9	-5.41**	[-7.58, -3.25]	-0.37	[-0.52, -0.22]	.02	[.00, .03]	-.09**
topic1	-0.12	[-0.66, 0.42]	-0.02	[-0.09, 0.06]	.00	[-.00, .00]	-.04
topic2	-0.19	[-1.08, 0.69]	-0.01	[-0.07, 0.05]	.00	[-.00, .00]	-.01
topic3	0.01	[-0.59, 0.62]	0.00	[-0.07, 0.07]	.00	[-.00, .00]	-.04
topic4	0.25	[-0.29, 0.78]	0.03	[-0.04, 0.11]	.00	[-.00, .00]	-.01
topic5	-0.34	[-0.93, 0.25]	-0.04	[-0.11, 0.03]	.00	[-.00, .00]	-.04
topic7	0.59	[-0.22, 1.40]	0.04	[-0.02, 0.11]	.00	[-.00, .01]	.01
topic8	0.04	[-0.48, 0.55]	0.01	[-0.07, 0.08]	.00	[-.00, .00]	-.02
topic9	0.21	[-0.32, 0.73]	0.03	[-0.05, 0.11]	.00	[-.00, .00]	.00
topic10	0.05	[-0.47, 0.57]	0.01	[-0.07, 0.08]	.00	[-.00, .00]	.01
topic11	0.33	[-0.18, 0.85]	0.05	[-0.03, 0.12]	.00	[-.00, .00]	.00
topic12	0.06	[-0.43, 0.55]	0.01	[-0.07, 0.09]	.00	[-.00, .00]	.03
topic13	0.30	[-0.24, 0.84]	0.04	[-0.03, 0.11]	.00	[-.00, .00]	-.01
topic14	0.28	[-0.19, 0.75]	0.05	[-0.03, 0.13]	.00	[-.00, .00]	.05
topic15	0.54	[-0.38, 1.46]	0.03	[-0.02, 0.09]	.00	[-.00, .00]	.01

$R^2 = .264^{**}$ $\Delta R^2 = .255^{**}$
 95% CI[.20,.29] 95% CI[.21, .30]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. sr^2 represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

* indicates $p < .05$. ** indicates $p < .01$.

Figure S6.

Predictive Validity for the Everyday Creative Problem-Solving School Prompt

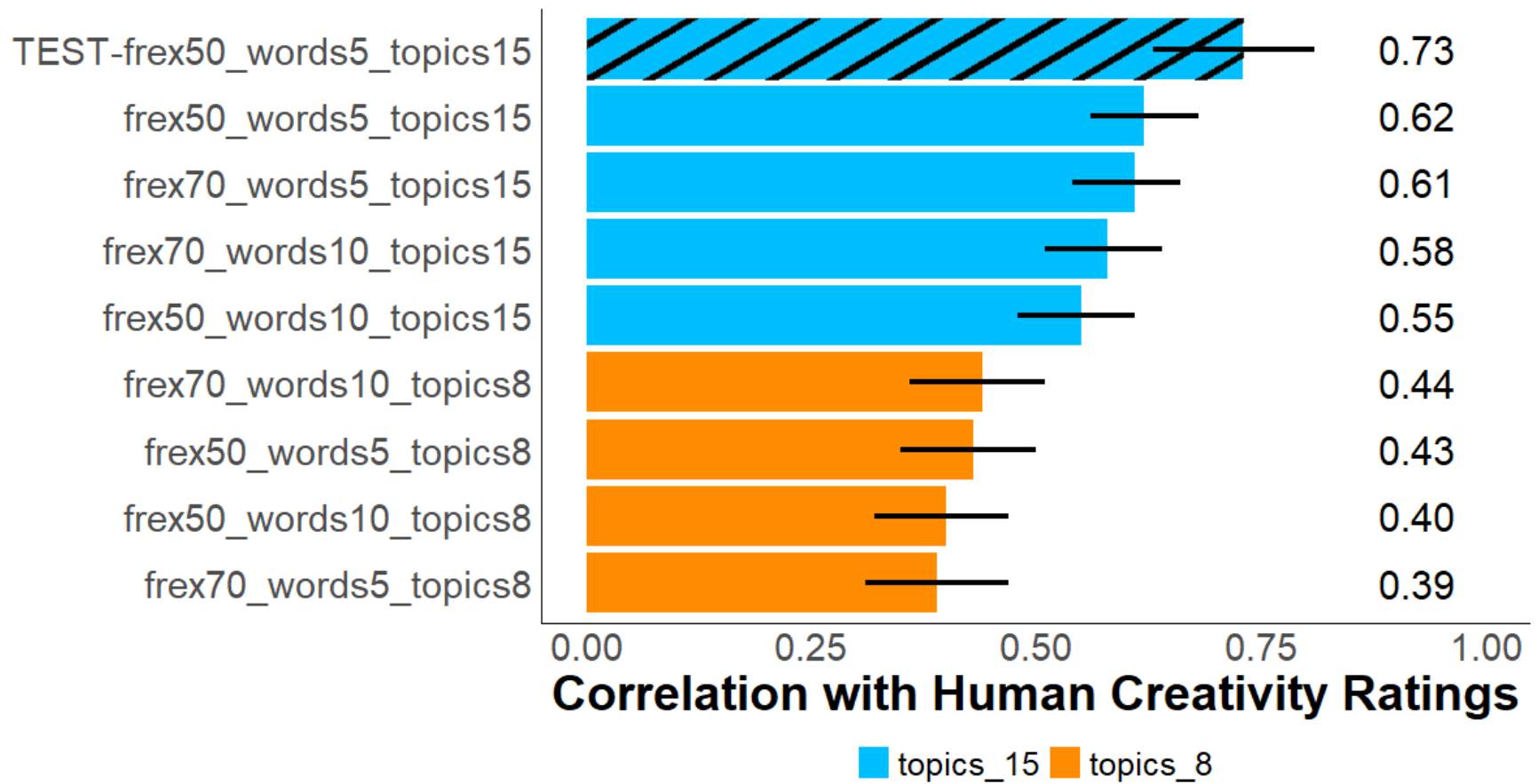


Table S8

Incremental Validity Beyond DSI and Word Count for Everyday Creative Problem-Solving School Prompt

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> ²	<i>sr</i> ² 95% CI [LL, UL]	<i>r</i>	Fit	Difference
(Intercept)	-3.69**	[-5.27, -2.12]							
DSI	7.74**	[5.68, 9.80]	0.30	[0.22, 0.38]	.07	[.03, .11]	.47**		
word_count	0.01**	[0.01, 0.01]	0.35	[0.27, 0.43]	.09	[.05, .14]	.50**		
								$R^2 = .318^{**}$	
								95% CI[.25,.37]	
(Intercept)	-5.33**	[-7.47, -3.19]							
word_count	0.01**	[0.00, 0.01]	0.29	[0.22, 0.36]	.06	[.03, .09]	.50**		
DSI	6.02**	[3.96, 8.07]	0.24	[0.16, 0.32]	.03	[.01, .05]	.47**		
topic_X1	-0.30	[-2.41, 1.82]	-0.02	[-0.15, 0.12]	.00	[-.00, .00]	.00		
topic_X10	2.91**	[1.16, 4.66]	0.27	[0.11, 0.44]	.01	[-.00, .02]	.49**		
topic_X11	-1.10	[-3.14, 0.95]	-0.09	[-0.26, 0.08]	.00	[-.00, .00]	.38**		
topic_X12	-0.89	[-2.70, 0.93]	-0.07	[-0.21, 0.07]	.00	[-.00, .00]	-.13**		
topic_X13	2.94**	[0.98, 4.91]	0.22	[0.07, 0.37]	.01	[-.00, .02]	.27**		
topic_X14	-3.49**	[-4.98, -1.99]	-0.30	[-0.42, -0.17]	.02	[.00, .04]	.10*		
topic_X15	2.27*	[0.15, 4.40]	0.19	[0.01, 0.37]	.00	[-.00, .01]	.42**		
topic_X2	-0.52	[-2.92, 1.87]	-0.03	[-0.19, 0.12]	.00	[-.00, .00]	-.06		
topic_X3	-3.85**	[-5.64, -2.07]	-0.24	[-0.36, -0.13]	.02	[.00, .03]	-.03		
topic_X4	1.84**	[0.63, 3.05]	0.13	[0.04, 0.21]	.01	[-.00, .02]	.16**		
topic_X5	0.67	[-1.21, 2.54]	0.04	[-0.08, 0.16]	.00	[-.00, .00]	-.11*		
topic_X6	0.61	[-0.76, 1.97]	0.05	[-0.07, 0.17]	.00	[-.00, .00]	.08		
topic_X7	1.74	[-0.59, 4.07]	0.10	[-0.03, 0.23]	.00	[-.00, .01]	.26**		
topic_X8	-1.36	[-3.18, 0.45]	-0.07	[-0.17, 0.02]	.00	[-.00, .01]	.14**		
topic_X9	3.30**	[1.99, 4.61]	0.26	[0.16, 0.37]	.02	[.01, .04]	-.03		
								$R^2 = .510^{**}$	$\Delta R^2 = .192^{**}$
								95% CI[.44,.54]	95% CI[.14, .24]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression

weights. *beta* indicates the standardized regression weights. *sr*² represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

* indicates $p < .05$. ** indicates $p < .01$.

Table S9

Incremental Validity Beyond Topic Probabilities for the Everyday Creative Problem-Solving School Prompt

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> ²	<i>sr</i> ² 95% CI [LL, UL]	<i>r</i>	Fit	Difference
(Intercept)	3.47**	[2.95, 3.99]							
topic1	0.65	[-0.13, 1.42]	0.07	[-0.01, 0.16]	.00	[-.00, .01]	.14**		
topic2	0.84	[-0.05, 1.74]	0.08	[-0.00, 0.17]	.00	[-.00, .01]	.19**		
topic3	1.06*	[0.25, 1.86]	0.11	[0.03, 0.20]	.01	[-.00, .02]	.17**		
topic4	-0.37	[-1.06, 0.32]	-0.06	[-0.16, 0.05]	.00	[-.00, .01]	-.10*		
topic5	1.19**	[0.47, 1.91]	0.17	[0.07, 0.27]	.01	[-.00, .03]	.32**		
topic6	-0.34	[-1.19, 0.50]	-0.04	[-0.12, 0.05]	.00	[-.00, .00]	.09*		
topic7	-0.29	[-1.06, 0.47]	-0.03	[-0.12, 0.05]	.00	[-.00, .00]	-.03		
topic9	-1.06**	[-1.77, -0.35]	-0.16	[-0.26, -0.05]	.01	[-.00, .02]	-.31**		
topic10	-4.67**	[-5.72, -3.61]	-0.39	[-0.48, -0.30]	.09	[.05, .13]	-.53**		
topic11	-0.14	[-0.87, 0.59]	-0.02	[-0.11, 0.08]	.00	[-.00, .00]	-.03		
topic12	0.17	[-0.58, 0.93]	0.02	[-0.07, 0.12]	.00	[-.00, .00]	-.07		
topic13	-0.74	[-1.50, 0.02]	-0.09	[-0.18, 0.00]	.00	[-.00, .01]	-.16**		
topic14	0.41	[-0.26, 1.07]	0.07	[-0.04, 0.18]	.00	[-.00, .01]	.21**		
topic15	-0.33	[-1.31, 0.64]	-0.03	[-0.11, 0.05]	.00	[-.00, .00]	-.03		
									$R^2 = .385^{**}$
									95% CI[.31,.43]
(Intercept)	-1.51	[-3.22, 0.20]							
topic_X1	-1.85	[-4.12, 0.43]	-0.12	[-0.26, 0.03]	.00	[-.00, .01]	.00		
topic_X10	3.01**	[1.01, 5.01]	0.28	[0.09, 0.47]	.01	[-.00, .02]	.49**		
topic_X11	-3.81**	[-6.07, -1.55]	-0.32	[-0.51, -0.13]	.01	[-.00, .02]	.38**		
topic_X12	-0.59	[-2.49, 1.31]	-0.05	[-0.19, 0.10]	.00	[-.00, .00]	-.13**		

topic_X13	2.94**	[0.78, 5.11]	0.22	[0.06, 0.39]	.01	[-.00, .02]	.27**
topic_X14	-1.51	[-3.24, 0.21]	-0.13	[-0.28, 0.02]	.00	[-.00, .01]	.10*
topic_X15	3.76**	[1.56, 5.96]	0.32	[0.13, 0.50]	.01	[-.00, .02]	.42**
topic_X2	-1.09	[-3.57, 1.39]	-0.07	[-0.23, 0.09]	.00	[-.00, .00]	-.06
topic_X3	-0.91	[-2.85, 1.04]	-0.06	[-0.18, 0.07]	.00	[-.00, .00]	-.03
topic_X4	1.50*	[0.13, 2.87]	0.10	[0.01, 0.20]	.00	[-.00, .01]	.16**
topic_X5	3.04**	[1.05, 5.03]	0.19	[0.07, 0.32]	.01	[-.00, .02]	-.11*
topic_X6	1.14	[-0.42, 2.70]	0.10	[-0.04, 0.24]	.00	[-.00, .01]	.08
topic_X7	0.58	[-1.85, 3.01]	0.03	[-0.10, 0.17]	.00	[-.00, .00]	.26**
topic_X8	-0.78	[-2.66, 1.10]	-0.04	[-0.14, 0.06]	.00	[-.00, .00]	.14**
topic_X9	1.30	[-0.14, 2.73]	0.10	[-0.01, 0.22]	.00	[-.00, .01]	-.03
topic1	0.49	[-0.23, 1.20]	0.06	[-0.03, 0.14]	.00	[-.00, .01]	.14**
topic2	0.48	[-0.35, 1.31]	0.05	[-0.03, 0.13]	.00	[-.00, .01]	.19**
topic3	0.95*	[0.20, 1.69]	0.10	[0.02, 0.18]	.01	[-.00, .02]	.17**
topic4	-0.36	[-1.03, 0.31]	-0.05	[-0.16, 0.05]	.00	[-.00, .00]	-.10*
topic5	1.34**	[0.63, 2.05]	0.19	[0.09, 0.29]	.01	[-.00, .03]	.32**
topic6	-0.19	[-1.07, 0.69]	-0.02	[-0.11, 0.07]	.00	[-.00, .00]	.09*
topic7	-0.34	[-1.04, 0.36]	-0.04	[-0.12, 0.04]	.00	[-.00, .00]	-.03
topic9	-1.37**	[-2.05, -0.69]	-0.20	[-0.30, -0.10]	.02	[.00, .03]	-.31**
topic10	-2.87**	[-4.09, -1.66]	-0.24	[-0.34, -0.14]	.02	[.00, .04]	-.53**
topic11	0.12	[-0.61, 0.84]	0.02	[-0.08, 0.11]	.00	[-.00, .00]	-.03
topic12	-0.35	[-1.06, 0.35]	-0.04	[-0.13, 0.04]	.00	[-.00, .00]	-.07
topic13	0.13	[-0.61, 0.88]	0.02	[-0.07, 0.10]	.00	[-.00, .00]	-.16**
topic14	0.55	[-0.11, 1.21]	0.09	[-0.02, 0.21]	.00	[-.00, .01]	.21**
topic15	0.04	[-0.87, 0.95]	0.00	[-0.07, 0.08]	.00	[-.00, .00]	-.03

$R^2 = .518^{**}$ $\Delta R^2 = .134^{**}$
 95% CI[.43, .54] 95% CI[.09, .18]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*² represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

* indicates $p < .05$. ** indicates $p < .01$.

Figure S7.

Predictive Validity for the Alternate Uses Task Box Prompt

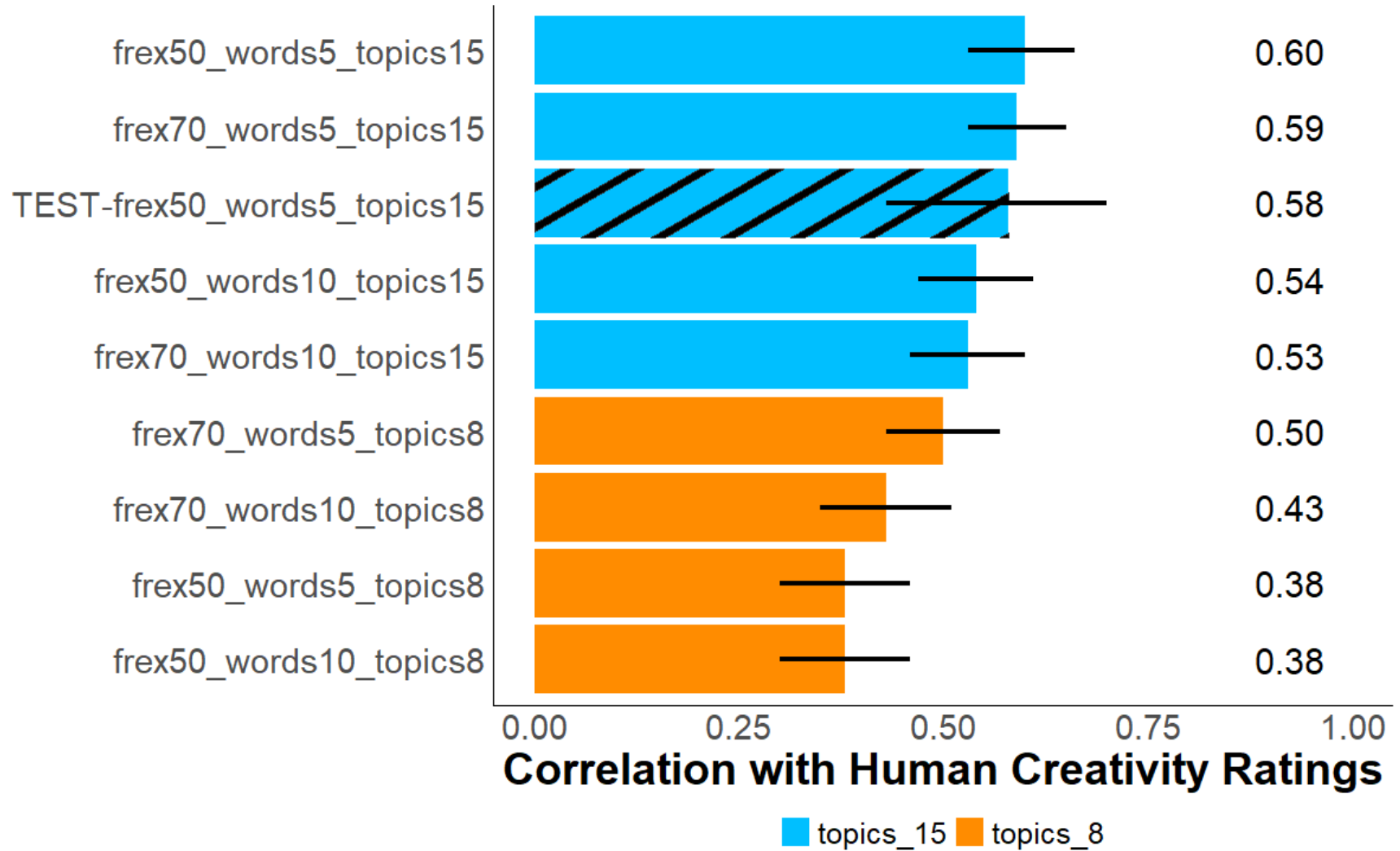


Table S10

Incremental Validity Beyond DSI and Word Count for the Alternative Uses Task Box Prompt

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> ²	<i>sr</i> ² 95% CI [LL, UL]	<i>r</i>	Fit	Difference
(Intercept)	-0.20	[-0.68, 0.28]							
DSI	2.53**	[1.86, 3.21]	0.34	[0.25, 0.43]	.09	[.04, .13]	.41**		
word_count	0.00**	[0.00, 0.01]	0.14	[0.05, 0.23]	.02	[-.00, .04]	.31**		
								$R^2 = .183^{**}$	
								95% CI[.13,.24]	
(Intercept)	-3.77**	[-4.86, -2.68]							
word_count	0.00	[-0.00, 0.00]	0.03	[-0.07, 0.13]	.00	[-.00, .00]	.31**		
DSI	1.85**	[1.20, 2.49]	0.25	[0.16, 0.33]	.04	[.01, .07]	.41**		
topic_X1	2.57**	[1.30, 3.84]	0.31	[0.16, 0.47]	.02	[.00, .04]	.03		
topic_X10	0.65	[-0.38, 1.68]	0.07	[-0.04, 0.19]	.00	[-.00, .01]	.15**		
topic_X11	-1.92**	[-3.07, -0.76]	-0.24	[-0.38, -0.10]	.01	[-.00, .03]	.27**		
topic_X12	0.02	[-0.98, 1.03]	0.00	[-0.10, 0.11]	.00	[-.00, .00]	.04		
topic_X13	-0.01	[-0.83, 0.81]	-0.00	[-0.10, 0.10]	.00	[-.00, .00]	.11*		
topic_X14	1.69**	[0.81, 2.58]	0.25	[0.12, 0.38]	.02	[-.00, .04]	.21**		
topic_X15	-1.73**	[-2.49, -0.98]	-0.22	[-0.32, -0.13]	.03	[.00, .05]	-.03		
topic_X2	1.28**	[0.47, 2.08]	0.14	[0.05, 0.23]	.01	[-.00, .03]	.31**		
topic_X3	0.88	[-0.03, 1.79]	0.11	[-0.00, 0.23]	.00	[-.00, .01]	.10*		
topic_X4	1.76**	[0.67, 2.85]	0.19	[0.07, 0.31]	.01	[-.00, .03]	.09*		
topic_X5	2.45**	[1.50, 3.40]	0.33	[0.20, 0.46]	.03	[.01, .06]	.15**		
topic_X6	-3.27**	[-4.42, -2.13]	-0.56	[-0.75, -0.36]	.04	[.01, .07]	-.17**		
topic_X7	-0.79	[-1.79, 0.20]	-0.09	[-0.21, 0.02]	.00	[-.00, .01]	.11*		
topic_X8	-0.25	[-1.29, 0.78]	-0.03	[-0.13, 0.08]	.00	[-.00, .00]	-.05		

topic_X9 2.00** [1.03, 2.96] 0.30 [0.15, 0.44] .02 [.00, .04] .11*

$R^2 = .369^{**}$ $\Delta R^2 = .186^{**}$
95% CI[.28,.41] 95% CI[.13, .24]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. sr^2 represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

* indicates $p < .05$. ** indicates $p < .01$.

Table S11

Incremental Validity Beyond Topic Probabilities for the Alternate Uses Task Box Prompt

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	sr^2	sr^2 95% CI [LL, UL]	<i>r</i>	Fit	Difference
(Intercept)	1.81**	[1.66, 1.96]							
topic1	0.35**	[0.10, 0.61]	0.13	[0.04, 0.23]	.01	[-.00, .03]	.17**		
topic3	-0.08	[-0.31, 0.16]	-0.03	[-0.13, 0.07]	.00	[-.00, .00]	-.04		
topic4	0.69**	[0.43, 0.95]	0.25	[0.16, 0.35]	.04	[.01, .07]	.29**		
topic5	0.15	[-0.06, 0.37]	0.08	[-0.03, 0.19]	.00	[-.01, .01]	.10*		
topic6	0.19	[-0.02, 0.40]	0.10	[-0.01, 0.21]	.01	[-.01, .02]	.14**		
topic7	-0.11	[-0.33, 0.11]	-0.05	[-0.16, 0.05]	.00	[-.00, .01]	-.04		
topic8	-0.22*	[-0.43, -0.01]	-0.12	[-0.23, -0.00]	.01	[-.01, .02]	-.13**		
topic9	-0.13	[-0.36, 0.09]	-0.06	[-0.17, 0.04]	.00	[-.01, .01]	-.07		
topic10	-0.03	[-0.26, 0.20]	-0.01	[-0.11, 0.09]	.00	[-.00, .00]	-.01		
topic11	0.14	[-0.07, 0.36]	0.07	[-0.04, 0.18]	.00	[-.01, .01]	.09		
topic12	-0.31**	[-0.54, -0.08]	-0.14	[-0.25, -0.03]	.01	[-.01, .03]	-.15**		
topic13	-0.32**	[-0.53, -0.10]	-0.16	[-0.27, -0.05]	.01	[-.00, .03]	-.19**		
topic14	-0.08	[-0.30, 0.14]	-0.04	[-0.15, 0.07]	.00	[-.00, .01]	-.03		
topic15	-0.14	[-0.58, 0.29]	-0.03	[-0.11, 0.06]	.00	[-.00, .00]	-.03		

$R^2 = .200^{**}$
95% CI[.12,.24]

(Intercept)	-2.58**	[-3.67, -1.49]					
topic_X1	2.64**	[1.33, 3.96]	0.32	[0.16, 0.48]	.02	[.00, .04]	.03
topic_X10	0.85	[-0.19, 1.89]	0.10	[-0.02, 0.21]	.00	[-.00, .01]	.15**
topic_X11	-2.33**	[-3.48, -1.18]	-0.29	[-0.43, -0.15]	.02	[.00, .04]	.27**
topic_X12	-0.18	[-1.21, 0.86]	-0.02	[-0.13, 0.09]	.00	[-.00, .00]	.04
topic_X13	-0.16	[-0.99, 0.67]	-0.02	[-0.12, 0.08]	.00	[-.00, .00]	.11*
topic_X14	1.99**	[1.12, 2.86]	0.29	[0.16, 0.42]	.03	[.00, .05]	.21**
topic_X15	-1.36**	[-2.15, -0.57]	-0.17	[-0.28, -0.07]	.01	[-.00, .03]	-.03
topic_X2	1.20**	[0.36, 2.05]	0.13	[0.04, 0.23]	.01	[-.00, .02]	.31**
topic_X3	1.17*	[0.22, 2.13]	0.15	[0.03, 0.27]	.01	[-.00, .02]	.10*
topic_X4	1.54**	[0.41, 2.66]	0.17	[0.05, 0.29]	.01	[-.00, .02]	.09*
topic_X5	2.85**	[1.86, 3.84]	0.39	[0.25, 0.52]	.04	[.01, .07]	.15**
topic_X6	-3.53**	[-4.65, -2.42]	-0.60	[-0.79, -0.41]	.05	[.02, .08]	-.17**
topic_X7	-1.06*	[-2.07, -0.04]	-0.13	[-0.25, -0.00]	.01	[-.00, .02]	.11*
topic_X8	-0.25	[-1.32, 0.81]	-0.03	[-0.14, 0.08]	.00	[-.00, .00]	-.05
topic_X9	2.18**	[1.21, 3.16]	0.32	[0.18, 0.47]	.02	[.00, .05]	.11*
topic1	0.08	[-0.17, 0.32]	0.03	[-0.06, 0.12]	.00	[-.00, .00]	.17**
topic3	0.09	[-0.12, 0.31]	0.04	[-0.05, 0.14]	.00	[-.00, .00]	-.04
topic4	0.59**	[0.34, 0.84]	0.22	[0.13, 0.31]	.03	[.01, .05]	.29**
topic5	0.20	[-0.02, 0.41]	0.10	[-0.01, 0.21]	.00	[-.00, .01]	.10*
topic6	0.22*	[0.01, 0.43]	0.12	[0.01, 0.23]	.01	[-.00, .02]	.14**
topic7	-0.07	[-0.29, 0.14]	-0.04	[-0.14, 0.07]	.00	[-.00, .00]	-.04
topic8	-0.06	[-0.26, 0.13]	-0.03	[-0.14, 0.07]	.00	[-.00, .00]	-.13**
topic9	-0.11	[-0.32, 0.09]	-0.05	[-0.15, 0.04]	.00	[-.00, .01]	-.07
topic10	0.06	[-0.16, 0.27]	0.03	[-0.07, 0.12]	.00	[-.00, .00]	-.01
topic11	0.17	[-0.03, 0.38]	0.09	[-0.01, 0.19]	.00	[-.00, .01]	.09
topic12	-0.03	[-0.25, 0.19]	-0.02	[-0.12, 0.09]	.00	[-.00, .00]	-.15**
topic13	-0.12	[-0.31, 0.08]	-0.06	[-0.16, 0.04]	.00	[-.00, .01]	-.19**
topic14	-0.01	[-0.21, 0.20]	-0.00	[-0.10, 0.10]	.00	[-.00, .00]	-.03
topic15	-0.06	[-0.45, 0.34]	-0.01	[-0.09, 0.06]	.00	[-.00, .00]	-.03

$R^2 = .390^{**}$ $\Delta R^2 = .190^{**}$
 95% CI[.29, .41] 95% CI[.13, .24]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression

weights. *beta* indicates the standardized regression weights. sr^2 represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

* indicates $p < .05$. ** indicates $p < .01$.

Figure S8.

Predictive Validity for the Alternate Uses Task Brick Prompt

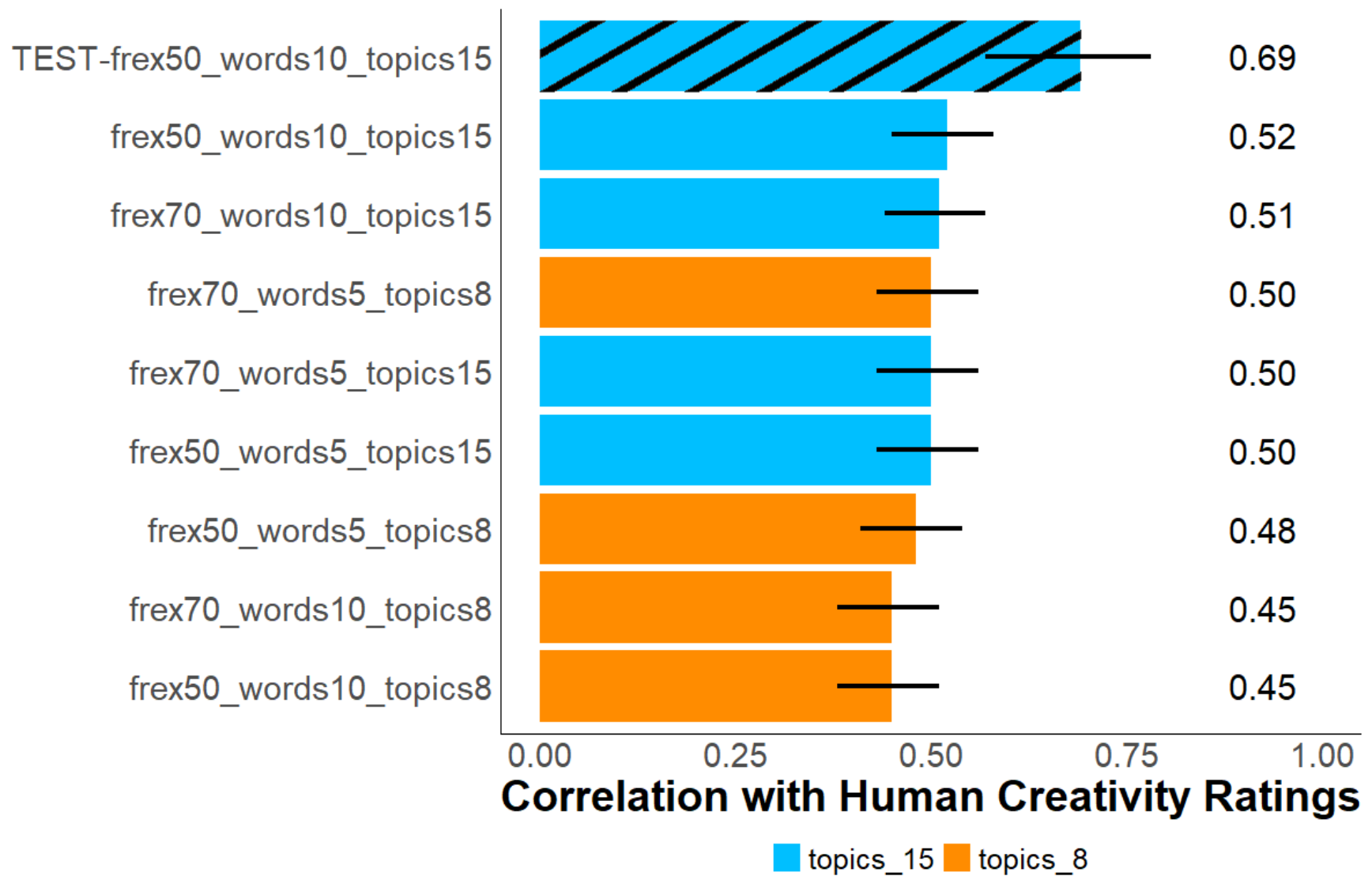


Table S12

Incremental Validity Beyond DSI and Word Count for the Alternative Uses Task Brick Prompt

Predictor	b	b 95% CI [LL, UL]	β	β 95% CI [LL, UL]	sr^2	sr^2 95% CI [LL, UL]	r	Fit	Difference
(Intercept)	0.30	[-0.06, 0.66]							
DSI	1.94**	[1.45, 2.43]	0.32	[0.24, 0.40]	.08	[.04, .13]	.29**		
word_count	-0.00	[-0.00, 0.00]	-0.06	[-0.14, 0.02]	.00	[-.01, .01]	.06		
								$R^2 = .089^{**}$	
								95% CI[.05,.13]	
(Intercept)	-0.18	[-1.57, 1.21]							
word_count	-0.00**	[-0.00, -0.00]	-0.11	[-0.19, -0.03]	.01	[-.00, .02]	.06		
DSI	1.10**	[0.61, 1.60]	0.18	[0.10, 0.26]	.02	[.00, .04]	.29**		
topic_X1	0.26	[-0.95, 1.47]	0.03	[-0.11, 0.17]	.00	[-.00, .00]	.17**		
topic_X10	1.78**	[0.58, 2.99]	0.21	[0.07, 0.35]	.01	[-.00, .02]	-.00		
topic_X11	1.36**	[0.43, 2.30]	0.26	[0.08, 0.44]	.01	[-.00, .02]	.34**		
topic_X12	0.18	[-0.80, 1.16]	0.02	[-0.11, 0.16]	.00	[-.00, .00]	.23**		
topic_X13	-1.73**	[-2.61, -0.85]	-0.23	[-0.35, -0.11]	.02	[-.00, .03]	-.14**		
topic_X14	-0.05	[-0.93, 0.83]	-0.01	[-0.18, 0.16]	.00	[-.00, .00]	.36**		
topic_X15	0.19	[-1.01, 1.38]	0.02	[-0.10, 0.13]	.00	[-.00, .00]	.06		
topic_X2	-0.18	[-1.02, 0.65]	-0.02	[-0.11, 0.07]	.00	[-.00, .00]	-.03		
topic_X3	0.78	[-0.57, 2.12]	0.08	[-0.06, 0.22]	.00	[-.00, .01]	-.01		
topic_X4	1.51**	[0.48, 2.53]	0.15	[0.05, 0.26]	.01	[-.00, .02]	.16**		
topic_X5	1.56**	[0.58, 2.54]	0.24	[0.09, 0.40]	.01	[-.00, .02]	-.06		
topic_X6	-0.48	[-1.46, 0.51]	-0.05	[-0.17, 0.06]	.00	[-.00, .01]	-.02		
topic_X7	0.55	[-0.50, 1.61]	0.06	[-0.05, 0.17]	.00	[-.00, .01]	-.04		
topic_X8	-0.18	[-1.14, 0.77]	-0.02	[-0.11, 0.08]	.00	[-.00, .00]	-.24**		
topic_X9	-3.58**	[-4.83, -2.34]	-0.35	[-0.48, -0.23]	.04	[.01, .06]	-.30**		
								$R^2 = .296^{**}$	$\Delta R^2 = .207^{**}$
								95% CI[.22,.33]	95% CI[.15, .26]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*² represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

Table S13

Predictor	b	β	sr^2	Fit	Difference
	b	β	sr^2	Fit	Difference
	95% CI [LL, UL]	95% CI [LL, UL]	95% CI [LL, UL]		
(Intercept)	1.83** [1.57, 2.08]				
topic1	0.24 [-0.09, 0.57]	0.08 [-0.03, 0.19]	.00 [-.00, .01]	.12**	
topic3	0.08 [-0.29, 0.46]	0.02 [-0.07, 0.11]	.00 [-.00, .00]	-.04	
topic4	0.26 [-0.12, 0.63]	0.07 [-0.03, 0.16]	.00 [-.00, .01]	.01	
topic5	0.30 [-0.03, 0.64]	0.10 [-0.01, 0.20]	.00 [-.00, .01]	.11**	
topic6	-0.32* [-0.64, -0.00]	-0.12 [-0.24, -0.00]	.00 [-.00, .01]	-.02	
topic7	-0.32 [-0.77, 0.13]	-0.06 [-0.15, 0.02]	.00 [-.00, .01]	-.10**	
topic8	0.28 [-0.05, 0.61]	0.09 [-0.02, 0.20]	.00 [-.00, .01]	.14**	
topic9	-0.62** [-0.91, -0.32]	-0.29 [-0.43, -0.15]	.02 [.00, .04]	-.35**	
topic10	-0.16 [-0.50, 0.19]	-0.04 [-0.15, 0.06]	.00 [-.00, .01]	-.01	
topic11	-0.26 [-0.60, 0.07]	-0.09 [-0.19, 0.02]	.00 [-.00, .01]	-.16**	
topic12	0.17 [-0.18, 0.51]	0.05 [-0.05, 0.15]	.00 [-.00, .01]	.05	
topic13	0.20 [-0.13, 0.53]	0.06 [-0.04, 0.17]	.00 [-.00, .01]	.14**	
topic14	0.44** [0.11, 0.78]	0.14 [0.04, 0.25]	.01 [-.00, .02]	.21**	
topic15	0.04 [-0.37, 0.44]	0.01 [-0.08, 0.10]	.00 [-.00, .00]	.02	
$R^2 = .198^{**}$					
95% CI [.13, .23]					

(Intercept)	1.55*	[0.20, 2.90]					
topic_X1	-0.04	[-1.27, 1.19]	-0.00	[-0.14, 0.14]	.00	[-.00, .00]	.17**
topic_X10	2.51**	[1.24, 3.78]	0.29	[0.14, 0.44]	.02	[.00, .03]	-.00
topic_X11	0.90	[-0.09, 1.90]	0.17	[-0.02, 0.37]	.00	[-.00, .01]	.34**
topic_X12	0.23	[-0.78, 1.24]	0.03	[-0.11, 0.17]	.00	[-.00, .00]	.23**
topic_X13	-1.69**	[-2.62, -0.76]	-0.22	[-0.35, -0.10]	.01	[-.00, .03]	-.14**
topic_X14	-0.29	[-1.19, 0.62]	-0.06	[-0.23, 0.12]	.00	[-.00, .00]	.36**
topic_X15	0.33	[-0.92, 1.57]	0.03	[-0.09, 0.15]	.00	[-.00, .00]	.06
topic_X2	-0.30	[-1.19, 0.59]	-0.03	[-0.13, 0.07]	.00	[-.00, .00]	-.03
topic_X3	1.16	[-0.21, 2.52]	0.12	[-0.02, 0.27]	.00	[-.00, .01]	-.01
topic_X4	1.37*	[0.31, 2.43]	0.14	[0.03, 0.25]	.01	[-.00, .02]	.16**
topic_X5	0.72	[-0.33, 1.77]	0.11	[-0.05, 0.28]	.00	[-.00, .01]	-.06
topic_X6	-0.57	[-1.63, 0.50]	-0.06	[-0.19, 0.06]	.00	[-.00, .01]	-.02
topic_X7	0.60	[-0.51, 1.71]	0.06	[-0.05, 0.18]	.00	[-.00, .01]	-.04
topic_X8	-0.53	[-1.50, 0.44]	-0.05	[-0.15, 0.04]	.00	[-.00, .01]	-.24**
topic_X9	-3.68**	[-4.94, -2.41]	-0.36	[-0.49, -0.24]	.04	[.01, .06]	-.30**
topic1	0.23	[-0.09, 0.54]	0.07	[-0.03, 0.18]	.00	[-.00, .01]	.12**
topic3	0.07	[-0.29, 0.43]	0.02	[-0.07, 0.11]	.00	[-.00, .00]	-.04
topic4	0.31	[-0.05, 0.67]	0.08	[-0.01, 0.17]	.00	[-.00, .01]	.01
topic5	0.25	[-0.08, 0.58]	0.08	[-0.02, 0.19]	.00	[-.00, .01]	.11**
topic6	-0.13	[-0.46, 0.20]	-0.05	[-0.17, 0.08]	.00	[-.00, .00]	-.02
topic7	-0.04	[-0.48, 0.41]	-0.01	[-0.09, 0.08]	.00	[-.00, .00]	-.10**
topic8	0.16	[-0.16, 0.47]	0.05	[-0.05, 0.16]	.00	[-.00, .01]	.14**
topic9	-0.17	[-0.51, 0.17]	-0.08	[-0.24, 0.08]	.00	[-.00, .01]	-.35**
topic10	0.01	[-0.33, 0.35]	0.00	[-0.09, 0.10]	.00	[-.00, .00]	-.01
topic11	-0.05	[-0.38, 0.27]	-0.02	[-0.12, 0.09]	.00	[-.00, .00]	-.16**
topic12	0.40*	[0.04, 0.75]	0.11	[0.01, 0.21]	.01	[-.00, .01]	.05
topic13	0.09	[-0.23, 0.41]	0.03	[-0.07, 0.13]	.00	[-.00, .00]	.14**
topic14	0.34*	[0.02, 0.66]	0.11	[0.01, 0.21]	.00	[-.00, .01]	.21**
topic15	0.24	[-0.16, 0.64]	0.05	[-0.04, 0.14]	.00	[-.00, .01]	.02

$R^2 = .307^{**}$ $\Delta R^2 = .109^{**}$
 95% CI[.22,.33] 95% CI[.07, .15]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. sr^2 represents the semi-partial correlation squared. *r* represents the zero-order

correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

* indicates $p < .05$. ** indicates $p < .01$.

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