**Extended Discussion**

The lack of group differences between the control and the Best-Self PPI is inconsistent with previous literature. For example, a meta-analysis of PPI interventions found that multiple domains on interventions that I designed the Best-Self PPI to use demonstrate small to medium effect sizes. Further, the intervention contained components taken from processing positive past events, *d* = 0.25, savoring, *d* = .28, optimism, *d* = .36, and strengths identification and novel utilization, *d* = .20 (Bolier et al., 2013). Further, some might critique our delivery of the intervention (i.e., a single administration of the computer); however, multiple studies have found effects of PPIs after a single computer administration (e.g., best possible self; Boselie et al., 2014; personal, humorous writing; Maiolino & Kuiper, 2016; gratitude letter; Stone et al., 2021). Additionally, the use of undergraduates is consistent with many previous PPI studies have used undergraduates to demonstrate the effects of PPIs (e.g., Renshaw & Hindman, 2017; Altintas et al., 2020; Stone & Schmidt, 2020). The literature suggests that the lack of findings in the current study is inconsistent with the effects researchers have previously reported in the literature for several potential reasons.

           A recent review paper that critiques the studies that validate positive psychological interventions suggests some areas that may explain the lack of findings in the current study (Heintzelman & Kushlev, 2020). First, the article suggests that I need to standardize the control groups across PPI studies given that there is no standardized control groups across PPI studies. Heintzelman and Kushlev (2020) suggested that a wait-list control might be the best control group. However, the authors did not provide a rationale for why a wait-list control would be the best option. In the current study, I used the control group that appears across multiple PPI studies, which is recalling a childhood memory. However, it remains unclear if the benefits of having a wait-list control (i.e., potentially finding a more standardized and stronger effect) were worth the loss of not knowing if the writing of the intervention itself would cause any effects. In fact, waiting list controls are generally considered to be inferior to active controls (See Hollon & Ponniah , 2010 for a review). Second, the Heintzelman & Kushlev (2020) review suggests that many PPI samples use convenience samples, including WEIRD people (i.e., White, educated, industrialized, rich, and democratized), specifically focusing our samples on young, educated, middle-class White women. The article suggests that pursuing happiness for these individuals is more bourgeois and not completed out of necessity. As such, the paper suggests that there is less room for improvement in these privileged samples, thus diminishing the potential effects of the PPIs. This critique may only partially apply to our study because our mean values on the measures I administered did not appear to have a floor or ceiling effect. This finding suggests that, although participants from WEIRD populations may not have much room for improvement relative to their own scores, this lack of findings is not because of a limitation of the measures. Finally, the article suggests that the design and implementation of PPI research should be interdisciplinary, drawing from the expertise of multiple disciplines instead of relying on just clinical psychology designs. Psychologists were responsible for the main design and execution in the current study. Thus, the results may have differed if I had received feedback and guidance from multiple disciplines.

**Implications**

This study has some implications for the field of PPI research. Specifically, the lack of findings in the current study are troubling due to the similarity this study has to other PPI studies. I carried out the experiment in a laboratory setting, with undergraduates participating for course credit, with a single administration on a computer, and using components of well-established PPI similar to other PPI studies. In some sense, this study was a replication of many previous PPI studies and I failed to find the effects. Given the state of psychological literature with the replication crisis, I am suspicious that some of the effects found in previous PPI studies with similar designs may fail to replicate across laboratory studies. Unfortunately, the number of studies examining the efficacy of PPIs is small and the effects are not robust enough to survive a high Type I error rate or failure to replicate. If researchers began to investigate the field of PPIs and found it difficult to replicate the effects, there is currently not enough evidence for researchers to justify its use in clinical settings, given the large number of well-established interventions with stronger effect sizes. Still, many PPI studies find effects that used a better design than the one in the current study. For example, many PPI studies use several administrations and sometimes in clinical populations. Thus, although this study calls into question the robustness of the effects of PPI studies on similar quality and design, it is still very possible that the effects of PPI are robust when researchers use a better design.

Regarding clinical practice, the current study may call into question the utility of using brief PPIs in a clinical setting. It is possible that the delivery of the Best-Self PPI was not conducive to emotional change given the context of the delivery in a laboratory setting. Further, a majority of the studies on PPIs have used on laboratory administration, with only a small handful of studies being done in clinical settings (e.g., Appiah et al., 2020). Therefore, it is unknown if the effects of the PPI are non-existent or if the intervention needs to be paired with a therapeutic setting to work (e.g., warm lighting or direct person contact). Still, if this intervention needs a therapeutic setting to work it is difficult for researchers to determine how much of a positive effect is due to the therapeutic setting compared to the activity, even with a control group. If the theoretical rationale for an intervention is strong, then researchers should expect to find an effect in either a therapeutic or laboratory setting, because the setting should not change the theoretical rationale.

**Limitations**

The current investigation has several limitations. First, some limitations may explain the lack of intervention versus control group findings. First, participants only received one dose of the intervention, which lasted only 15 minutes with a homework assignment that lasted 24 hours. Previous research on PPIs has demonstrated that large effect sizes can be attained through repeated administrations of the intervention. For example, in a seminal study conducted by Seligman and colleagues (2005), participants completed a gratitude letter once a week for six weeks and found large effects on reducing depression and promoting life satisfaction that remained at a six-month follow-up. These large effects contrast the small to medium effects found in single-dose studies (Bolier et al., 2013). Thus, it is possible that the single administration of the Best-Self PPI was not enough to create a detectable effect.

Second, the parameters of the intervention delivery may not have been conducive to producing a strong effect. For example, the participants completed the PPIs on a computer without interacting with other individuals, and they had a time limit. Although this method is suitable for internal validity, clinicians would likely not select this delivery method in clinical settings, limiting external validity. Further, previous research has demonstrated that the incentive to complete the intervention affects the improvement created by an intervention. In one study, researchers examined the effectiveness of a substance use intervention and manipulated the delivery (i.e., in-person vs. remote) and the incentive (i.e., incentive vs. no incentive; Rodriguez et al., 2021). The researchers found that those who were incentivized and completed the intervention in-person reported greater gains from the intervention than those who were not incentivized or completed the study remotely. In the current study, participants may not have bee adequately incentivized through course credit like they would have been if I offered a financial reward or if they were treatment-seeking.

Third, emotions are more complex than just the subjective feeling they elicit. Emotions involve behavioral changes, neurobiological expressions, cognitive elicitation, and dynamic interpersonal changes, all of which I did not capture by the self-report measures used in this study. One study demonstrated that changes that arise from emotional elicitations are not always caught by the participants’ subjective reporting of the emotional experience (Gonzaga et al., 2006). Essentially, some individuals can report certain expressions of their emotions, typically the subjective experiences or “feelings” associated with emotions, while missing crucial components of emotional expressions, which I did not measure in the current study. Thus, it is possible that I missed changes in emotions due to the narrow assessment of the emotions. Still, the measures of emotions used in the current study are similar to other studies on PPIs in the literature.

Finally, although this study had a large percentage of individuals who identified as people of color, many racial groups are still underrepresented due to the smaller sample size. Some racial groups were only represented by a few individuals, which limits our ability to argue that these relationships apply to multiple races. In addition, the effects of some PPIs appear to be culturally dependent. One study found that, while the gratitude letter appears to have beneficial effects on Anglo-Americans, the gratitude letter was much less effective for Asian-Americans (Boehm et al., 2011). Therefore, if these relationships are present in this predominantly White sample, it is unclear if they would persist if the racial composition of the sample were to change to a predominantly person of color sample.

**Future Directions**

First, it is not clear whether the Best-Self PPI would prove efficacious in clinical population who may have much more negative self-referential processing (e.g., Williams & Moulds, 2010). The population in the current study was undergraduates, which may not represent a population experiencing depression and is seeking treatment. Previous research has demonstrated that depression prevalence as measured by common clinical measures (e.g., the Beck Depression Inventory) is high in undergraduates at 34% (see Chang et al., 2021 for a meta-analysis). However, the prevalence of anxiety and depression in clinical settings is higher (35-53%; Wang et al., 2017). Therefore, I may have experienced a floor effect for the individuals in this study, where reductions in depression were not as detectable as they may have been in a clinical population with higher depression. Further, the individuals in this study were not necessarily treatment-seeking; rather, they participated to complete course credit. In a clinical population, individuals enter outpatient services to see improvements in their depressive symptoms. This incentive to see improvements may increase the effects of the intervention (Rodriguez et al., 2021).

Secondly, researchers may consider adjusting the dose and changing the setting of the intervention delivery. The participants completed the intervention on a computer, alone, and with a time limit in the current study. In an ideal setting, clinicians would deliver the intervention as a discussion that lasts for 50 minutes as part of a traditional session. This format change would allow for a more thorough explanation of the situations described in the intervention and a chance to savor any emotions during the session, resulting in a more powerful effect and an overall better experience for the client. Further, this intervention was only delivered one time. Previous research has shown that PPIs are most effective when the dose is more than once and spaced out over weeks (e.g., Bolier et al., 2013; Seligman et al., 2005). Researchers should consider delivering this intervention in a clinical setting, with a clinician, and multiple times over several weeks.

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