



ASSESSMENT REPORT

I. SUMMARY OF ASSESSMENT	Site (suggested length of 1-2 pages)
A. Department	Psychology
Program	Psychology BA/BS
Reporting for Academic Year	2019-2020
Last 5-Year Review	2010–2011
Next 5-Year Review	2020–2021 (received one-year extension to 2019-2020 and then pandemic happened)
Department Chair	David Fencsik
Date Submitted	September 3, 2020

List all your PLO in this box. Indicate for each PLO its alignment with one or more institutional learning outcomes (ILO). For example: “PLO 1. Apply advanced computer science theory to computation problems (ILO 2 & 6).”

1. Identify key concepts, principles, and applications of psychology’s content domains.
2. Apply scientific reasoning to interpret psychological phenomena and to design and conduct basic psychological research (ILO 1: Critical Thinking).
3. Evaluate the ethics of psychological science and practice.
4. Demonstrate effective communication skills (ILO 2: Written Communication).
5. Describe career options within psychology.

B. Program Learning Outcome(S) Assessed

List the PLO(s) assessed. Provide a brief background on your program’s history of assessing the PLO(s) (e.g., annually, first time, part of other assessments, etc.)

During the 2016-2017 school year, we assessed PLO 4 using the CSUEB ILO Written Communication Rubric with our advanced research classes (PSYC 491/493). During the 2017-2018 school year, we created a 15-question online multiple-choice test to evaluate PLOs 1 and 2 in beginner and advanced students. During the 2018-2019 school year, we further developed the online multiple-choice test to assess a broader range of content areas under PLO 1 and added questions to assess PLO 3 (28 questions). This year (2019-2020), we used an empirical article analysis assignment to evaluate PLO 2. We also submitted our student assignments to assist the university’s assessment of ILO 1.

C. Summary of Assessment Process

Summarize your assessment process briefly using the following sub-headings.

Instrument(s): (include if new or old instrument, how developed, description of content)

Students read a short empirical article and answered eight questions that assessed their critical thinking ability. First, we evaluated students' understanding of the article content by asking questions about the theory underlying the research project, the operationalization of variables in the study, the researchers' hypotheses and rationale, and the results. Next, we evaluated whether students could recognize pros and cons to the researchers' approach and identify possible alternative explanations for the results. Lastly, we asked students to design a follow-up study that operationalized the key variable in a different way. See Appendix A for complete assignment.

The assessment committee (Drs. Horne, Layous, and Little) evaluated student responses (each student evaluated by two raters). For each student, evaluators provided ratings on the Institutional Learning Outcome Critical Thinking Rubric (approved by Academic Senate March 2016) and also provided ratings on more specific questions of interest to the psychology department (e.g., How well did the student design their own study overall?). See Appendix B for complete evaluation.

Sampling Procedure:

Our sample ($N = 29$) came from Dr. Horne's PSYC 491A and Dr. Layous' PSYC 491E classes. Participants were offered time in class and extra credit to complete the assignment. Participants were assured non-completion would not count against them and that their assignments would be anonymized when evaluated. Participants were also notified that their responses would be evaluated by faculty in the psychology department as well as by a university-level committee.

Sample Characteristics:

All students were in the late stages of completing their major as PSYC 491 is often students' last course and requires multiple prerequisites. We did not collect demographic information from participants.

Data Collection: *(include when, who, and how collected)*

Drs. Horne and Layous set aside class time during Week 7 and Week 6, respectively, of Spring semester 2020 for students to complete the article analysis assignment. The assignment and corresponding article were posted to Blackboard. Students typed their answers to the questions in their class computer lab and then re-uploaded their completed assignment to the Blackboard assignment link.

Data Analysis:

Because each student was evaluated by two evaluators, we first explored whether the two evaluators agreed on the ratings (i.e., interrater reliability). We looked for absolute agreement (more stringent), as well as consistency agreement (allowing for the fact certain raters may have rated people higher or lower than others, but the rise and fall of the ratings were similar). Intraclass correlations indicated that raters achieved good absolute agreement on scores, so we felt comfortable averaging across raters. Table 1 includes the mean and standard deviation

across students for items on the ILO Critical Thinking rubric. Table 2 includes the mean and standard deviation across students for the Psychology Department’s more specific questions.

Table 1

	Mean (4-point scale with higher numbers indicating better responses)	Standard Deviation
Explanation of Issues	2.43	0.65
Use of Evidence	2.90	0.83
Context, assumptions	2.31	0.91
Alternative viewpoints	2.17	0.62
Statement of position	2.24	0.61
Conclusions, implications, and consequences	2.21	0.62

Table 2

	Mean (5-point scale with higher numbers indicating better responses)	Standard Deviation
How well did the student explain sociometer theory?	3.16	1.43
How well did the student state the hypothesis?	3.69	1.01
How well did the student evaluate the design of the studies?	2.97	1.13
How well did the student design their own study overall?	2.64	1.08
How well did the student operationalize social inclusion?	2.55	1.23
How well did the student state the implications/importance of their newly designed study?	2.29	1.16

D. Summary of Assessment Results

Summarize your assessment results briefly using the following sub-headings.

Main Findings:

On the ILO rubric (4-point scale, with higher scores indicating better responses), all averages except “Use of Evidence” were closer to 2 than 3, indicating that students provided some evidence of skill in the area (scores were not 1), but perhaps missed important points or did not provide complete information/analysis (as would be indicated by a score of 3 or 4). On the

more specific questions, students scored near the midpoint (5-point scale, with higher scores indicating better responses). They scored highest when asked to state the authors' hypotheses, but the lowest when asked to design their own study and provide the reasons why this study would be important.

Recommendations for Program Improvement: (*changes in course content, course sequence, student advising*)

Although we had some promising evidence that students can extract research hypotheses and results from a professional empirical article in their field, we also found evidence that students struggled to go beyond the basic facts of the presented study. Specifically, they were not able to provide strong alternative viewpoints to the findings or implications of the research. Furthermore, they struggled to design a new study and provide rationale for why their new study would be important. Thus, students may understand research that has been conducted, but not necessarily have the skills to question it or improve upon it. Additionally, another surprising finding was that most students did not understand what an operational definition is, and this likely affected responses to several questions. Our suggestions for program improvement would be to encourage instructors teaching courses in the Psychology Department to provide more opportunities for students to work on these skills, even in courses that are not focused on completing research projects.

Next Step(s) for Closing the Loop: (*recommendations to address findings, how & when*)

We will discuss results from the 2019-2020 assessment during a faculty meeting fall semester and discuss ways to address critical thinking deficits in our courses. The faculty discussed the 2018-2019 assessment report at a meeting on October 14, 2019. The report showed that advanced students in the major scored better than beginning students on the aforementioned online test of knowledge in diverse areas within psychology as well as research methods. However, the advanced students did not have high scores, suggesting that more efforts need to be placed in helping them retain knowledge from courses.

The assessment committee from the Psychology Department (Drs. Horne, Layouts, and Little) has also thought of potential improvements to this assessment tool. For example, the question we used to assess alternative viewpoints left open the possibility that students agree with the authors' hypotheses, in which case they would not have provided alternative viewpoints. This could have driven students' low score in that area. A future assignment for assessing PLO 2 should force students to state a position and defend their claims with evidence. For example, students could read two different articles with conflicting conclusions and then make a well-reasoned argument for which conclusion they think is stronger (based on the provided evidence).

Other Reflections:

In the future, it would be nice to compare our advanced students (PSYC 491/493) to our newer students (e.g., in PSYC 200) to see whether advanced students scored better on this assignment than newer students like we have done on the online subject matter assessment (2017-2018 and 2018-2019). That growth would indicate success in our research classes that we cannot presently infer based on mean scores from advanced students alone. The results of this assessment are positive in that students seemed to understand the presented research, but also leave room for improvement in students' critical evaluation of the research and potential contribution to new knowledge.

E. Assessment Plans for Next Year

Summarize your assessment plans for the next year, including the PLO(s) you plan to assess, any revisions to the program assessment plan presented in your last five-year plan self-study, and any other relevant information.

During spring semester of 2021, we plan to evaluate PLO 3 (understanding of ethics) with four multiple-choice questions first used during our 2019-2020 assessment. We will administer this assessment to students in our PSYC 200 and PSYC 491/493 courses to assess whether students' understanding of ethics improves from the beginning to the end of the program.

Article Analysis Assignment

As part of the ongoing commitment to improve our instructional programs, CSUEB periodically conducts secondary reviews of randomly selected student work on key assignments. This is only to help faculty improve the curriculum and will NOT affect your grade. The purpose of this particular assignment is to assess your critical thinking skills, including your ability to interpret scientific findings and design studies to test psychological phenomena. Faculty from the Psychology Department and from other departments at CSUEB will evaluate your work to guide future changes to our curriculum and teaching methods. Please complete the assignment to the best of your ability to represent your knowledge accurately.

To complete this assignment, please follow these instructions carefully. Download the Burrow and Rainone (2017) article (PDF) and the “Article Analysis” Word document. Read the Burrow and Rainone (2017) article and type your answers to the questions in the “Article Analysis” Word document. Once finished, please upload your completed “Article Analysis” Word document to the designated assignment in Blackboard. Please DO NOT include your name inside the document (simply uploading the assignment on Blackboard will let your instructor know you completed it). Although your instructor will be able to link your name to your assignment, we do not want the other faculty evaluators to have your name.

1. What theory were these studies testing? Briefly explain the theory.

Sociometer theory. Sociometer theory holds that one’s self-esteem is related to their perceptions of their social value. As they receive indications that they are valued by others, their self-esteem should go up. As they receive cues of rejection, their self-esteem should go down.

2. What was the researchers’ hypothesis?

Their hypothesis was that people who received more “likes” on Facebook would also report higher self-esteem. They expected the relationship between likes and self-esteem to be moderated by people’s sense of purpose. Specifically, people who had higher sense of purpose would not show as strong a relationship between likes and self-esteem.

3. What was the rationale for the researcher's hypothesis? Put another way, this question asks you to explain why the researchers predicted what they predicted.

The authors thought that social media likes was a good indicator of social inclusion and therefore, following sociometer theory, likes would be related to self-esteem. However, they expected that people who already have a sense of purpose in their lives may draw their self-esteem from their pursuit of valued goals, rather than from social feedback like social media likes. In addition, some personally meaningful goals are prosocial in nature and therefore people with purpose may already feel a sense of connection to others regardless of social media feedback.

4. How did the researchers operationalize social inclusion in Study 1? How did they operationalize social inclusion in Study 2? In other words, how was social inclusion represented in each study?

Study 1 – Participants self-reported how many likes their current profile picture has received,

and how many likes their profile pictures tend to receive on average. Researchers used the average number of likes as a predictor of self-esteem.

Study 2 – Researchers manipulated number of likes received. They stated that they were piloting a new social media site and they needed to take a selfie to upload to their personal profile. After taking the selfie, the experimenter claimed to upload the picture to the site and leave it displayed for five minutes. After the five minutes had passed, participants were told that, compared to other pilot testing, their selfie had received either average, below average, or above average likes.

5. Please summarize the results from Study 1 and Study 2. Also note whether these results supported the authors' hypothesis.

In both studies, authors found support for their prediction that a sense of purpose moderated the relationship between social media likes and self-esteem. In both studies, the number of likes received was only related to self-esteem among those with a lower sense of purpose. In other words, if one had lower sense of purpose, their self-esteem was contingent on social media likes. Astute students may notice that number of social media likes was not related to self-esteem overall in Study 1 (nonsignificant bivariate correlation and nonsignificant "likes received" predictor in the regression model). The authors glazed over that point. However, in Study 2, researchers did find a main effect of social media likes, as well as the hypothesized interaction.

6. Evaluate the design of Study 1 and Study 2, listing both pros and cons about each study. Which one provides stronger support for the authors' hypothesis and why?

Study 1 – Self-reporting number of likes on profile pictures is not ideal due to potential for social desirability or memory biases to affect accurate reporting. Also, Study 1 is a correlational design, so we cannot infer that likes affected self-esteem. For example, it is possible that people with higher self-esteem garner more likes due to other aspects of their personality (e.g., extraversion), rather than the number of likes affecting their self-esteem.

Study 2 is an experiment, so addresses some of the shortfalls of Study 1. Because people were randomly assigned to receive a certain number of likes, we can be more sure that number of likes is what accounts for their differences in self-esteem. Although the hypothesized relationship between likes and self-esteem was found, I wondered how believable the cover story was to participants. The findings in the real world might be even stronger as people would be able to experience the dynamic nature of the likes—who they are from, how much time passes before getting a like, etc. Thus, just being told the number of likes with no other information may have actually undermined/attenuated the true relationship between likes and self-esteem. In addition, in both studies, purpose was self-reported. It would have been nice if purpose could have also been manipulated (perhaps through a writing activity) so that we could have inferred causality. In both studies, self-reported purpose was very highly related to self-reported self-esteem, so would have been nice to have purpose operationalized in a different way to reduce common method variance and to infer causality.

I could see students saying Study 1 was stronger because it was more externally valid, but I would say Study 2 was stronger because it manipulated study likes and causality can be inferred about that part of the study.

7. Can you think of any alternative explanations for the results of these two studies? In other words, do you think the authors' conclusions were appropriate or would you interpret these results differently? Explain your answer.

Overall, I think the authors' conclusions were appropriate. I could nitpick that they did not discuss the nonsignificant relationship between likes and self-esteem in Study 1—I think they should have. Purpose was so highly related to self-esteem in Studies 1 and 2, that maybe they were almost interchangeable. Perhaps likes did not relate strongly to self-esteem among those high in purpose because they already had such high self-esteem. The authors said they tested the possibility of this ceiling effect and found it to be unlikely due to the top 50th percentile in purpose still having variability on the self-esteem scale. I still think this could have been an issue and was not sure why they zeroed in on the top 50th percentile when their simple slopes analyses zeroed in on one standard deviation above and below the mean (a much narrower group than top 50th percentile). Anyway, students may note the high correlation between meaning and self-esteem as concerning.

They also may note the lack of external validity from Study 2 and the potential for deceit in Study 1. I'm not sure what alternative explanations that would lead them to have, but would give points for anything plausible.

8. Please design a study that operationalizes social inclusion in a different way. Describe how you would represent social inclusion in this new study. For example, if the new study is an experiment, describe what participants would do in each condition. If the new study is correlational, describe how you would measure social inclusion. Please also note why doing this new study would be important. In other words, how would your study contribute to the literature over and above Burrow and Rainone (2017)?

This could have a broad range of answers. Anything clear, complete, and rational would show critical thinking for me. I include this question because of how our PLO is written: "Apply scientific reasoning to interpret psychological phenomena and to design and conduct basic psychological research" but I don't think this question fits very well with the university rubric. I think that's fine—just noting this question is more for us than them.



FlashReport

How many likes did I get?: Purpose moderates links between positive social media feedback and self-esteem.



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ABSTRACT

Sociometer theory asserts that self-esteem is calibrated to one's perceived relational value. Accordingly, positive feedback should boost self-esteem because it signals acceptance by others. Yet, the extent to which self-esteem is sensitive to positive feedback may depend on individuals' sense of purpose. In two studies ($N = 342$), we tested purpose in life as a source of self-directed and prosocial motivation and predicted that having greater purpose would lessen sensitivity to social media feedback. Study 1 revealed that the number of likes individuals received on their Facebook profile pictures was positively associated with self-esteem. Study 2 replicated these findings experimentally by manipulating the number of likes individuals received on self-photographs posted to a mock Facebook site. In both studies, links between likes and self-esteem were diminished for those with greater purpose. Implications for purpose as a moderator of the self-esteem contingencies of positive social feedback are discussed.

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Facebook, the world's largest online social network, allows users to "like" the content they view with the click of a button. The simplicity of liking posted material has made doing so extraordinarily popular, with nearly 4.5 billion likes generated daily and half of all users liking at least one post they view every day (Pew Research Center, 2014). But what impact does this proliferation of likes have on those receiving them? On one hand, accumulating evidence suggests a positive influence: receiving affirmation on content posted virtually corresponds positively with self-esteem and subjective well-being and negatively with loneliness (Bazarova, Choi, Schwanda Sosik, Cosley, & Whitlock, 2015; Burke, Marlow, & Lento, 2010; Oh, Ozkaya, & LaRose, 2014; Valkenburg, Peter, & Schouten, 2006). On the other hand, relying on affirmation from others in order to feel good about oneself may signal contingent self-worth, which can undermine well-being over time (Kernis, Paradise, Whitaker, Wheatman, & Goldman, 2000). Adjudicating between these possibilities is important as seeking attention and acknowledgement from others are reported as primary drivers of Facebook use (Sung, Lee, Kim, & Choi, 2016; Stefanone, Lackaff, & Rosen, 2011).

A central aim of the current research was to examine the extent to which virtual likes influence how individuals feel about themselves. We based our examination on sociometer theory (Leary & Baumeister, 2000; Leary & Downs, 1995), which holds that self-esteem is calibrated to cues of inclusion or rejection within the social environment. From this perspective, how individuals feel about themselves is a dynamic

and self-regulatory gauge of one's relational value. Several experiments and field studies confirm that self-esteem is elevated when individuals are (or imagine being) included, accepted, or deemed popular by others (Denissen, Penke, Schmitt, & van Aken, 2008; Leary, Tambor, Terdal, & Downs, 1995; Reitz, Motti-Stefanidi, & Asendorpf, 2015). Notably, having Facebook friends who are more responsive can satisfy psychological needs above and beyond the number of Facebook friends one has (Greitemeyer, Mügge, & Bollermann, 2014). Because receiving positive feedback can signal acceptance within one's social environment, we predicted that self-esteem would increase as a function of the number of likes one received on their personal photographs.

It should be noted, however, the extent to which self-esteem relies on perceptions of one's relational value can be limited by other factors. For example, among individuals driven by strong personal goals and motivations, social inclusion is a much weaker predictor of self-esteem (Guay, Delisle, & Fernet, 2008). Thus, we also predicted that having a sense of purpose in life – or a "self-organizing life aim that organizes and stimulates goals, manages behaviors, and provides a sense of meaning" (McKnight & Kashdan, 2009, p. 242) would moderate the effect of likes on self-esteem. Specifically, this effect should manifest primarily for those lacking purpose, but should have little to no influence for those with a greater sense of it because the self-esteem of purposeful individuals should be less contingent on social approval. In addition, because purpose is conceptualized as a prosocial motivation, whereby purposeful individuals strive to accomplish goals that are both personally meaningful and relevant to the world beyond the self (Damon, Menon, & Cotton Bronk, 2003), those scoring higher in purpose should be expected to show less sensitivity to positive social media feedback

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because they are already guided by a sense of connection with and service to others. This hypothesis is further supported by previous studies that have found that individuals with strong civic and prosocial orientations tend to use Facebook for informational reasons rather than status enhancement or socialization (Park, Kee, & Valenzuela, 2009), and emotional consequences of Facebook use are most pronounced when people lack a sense of meaning (Sagioglou & Greitemeyer, 2014). Thus, evoking one's sense of personal motivation and prosocial goals (i.e., purpose; Damon et al., 2003) may more reliably decouple self-esteem from social feedback.

While prior research has consistently found that purposeful individuals have higher self-esteem (Scheier et al., 2006), a conceptual distinction can be drawn between the two constructs. Whereas self-esteem refers to one's appraisals of her or his value (Leary & Baumeister, 2000), purpose represents a prospective life aim that is already valued. Thus, the current study provides an initial test of purpose as a resource for disrupting the positive feedback contingencies of self-esteem. Evidence in favor of this capacity would be significant for two main reasons. First, the buffering effects of purpose, to date, have only been demonstrated in contexts of stress reactivity. Confirmation that purpose also attenuates reactivity to *positive* stimuli (receiving likes) would broaden understanding of purpose as a source of psychological self-regulation and homeostasis. Second, it would situate purpose as an arbiter of when self-esteem operates as a sociometer; thus supporting purpose theories that claim that purpose involves pursuing aims that one believes are of value to others. Finally, provided the widespread exposure to likes and other virtual expressions of affirmation common on social media sites, purpose enhancement might offer an accessible point of intervention for promoting more adaptive outcomes among users.

1. Study 1

1.1. Methods

1.1.1. Participants and procedure

Participants were 300 adults (49% women) between the ages of 18 and 69 ($M_{age} = 32.63$, $SD = 10.20$) recruited through Amazon Mechanical Turk. Because past studies have relied on much smaller sample sizes to detect moderating effects of purpose in life on ratings of self-relevant attitudes and satisfaction (sample sizes ranging from 49 to 151; Heisel & Flett, 2004; Steger, Oishi, & Kesebir, 2011), we sought to utilize a much larger sample to test our predictions. Data collection did not depend on any analysis of results. Respondents were only included in analyses if they reported having (a) an active Facebook account, (b) at least 20 friends in their virtual network, and (c) received fewer than 200 likes on their average profile picture in order to ensure that the sample reflected the average Facebook user. Based on these criteria, 246 respondents were retained. All measures used in this study are reported below.

1.1.2. Measures

1.1.2.1. Purpose in life. Purpose in life was assessed using the six-item Life Engagement Test (Scheier et al., 2006). Participants indicated the extent to which they agreed with statements such as, "There is not enough purpose in my life" (reverse scored), "To me, the things I do are all worthwhile" and "I have lots of reasons for living". Responses ranged from 1 (*strongly disagree*) to 5 (*strongly agree*).

1.1.2.2. Self-esteem. Self-esteem was assessed using the 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1965; $\alpha = 0.92$). Participants reported the extent to which they agreed with each item (i.e. "On the whole, I am satisfied with myself") using a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

1.1.2.3. Facebook information. Participants with active Facebook accounts reported the total number friends in their network, how many likes their current profile picture has received, and how many likes their profile pictures tend to receive on average.

1.1.2.4. Covariates. Because individual differences in Big Five personality traits, narcissism, and positive mood may contribute to variance in self-esteem (Erdle & Rushton, 2011; Robins, Hendin, & Trzesniewski, 2001), and are known correlates of purpose (e.g. Scheier et al., 2006), we included these factors as covariates in our analyses. Big Five personality traits were assessed using the 20-item Mini-IPIP (Donnellan, Oswald, Baird, & Lucas, 2006). Sample items and scale reliabilities were: "I am the life of the party" (extraversion; $\alpha = 0.80$), "I sympathize with others' feelings" (agreeableness; $\alpha = 0.81$), "I get chores done right away" (conscientiousness; $\alpha = 0.73$), "I have a vivid imagination" (openness; $\alpha = 0.67$), and "I have frequent mood swings" (neuroticism; $\alpha = 0.71$). Four additional items assessed narcissism (i.e. "I like to look at myself in the mirror"; $\alpha = 0.90$). Responses ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). General mood was assessed using 10-discrete ($\alpha = 0.90$) items from the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988). Participants were asked to indicate the extent to which they generally felt each emotion ranging from 1 (*not at all*) to 5 (*extremely*).

1.2. Results and discussion

Descriptive statistics for study variables are provided in Table 1. To test our hypothesis, a multivariate regression examined whether the average likes participants received on their profile photos, sense of purpose, and their interaction predicted self-esteem (see top of Table 2). These predictors explained 65% of the variance in self-esteem, $F(3, 244) = 158.92$, $p < 0.001$. A significant main effect detected for purpose ($\beta = 0.80$, $p < 0.001$) was qualified, however, by its interaction with average number of photo likes received, $\beta = -0.13$, $p = 0.001$.

To further test whether this effect persisted after adjusting for our covariates, we conducted a separate regression including demographic variables, personality traits, narcissism, positive mood, total number of Facebook friends, average likes received on their profile photos, and sense of purpose in life as predictors of self-esteem (see bottom of Table 2). Together, these predictors explained 73% of the variance in self-esteem, $F(13, 245) = 57.67$, $p < 0.001$. A main effect detected for purpose ($\beta = 0.49$, $p < 0.001$) was qualified by its interaction with average number of photo likes received, $\beta = -0.09$, $p = 0.002$. As illustrated in Fig. 1, simple-slopes tests indicated that receiving a greater number of likes was positively associated with self-esteem for those scoring low (-1 SD) in purpose ($\beta = 0.14$, $p = 0.002$), but was unrelated to self-esteem for those scoring high ($+1$ SD) in purpose ($\beta = -0.04$, $p = 0.337$). Overall, results supported the prediction that at lower levels of purpose, the number of likes individuals received were more strongly associated with levels of self-esteem.

2. Study 2

In Study 1, individuals self-reported the number of likes they typically receive on their Facebook profile pictures. However, such reporting is susceptible to bias due to social desirability and recall limitations, potentially leading to faulty estimates. In addition, the correlational nature of the data obscured evidence of the directionality of the demonstrated effects. To address these limitations in Study 2, we used an experimental manipulation to inform participants that they received either a low, average, or high number of likes on self-photographs ("selfies") prior to completing measures of self-esteem. All measures, manipulations, and excluded participants are reported below.

Table 1
Bivariate, means, and standard deviations for Study 1 variables.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Gender	–												
2. Age	–0.20*	–											
3. Openness	–0.05	0.12	–										
4. Conscientiousness	0.02	0.25**	0.26**	–									
5. Extraversion	–0.08	0.06	0.22**	0.05	–								
6. Agreeableness	–0.20*	0.12	0.34**	–0.17**	0.26**	–							
7. Neuroticism	–0.14*	–0.12	–0.29**	–0.39**	0.24**	–0.10	–						
8. Narcissism	0.06	–0.27**	–0.04	0.00	–0.26**	–0.25**	–0.15*	–					
9. Positive affect	0.04	0.14	0.06	0.16*	0.31**	0.07	–0.20**	0.37**	–				
10. Total friends	–0.01	–0.13*	0.10	–0.06	0.19**	0.08	–0.09	0.03	–0.02	–			
11. Avg. likes	–0.23**	0.10	0.05	–0.08	0.26**	–0.00	–0.11	0.18**	0.22**	0.29**	–		
12. Purpose in life	–0.03	0.13*	0.31**	0.41**	0.32**	0.25**	–0.46**	0.17**	0.33**	0.13**	0.13*	–	
13. Self esteem	0.03	0.21**	0.37**	0.46**	0.32**	0.21**	–0.58**	0.18**	0.31**	0.13*	0.11	0.70**	–
Mean	–	32.57	3.66	3.55	2.74	3.61	2.64	2.57	2.80	371	18.48	3.66	3.65
SD	–	10.19	0.77	0.85	0.95	0.87	0.89	1.09	0.81	446	18.07	0.85	0.84

Note. Gender (0 = Male, 1 Female). All *p*-values are 2-tailed.

* = *p* < 0.05.

** = *p* < 0.01

2.1. Methods

2.1.1. Participants and procedure

Participants were 102 undergraduate students (74% female) aged 18 to 31 (*M*_{age} = 20.14, *SD* = 1.84) at a large northeastern university. Six respondents were omitted because they failed an attention check. Based on an anticipated small effect size (Cohen's *f*² = 0.1), a power analysis determined a sample size of 114 would be required to reach adequate power of 0.80. Data collection did not depend on any analysis of results.

Participants began the study by completing a demographics form, a measure of purpose in life ($\alpha = 0.84$; same as described in Study 1), and a personality inventory that was not included in present analysis because it was administered pre-manipulation and, as a covariate, was found not to account for the hypothesized effects in Study 1. After completing the survey, an experimenter explained to participants that the aim of the study was to pilot test a new social media site that resembled Facebook (in actuality no new site had been created). Participants were told that in order to test some of the features of the interactive features of site, they would need to create a new personal profile by taking a photograph of themselves to be uploaded by the experimenter. The

Table 2
Hierarchical regression estimates predicting self-esteem in Study 1.

Predictors	<i>B</i>	<i>SE B</i>	β	95% <i>CI Lower</i>	95% <i>CI Upper</i>
<i>Unadjusted model</i>					
Average likes received	0.04	0.03	0.04	–0.03	0.10
Purpose in life	0.67***	0.03	0.79	0.61	0.73
Purpose × likes received	–0.09**	0.03	–0.11	–1.56	–0.03
<i>Adjusted model</i>					
Gender	0.06	0.06	0.03	–0.07	0.17
Age	0.08*	0.03	0.10	0.00	0.01
Openness	0.12**	0.04	0.11	0.04	0.20
Conscientiousness	0.14**	0.04	0.14	0.06	0.22
Extraversion	0.05	0.03	0.05	–0.02	0.11
Agreeableness	–0.04	0.07	–0.04	–0.11	0.04
Neuroticism	–0.18***	0.04	–0.19	–0.25	–0.10
Narcissism	0.08*	0.03	0.10	0.02	0.15
Positive affect	–0.03	0.04	–0.03	–0.11	0.05
Total FB friends	0.00	0.00	0.04	0.00	0.00
Average likes received	0.04	0.03	0.04	–0.03	0.10
Purpose in life	0.49***	0.04	0.58	0.42	0.56
Purpose × likes received	–0.09**	0.03	–0.10	–1.46	–0.03

Notes. *F*(13, 245) = 57.67, *p* < 0.001. *R*² = 0.73. Gender: female = 1, male = 0.

* *p* < 0.05.

** *p* < 0.01.

*** *p* < 0.001.

experimenter then provided participants with a digital camera and asked them to take a selfie. After taking the selfie, the experimenter ostensibly uploaded the photograph to the site by connecting the camera to a computer with a monitor that was not visible to participants. Participants were told their photograph was being displayed for 5 min and that other users would have the chance to view and like their picture. While they waited for their results, participants completed a word-find task designed as a distraction. After 5 min had passed, participants were given randomized feedback about their selfie. Specifically, they were told that compared to pilot testing, their selfie had received the average number of likes (27 likes; *n* = 32), above the average number of likes (48 likes; *n* = 30), or below the average number of likes (6 likes; *n* = 34). Finally, participants completed a post-manipulation measure of self-esteem ($\alpha = 0.91$; same as Study 1).

2.2. Results and discussion

Across participants, both purpose (*M* = 4.11, *SD* = 0.63) and self-esteem (*M* = 3.84, *SD* = 0.72) were above the midpoint on both scales, and were positively correlated, *r* = 0.58, *p* < 0.001.

To establish that our manipulation operated in a manner consistent with sociometer theory, we first examined whether self-esteem was influenced by condition. An omnibus ANOVA revealed that participants in the high likes condition (*M* = 4.12, *SD* = 0.55) reported significantly higher self-esteem than those who received a low (*M* = 3.74, *SD* = 0.79) or average (*M* = 3.70, *SD* = 0.74) number of likes, *F*(2, 95) = 3.33, *p* < 0.040, *d* = 0.56. A planned contrast confirmed the high likes condition reported higher self-esteem than the combined average and low likes conditions, *t*(93) = –15.36, *p* < 0.001. Therefore, to test our main hypothesis that boosts in self-esteem caused by receiving a high number of likes would be attenuated among participants who had a

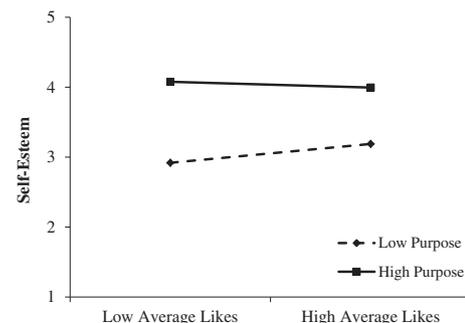


Fig. 1. Interaction between likes received and purpose predicting self-esteem in Study 1.

greater sense of purpose in life we ran two separate regression analyses to test our hypothesis: (1) a model including all three experimental conditions, and (2) a follow-up model in which the low and average likes conditions were combined.

In the regression model with all three conditions considered, two dummy-codes were created to uniquely identify members of the low likes and high likes conditions; (participants were assigned a 0 = if they were not members and a 1 = if they were members of these conditions, respectively). Thus, by entering both of these dummy-codes into the model simultaneously, the average likes condition served as the reference group. The dummy-scored feedback conditions, purpose, and their interactions were entered as predictors of self-esteem (see top of Table 3). Together, these predictors explained 41% of the variance in self-esteem, $F(5, 95) = 14.20, p < 0.001$. The only significant interaction emerged between the purpose and the high likes dummy condition, ($\beta = -0.28, p = 0.04$). Simple-slopes tests indicated that compared to the average likes condition, receiving a high number of likes was positively associated with self-esteem for those low (-1 SD) in purpose ($\beta = 0.77, p = 0.003$), but was unrelated to self-esteem for those high ($+1$ SD) in purpose ($\beta = 0.09, p = 0.579$).

In the follow-up model, demographic variables, modified feedback condition, purpose, and feedback condition X purpose were entered as predictors of self-esteem (see bottom of Table 3). Together, these predictors explained 41% of the variance in self-esteem, $F(5, 94) = 14.77, p < 0.001$. Significant main effects for both purpose and feedback conditions were qualified by an interaction between the two, ($\beta = -0.31, p = 0.014$). As illustrated in Fig. 2, simple-slopes tests indicated that receiving a greater number of likes was positively associated with self-esteem for those low (-1 SD) in purpose ($\beta = 0.70, p < 0.001$), but was unrelated to self-esteem for those high ($+1$ SD) in purpose ($\beta = 0.07, p = 0.683$).

3. General discussion

While the like button did not appear on Facebook for the site's first five years of operation, its emergence has not gone unnoticed. With billions of likes conferred daily, the common Facebook user may be justified in worrying less about whether anyone will like what they post and instead wonder just how many likes they will receive. When the aim is to boost self-esteem, the current research suggests: the more the better. Whether self-reported (Study 1) or manipulated (Study 2),

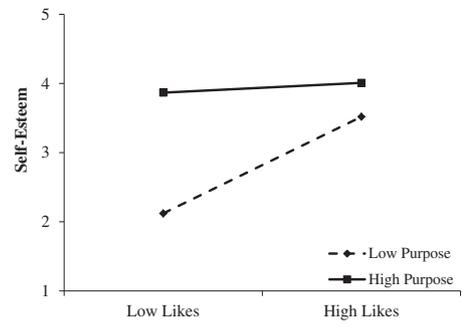


Fig. 2. Interaction between likes condition and purpose predicting self-esteem in Study 2.

receiving a greater number of likes reliably predicted greater self-esteem. This pattern of results corroborates and extends precepts of sociometer theory insofar that individuals' self-esteem was responsive to evidence of one's value to others, even in virtual environments. Notably, however, purpose in life attenuated this association; having a stronger sense of purpose disrupted the extent to which self-esteem was contingent on evidence of one's social value.

Why might purpose act as a moderator in the relationship between social media feedback and self-esteem? Recent research has found that adolescents who viewed photographs posted to social media that had received more likes demonstrated greater activation of neural regions involved in reward processing (Sherman, Payton, Hernandez, Greenfield, & Dapretto, 2016). If receiving or observing likes activates these neural regions, then lessening responsiveness to them likely requires inhibiting reactions to them as social endorsements. Interestingly, Burrow and Spreng (2016) found that purpose in life inhibits impulsivity to reward seeking. Thus, greater inhibition may be a mechanism by which purpose contours the impact of social appraisals on self-esteem. Future studies should examine this possibility by incorporating measures of purpose into studies of reward processing of social media feedback. This may be of greatest benefit to youth populations given their known susceptibility to peer endorsement and increased frequency of social media use.

A potential concern in interpreting our findings is the strong correlation detected between purpose and self-esteem in both studies. Perhaps at high levels of purpose, greater likes showed no association with self-esteem due to ceiling effects, thus limiting the potential for increased self-esteem. To clarify this possibility empirically, a median-split on the purpose variable in Study 1 showed that those highest in purpose had a mean of 4.20 and a standard deviation of 0.55 on the 5-point self-esteem scale (compared to 3.20 and 0.66 among those lowest in purpose). Thus, substantial variability in reported self-esteem existed even among those indicating higher levels of purpose.

Having supported our hypotheses, we can now revisit the implications of purpose as an arbiter of the self-esteem – positive feedback link outlined above. As noted, past work has primarily showcased purpose as a buffer to stressful experience. For example, it is known that purposeful individuals recover faster after viewing threatening stimuli (Schaefer et al., 2013), and show less distress when navigating settings characterized by higher proportion of social outgroups (Burrow & Hill, 2013). The current findings extend this attenuating role to shaping reactions to positive experiences. While limiting the magnitude of self-esteem derived from receiving likes may run counter to notions of a psychological resource, it is consistent with studies showing the damaging effects of contingent and unstable self-esteem (Kernis et al., 2000).

In addition, while some theories of purpose describe it as a self-focused pursuit (e.g., McKnight & Kashdan, 2009), others mandate that it must involve an intention to contribute to the world beyond the self (e.g., Damon et al., 2003). Consistent with the sociometer perspective, purpose may reduce the import of fleeting affirmations such as likes, by reminding individuals they are already inherently striving to

Table 3
Hierarchical regression estimates predicting self-esteem in Study 2.

Predictors	B	SE B	β	95% CI Lower	95% CI Upper
<i>Unadjusted model</i>					
Below average likes	0.01	0.14	0.00	-0.27	0.28
Above average likes	0.39**	0.14	0.25	0.11	0.67
Purpose in life	0.57***	0.13	0.76	0.31	0.82
Purpose \times above average likes	-0.01	0.16	-0.01	-0.33	0.31
Purpose \times above average likes	-0.32*	0.16	-0.28	-0.64	-0.01
<i>Adjusted/modified model</i>					
Gender	0.14	0.12	0.08	-0.11	0.38
Age	0.01	0.03	0.01	-0.05	0.06
Likes received: low-0 vs. high-1	0.37**	0.12	0.25	0.14	0.63
Purpose in life	0.56***	0.08	0.74	0.40	0.72
Purpose \times likes received	-0.31*	0.13	-0.27	-0.56	-0.07

Notes. Unadjusted model Adjusted model $F(5, 95) = 14.20, p < 0.001, R^2 = 0.41$. Average likes is reference group for above and below average likes. Adjusted model $F(5, 94) = 14.77, p < 0.001, R^2 = 0.41$.

Gender: female = 1, male = 0.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

accomplish aims they believe are of significant social value. However, it is important to note that while purposeful individuals may be less reactive to the number of likes they receive on a selfie, such feedback on content intended to be more representative of their life pursuits (e.g., status updates about one's future goals, or shared video clips detailing one's desired profession) may elicit a discernable response. In support of this possibility, McKnight and Kashdan (2009) suggest that individuals with the greatest sense of purpose may suffer the most when perceiving obstacles to pursuing it. Thus, future studies might examine the effect of both positive and negative feedback on purpose-relevant social media posts, as a means of identifying conditions under which having a strong sense of purpose could be associated with vulnerability. Additionally, our findings support purpose as a resource that could be bolstered as a means of promoting more optimal outcomes. There is emerging empirical evidence to suggest that curating one's Facebook profile can be a source of self-affirmation (Toma & Hancock, 2013), and protective against identity threats. Future work might explore opportunities for individuals to cultivate and affirm one's purpose through information shared on their profiles as a way of protecting them against the negative consequences of positive feedback, while still enjoying the benefits of Facebook use.

The present study focused exclusively on likes as a form of positive feedback. However, our central predictions should be continued to be tested using the variety of other forms of feedback that are commonplace on social media platforms. It should also be noted that the benefits associated with receiving positive feedback on social media may be uniquely contextualized, considering evidence that spending greater amounts of time on Facebook has been linked to decreased subjective wellbeing and life satisfaction (Kross et al., 2013). Thus, the fuller role of purpose needs to be examined across a more comprehensive set of virtual media users' experiences going forward. Still, the present findings lend growing credence to purpose as a psychological asset for those who cultivate it; an asset worth having both off- and on-line.

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Default Question Block

Who are you? This is just for organization purposes. Your scores will not be attached to your name in the assessment report.

- Jeri
- Kristin
- Murray

Please select the three-digit identifier on the assignment you are currently evaluating.

Below is the rubric for the critical thinking institutional learning outcome (from the university). Please consider the whole assignment when evaluating each student in these areas. That said, specific questions speak to each area better than others.

Explanation of issues: Q1-Q4

Use of evidence: Q5

Context, assumptions: Q6

Alternative viewpoints: Q7

Statement of position: Q6-Q7

Conclusions, implications, and consequences: Q6-Q8

Explanation of issues

4 = Explanation stated clearly and provides all relevant information necessary for full understanding.

3 = Explanation stated less clearly and/or provides mostly relevant information necessary for full understanding.

2 = Explanation stated provides some relevant information necessary for understanding.

1 = Explanation too weak for necessary understanding or not provided.

Use of evidence

4 = Provides sufficient information to support claims and conclusions made.

3 = Provides some information to support claims and conclusions made.

2 = Provides little information to support claims and conclusions made.

1 = Lacks information to support claims and conclusions made.



Context, assumptions

4 = Thoroughly analyzes strengths and weaknesses of one's own and others' assumptions; carefully evaluates influence of context.



3 = Analyzes strengths and weaknesses of one's own and others' assumptions; evaluates context.



2 = Minimally analyzes strengths and weaknesses of one's own and others' assumptions; minimally evaluates context.



1 = Fails to analyze strengths and weaknesses of one's own and others' assumptions; does not evaluate context.



Alternative viewpoints

4 = Carefully evaluates all relevant alternative viewpoints.



3 = Evaluates most of the relevant alternative viewpoints.



2 = Evaluates some of the relevant alternative viewpoints.



1 = Evaluates little/none of the relevant alternative viewpoints.



Statement of position

4 = States a clear position that is valid, original and/or innovative, as appropriate.



3 = States a relatively clear position that has some validity, originality and/or innovation, as appropriate.



2 = States a position that lacks validity, originality, and/or innovation.



1 = Does not state a position.



Conclusions, implications, and consequences.

4 = Conclusions, implications, and consequences flow from student's analysis.



3 = Conclusions, implications, and consequences generally flow from student's analysis.



2 = Conclusions, implications, and consequences minimally flow from student's analysis.



1 = Conclusions, implications, and consequences do not flow from the student's analysis.



Here are a few additional questions.

How well did the student explain sociometer theory (Q1)?

Not at all



Slightly



Somewhat



Moderately



Extremely



How well did the student state the hypothesis (Q2)?

Not at all Slightly Somewhat Moderately Extremely

How well did the student evaluate the design of the studies (Q6)?

Not at all Slightly Somewhat Moderately Extremely

How well did the student design their own study overall (Q8)?

Not at all Slightly Somewhat Moderately Extremely

How well did the student operationalize social inclusion (Q8)?

Not at all Slightly Somewhat Moderately Extremely

How well did the student state the implications/importance of their newly designed study (Q8)?

Not at all Slightly Somewhat Moderately Extremely

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