



*Short research note*

## Examining the effects of communication apprehension within assessment centres

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Communication apprehension (CA), an individual difference variable not previously examined within assessment centres, was negatively related to critical thinking and oral communication scores. CA also mediated the relationships between participants' extraversion and emotional stability and their dimension scores. In addition, results indicated that for critical thinking scores, there was a significant interaction between exercise form (i.e., a presentation vs. group discussion) and CA.

Despite evidence that assessment centres (ACs) are effective predictors of job performance, considerable confusion remains regarding *why* these relationships occur (Lance, 2008; Sackett & Dreher, 1982). A recent stream of research suggests that some individuals would be expected to perform better in some exercises and not as well in others, depending on individual differences of participants and the characteristics of the exercise (Lievens, 2008).

An important individual difference variable that has not been researched within the AC setting is communication apprehension (CA). McCroskey (1977, p. 78) defined CA as 'an individual's level of fear or anxiety with either real or anticipated communication with another person or persons'. Variables such as CA may influence participants' skilled oral communication (or lack thereof), and thereby have a disproportionate negative effect on AC scores regardless of other competencies the participant may have.

Past research has shown that CA is related to the Big Five dimensions extraversion and emotional stability (Beatty, McCroskey, & Heisel, 1998; Hsu, 2004), both of which have been related to AC performance. In a meta-analysis, Collins *et al.* (2003) found that emotional stability and extraversion were the most highly correlated of the Big Five dimensions with overall AC ratings. Therefore, our first research question is: does CA mediate the relationships between both extraversion and emotional stability on AC dimension scores?

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The second purpose of this study is to explore the person-situation interaction effects of CA across different AC exercises. By examining this interaction, we seek to better understand why dimension ratings in ACs have generally not been stable across exercises (Lievens, 2008). Although past research has explored how either exercise characteristics (e.g., Schneider & Schmitt, 1992) or individual-difference characteristics (e.g., Collins *et al.*, 2003) have influenced AC performance, few studies have simultaneously examined how the interaction of exercise and individual-difference characteristics influence dimension scores in ACs. The person-situation interactionist perspective suggests that participant performance will vary across different AC exercises (Tett & Burnett, 2003). Our second research question is: does exercise form (i.e., leaderless group discussion or LGD vs. presentation) moderate the relationship between CA and the AC dimension scores?

## Method

Participants were 282 upper-level undergraduates from a Midwestern University in the USA. The sample was 58% male and 83% Caucasian. Approximately 67% of the participants were business majors, while 33% were non-business majors. As part of a course requirement, these students participated in a 2.5 h developmental AC. Their performance in the AC was evaluated and 10% of their course grade was based on their overall performance.

We utilize an experimental design with two exercises (i.e., a LGD and presentation). For the purposes of this study, each participant is evaluated on two dependent variables (oral communication and critical thinking dimensions) within one of these two exercises. Participants were randomly assigned to and rated in the first exercise that the student participated in. It was not possible to assign exactly the same number of participants to each exercise due to the logistic requirements of running the AC. The final sample consisted of 136 participants assigned to the presentation exercise and 146 participants assigned to the LGD. Therefore, a between-subjects design was employed, as each participant received only one score on each of the dependent variables.

## Exercises

*LGD.* A salary-increase allocation exercise was adapted from Bracken (1989). Participants were given materials when they arrived and were given 8 min to prepare for the LGD. The groups of four or five participants were given 17 min to complete the LGD, which was videotaped.

*Presentation.* Participants were given approximately 20 min to prepare for a 2-4 min videotaped presentation regarding a potential market for the company's international expansion. This presentation has been used successfully in several past ACs. The audience for the presentation exercise was three or four other participants.

## Measures

About 1 month before the AC, participants completed a questionnaire containing the individual-difference measures. In addition, a short questionnaire containing measures of motivation to perform well was completed immediately prior to the AC.

### **Communication apprehension**

The personal report of CA was used to measure CA (McCroskey, 1982). Six items measure CA in each of four different contexts (group discussions, talking in meetings, conversing with others, and giving a speech). This measure allows for the calculation of CA in each context as well as an overall CA score, which is determined by summing or averaging responses across all four contexts (24-items). The alpha coefficient for overall CA was .94.

### **Extraversion and emotional stability**

We measured extraversion and emotional stability using the 10-item scales of Goldberg's (1999) Big Five factor markers in the International Personality Item Pool. Extraversion and emotional stability had internal consistency reliabilities of .88 and .85, respectively.

### **Control variables**

Cognitive ability was measured with the Wonderlic Personnel Test. English as a second language was measured using a single item that asked whether English was spoken as a native language or as a second language. Motivation to perform well in the AC was measured using a three-item scale that had an alpha coefficient of .64. A sample item is, 'I really want to perform well in the AC exercises'. Finally, we also controlled for exercise content, which refers to the competitive design of the tasks performed within the exercise.

### **Oral communication and critical thinking dimensions**

We developed five key areas for the oral communication and critical thinking dimensions based on measures used in previous AC evaluation.<sup>1</sup> We relied on Schneider and Schmitt's (1992) measures as well as measures that have been used in ACs for MBA courses at a Midwestern University.

### **Rating procedure**

The exercises in this study were videotaped for later viewing by assessors. Assessors received 4 h of frame-of-reference training for each exercise. Two assessors observed and rated the videotaped exercises independently, allowing for estimates of inter-rater reliability. Intra-class correlations were calculated for each dimension by exercise as a measure of inter-rater reliability. The average reliability for oral communication was .86 (mean of .83 and .89) and the average reliability for critical thinking was .80 (mean of .79 and .81).

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<sup>1</sup> Measurement items for oral communication consisted of: (1) speaks with appropriate volume and enunciates words clearly; (2) uses voice inflection; speaks confidently and enthusiastically; (3) maintains eye contact and does not read material; (4) Avoids distracting pauses and language fillers; and (5) displays appropriate non-verbal behaviours. Measurement items for critical thinking consisted of: (1) identifies decision criteria and key underlying issues; (2) integrates appropriate information into comments and recommendations; (3) uses sound logic to support recommendations and considers potential consequences of recommendations; (4) makes concluding statements that logically follow from preceding comments; (5) does not make unrealistic comments or skew information.

## Results

Descriptive statistics are reported in Table 1. LISREL 8.80 (Jöreskog & Sörbom, 1993) SEM software was used to estimate the structural model shown in Figure 1. The two-stage approach was followed (Anderson & Gerbing, 1988). Because CA was the key construct in the model, we created item parcels for the four CA contexts and these four subscales were used as reflective indicators of CA.

Overall, the CFA model was a good fit to the data,  $\chi^2(29) = 64.24$ ; RMSEA = .064; NNFI = .92; CFI = .97; and SRMR = .028. The theoretical model shown in Figure 1 also demonstrated a good fit, with  $\chi^2(36) = 71.54$ ; RMSEA = .060; NNFI = .94; CFI = .97; and SRMR = .035. These goodness-of-fit indices show that the proposed model adequately accounts for the sample variances and covariances (Hu & Bentler, 1999). Squared multiple correlations for the structural equations were .50 for CA, .13 for critical thinking, and .12 for oral communication. The standardized path coefficients for significant relationships are recorded in Figure 1.

Results from this SEM analysis indicate that CA has a significant, negative relationship with both critical thinking ( $\beta = -0.17, p < .05$ ) and oral communication ( $\beta = -0.31, p < .01$ ). Regression results from Models 1b and 2b in Table 2 that show a significant, negative relationship between CA and both oral communication and critical thinking scores are consistent with these SEM results. The relationship between both extraversion and emotional stability with CA is negative and significant ( $\beta = -0.60, p < .01$  and  $\beta = -0.26, p < .01$ , respectively).

We examined the correlations between the independent and dependent variables before testing for mediation. Both extraversion ( $r = .19; p < .01$ , one-tail test) and emotional stability ( $r = .13; p < .05$ , one-tail test) had significant, positive correlations with oral communication. However, only extraversion had a significant positive correlation with critical thinking ( $r = .10; p < .05$ , one-tailed test), while emotional stability did not ( $r = .07; p > .05$ , one-tail test). Since a significant correlation did not exist between emotional stability and critical thinking, we did not examine CA as a mediator of the relationship between emotional stability and critical thinking.

To test for mediation involving extraversion we added the direct relationships between extraversion and both the dependent variables. The results from this model are  $\chi^2(34) = 71.25$ . Allowing for these two direct effects did not significantly improve model fit,  $\Delta\chi^2(2) = 0.29$  ( $p > .10$ ), and neither of these direct paths were significant. Next, we added the direct relationship between emotional stability and oral communication. The results from this model are  $\chi^2(35) = 71.26$  and again the direct path was not significant nor did the model significantly improve,  $\Delta\chi^2(1) = 0.28$  ( $p > .10$ ). These findings indicate that CA completely mediated the effects of extraversion and emotional stability on oral communication. CA also completely mediated the effect of extraversion on critical thinking. Although emotional stability was not directly related to critical thinking, emotional stability did have a positive, indirect effect on critical thinking via CA (see Figure 1).

Table 2 contains the unstandardized regression coefficients from the hierarchical regression analysis involving CA and both dependent variables. The unstandardized regression coefficient from Model 1c with oral communication as the dependent variable is not significant ( $B = -0.13, p > .05$ ), while the regression coefficient from Model 2c with critical thinking as the dependent variable is significant ( $B = -.40, p < .05$ ). When plotted in Figure 2, the form of the interaction between CA and exercise form shows that the slope of the line representing the LGD exercise is negative, while the slope of the line representing the presentation exercise is nearly zero.

**Table 1.** Means, standard deviations, Cronbach's alphas, and intercorrelations among variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1 English as second language <sup>a</sup>	0.09	0.28										
2 Cognitive ability	26.51	4.68	-.16**									
3 Motivation	3.96	0.63	-.14*	-.13*								
4 Emotional stability	3.33	0.64	-.06	.11	.15*	(.64)						
5 Extraversion	3.53	0.64	-.06	.01	.20**	.21**	(.88)					
6 Communication apprehension	2.43	0.60	.11	-.05	-.29**	-.35**	-.56**	(.94)				
7 Exercise form <sup>b</sup>	0.52	0.50	.05	.04	-.01	-.02	.06	-.06				
8 Exercise content <sup>c</sup>	0.50	0.50	.01	-.05	-.04	-.07	-.12	-.04	.01			
9 Oral communication score <sup>d</sup>	3.01	0.91	-.24**	.12*	.11	.13*	.19**	-.22**	-.02	.07	(.86)	
10 Critical thinking score <sup>d</sup>	2.99	0.93	-.14*	.15*	.03	.07	.10	-.24**	.23**	.03	.50**	(.80)

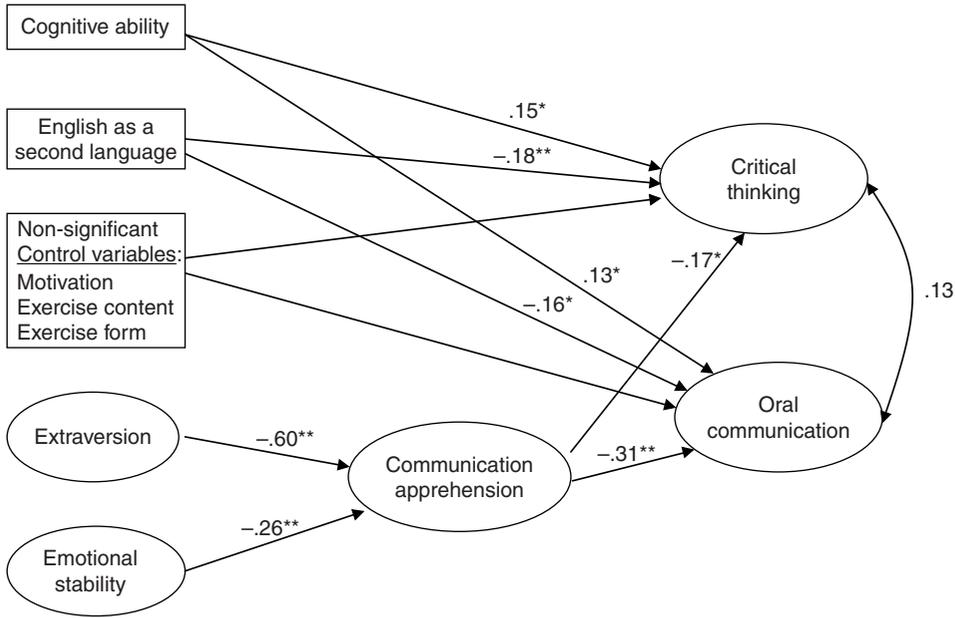
Note. N = 282. Cronbach's alphas listed on diagonal in parentheses, where applicable. \*p < .05; \*\*p < .01.

<sup>a</sup>0 = no; 1 = yes.

<sup>b</sup>0 = presentation; 1 = leaderless group discussion.

<sup>c</sup>0 = non-competitive; 1 = competitive.

<sup>d</sup>The oral communication and critical thinking scores include scores from both the LGD and presentation exercises. We mean-centered the dependent variables for each exercise before combining them and performing the statistical analyses. This gave the dependent variables from two different exercises a common scale (e.g., a 0 would indicate an average score on both exercises).



\* $P < .05$ ; \*\*  $P < .01$   $N = 282$

Figure 1. Hypothesized model with CA as a mediator.

**Discussion**

Participants with higher CA received lower AC scores for both oral communication and critical thinking. The finding that CA is negatively related to participants' ability to demonstrate critical thinking in an AC setting is especially interesting. This is because one might expect that a person's critical thinking score would be impacted by characteristics such as cognitive ability, but it may not be as apparent that CA would also influence it. However, many AC exercises (e.g., role-play exercises) have high communication requirements and are likely perceived by some participants to be stressful. Therefore, in these exercises where effective oral communication is necessary to demonstrate critical thinking and other assessed dimensions (e.g., organization and planning), it is possible that CA could influence these other dimension scores across an exercise. The mediation results indicated that the positive effects of higher extraversion and emotional stability for participants in this sample worked through lower CA to enable them to perform better in the exercises and receive higher dimension scores.

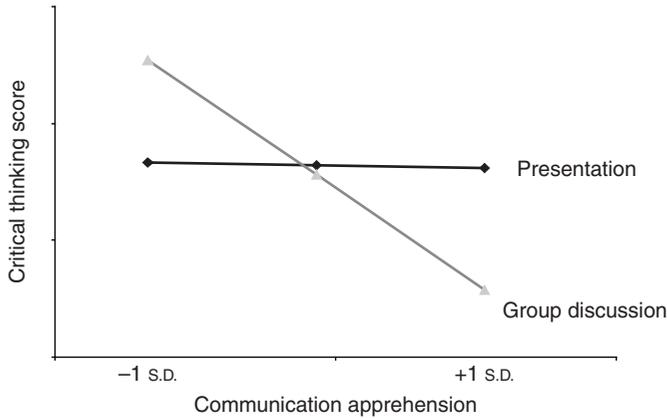
While CA had a negative effect on oral communication in both exercises, CA only had a negative impact on the demonstration of critical thinking in the LGD (and not in the presentation exercise). While we encourage future research to replicate this finding since we did not hypothesize this *a priori*, this could have occurred for several reasons. One important factor may be the timing of when the apprehension occurs for each exercise. It could be that although participants find delivering a presentation to be stressful, their critical thinking has already occurred earlier while preparing the speech. Another factor is that those with higher CA may have been more meticulous during their preparation time for the speech. A final explanation is that in the presentation exercise everyone had an equal opportunity to speak and a similar amount of time to display their

**Table 2.** Interaction of CA and exercise form on oral communication and critical thinking

Independent variables	Dependent variable							
	Oral communication score				Critical thinking score			
	Model 1a	Model 1b	Model 1c	Model 2a	Model 2b	Model 2c	Model 2c	
Constant	-.43	-.10	-.18	-.49	-.09	-.35	-.35	
<i>Step 1: Controls</i>								
English as second language	-.69**	-.65**	-.64**	-.42*	-.37*	-.34	-.34	
Motivation	.15	.07	.08	.06	-.03	-.01	-.01	
Cognitive ability	.02	.02	.02	.03*	.02*	.03*	.03*	
Exercise content	.02	.05	.05	.02	.05	.06	.06	
<i>Step 2: Main effects</i>								
Exercise form		-.01	-.01		-.02	-.02	-.02	
Communication apprehension		-.01**	-.01		-.02**	-.01	-.01	
<i>Step 3: Two-way interaction</i>								
Communication apprehension X exercise form	.08	.12	-.13	.04	.09	-.40*	-.40*	
R <sup>2</sup>		.03**	.00		.05**	.11	.11	
ΔR <sup>2</sup>		6.06**	5.27**	3.16*	4.70**	.02*	.02*	
Overall model F	6.22**	6.06**	5.27**	3.16*	4.70**	4.79**	4.79**	

Note. N = 282, \*p < .05; \*\*p < .01.

<sup>a</sup> Entries are unstandardized regression coefficients.



**Figure 2.** Interactive effect of CA and exercise form on critical thinking.

critical thinking. However, in the LGD, individuals are given more discretion in how often or how long to speak. It may be that in the LGD those with higher CA did not participate or speak as much and therefore did not display their critical thinking skills. *Post-hoc* analysis did indicate that CA was negatively related to the percentage of the overall 'air-time' that participants spoke in the LGD (i.e.,  $r = -.36$ ;  $p < .01$ ). This is consistent with past research which has shown that CA reduces the *quantity* of communication (Allen & Bourhis, 1996).

One limitation of this study is that the generalizability of the results may be limited to the two AC dimensions included in this study. This study also uses a student sample, which may limit the generalizability of the findings if the students are not representative of other assessees.

In conclusion, this study highlights how CA may influence performance in AC exercises that require oral communication. If the ability to interact socially under stress is an important part of what is being assessed in some AC exercises, practitioners should take this into consideration when determining how relevant the AC exercises are for the position being considered. Similar to research that has shown that CA negatively influences interview performance (McCarthy & Goffin, 2004), CA is likely to influence performance in ACs that are being used for selection purposes.

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