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The Effects of Detached Mindfulness on Cognitive Factors and Social Anxiety: A Randomized Controlled Trial

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This study explored the effects of detached mindfulness (DM) and the attention training technique (ATT) on cognitive factors and anxiety symptoms in individuals with social anxiety. Participants ($n = 61$) were randomly assigned to the DM ($n = 21$), ATT ($n = 20$), or control ($n = 20$) group and received brief interventions for four days. On the fifth day, all participants completed a speech task. Multilevel linear modeling was used to examine whether the interventions produced change over the five-day period, followed by multiple mediation analyses using slopes derived from the multilevel models. The results indicated that both the DM and ATT groups significantly increased decentering and decreased self-focused attention (SFA) across the five days, with DM showing steeper slopes than the ATT for both variables. In contrast, anxiety symptoms decreased to a greater extent in the ATT group. Mediation analyses indicated that DM was associated with lower social anxiety only through decentering, whereas ATT was associated with lower social anxiety through both decentering and SFA, sequentially. These findings suggest that although DM and the ATT share decentering as a common mechanism, they may differentially influence cognitive and affective pathways in reducing social anxiety.

Keywords: social anxiety, self-focused attention, rumination, decentering, detached mindfulness, attention training technique

Introduction

Social anxiety involves a persistent worry about specific social situations due to fear of negative evaluation, along with difficulties performing tasks in public and maintaining relationships (APA, 2013). Individuals with social anxiety disorder often avoid public event and may refrain from expressing opinions or engaging in interactions for fear of being perceived as unlikable or unintelligent (Stein & Stein, 2008). Such difficulties pose challenges for young adults, especially in contexts such as job interviews. Although the onset of social anxiety disorder typically occurs in childhood or adolescence (Chavira & Stein, 2005) and its prevalence is estimated at 12.1% (Kessler et al., 2012), treatment–seeking remains low, highlighting the need for early intervention (Stein et al., 2005).

According to the cognitive model of social anxiety disorder, Self–Focused Attention (SFA) is a critical factor in maintaining symptoms (Clark & Wells, 1995; Rapee & Heimberg, 1997). SFA refers to internally generated information, such as physical states, thoughts, and emotions (Ingram, 1990), and is implicated in various psychological disorders. Individuals with social anxiety tend to excessively focus on negative self-images or physiological symptoms in social situations (Hackmann et al., 1998; Im et al., 2007), which can lead to post–event rumination (Brozovich & Heimberg, 2008) and heightened anxiety (Rapee & Heimberg, 1997). Post-event rumination occurs after anxiety-provoking social situations (Penney & Abbott, 2014) and differs from depressive rumination

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in content (Nolen-Hoeksema, 1991). SFA perpetuates social anxiety by creating a cycle of maladaptive thoughts (Gaydukevych & Kocovski, 2012). Although distraction techniques can temporarily reduce ruminative thinking (Fennell et al., 1987), they may function as safety behaviors that maintain symptoms (Salkovskis, 1991; Wells et al., 1995).

Decentering, defined as distancing oneself from thoughts and emotions (Safran et al., 1990), offers a more adaptive means of addressing maladaptive SFA. Individuals with social anxiety overidentify with negative self-cues, whereas decentering helps disengage from such cues (Hayes-Skelton & Lee, 2018; Lebois et al., 2015). Prior studies show that decentering reduces social anxiety symptoms (Hayes-Skelton & Lee, 2018; Hayes–Skelton & Marando–Blanck, 2019) and is negatively associated with rumination (Fresco et al., 2007; Kaiser et al., 2015; Mori & Tanno, 2015; Naragon-Gainey & DeMarree, 2017). These findings support the importance of decentering within psychological interventions (Bernstein et al., 2015).

In the Self-Regulatory Executive Function (S–REF) model, decentering reduces maladaptive SFA (Wells, 2005; Mori & Tanno, 2015). Based on this model, Wells (2002) developed the Attention Training Technique (ATT), which shifts attention from internal thoughts to external stimuli while fostering decentering. ATT consists of a three-stage auditory process designed to enhance attentional flexibility (Wells & Papageorgiou, 1999) and has been shown to reduce anxiety symptoms and SFA (Fergus et al., 2014; McEvoy et al., 2017; Nassif & Wells, 2014). Given that many anxiety triggers in social contexts originate externally, ATT may weaken internal self-focus.

As another S–REF based approach, Detached Mindfulness (DM) involves observing internal experiences with psychological distance and redirecting attention to external stimuli. DM reduces self-focused attention by promoting a decentered awareness in which internal reactions are treated as transient mental events rather than reality, thereby weakening SFA triggered by threat cues and improving cognitive mechanisms underlying social anxiety (Wells, 2005). Gkika and Wells (2015) found that DM reduced anticipatory rumination and negative self-imagery in individuals with social anxiety, suggesting that improvements of social anxiety symptoms may occur through change in SFA.

Although DM and ATT both aim to modify maladaptive SFA and share decentering as a therapeutic element, their mechanisms differ: ATT trains attentional flexibility, whereas DM cultivates non–evaluative awareness. However, no study has directly examined both interventions with a design targeting SFA in social anxiety, despite the shared theoretical background. Therefore, the present study aimed to compare the effects of ATT and DM on cognitive and affective outcomes. Specifically, we hypothesized that both interventions would (1) show increased slopes of decentering relative to the control group over 5 days, (2) decreased slopes of SFA, (3) reduced post-event rumination after the fifth-day speech task, and (4) reduced slopes of social anxiety symptoms on the fifth day. Finally, (5) we expected both interventions to reduce anxiety symptoms through sequential changes in decentering and SFA.

Methods

Study Design

The study was registered in the Korea Clinical Research Information Service (CRIS) database (no. KCT0010344). The required sample size was calculated using G*Power 3.1 (Faul et al., 2007). A priori power analysis indicated that a minimum of 36 participants was needed to detect a medium effect size ($f = .25$), with $\alpha = .05$, power = .80, seven repeated measurements, and a non-sphericity correction (ε) of .5 in a repeated-measures ANOVA. A single-blind randomized controlled trial was used in our study. All of the participants were informed during the explanation of the consent form that they would be randomly assigned to one of the groups. Randomization was performed by independent third researcher using a random number generator in Excel, ensuring allocation concealment. The study was approved by the IRB (No. 2020-01-006-004).

Participants and Procedures

A total of 87 participants were recruited between June and November 2020 via campus bulletin boards and online platforms in Chuncheon, Korea (Figure 1). Inclusion criteria were ages 19–39 and a Social Avoidance and Distress Scale (SADS) score of 64 or higher. Individuals with neuropsychiatric disorders, current psychiatric medication use, or ongoing psychotherapy were excluded.

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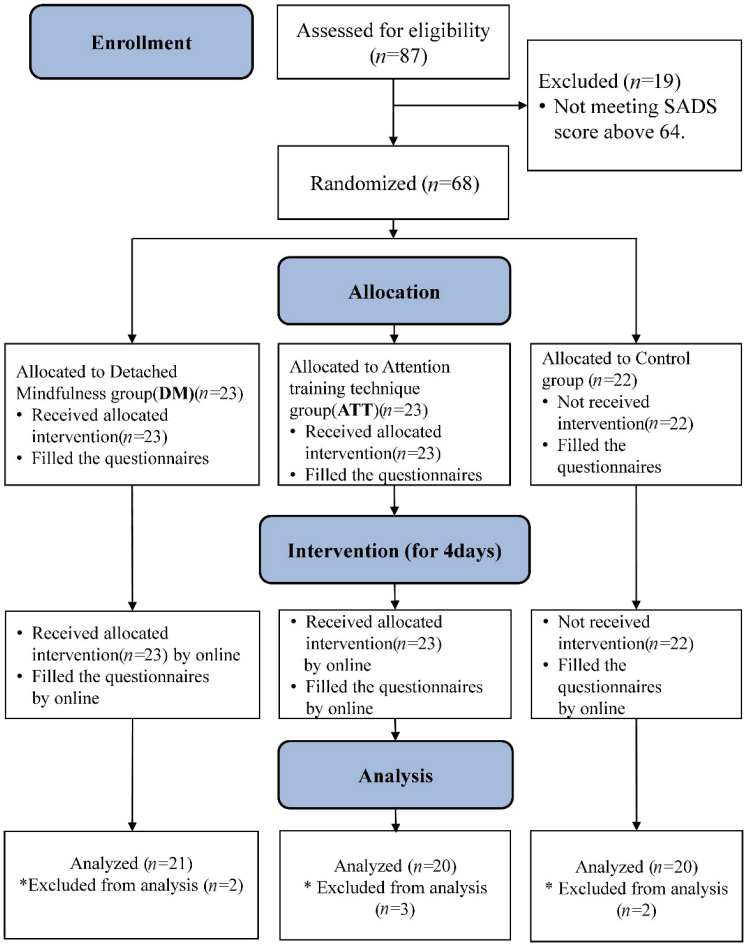

Figure 1. *Consort flow diagram. DM = Detached mindfulness; ATT = Attention Training Technique; SADS = The Social Avoidance and Distress Scale.*

Of the 87, 68 met eligibility criteria, and 61 were included in the final analysis after excluding 7 for incomplete or insincere responses. Participants provided written informed consent and were randomly assigned to DM ($n = 21$), ATT ($n = 20$), or Control ($n = 20$). The five-day online program by Zoom consisted of baseline assessment and intervention on day 1, daily training or assessments on days 2–4, and an oral presentation with assessments on day 5–1. On day 5–2, participants again practiced the interventions and completed the final assessments.

Baseline Measures

SADS

The SADS assesses stress, anxiety, and avoidance in social situations where unpleasant feelings are expected (Watson & Friend, 1969), validated by Lee and Choi (1997). Higher scores indicate greater social anxiety and avoidance, with a severity range of 64–81. Internal consistency in this study was .94.

Social Phobia Scale (SPS)

The SPS (Mattick & Clarke, 1998), adapted by Kim (2001), measures fear of performing in front of others or being the focus of attention. Items use a 5-point Likert scale (0–4), with a total score range from 0 to 80. Internal consistency in this study was .93.

Center for Epidemiological Studies Depression Scale (CES–D)

The CES-D measures depressive symptoms (Radloff, 1977), validated in Korean by Jeon et al. (2001). It consists of 20 items (17 negative, 3 positive), scored 0–60, with positive items reverse-coded. Internal consistency in this study was .91.

Outcome Measures

Experience Questionnaire (EQ)

The EQ (Fresco et al., 2007), validated in Korean by Kim et al. (2010), assesses decentering via 11 items on a 5-point scale. Higher scores reflect greater decentering. Internal consistency was .92.

SFA

The SFA (Bögels et al., 1996), validated by Kim et al. (2018), consists of 11 items across two subscales: SFA-awareness (6 items) and SFA-performance (5 items), rated from 0 to 4. Higher scores indicate greater internal attention during social tasks. Internal consistency was .92.

Post–Event Rumination Scale (PERS)

The PERS (Edward et al., 2003), validated by Im et al. (2007), assesses post-event rumination using 15 negative and 9 positive items. Internal consistency was .95 (negative) and .93 (positive).

Personal Report of Confidence as a Speaker (PRCS)

Originally developed by Paul (1966), the PRCS was modified in Korean to a 5-point scale (Cho et al., 1999). Higher scores indicate higher speech anxiety. Internal consistency in this study was .94.

State Anxiety Rating Scale (SAR)

The SAR (Rapee & Abbott, 2007) includes 10 items assessing state anxiety before and after the speech task, rated from 0 to 4. Internal consistency in this study was .94.

DM

In the DM technique, participants were given instructions to observe mental images in their minds without actively engaging them. Concurrently, six stimulus words, which had been validated in a previous study (Jang & Lee, 2020), were used, and presented at 30-second intervals. The instruction script used in the study was adapted from earlier research (Gkika & Wells, 2015; Wells, 2005).

ATT

The ATT intervention mainly involved attention shifting, which was the first of three stages suggested in the original design by Wells (2005). Participants were instructed to identify and shift their attention correspondence with audio stimulus, which gradually became more complex toward the second half of the session to increase the intervention intensity.

Statistical Analysis

To examine within-person change and between-group differences, we estimated linear mixed-effects models (LMMs) for EQ, SFA, and PRCS using R 4.3.2. Prior to analysis, variable distributions, missingness, and outliers were inspected. The final sample consisted of 61 participants assessed across seven time points. Models were fit with the lme4 package, with time coded from 0 (baseline) to 6 (post-speech) and group specified as a three-level categorical predictor (DM, ATT, Control). Random intercepts and slopes were included to allow individual variability in initial status and rates of change. The Level-1 model was:

$$Y_{ij} = \beta_{0i} + \beta_{1i}\text{Time}_{ij} + \varepsilon_{ij}$$

Y_{ij} represents the repeated outcome for individual i at time j; β_{0i} is the person-specific intercept; β_{1i} is the person-specific linear slope, and ε_{ij} is the residual. At Level–2, between-person differences were modeled using groups and a centered CES–D covariate, given its established association with social anxiety. The Level-2 equations were:

$$\beta_{0i} = \gamma_{00} + \gamma_{01}\text{CES–D}_i + \gamma_{02}\text{Group}_i + u0_i$$
$$\beta_{1i} = \gamma_{10} + \gamma_{12}\text{Group}_i + u_{1i}$$

Thus, combining Level–1 and Level–2 yields the integrated model as follow:

$$Y_{ij} = \gamma_{00} + \gamma_{01}(\text{CES–D}_i) + \gamma_{02}(\text{Group}_i) + \gamma_{10}(\text{Time}_{ij}) + \gamma_{12}(\text{Group}_i \times \text{Time}_{ij}) + u_{0i} + u_{1i}(\text{Time}_{ij}) + \varepsilon_{ij}$$

Model adequacy was evaluated through sequential comparison of null, linear, and random-slope models using maximum likelihood (ML). Model fit was assessed using –2 log likelihood (–2LL), Akaike Information Criterion (AIC), intra-class correlation coefficients (ICC), and Level-2 R^2. ICC values above .05 were considered indicative of sufficient between-person variability to justify multilevel modeling (Hox et al., 2017). Final slope models were estimated using restricted maximum likelihood (REML). To examine mechanisms between interventions, we conducted multiple mediation

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Table 1. *Demographic and Clinical Characteristics of the Participants*

Variable	DM ($n=21$)	ATT ($n=20$)	Control ($n=20$)	Total ($N=61$)	p
Sex, *n* (%)					
Male	5 (23.8)	7 (35)	10 (50)	22 (36.07)	.27
Female	16 (76.2)	13 (65)	10 (50)	39 (63.93)	
Age (Mean, *SD*)	24.09 (4.34)	24.20 (3.47)	22.60 (2.13)	23.63 (3.47)	.27
Occupation, *n* (%)					
Undergraduate student	17 (80.95)	14 (70)	15 (75)	46 (75.41)	.97
graduate student	3 (14.29)	3 (15)	3 (15)	9 (14.75)	
Employed	1 (4.76)	2 (10)	1 (5)	4 (6.56)	
Self Employed		1 (5)		1 (1.64)	
Unemployed			1 (5)	1 (1.64)	
CES-D (Mean, *SD*)	20.19 (10.23)	17.35 (12.28)	15.80 (8.52)	17.81 (10.44)	.40
SPS (Mean, *SD*)	31.23 (16.00)	36.45 (14.48)	33.45 (15.61)	33.67 (15.28)	.56
PRCS (Mean, *SD*)	79.19 (21.29)	86.65 (16.05)	78.05 (18.33)	81.26 (18.80)	.29

DM = Detached Mindfulness; ATT = Attention Training Technique; CES-D = Center for Epidemiologic Studies Depression Scale; SPS = Social Phobia Scale; PRCS = Social anxiety level during the speech task as measured by the Personal Report of Confidence as a Speaker.

Table 2. *Results of the Multiple Linear Model for EQ, SFA, PRCS, PERS and SAR Across 5 days (N = 61)*

Effect		B (*SE*)				
Fixed effects		EQ	SFA	PRCS	PERS	SAR
Intercept (Control, CES-D = 0)		33.19 (1.25)***	28.36 (1.52)***	8.06 (4.07)***	42.02 (8.34)***	21.86 (4.05)***
Linear Time[a]		–.13 (.20)	.31 (.27)	–.25 (.47)	1.70 (1.39)	1.20 (.66)
CES-D		–.25 (.07)**	.15 (.08)	.55 (.22)*	.75 (.18) ***	.48 (.10)***
Time × DM		1.12 (.28)***	–1.35 (.37)**	–1.99 (.65)**	–.70 (1.95)	–.34 (.93)
Time × ATT		.85 (.28)**	–1.17 (.38)**	–2.50 (.66)***	–3.20 (1.97)	–3.20 (.94)**
Random effects						
σ^2 within participants		.48 (.12)	–1.39 (–.21)	–6.25 (–.22)	19.37 (4.40)	4.41 (2.10)
σ^2 between participants		27.74 (5.27)	41.14 (6.41)	304.40 (17.45)	205.44 (14.33)	57.42 (7.58)
Var (Slope)		.55 (.74)	1.09 (1.04)	2.61 (1.62)		
Model fit indexes		EQ	SFA	PRCS	PERS	SAR
ICC	Null	.79	.73	.77	.94	.95
AIC	Null	2,468.51	2,607.14	1,956.36	922.47	771.49
	Linear	2,414.93	2,575.06	1,901.81	906.73	748.46
	Slope	2,333.67	2,471.71	1,867.40	907.73	739.21
-2LL	Null	2,462.51	2,601.14	1,950.36	916.47	765.49
	Linear	2,400.93	2,561.06	1,887.81	892.73	734.46
	Slope	2,311.67	2,449.71	1,845.40	889.73	721.21
R^2 (Level 2)	Slope	.40	.17	.03	.33	.40

DM = Detached Mindfulness; ATT = Attention Training Technique; CES-D = Center for Epidemiologic Studies Depression Scale; EQ = Decentering as measured by Experience Questionnaire; SFA = SFA as measured by the SFA scale; PRCS = Social anxiety level during the speech task as measured by the Personal Report of Confidence as a Speaker; PERS = Post Event Rumination Scale; SAR = State Anxiety Rating scale.
EQ and SFA were measured at 7 time point over 5 days; PRCS was measured at 4 time point over 5 days. PERS and SAR were measured at 2 time-points on day 5 before and after the speech task.
$^*p < .05$. $^{**}p < .01$, $^{***}p < .001$.

analyses model 6 (Hayes, 2018) using the 5 days slopes of EQ, SFA, and PRCS. Analyses were performed with the lavaan package in R, with 95% bootstrap confidence intervals based on 5,000 resamples. Two contrast-coded models were evaluated: DM = 1, ATT = 0, Control = 0 for the DM contrast, and ATT = 1, DM = 0, Control = 0 for the ATT contrast. EQ and SFA slopes served as mediators, and the PRCS slope served as the outcome.

Results

Descriptive Analysis

The average age of participants was 23.63 years, with 23 males and 38 females (Table 1). To verify demographic homogeneity, a one-way ANOVA was conducted on gender, age, and occupation by group (Table 1), showing no significant differences [($F_{sex}(2, 58) = 1.53$, $p = .268$; $F_{age}(2, 58) = 1.35$, $p = .268$; $F_{occupation}(2, 58) = .03$, $p = .969$]. Group differences in baseline depression and anxiety were also not significant [CES-D: $F(2, 58) = .93$, $p = .399$; SPS: $F(2, 58) = .59$, $p = .557$; PRCS: $F(2, 58) = 1.25$, $p = .294$]. Given the strong correlation between depression and social anxiety in this study, depression was controlled as a covariate.

Preliminary Analyses and Model Evaluation

Model comparisons indicated that the random-slope model provided the best fit across all outcomes (Table 2). ICC showed substantial between-person variance for EQ (ICC = .79), SFA (ICC = .73), PRCS (ICC = .77), PERS (ICC = .94), and SAR (ICC = .95), supporting the use of multilevel modeling. Model fit indexes indicated that the random slope model improved AIC values (EQ = 2,333.67; SFA = 2,471.71; PRCS = 1,867.40; PERS = 907.73; SAR = 739.21) and –2LL values (EQ = 2,311.67; SFA = 2,449.71; PRCS = 1,845.40; PERS = 889.73; SAR = 721.21) compared with the null and linear models. R^2 values of Level-2 indicated that Group and CES-D collectively explained 40% (EQ), 17% (SFA), 3% (PRCS), 33% (PERS), and 40% (SAR) of the between-person variance. CES-D also showed significant fixed effects for EQ ($\beta = -.25$, $p < .01$), PRCS ($\beta = .55$, $p < .05$), PERS ($\beta = .75$, $p < .001$), and SAR ($\beta = .48$, $p < .001$), indicating that variance of depressive symptoms has affected on overall outcome measures in our study.

The Fixed Effect of the Random Slope Model

The fixed effect in the random slope model are presented as fol-

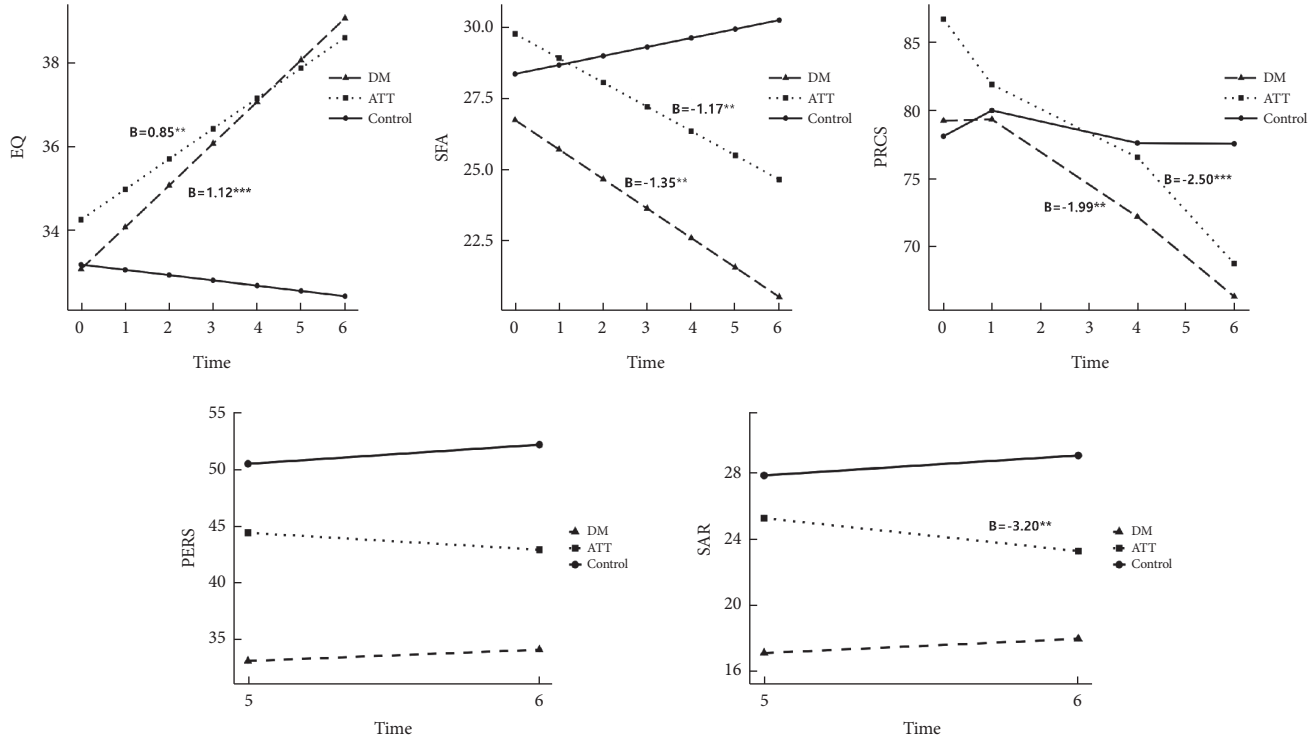

Figure 2. *Changes in outcome measures for the interventions during 5days.*
DM = Detached mindfulness; ATT = Attention training Technique; EQ = Decentering as measured by Experience Questionnaire; SFA = SFA as measured by the SFA scale; PRCS = Social anxiety level during the speech task as measured by the Personal Report of Confidence as Speakers.
Time 0 = day 1 baseline, 1 = day after intervention, 2 = day 2 after intervention, 3 = day 3 after intervention, 4 = day 4 after intervention, 5 = day 5 before speech task, 6 = day 5 after speech task and intervention.
***p = 0.01, ***p < 0.001.*

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lows (Table 2, Figure 2). The fixed effect of interaction between time and groups was significant for both intervention groups on EQ (DM: $B = 1.12$, $p < .001$; ATT: $B = .85$, $p < .01$), showing that the rate of EQ in DM was higher than ATT group. For SFA, the interaction between time and groups was also significant (DM: $B = -1.35$, $p < .01$; ATT: $B = -1.17$, $p < .01$). For PRCS, significant interactions between time and groups were found for both intervention groups (DM: $B = -1.99$, $p < .01$; ATT: $B = -2.50$, $p < .001$). For PERS, there was no significant fixed effect in all groups. For SAR, only ATT group had a significant interaction effect ($B = -3.20$, $p < .01$), but neither time nor group main effects were significant on other groups.

The Random Effects of the Random Slope Model

The random effect in the random slope model are presented as follows (Table 2, Figure 2). For EQ, the within-person variance was 6.92 and the between-person variance was 27.74, with an intercept slope covariance of .13. For SFA, the within-person variance was 9.15 and the between-person variance was 41.07, with an intercept slope covariance of –.20. For PRCS, the within–person variance was 39.23 and the between–person variance was 304.93, with an intercept slope covariance of –.22. For PERS, the within person variance was 19.37 and the between-person variance was 205.44. For SAR, the within-person variance was 4.41 and the between person variance was 57.42. Both PERS and SAR were measured only twice, before and after the five days, which resulted in a lack of slope variance for these measures.

Multiple Mediation Analysis in the DM and ATT Contrast Models

The results from multiple mediation analysis are presented as follows Table 3. Each of model contrasted either the DM or ATT group with the Control group respectively, using EQ and SFA as mediators and PRCS slope as the outcome for 5 days (Supplementary Figure 1). In the DM model, DM was significantly mediated by PRCS through the slope of EQ (β = –.86, $SE = .34$, 95% CI [–1.52, –.17]). In contrast, the indirect pathway through the slope of SFA alone (β = –.13, $SE = .13$, 95% CI [–.43, .09]) and the sequential EQ, SFA pathway (β = –.22, $SE = .16$, 95% CI [–.53, .12]) were not significant. Also, the direct effect of DM did not reach significance (β = –.63, $SE = .40$, 95% CI [–1.47, .10]). In the ATT model, both the indirect effect through EQ (β = –.80, $SE = .29$, 95% CI [–1.38, –.23]) and through SFA (β = –.38, $SE = .24$, 95% CI [–.90, –.01]) were significant. The sequential indirect effect of EQ, SFA was also significant (β = –.33, $SE = .20$, 95% CI [–.77, –.03]). The direct effect of ATT remained significant (β = –1.02, $SE = .46$, 95% CI [–1.91, –.08]).

Discussion

This study examined the effects of DM and ATT on cognitive mechanism associated with social anxiety and examined whether

Table 3. *Multiple Mediation Analysis in DM and ATT Contrast Model Derived from Multilevel Linear Model for 5 Days*

Indirect Effects		β	95% CI (LL; UL)	*SE*
DM				
Indirect 1	**DM→EQ →PRCS**	**–.86**	**–1.52; –.17**	.34
Indirect 2	DM→SFA →PRCS	–.13	–.43; .09	.13
Indirect 3	DM→EQ→SFA→PRCS	–.22	–.53; .12	.16
Direct	DM→PRCS	–.63	–1.47; .10	.40
ATT				
Indirect 1	**ATT→EQ→PRCS**	**–.80**	**–1.38; –.23**	.29
Indirect 2	**ATT→SFA→PRCS**	**–.38**	**–.90; –.01**	.24
Indirect 3	**ATT→EQ→SFA→PRCS**	**–.33**	**–.77; –.03**	.20
Direct	**ATT→ PRCS**	**–1.02**	**–1.91; –.08**	.46

Bold in table indicates the significant pathways.
DM = Detached Mindfulness; ATT = Attention Training Technique; EQ = Decentering as measured by Experience Questionnaire; SFA = Self-Focused Attention as measured by SFA scale; PRCS = social anxiety level during the speech task as measured by the Personal Report of Confidence as a Speaker. Each of mediators indicates the slope based on multiple linear model analysis for 5 days.

changes in decentering (EQ) and SFA mediated subsequent reductions in state anxiety during a speech task. Using a multilevel linear model across 5 days, we investigated both within- and between-person differences often overlooked in short-term intervention research.

Consistent with the metacognitive models (Wells, 2005), both DM and ATT significantly increased the slope of decentering over the five-day period. This suggests that even brief, daily metacognitive practices can improve one's decentering ability to adopt a psychologically distanced, observer perspective toward internal events in the experimental setting. This result is consistent with prior findings that metacognitive-based interventions enhance psychological distancing (Wells, 2005). Notably, DM showed a steeper increase in decentering than ATT. Given that DM directly trains participant to observe internal imagery, this technique may more powerfully activate the processes required to shift from object-mode to metacognitive mode. This mechanism may account for the more pronounced increase in decentering observed in DM condition.

Second, both DM and ATT also resulted in reductions in SFA, supporting the theoretical premise that metacognitive techniques weaken internal self-focused processing, a key maintenance factor in social anxiety. DM showed a steeper reduction slope in SFA than ATT, indicating a stronger effect on lowering internal self-focus. Given that SFA reflects a self-referential processing mode focused on personally relevant information (Spurr & Stopa, 2002), observing internal imagery in DM from a detached, objective stance may be more directly counteract SFA, as it encourages individuals to adopt an objective stance toward their thoughts and feelings rather than being fused with them (Baer, 2009). In contrast, ATT primarily reallocates attentional resources from maladaptive self-focus to neutral external stimuli (Jahn et al., 2023), a shift that may facilitate greater cognitive flexibility and disrupt rigid SFA patterns (Knowles et al., 2016). Taken together, the steeper downward slope observed in the DM group suggests that DM may be more directly related to changes in SFA, despite considerable individual differences at baseline.

Third, the slope of PERS did not show significant changes in either intervention. Because PERS and State Anxiety (SAR) were assessed only twice, immediately before and after the after the speech task, these measures primarily captured acute, situational anxiety responses. A brief five-day intervention may not have been sufficient to modify cognitive processes activated under high evaluative stress. This suggests that reductions in post-event rumination may require repeated practice or longer intervention duration for noticeable change. In contrast, ATT was significantly effective in reducing State Anxiety (SAR) compared with DM and the Control group, indicating that attentional training may be more effective in modulating acute anxiety responses during social threatening situations. Similarly, social anxiety as measured by the PRCS showed a steeper decrease in ATT than in DM.

Taken together, DM showed stronger effects on cognitive factors such as decentering and self-focused attention, whereas ATT yielded greater reduction in anxiety symptoms. These findings suggest that not only the presence of decentering, but also the pathway through which it is activated, may carry important clinical implications for interventions targeting social anxiety. DM may be more suitable for modifying cognitive maintenance mechanisms, particularly the self-referential processing patterns that maintain social anxiety, because it directly cultivates an observer stance toward internal experiences. In contrast, ATT may be more beneficial in heightened anxiety or acute social evaluative threat events, as it promotes an externally oriented attentional shift that functions similarly to a metacognitive form of exposure (Vogel et al., 2017). The multiple mediation results further clarify these distinctions. DM reduced social anxiety (PRCS) primarily through decentering (EQ), suggesting that its therapeutic effects operate mainly by strengthening metacognitive distancing. In contrast, ATT reduced social anxiety (PRCS) through a sequential pathway involving both decentering (EQ) and reductions in SFA, indicating a broader engage partially overlapping but distinct therapeutic mechanism. Overall, these findings support the interpretation that DM and ATT engage partially overlapping but distinct therapeutic mechanisms. That is, DM may operate by directly enhancing decentering capacity, whereas ATT may facilitate decentering indirectly by reallocating attentional resources and disrupting rigid self-focused processing, consistent with their theoretical foundations (Wells, 2005). These distinctions may help better treatment selection by tailoring metacognitive strategies to an individual's dominant maintenance processes-whether cognitive fusion and self-referential processing, or attentional vigilance in social

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contexts.

Despite these findings, several limitations should be noted. First, the non-clinical sample may limit generalizability. Future studies should recruit clinical populations using structured diagnostic tools (e.g., SCID, MINI). Second, participants' prior experience with similar interventions and their trait characteristics were not controlled and may have influenced outcomes. Given that individuals may vary in their habitual tendency to direct attention internally or externally (Muraven, 2005), such baseline characteristics could moderate responsiveness to DM or ATT. Future studies should measure and account for these factors to better clarify differential treatment effects. Third, researcher involvement in delivering the intervention may have introduced expectancy or procedural bias, highlighting the need of using standardized protocols and independent facilitators in later studies.

Nevertheless, this study provides evidence that DM and ATT produced differential patterns of changes in social anxiety-related processes. DM was more strongly associated with improvements in cognitive mechanisms such as decentering and reductions in self-focused attention, whereas ATT showed more direct effects on anxiety symptoms, particularly under socially evaluative conditions. The mediation findings further indicate that DM primarily operates through strengthening decentering capacity, whereas ATT exerts its effects through both decentering and attentional reallocation away from rigid attentional processing. Taken together, these findings suggest that the effectiveness of metacognitive interventions for social anxiety may depend not only on whether decentering is activated, but on the specific cognitive pathway through which it is achieved. Accordingly, intervention selection can be optimized by tailoring therapeutic strategies to the primary maintenance mechanisms of social anxiety; either targeting maladaptive self-referential processing or enhancing adaptive attentional flexibility in anxiety-provoking situations.

Author contributions statement

Sang Kyoung Kim: design of study, conceptualization, writing – original draft, review & editing, overall analysis Jong-Sun Lee: Conceptualization, Writing - review & editing, Supervision for all the research process.

References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). https://doi.org/10.1176/appi.books.9780890425596

Baer, R. A. (2009). Self-focused attention and mechanisms of change in mindfulness-based treatment. *Cognitive Behaviour Therapy, 38*, 5-20. https://doi.org/10.1080/16506070902980703

Bernstein, A., Hadash, Y., Lichtash, Y., Tanay, G., Shepherd, K., & Fresco, D. M. (2015). Decentering and related constructs: A critical review and metacognitive processes model. *Perspectives on Psychological Science, 10,* 599-617. https://doi.org/10.1177/1745691615594577

Bögels, S. M., Alberts, M., & de Jong, P. J. (1996). Self-consciousness, SFA, blushing propensity and fear of blushing. *Personality and Individual Differences, 21*, 573-581. https://doi.org/10.1016/0191-8869(96)00100-6

Brozovich, F., & Heimberg, R. G. (2008). An analysis of post-event processing in social anxiety disorder. *Clinical Psychology Review, 28*, 891-903. https://doi.org/10.1016/j.cpr.2008.01.002

Chavira, D. A., & Stein, M. B. (2005). Childhood social anxiety disorder: From understanding to treatment. *Child and Adolescent Psychiatric Clinics of North America, 14*, 797-818. https://doi.org/10.1016/j.chc.2005.05.003

Cho, Y., Lee, M., & Park, S. (1999). A study on the reliability and validity of the Korean version of speech anxiety scale. *Korean Journal of Clinical Psychology, 18*, 165-178. https://dl.nanet.go.kr/SearchDetailView.do?cn=KINX2001057675#none.

Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia. In R. G. Heimberg, M. R. Liebowitz, D. A. Hope, & F. R. Schneier (Eds.), *Social phobia: Diagnosis, assessment, and treatment* (pp. 69-93). Guilford Press.

Edwards, S. L., Rapee, R. M., & Franklin, J. (2003). Post event rumination and recall bias for a social performance event in high and low socially anxious individuals. *Cognitive Therapy and Research, 27*, 603-616. https://doi.org/10.1023/A:1026395526858

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*, 175-191. https://doi.org/10.3758/BF03193146

Fennell, M. J., Teasdale, J. D., Jones, S., & Damlé, A. (1987). Distraction in neurotic and endogenous depression: An investigation of negative thinking in major depressive disorder. *Psychological Medicine, 17*, 441-452. https://doi.org/10.1017/S0033291700025009

Fergus, T. A., Wheless, N. E., & Wright, L. C. (2014). Attention training technique, self-focused attention, and anxiety: A laboratory-based component study. *Behaviour Research and Therapy, 61*, 150-155. https://doi.org/10.1016/j.brat.2014.08.007

Fresco, D. M., Moore, M. T., van Dulmen, M. H., Segal, Z. V., Ma, S. H., Teasdale, J. D., & Williams, J. M. G. (2007). Initial psychometric properties of the experiences questionnaire: Validation of a self-report measure of decentering. *Behavior Therapy, 38*, 234-246. https://doi.org/10.1016/j.beth.2006.08.003

Gaydukevych, D., & Kocovski, N. L. (2012). Effect of self-focused attention on post-event processing in social anxiety. *Behaviour Research and Therapy, 50*, 47-55. https://doi.org/10.1016/j.brat.2011.10.010

Gkika, S., & Wells, A. (2015). How to deal with negative thoughts? A preliminary comparison of detached mindfulness and thought evaluation in socially anxious individuals. *Cognitive Therapy and Research, 39*, 23-30. https://doi.org/10.1007/s10608-014-9637-5

Hackmann, A., Surawy, C., & Clark, D. M. (1998). Seeing yourself through others' eyes: A study of spontaneously occurring images in social phobia. *Behavioural and Cognitive Psychotherapy, 26*, 3-12. https://doi.org/10.1017/S1352465898000022

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). Guilford Press.

Hayes-Skelton, S. A., & Lee, C. S. (2018). Changes in decentering across cognitive behavioral group therapy for social anxiety disorder. *Behavior Therapy, 49*, 809-822. https://doi.org/10.1016/j.beth.2018.01.005

Hayes-Skelton, S. A., & Marando-Blanck, S. (2019). Examining the interrelation among change processes: Decentering and anticipatory processing across cognitive behavioral therapy for social anxiety disorder. *Behavior Therapy, 50*, 1075-1086. https://doi.org/10.1016/j.beth.2019.03.004

Hox, J., Moerbeek, M., & Van de Schoot, R. (2017). *Multilevel analysis: Techniques and applications*. Routledge. https://doi.org/10.4324/9781315650982

Im, S., Kwon, S., & Choi, H. (2007). The influence of post-event rumination on social self-efficacy and anticipatory anxiety. Korean *Journal of Clinical Psychology, 26*, 39-56. https://doi.org/10.15842/kjcp.2007.26.1.003

Ingram, R. E. (1990). Self-focused attention in clinical disorders: Review and a conceptual model. *Psychological Bulletin, 107*, 156-176. https://doi.org/10.1037/0033-2909.107.2.156

Jahn, N., Sinke, C., Kayali, Ö., Krug, S., Leichter, E., Peschel, S., Müller, T., Burak, A., Krüger, T. H. C., Kahl, K. G., & Heitland, I. (2023). Neural correlates of the attention training technique as used in metacognitive therapy: A randomized sham-controlled fMRI study in healthy volunteers. *Frontiers in Psychology, 14*, Article 1084022. https://doi.org/10.3389/fpsyg.2023.1084022

Jang, H., & Lee, J. (2020). Do effects of attention bias modification training depend on working memory capacity for social anxiety symptoms? *Korean Journal of Clinical Psychology, 39*, 242-256. https://doi.org/10.15842/KJCP.PUB.39.3.242

Jeon, K., Choi, S., & Yang, B. (2001). The development of an integrative Korean version of CES-D. *Korean Journal of Health Psychology, 6*, 59-76.

Kaiser, R. H., Andrews-Hanna, J. R., Metcalf, C. A., & Dimidjian, S. (2015). Dwell or decenter? Rumination and decentering predict working memory updating after interpersonal criticism. *Cognitive Therapy and Research, 39*, 744-753. https://doi.org/10.1007/s10608-015-9697-1

Kessler, R. C., Petukhova, M., Sampson, N. A., Zaslavsky, A. M., & Wittchen, H. U. (2012). Twelve-month and lifetime prevalence and lifetime morbid risk of anxiety and mood disorders in the United States. *International Journal of Methods in Psychiatric Research, 21*, 169-184. https://doi.org/10.1002/mpr.1359

Kim, B., Lim, Y., & Kwon, S. (2010). The role of decentering in the relationship between rumination and depressive symptoms. *Korean Journal of Clinical Psychology, 29*, 573-596. https://doi.org/10.15842/kjcp.2010.29.2.014

Kim, H. (2001). Memory bias in subtypes of social phobia. Seoul National University. https://doi.org/10.23170/snu.000000064217.11032.0000820

Kim, S., Yoon, H., & Kwon, J. (2018). Validation of the Korean version of the self-focused attention scale (K-SFA). *Cognitive Behavior Therapy in Korea, 18*, 313-334. https://doi.org/10.33703/cbtk.2018.18.3.313

Knowles, M. M., Foden, P., El-Deredy, W., & Wells, A. (2016). A systematic review of efficacy of the attention training technique in clinical and nonclinical samples. *Journal of Clinical Psychology, 72*, 999-1025. https://doi.org/10.1002/jclp.22312

Lebois , L. A. M., Papies, E. K., Gopinath, K., Cabanban, R., Quigley, K. S., Krishnamurthy, V., Barrett, L. F., & Barsalou, L. W. (2015). A shift in perspective: Decentering through mindful attention to imagined stressful events. *Neuropsychologia, 75*, 505-524. https://doi.org/10.1016/j.neuropsychologia.2015.05.030

Lee, J., & Choi, J. (1997). The effects of the cognitive-behavioral and exposure therapy for social phobia. *Korean Journal of Counseling and Psychotherapy, 9*, 35-56.

Mattick, R. P., & Clarke, J. C. (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy, 36*, 455-470. https://doi.org/10.1016/S0005-7967(97)10031-6

McEvoy, P. M., Graville, R., Hayes, S., Kane, R. T., & Foster, J. K. (2017). Mechanisms of change during attention training and mindfulness in high trait-anxious individuals: A randomized controlled study. *Behavior Therapy, 48*, 678-694. https://doi.org/10.1016/j.beth.2017.04.001

Mori, M., & Tanno, Y. (2015). Mediating role of decentering in the associations between self-reflection, self-rumination, and depressive symptoms. *Psychology, 6*, 613-622. https://doi.org/10.4236/psych.2015.65059

https://doi.org/10.15842/kjcp.2026.45.1.003

Muraven, M. (2005). Self-focused attention and the self-regulation of attention: Implications for personality and pathology. *Journal of Social and Clinical Psychology, 24*, 382-400. https://doi.org/10.1521/jscp.24.3.382.65615

Naragon-Gainey, K., & DeMarree, K. G. (2017). Structure and validity of measures of decentering and defusion. *Psychological Assessment, 29*, 935-946. https://doi.org/10.1037/pas0000405

Nassif, Y., & Wells, A. (2014). Attention training reduces intrusive thoughts cued by a narrative of stressful life events: A controlled study. *Journal of Clinical Psychology, 70,* 510-517. https://doi.org/10.1002/jclp.22047

Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology, 100*, 569-582. https://doi.org/10.1037//0021-843x.100.4.569

Paul, G. L. (1966). *Insight vs. desensitization in psychotherapy: An experiment in anxiety reduction*. Stanford University Press.

Penney, E. S., & Abbott, M. J. (2014). Anticipatory and post-event rumination in social anxiety disorder: A review of the theoretical and empirical literature. *Behaviour Change, 31*, 79-101. https://doi.org/10.1017/bec.2014.3

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385-401. https://doi.org/10.1177/014662167700100306

Rapee, R. M., & Abbott, M. J. (2007). Modelling relationships between cognitive variables during and following public speaking in participants with social phobia. *Behaviour Research and Therapy, 45*, 2977-2989. https://doi.org/10.1016/j.brat.2007.08.008

Rapee, R. M., & Heimberg, R. G. (1997). A cognitive-behavioral model of anxiety in social phobia. *Behaviour Research and Therapy, 35*, 741-756. https://doi.org/10.1016/S0005-7967(97)00022-3

Safran, J. D., Segal, Z. V., Hill, C., & Whiffen, V. (1990). Refining strategies for research on self-representations in emotional disorders. *Cognitive Therapy and Research, 14*, 143-160. https://doi.org/10.1007/BF01176206

Salkovskis, P. M. (1991). The importance of behaviour in the maintenance of anxiety and panic: A cognitive account. *Behavioural and Cognitive Psychotherapy, 19*, 6-19. https://doi.org/10.1017/S0141347300011472

Spurr, J. M., & Stopa, L. (2002). Self-focused attention in social phobia and social anxiety. *Clinical Psychology Review, 22*, 947-975. https://doi.org/10.1016/S0272-7358(02)00107-1

Stein, M. B., Roy-Byrne, P. P., Craske, M. G., Bystritsky, A., Sullivan, G., Pyne, J. M., Katon, W., & Sherbourne, C. D. (2005). Functional impact and health utility of anxiety disorders in primary care outpatients. *Medical Care, 43*, 1164-1170. https://doi.org/10.1097/01.mlr.0000185750.18119.fd

Stein, M. B., & Stein, D. J. (2008). Social anxiety disorder. *The Lancet, 371*, 1115-1125. https://doi.org/10.1016/S0140-6736(08)60488-2

Vogel, P. A., Hagen, R., Hjeltnes, A., Solem, S., Launes, G., & Wells, A. (2017). Metacognitive therapy applications in social anxiety disorder: An exploratory study of the individual and combined effects of the attention training technique and situational attentional refocusing. *Journal of Experimental Psychopathology, 8*, 250-270. https://doi.org/10.5127/jep.054716

Watson, D., & Friend, R. (1969). Measurement of social-evaluative anxiety. *Journal of Consulting and Clinical Psychology, 33*, 448-457. https://doi.org/10.1037/h0027806

Wells, A. (2002). *Emotional disorders and metacognition: Innovative cognitive therapy*. Wiley. https://doi.org/10.1002/9780470713662

Wells, A. (2005). Detached mindfulness in cognitive therapy: A metacognitive analysis and ten techniques. *Journal of Rational-Emotive and Cognitive-Behavior Therapy, 23*, 337-355. https://doi.org/10.1007/s10942-005-0018-6

Wells, A., Clark, D. M., Salkovskis, P., Ludgate, J., Hackmann, A., & Gelder, M. (1995). Social phobia: The role of in-situation safety behaviors in maintaining anxiety and negative beliefs. *Behavior Therapy, 26,* 153-161. https://doi.org/10.1016/S0005-7894(05)80088-7

Wells, A., & Papageorgiou, C. (1999). The observer perspective: Biased imagery in social phobia, agoraphobia, and blood/injury phobia. *Behaviour Research and Therapy, 37*, 653-658. https://doi.org/10.1016/S0005-7967(98)00150-8

Supplementary document

Instruction and Protocol of Detached mindfulness (DM)

Detached mindfulness was conducted by inducing decentering from attention allocated to participants' negative aspects through brief instructions. A series of words were presented, and participants were instructed to freely recall images related to these words. Based on previous studies, each session included four neutral words and two socially threatening words. Words related to social anxiety were gradually introduced across sessions. In total, 32 neutral word stimuli and 16 socially threatening word stimuli were used over eight sessions. To minimize practice and carryover effects, the words were randomly assigned to each session. The word stimuli were adopted from a previous study (Jang Han-bi & Lee, 2020) and had been evaluated and validated by a professional clinician. In addition, words with three or fewer Korean syllables were selected so that participants could intuitively understand them. The procedure was conducted at 30-second intervals, and decentering was induced by instructing participants only to 'observe' the images that came to mind. The instructions were as follows.

▪ Detached Mindfulness Instructions

"In order to become more familiar with non-attachment mindfulness, it would be useful to practice applying it to your reactions to events that occur simultaneously in your mind or body. By doing this, you can learn how to relate to these events in a new way.

From now on, at this moment, I will give you a series of words. I want you to let your mind freely hear and respond to these words. Whatever thoughts come to your mind, do not try to control or analyze them, but just watch how your mind reacts. You may not be able to find out what events have occurred, but you may be able to find some pictures or sensations coming into your mind. It does not matter what happens, your task is simply to watch whatever it is without trying to get rid of it. Now, before we begin, open your eyes. I will now give you a series of words. Apples, birthdays, beaches, bikes, summer, and roses"

What did you notice when you looked into your mind?

"You should apply these strategies when negative thoughts or feelings arise. Whatever thoughts come up, don't try to catch them, just look into your mind."

▪ Word composition examples

Apple, birthday, beach, desk (neutral words), presentation, interview (social threat words) 30-second intervals, and then observe the images that come to mind.

Instruction and Protocol of Attention training technique (ATT)

The ATT was developed for the purpose of flexible attention switching. Brief instructions are given before starting the training. Participants can train attention switching by paying attention to sounds presented in audio files for about 15 minutes or switching the object of attention (sounds) according to the instructions. The protocol of the attention training technique group is as follows.

▪ Attention Training Technique Instructions

"Attention fixation on negative thoughts or events is a key problem in causing emotional problems. And it is very difficult to control these thoughts or feelings. The way to reduce this tendency is called the Attention Training Technique. Through this technique, you will train yourself to focus your attention on external sounds in a specific way in a directed manner. I will tell you to focus your attention on 6 to 8 sounds from now on. Do not focus on other sounds and only focus on the sounds you hear."

After listening to the above instructions, the participant listens to a certain pattern of sound (e.g., wind sound). After a certain period, a different sound is added to the existing continuous sound. When the different types of sounds start to mix, a voice is presented to pay attention to the 'added sound'. Thus, the participant is trained to continuously switch attention between various sounds.

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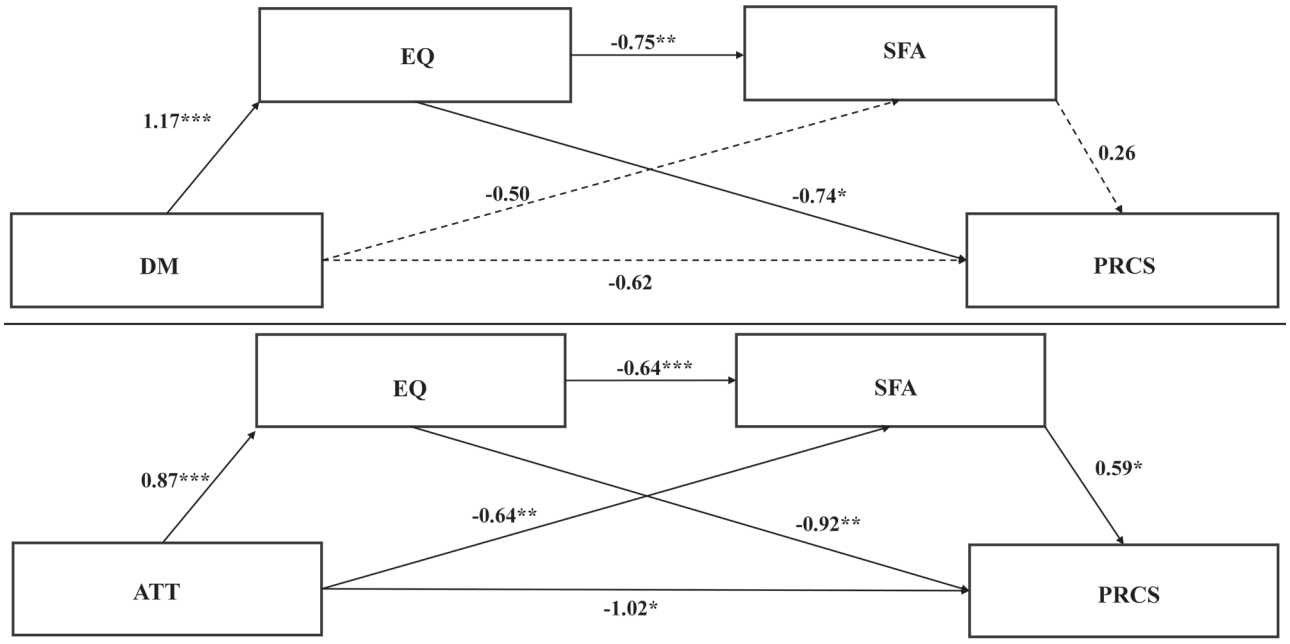

Supplementary Figure 1. *Multi mediation model using 5-day MLM-derived slopes of DM and ATT on PRCS. DM = Detached mindfulness; ATT = Attention training Technique; EQ = Decentering as measured by Experience Questionnaire; SFA = SFA as measured by the SFA scale; PRCS = Social anxiety level during the speech task as measured by the Personal Report of Confidence as Speakers. *p < .05, **p ≤ .01, ***p ≤ .001.*