RUNNING HEAD: COGNITIVE DEFUSION FOR PUBLIC SPEAKING ANXIETY

A Comparison of Ultra-Brief Cognitive Defusion and Positive Self-Affirmation Interventions on the Reduction of Public Speaking Anxiety

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Abstract

Objectives: The present study examined the preliminary efficacy of an ultra-brief cognitive defusion intervention, compared to a positive self-affirmation intervention, on moderate subclinical Public Speaking Anxiety (PSA). **Method:** Sixty-three participants (*M*=25.70 yrs, *SD*=9.48) first completed a questionnaire assessing PSA symptomology and were then randomly assigned to receive one of two interventions (cognitive defusion, positive self-affirmation) or nothing at all (no-treatment control). All participants then performed an impromptu speech task before recompleting the questionnaire. **Results:** A significant decrease in PSA was reported within the cognitive defusion condition, relative to the positive self-affirmation and no-treatment control conditions. **Conclusions:** An ultra-brief cognitive defusion intervention has the potential to reduce short-term anxiety among those with moderate PSA.

Keywords: public speaking anxiety, defusion, self-affirmation.

The fear of public speaking, or public speaking anxiety (PSA), is a context-dependent social anxiety occurring during real or imagined enactment of oral speeches, such as presentations and interviews (Bodie, 2010; Niles & Craske, 2019). PSA usually results in maladaptive behaviors such as a quivering voice, shaking knees, being at a loss for words and overestimating the extent to which one is negatively evaluated by an audience (Beatty, 1988; Savitsky & Gilovich, 2003; Shi, Brinthaup, & McCree, 2015). Accordingly, PSA tends to hinder the ability to focus, to think clearly, to form sentences and to utter speech with adequate volume and direction (Voncken & Bögels, 2008). As such, it is unsurprising that the speech performance of individuals with PSA is classed as being significantly poorer than those without it (Hofmann, Gerlach, Wender, & Roth, 1997).

Although PSA is diverse in its manifestations, it has been reported that it is the most widespread social anxiety (Furmark, Tilfors, Stattin, Ekselius, & Frederickson, 2000; Stein, Walker, & Forde, 1996; Tilfors & Furmark, 2007) and is believed to affect 33% of the US population at a clinical level (Ruscio, Brown, Sareen, Stein, & Kessler, 2008). However, given that the distress associated with PSA lies on a continuum ranging from mild to severely debilitating (Bögels et al., 2010), it has been estimated that 63% of the general population also report the fear (Marinho, de Mederios, Gama, & Teixeira, 2017). Considering that numerous organizations and educational establishments require engagement in public speaking tasks, empirically validated intervention techniques are needed to reach those with moderate or subclinical levels of PSA (Jackson, Compton, Thornton, & Dimmock, 2017).

Some attempts have been made in this regard, with approaches that employ habituation methods in combination with direct modification of irrational cognitions found to be useful (Amir, Weber, Beard, Bomyea, & Taylor, 2008; Allen, Hunter & Donohue, 1989; Anderson, Zimmand, Hodges, & Rothbaum, 2005). In recent years, growing attention has also been paid in the clinical literature to Acceptance and Commitment Therapy (ACT;

Hayes, Strosahl, & Wilson, 1999), which may be particularly helpful in the domain of PSA given its emphasis on psychological acceptance (England et al., 2012; see also Gallego, McHugh, Villatte, & Lappalainen, 2020). Empirical studies have supported the use of ACT in this context. For example, both Block and Wulfert (2000) and England et al. (2012) found that ACT-based interventions positively impacted sub-clinical PSA.

However, while the potential benefits of a broad ranging ACT intervention merit further investigation (see Craske et al., 2014, for a discussion on social phobia more generally), ultra-brief (i.e., extremely short) interventions that can be widely distributed, readily self-applied outside of clinical contexts and that do not require the need for clinical supervision may better suit the needs of those with subclinical PSA. ACT seems perfectly placed to help in the creation of such interventions because each of ACT's six core processes can be harnessed and delivered as stand-alone interventions. Indeed, the core process of *cognitive defusion* (or just *defusion*) has shown much empirical success when delivered as a brief intervention (Larsson, Hooper, Osborne, Bennett, & McHugh, 2016; Masuda, Hayes, Sackett, & Twohig, 2004; Masuda et al., 2010; Tyndall, Papworth, Roche, & Bennett, 2017)[1].

Cognitive fusion, the antithesis of defusion, refers to a contextually controlled behavior-behavior relation in which thoughts and feelings are responded to as if they are actually 'true' (i.e., the literal content of such thoughts must be abided by; see Hayes et al., 2006; Hooper & McHugh, 2013). This rigid alignment of covert thoughts and feelings with overt actions characterises cognitive fusion, which is, in effect, a process-level description of rigid and maladaptive patterns of behavior (Assaz, et al., 2018). For example, in the case of

[1] Cognitive defusion is often discussed using mid-level terms and is not easily reducible to basic behavioral processes. This potential problem has been much commented upon (see Assaz, Roche, Kanter, & Oshiro, 2018). While we will discuss this here in somewhat process-based terminology, we will also use the mid-level terms employed by ACT researchers, for the purposes of convenience, and also because the current study is not a study on ACT core processes *per se*.

PSA, a person's overt response may become 'fused' with a thought such as, '*I will embarrass myself if I give a talk in front of my work colleagues, so I must avoid having to give it at all costs'*. Such avoidance behavior is negatively reinforced, in that avoiding giving the public presentation reduces the risk of experiencing the potentially punishing effects of feelings of embarrassment in front of peers. From a behavior-analytic perspective, rather than invoking embarrassment as a putative cause of avoidance, avoiding giving a public presentation reduces the risk of obtaining a negative audience response to one's public speaking. That audience could be others, ourselves or both, and the experience of embarrassment would secondary to that negative response. However, if cognitively fused thoughts such as these lead to repetitive avoidance behavior in such contexts, it may detrimentally influence a worker's periodical performance review or chances of promotion within their organization.

Defusion aims to counteract this process by teaching individuals to observe thoughts for what they are (verbal stimuli that come and go), rather than as what the mind suggests them to be (verbal rules and truths that must be adhered to). Bringing the client's attention to the experience of variations in the response functions of stimuli, rather than to the functions themselves, enables private verbal relations between thoughts, feelings and actions, to be weakened. Thus, formerly problematic stimuli can be approached more openly and experienced as less threatening (Pilecki & McKay, 2012). Hence, defusion techniques aim to loosen, or defuse, the relationship between thoughts and action. In other words, a person who improves their levels of defusion will be able to observe their thoughts without them impacting overt behavior.

One study employed a brief defusion intervention in the context of public speaking with participants suffering with clinical levels of general social anxiety (Barrera, Szafranski, Rantcliff, Garnaat, & Norton, 2016). Barrera et al. compared a defusion technique (word-repetition exercise) to a cognitive restructuring technique and control condition in reducing

general social anxiety and impact of self-relevant negative thoughts, using a public speaking task as in-vivo exposure to induce social anxiety. No significant improvement in social anxiety symptoms during the public speech task were found using either active intervention. No study, however, has attempted to investigate an ultra-brief defusion intervention for those with subclinical PSA. The present study aims to fill this gap by investigating the effectiveness of an ultra-brief defusion intervention on PSA symptoms among a sample of those with moderate PSA. Defusion will be compared to a positive self-affirmation intervention (Sherman, 2013; Sherman & Cohen, 2006; Steele, 1988), which involves the individual in question repeating positive statements about oneself in the hope that it disrupts negative thought processes. Positive self-affirmation was chosen as the active comparison intervention. There is some support for the idea that positive self-affirmation may help counteract the negative impact of rumination around perceived threatening situations (e.g., Koole, Smeets, van Kinippenberg, & Dijksterhuis, 1999; Sherman, 2013; Sherman, Nelson, & Steele, 2000). Moreover, positive self-affirmation closely aligns to strategies that people tend to intuitively draw upon prior to giving a public speech performance (Jackson et al., 2017 for a discussion of inoculation interventions prior to public speech; see also Brooks, 2014 for a discussion of strategies to cope with pre-performance anxiety).

A positive affirmation intervention is of particular interest because it represents an ideal contrast to a common defusion exercise (the word-repetition technique) at a process level. Specifically, while positive affirmations involve evoking the reinforcing and appetitive response functions of words (e.g., "I am *wonderful*"), the word repetition method involves exposure to both the appetitive *and* aversive response functions of words. This defusion exercise is thought to work precisely by broadening the range of possible responses an individual makes to a stimulus that formerly had only a limited range of response functions (Masuda et al., 2004). For example, repeating the word "Spider" for a spider phobic does not

directly target the aversive functions of the word but does expose the client to auditory response functions, tactile response functions within the vocal musculature, and perhaps other covert response functions involving other more distantly related words and covert imagery. This, in effect, represents a broadening of the response functions of the problematic stimulus, rather than an effort to narrow the response functions to appetitive responses only (e.g., "Spiders are wonderful"). This difference in approach may seem small but it is important from an ACT perspective.

Given that anxiety and distress are often observed simultaneously (Hackmann, Clark, & McManus, 2000; McNeil, Ries, & Turk, 1995), it is prudent to also examine distress in this public speaking context (see Barrera et al., 2016; Price & Anderson, 2011). Given that cognitive defusion aims to alter the context the context in which negative private events are experienced, it may be the case that levels of self-reported distress might decrease following a function-altering intervention. Based on previous findings that defusion is efficacious in reducing the impact of negative thoughts, it is expected that those receiving the defusion intervention will experience greater reductions in self-reported levels of PSA compared to those receiving the positive self-affirmation intervention. Furthermore, it is predicted that those in both the defusion and positive self-affirmation conditions will report significantly greater reductions in PSA than those in a no-treatment control condition. Finally, the relative impact of very brief defusion and positive self-affirmation interventions on subjective reports of distress will be examined.

Method

Participants

Seventy-one participants were recruited through opportunity sampling of individuals at the University of X, using a Psychology Research Participation Scheme, university

emailing system, and social media forums. Participants possessing significantly high or low levels of PSA at baseline were excluded prior to the start of the study (see procedure section), leaving a final sample of *n*= 63 (46 females and 17 males), with ages ranging from 19 to 56 yrs *(M*=25.70, *SD*=9.48*).* Undergraduate students (*n*=51) accounted for 81% of participants, with the remaining 19% (*n*=12) in full or part-time employment.

Materials

Personal Report of Public Speaking Anxiety (PRPSA; McCroskey, 1970). The PRPSA is a 34-item self-report instrument which assesses the level of anxiety one experiences while holding a public presentation, with items rated on a 5-point Likert-type scale ranging from 1 (*'strongly disagree'*) to 5 (*'strongly agree'*). The PRPSA is a unidimensional scale, which is one of few precisely measuring public speaking. McCroskey (1970) found a high level of internal consistency (Cronbachs's α=.90), and well-established test-retest reliability (*r*=.84) for the PRPSA. For the purpose of the current study, 12 of the original 34 items (based on previous pilot work in our laboratory) were chosen due to their focus on public speaking as a class assignment and speech performance relative to anxiety. Thus, the items assessed severity of both cognitive symptoms (i.e., *'I am in constant fear of forgetting what I prepared to say'*) and physiological symptoms (*i.e. 'I perspire just before getting up to speak'*) in relation to generalized PSA. Data from the 12-items supports the internal reliability previously found (α=.90). With a possible total range of 12-60, three classification categories were employed as follows: 12-20: Extremely low anxiety; 21-50: Moderate-High anxiety; 51-60: Extremely high anxiety. A test-retest correlation for the 12-item PRSPA for the Control Condition of 0.86 provides support for the 12-item PRSPA for reliably assessing change (Jacobson & Truax, 1991).

Subjective Units of Distress Scale (SUDS; Wolpe, 1969). The SUDS is a one-item self-rated scale assessing subjective distress to specific stimuli. For the present study, the

scale was tailored to suit a public speaking scenario (i.e. '*Please indicate the level of distress you experience when faced with a public speaking task'*). Scores range from 0 ('No distress; totally relaxed') to 100 ('Highest distress that you have ever felt'). The SUDS is designed to measure changes in anxiety/distress along the course of exposure-based therapies (Wolpe, 1990).

Procedure

Following the obtainment of ethical approval from the University of X Research Ethics Committee, participants completed the PRPSA questionnaire and one-item SUDS using Qualtrics online survey software (Qualtrics, Provo UT, 2016). Eligible participants (those who scored in the moderate-high category for PRPSA only) were subsequently contacted via email with a laboratory appointment time. There were seven days between pre-screening and the intervention. Upon entering the laboratory, participants completed the PRPSA and SUDS online via Qualtrics on a Dell Inspiron laptop, as the pre-intervention baseline measures for anxiety and distress, respectively. Each participant was subsequently asked to generate and write down on paper a negative self-evaluative phrase that related to their personal experiences regarding public speaking (e.g., '*I'll make a mistake and look like an idiot'*). Participants were then assigned to condition and began the intervention process.

Participants in the defusion condition reduced their self-evaluative negative phrase into a single word (e.*g., idiot*) that best encompassed their overall worry/fear whilst partaking in public speech. Participants then executed a word repetition task using this word. First introduced by Titchener (1916), the task is based on the notion that excessive repetition of problematic words, such as 'embarrassment' can reduce their harmful impact as the semantic meaning of the word becomes weakened across repetitions. More specifically, across repeated exposures to the word, non-semantic features of the word stimulus, such as sound forms, word length, and other associative properties based on rhymes, approximate

homonyms or synonyms, become salient and compete with the formerly dominant conditioned aversive features. In this way, new responses to the stimulus are created (e.g., noticing that it has a funny sound, or is hard to pronounce), that dilute the probability of a single and well-rehearsed aversive reaction to it (see Blackledge, 2015 and Tyndall et al., 2017 for discussions of the potential underlying behavioral processes). Participants were asked to repeat aloud their chosen negative self-referential word at their fastest speed for a period of 30 seconds, which is a duration recommended by previous literature (see Masuda et al., 2009).

Participants in the positive self-affirmation condition were first taught to recognize their generated self-evaluative phrase as dysfunctional. They were subsequently asked to *cognitively reframe* their phrase, by thinking about its rationality and rewriting it to become a positive, rational thought (e.g. *'I will probably do ok on this task'*). Participants in the no-treatment control condition were required to complete an irrelevant numerical task, which consisted of counting backwards from 100 as fast as they could. Each intervention took around 30 seconds to complete.

After completing their interventions, all participants completed a Behavioral Assessment Test (BAT; Clark et al., 1997), which consisted of an *impromptu speech* in front of the researcher on a randomly selected topic; *your dream job*. The researcher maintained a neutral facial expression throughout. The impromptu speech task is designed to induce a realistic public speaking scenario, and is regarded as a reliable method for directly testing public speaking anxiety (e.g., Anderson & Price, 2011; McNeil, Ries, & Turk, 1995). Immediately after completion of the impromptu speech task, participants recompleted the PRPSA and SUDS, as the post-intervention measures. Finally, participants were given a debrief form explaining the purpose of the study and the condition in which they had just participated.

Results

Data Analytic Strategy

Overall scores from the dependent variable (PRPSA) were compared between the three treatment conditions (between-subjects) across two time-periods (within-subjects). Thus, a 3 (treatment group: defusion vs. positive self-affirmation vs. no-treatment control) x 2 (time point: pre-treatment vs. post-treatment) mixed model design was employed, where treatment group and time point were the independent variables. A mixed design ANOVA was conducted in order to establish any interaction or main effects between the type of intervention technique, at both time periods.

Analyses

Preliminary analyses were executed to establish whether the assumptions of a mixed ANOVA were satisfied. The assumption of homogeneity was met ($p > .05$), as well as Box's test of equality of covariance matrices ($p > .05$). Normality was established for all variables, using Kolmogorov-Smirnov ($p > .05$). At both time 1 (pre-intervention) and time 2 (post-intervention), each condition (defusion, positive self-affirmation, no-treatment control) comprised 21 participants. Prior to the statistical analysis of data, two one-way between-subjects ANOVAs were conducted on the baseline PRPSA and SUDS scores. No statistically significant differences were found (PRPSA $p = .584$ and SUDS $p = .304$). Both pre-intervention and post-intervention descriptive statistics are presented in Table 1.

Insert Table 1

The 3 (defusion vs. positive self-affirmation vs. no-treatment control) × 2 (pre-treatment vs. post-treatment) mixed design ANOVA revealed a significant main effect of

time, $F(1,60)=4.005$, $MSE=17.486$, $p<.05$, $\eta_p^2 = .077$. More specifically, there was a significant decrease in PSA scores from pre-intervention ($M= 38.61$, $SD= 8.89$) to post-intervention ($M= 36.95$, $SD=10.33$, 95% CI [.176 to 3.157], $p <.05$), when condition was not accounted for. However, there was no significant main effect of condition on PSA scores ($F(2,60)=.013$, $MSE=171.84$, $p=.987$, $\eta_p^2 <.001$). A significant time x condition interaction emerged ($F(2,60)= 4.342$, $MSE=17.486$, $p<.02$, $\eta_p^2= .126$). Further investigation into this interaction, using simple main effect analyses, revealed there was a statistically significant effect of time on PSA levels within the defusion condition ($F(1,20)=7.885$, $MSE= 30.195$, $p= .01$, $\eta_p^2 = .283$), whereby PSA levels were significantly lower at post-intervention ($M=35.48$, $SD=8.27$) compared to pre-intervention ($M=40.24$, $SD= 10.46$, 95% CI [-8.299 to –1.225], $p=.01$). However, there were no significant decreases from pre-intervention to post-intervention within the positive self-affirmation and no-treatment control conditions. More clearly put, the Cohen's *d* within-subject effect size of pre-test to post-test change for the cognitive defusion condition showed a medium effect (.51). By contrast, Cohen's *d* effect sizes for pre-test post-test change for the positive self-affirmation condition (.03) and control condition (.009) were minimal

Distress levels (i.e., SUDS) were analysed with the same 3 x 2 mixed design ANOVA. Results yielded a significant main effect of Time on distress levels, $F(1,60)=8.839$, $MSE=75.513$, $p<.01$, $\eta_p^2= .128$. That is, distress levels decreased significantly from pre-intervention ($M=60.87$, $SD= 18.30$) to post-intervention ($M=56.27$, $SD= 19.09$, 95% CI [1.506 to 7.700]) across conditions combined. However, there was no statistically significant difference in mean distress levels between conditions post-intervention ($F(2,60)=.485$, $MSE=631.335$, $p=.971$, $\eta_p^2=0.16$), and no significant Time x Condition interaction ($F(2,60)=2.157$, $MSE=75.513$, $p=.125$, $\eta_p^2= .067$. Cohen's *d* pre-test post-test change score effect sizes revealed a medium effect size for the cognitive defusion condition (.47) and very

small effect sizes for the positive self-affirmation (.14) and control condition (.11), respectively.

Discussion

The current study aimed to compare the impact of an ultra-brief defusion intervention to a positive self-affirmation intervention among a sample of people with subclinical (moderate) PSA. The results demonstrated that the defusion intervention reduced anxiety following exposure to a public speaking task, compared to the positive self-affirmation intervention and a no-treatment control condition. This finding adds to a growing literature illustrating the positive impact of defusion, and in particular the positive impact of the word repetition exercise (Masuda et al., 2010; Tyndall et al., 2017).

The present study marks an important contribution to the literature by showing that anxiety levels, in the case of persons who experience moderate levels of PSA, can be reduced with an extremely brief ACT-based intervention, even if reducing anxiety symptoms is not an overarching goal of defusion or of ACT more generally (Block & Wulfert, 2000). Although there were no significant PSA post-intervention score-only differences across the three conditions, only the defusion intervention demonstrated significant within-condition change, with a medium effect size. Nonetheless, the clinical significance of this finding is somewhat limited. However, given the very brief nature of the intervention, the timeframe involved, and the non-clinical sample employed, typical criteria for assessing the clinical significance of the intervention (e.g., Jacobsen & Truax, 1991) might not be appropriate.

There were no differences in distress levels (i.e,, single-item SUDS) at post-intervention in the cognitive defusion group relative to the positive self-affirmation group. There was no significant interaction between treatment type and time on distress scores

between cognitive defusion and positive affirmation conditions. However, there was a medium pre-test post-test change score effect size for the cognitive defusion condition, with very small effect sizes for both the positive self-affirmation and control conditions. As noted earlier, symptom reduction such as decrease in distress levels is not typically a target within ACT-based interventions but measures such as SUDS remain of interest to CBT practitioners (McNeil et al., 1995; Price & Anderson, 2011). It is not clear why the anxiety and distress measures might have differed in terms of effect sizes, and whether the distress effect size for the defusion condition was significant in this case, but it should be noted that the SUDS was a one-item measure of distress in this instance. Future researchers could look to examine the theoretical relation between anxiety and distress with respect to public speaking (Price & Anderson, 2011) in more depth, while utilizing a range of covert and overt measures of these constructs.

The argument could be made that the results of the current study will not interest those who practice ACT, because of its focus on PSA symptomology. Specifically, ACT does not explicitly seek to reduce symptoms but instead aims to help people control their behavior in value-consistent ways. However, we argue that by reducing such anxiety, even temporarily, the opportunity for positive public speaking experiences is improved, as may be the assessments of one's own competence at public speaking, and also one's willingness to engage in future public speaking events. In this way, short-term reductions in anxiety could have a catalytic effect on a range of outcomes central to better overall psychological functioning or, at the very least, could help to prevent the converse occurring (i.e., whereby perceived failures in public speaking contexts leads to increased fear, enhanced negative self-evaluations, more distress, and less willingness).

There are several ways in which the current study could be improved. Although the reliability of an impromptu speech task is generally strong (Beidel, Turner, Jacob, & Cooley,

1989), it is possible that the task did not function as intended. That is, perhaps completing a public speaking task in front of one researcher did not have a sufficiently anxiety-inducing effect. Future studies may wish to increase anxiety by asking the participants to perform a public speaking task either to a group of people or to a video camera. Related to this issue, future studies may also wish to ensure that the interventions functioned as intended. Specifically, other defusion studies have measured believability as a way to ensure that participant cognitions, following a defusion intervention, are, in fact, more defused (Masuda et al., 2004; Masuda et al., 2009; Masuda et al., 2010; Tyndall et al., 2017). Moreover, future researchers may wish to administer either the Cognitive Fusion Questionnaire (CFQ; Gillanders et al., 2014) or the more recently developed State Cognitive Fusion Questionnaire (SCFQ; Bolderston et al., 2019), to assess possible changes in cognitive fusion before and after such an intervention.

Although the researcher maintained a neutral facial expression throughout the speech task, the design was limited by the fact that the researcher was not blind to condition assignment (it could be argued that the researcher might have inadvertently given more positive feedback to the participants in the defusion condition). This is something that could be easily ameliorated in future research. Measuring outcomes after both the interventions and the behavioral approach task (i.e., exposure) is another limitation, because it means that the results cannot be attributed to the word repetition intervention alone. Specifically, it could be the case that the word repetition task was responsible for the differential outcome, but it could also be the case that the repetition task interacted with the exposure task (Culver, Stoyanova, & Craske, 2012; Craske, Treanor, Conway, Zbozicke, & Vervliet, 2014). Future researchers could include a measure of expectancy violations to address this, as some theoretical models posit such expectancy violations are the core mechanism in exposure, and place less emphasis on the role of fear reduction (e.g., Craske et al., 2014).

The study can also be criticized for its over-reliance on self-report measures. Not only is it possible that such standardized questionnaires may not accurately capture all individuals' personal public speaking experiences, but it is also possible that participants experienced demand characteristics in that they completed the same self-report measure on two occasions within close temporal proximity. Consequently, future research may wish to supplement these self-report measures with behavioral measures (Letamendi, Chavira, & Stein, 2009). That is, they should give participants a choice to engage or not engage with the public speaking task as a way to measure avoidance behavior, and they should ask independent observers to rate the performance, or even measure the amount of time that participants spoke, to better determine the behavioral impact of the intervention. Put more simply, future research could focus on whether such a brief intervention could enhance performance in a public speaking task. This would provide a more optimal behavioral measure of the utility or efficacy of the intervention and could be assessed using video recording and blind raters (e.g., Levin, Haeger, & Smith, 2017; Mesri et al., 2017).

There are three final suggestions for future improvements. Firstly, future research may wish to improve statistical power. Although the current study had a considerably greater sample size than previous studies in this area (Block & Wulfert, 2000; England et al., 2012; Glassman et al., 2016), larger participant numbers would increase the reliability of the findings. Nevertheless, future research can use the data parameters reported here to generate sample sizes that are appropriate to analyse the low-level laboratory-controlled effects typical of this and other experimental psychopathology studies.

Secondly, while the 34-item PRPSA (McCroskey, 1970) is a well-validated instrument, the current study is limited by the administration of a truncated 12-item version based on prior pilot work. To enhance validity and reliability, future researchers who do not wish to administer the full version might employ the 18-item PRPSA (see Montberg,

Jansson-Frojmark, Petterson, & Hennlid-Oredsson, 2018) or the Personal Report of Communication Apprehension, Public Speaking Subscale (PRSCA-PS; McCroskey, 1982; see also Gallego et al., 2020).

Thirdly, given that positive self-affirmation interventions resemble thought stopping, thought distraction, or thought suppression techniques (e.g., Hooper, Davies, Davies, & McHugh, 2011; Hooper & McHugh, 2013; Hooper, Sandoz, Ashton, Clarke, & McHugh, 2011; Masuda et al., 2010; Pilecki & McKay, 2012) which are somewhat limited in efficacy, future studies may wish to employ a more traditional *cognitive restructuring* procedure (e.g., Barrera et al., 2016; Deacon, Fawzy, Lickel, & Wolitzky-Taylor, 2011; Larrson et al., 2016), the process by which individuals learn to dispute maladaptive thoughts in order to alter their meaning (Heimberg & Becker, 2002; Rapee & Heimberg, 1997). For example, rather than the current study's focus on positive affirmation (e.g., *"I will be confident when I speak"*), which may be difficult for a person with moderate PSA to truly 'accept' or 'believe', a future study could focus on the likelihood of making a mistake with thought rationalisations such as *"I am probably not going to make a major mistake"* or cognitive restructuring of catastrophic thinking around mistakes (e.g., *"Even if I make a mistake, I will eventually recover from it"* or *"I might make a mistake but few people would probably notice"*). Such an approach would allow for a more direct comparison of the efficacy of an ACT-based technique (i.e., word-repetition defusion intervention) versus a more traditional CBT-based technique (i.e., cognitive restructuring).

Overall, the current results suggest that an ultra-brief cognitive defusion intervention significantly decreased the anxiety associated with a public speech task, compared to a positive self-affirmation exercise. While we acknowledge the limited *clinical significance* of this finding, the result of this preliminary study has potential applied implications. Specifically, the extremely brief nature of the defusion intervention may make it useful for

non-clinical samples dealing with the day-to-day anxieties of public presentations, which is particularly important considering the growing pressure placed upon individuals to perform competently and confidently in public speaking assignments in educational and work settings. The word-repetition exercise described herein provides individuals with an on-the-fly, cost-effective and low time-consuming technique that can be applied in any context.

Compliance with Ethical Standards

Disclosure of Conflicts of Interest: On behalf of all the authors, the corresponding author confirms that no author has a conflict of interest to declare.

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Ethical Approval: All procedures performed in this study with human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards

Availability of data and materials: Data is available from the authors upon request.

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Table 1

Mean and Standard Deviations (in parentheses) for Public Speaking Anxiety (PRSPA) and Distress (SUDS) at Pre-Intervention and Post-Intervention by Condition

	Public Speaking Anxiety		Distress	
	Pre	Post	Pre	Post
Word-repetition (n = 21)	40.24 (8.27)	35.48 (10.46)	65.38 (19.03)	56.23 (20.24)
Positive Self-Affirmation (n = 21)	38.14 (9.33)	37.81 (9.75)	60.62 (18.23)	58.05 (18.23)
Control (n = 21)	37.48 (9.23)	37.57 (11.07)	56.62 (17.41)	54.52 (19.40)