# Breaking Ceilings:
# Debate Training Promotes Leadership Emergence by Increasing Assertiveness

## SUPPLEMENTAL MATERIALS

## Experiment 1

### Exploratory Variables

In addition to assertiveness, we explored whether the debate training influenced individuals' motivation to lead, self-esteem, job satisfaction, and affective commitment to the organization (Allen & Meyer, 1990). These variables capture individuals' relationships with themselves, their jobs, and their organizations, respectively. Including these exploratory variables also helped mask our survey's focus on assertiveness and mitigated potential demand effects (i.e., it was less obvious that our experiment focused on assertiveness). The display order of these variables was randomized across respondents. All measures used a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). To maximize survey completion rate, we selected short but well-validated measures:

**Motivation to lead.** We measured motivation to lead with four items from Chan and Drasgow (2001): "I usually want to be the leader in the groups that I work in"; "I am the type of person who is not interested to lead others" (reverse-coded); "I am only interested to lead a group if there are clear advantages for me" (reverse-coded); "I would only agree to be a group leader if I know I can benefit from that role" (reverse-coded).

**Self-esteem.** Self-esteem refers to "a person's appraisal of his or her value" (Leary & Baumeister, 2000, p. 2). We assessed self-esteem with a widely-used measure: "Overall, I have high self-esteem" (Robins et al., 2001). Extensive research has validated this single-item measure, which has been cited over 4,000 times as of August 2024.

**Job satisfaction.** We assessed job satisfaction with a widely-used measure: "Overall, I am satisfied with my job" (Wanous et al., 1997). Extensive research has validated this single-item measure, which has been cited over 4,500 times as of August 2024.

**Affective commitment.** Affective commitment is defined as "an affective or emotional attachment to the organization" (Allen & Meyer, 1990, p. 2). We measured affective commitment using four items from Allen and Meyer (1990): "I really feel as if my company's problems are my own"; "I do not feel a strong sense of belonging to my company" (reverse-coded); "I do not feel emotionally attached to my company" (reverse-coded); "I would be very happy to spend the rest of my career with this company."

Table S8 details the means and standard deviations of these exploratory variables by condition and wave. Table S9 reports the analyses of these exploratory variables.

### Exploratory Moderation Analyses

**Assertiveness.** US/foreign-born status did not significantly moderate the effect of debate training on assertiveness change from Wave 1 to Wave 2 ($B$ = -.33, $SE$ = .20, $p$ = .10), suggesting that the training influenced US-born individuals' and foreign-born individuals' assertiveness similarly. Gender was not a significant moderator either ($B$ = -.006, $SE$ = .19, $p$ = .98), suggesting that the debate training influenced men's and women's assertiveness similarly.

Similarly, US/foreign-born status did not significantly moderate the effect of debate training on assertiveness change from Wave 1 to Wave 3 ($B$ = -.31, $SE$ = .23, $p$ = .18), nor was gender a significant moderator ($B$ = -.05, $SE$ = .21, $p$ = .83).

**Leadership advancement.** US/foreign-born status did not significantly moderate the effect of debate training on leadership advancement ($B$ = .13, $SE$ = .45, *Wald z* = .30, $p$ = .76), suggesting that the training influenced US-born individuals' and foreign-born individuals' leadership advancement similarly. Gender was not a significant moderator either ($B$ = -.07, $SE$ = .41, *Wald z* = -.18, $p$ = .86), suggesting that the debate training influenced men's and women's leadership advancement similarly.

**Deviations from the Preregistration** (https://aspredicted.org/LDD_QHE)

1. The wording of the preregistered hypotheses differed from that used in the manuscript. In particular, the preregistered hypotheses focused on Asians because Experiment 1 only recruited participants from the company's *Asian* employee resource group, whereas the hypotheses in the manuscript use the generic word "individuals" because Experiment 2 recruited an ethnically diverse sample that involved individuals from other ethnic groups.
2. Hypotheses 1 and 2 are reversed in order.
3. According to the preregistration, we aimed to recruit as many participants from the organization as possible. However, we overestimated our ability to recruit at least 600 participants; ultimately, 471 participants signed up for the study.
4. The preregistration forgot to mention motivation to lead as an exploratory variable.
5. The preregistration forgot to mention the exclusion of individuals who failed a simple attention check at Wave 1.
6. While the preregistration specified a 10-week training, we only conducted a 9-week training due to logistic issues.

## Experiment 2

### Group-Member-Rated Assertiveness

In addition to coder-rated assertiveness, we explored group-member-rated assertiveness.

**Between-conditions analyses.** Consistent with Hypothesis 1, the focal participant in the debate training condition ($M$ = 6.12, $SD$ = .61) was rated by group members as significantly more assertive than the focal participant in the active control condition ($M$ = 5.81, $SD$ = .75; 95% CI = [.12, .49], $t$ = 3.30, $p$ = .001, $d$ = .45) and the focal participant in the passive control condition ($M$ = 5.91, $SD$ = .76; 95% CI = [.03, .40], $t$ = 2.28, $p$ = .024, $d$ = .31). Meanwhile, there was no significant difference between the focal participant in the active control condition and the focal participant in the passive control condition ($t$ = -.92, $p$ = .36, 95% CI = [-.30, .11]).

As expected, group-member-rated assertiveness positively predicted leadership emergence for the focal participant ($B$ = 1.07, $SE$ = .08, $p$ < .001). Consistent with Hypothesis 3, group-member-rated assertiveness significantly mediated the positive effect of debate training (1 = debate training condition, 0 = active/passive control conditions) on leadership emergence (indirect effect = .27, bootstrapped 95% CI = [.11, .44], $p$ < .001). This mediating effect of group-member-rated assertiveness remained robust (indirect effect = .29, bootstrapped 95% CI = [.12, .46], $p$ < .001) when we controlled for the exploratory variables (self-esteem, task satisfaction, positive affect, and negative affect).

**Within-condition analyses.** Complementing the *between*-conditions analyses above, we also explored *within*-condition analyses for group-member-rated assertiveness.

Consistent with Hypothesis 1, *within* the debate training condition, the focal participant ($M$ = 6.12, $SD$ = .61) was rated by group members as significantly more assertive than the two non-focal participants ($M$ = 5.88, $SD$ = .94; 95% CI = [.07, .41], $t$ = 2.77, $p$ = .006, $d$ = .30).

*Within* the debate training condition, a participant's group-member-rated assertiveness positively predicted his/her leadership emergence ($B$ = .86, $SE$ = .06, $p$ < .001). Consistent with Hypothesis 3, *within* the debate training condition, group-member-rated assertiveness significantly mediated the effect of participant role (focal vs. non-focal participant) on leadership emergence (indirect effect = .20, bootstrapped 95% CI = [.07, .35], $p$ = .005). This mediating effect of group-member-rated assertiveness remained robust (indirect effect = .22, bootstrapped 95% CI = [.07, .37], $p$ = .002) when we controlled for the exploratory variables (self-esteem, task satisfaction, positive affect, and negative affect).

### Exploratory Variables

We explored whether the debate training also influenced individuals' self-esteem, task satisfaction, positive affect, and negative affect. Including these exploratory variables also helped mask our survey's focus on assertiveness and thus mitigated potential demand effects (i.e., it was less obvious that our experiment focused on assertiveness). Each participant self-rated these exploratory variables after rating his/her two group members. The display order of these variables was randomized across participants. All measures used a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). To maximize survey completion rate, we selected short but well-validated measures:

**Self-esteem.** We assessed self-esteem with the same measure as in Experiment 1: "Overall, I have high self-esteem" (Robins et al., 2001).

**Task satisfaction.** Similar to Experiment 1, we assessed task satisfaction using a two-item measure: "I was satisfied with the group task"; "I enjoyed the group task" ($\alpha$ = .78, $r$ = .67).

**Positive and negative affect.** To explore whether the three conditions differed in mood, we employed the widely-used Positive and Negative Affect Schedule (Watson et al., 1988). For positive affect, participants completed three items: "I am feeling positive"; "I am feeling happy"; "I am feeling relaxed" (α = .84). For negative affect, participants completed three items: "I am feeling negative"; "I am feeling upset"; "I am feeling irritable" (α = .86).

Table S11 details the means and standard deviations of these exploratory variables by condition and wave for *focal* participants.

**Between-conditions analyses.** The three conditions did not differ significantly in any of the exploratory variables (self-esteem, task satisfaction, positive affect, and negative affect) for the *focal* participant, ANOVA *p*s > .05. The three conditions did not differ significantly in any of the exploratory variables for the two *non-focal* participants either, ANOVA *p*s > .05.

**Within-condition analyses.** Within the debate training condition, the three participants did not differ significantly in any of the exploratory variables, ANOVA *p*s > .05.

Together, these null results suggest that the debate training did not significantly influence individuals' self-esteem, task satisfaction, positive affect, or negative affect, thus ruling them out as potential mediators (i.e., alternative mechanisms).

**Exploratory Moderation Analyses**

**Coder-rated assertiveness.** As in Experiment 1, the effect of debate training (vs. the two control conditions) on assertiveness was not significantly moderated by US/foreign-born status (*B* = -.006, *SE* = .27, *p* = .98) or by gender (*B* = -.14, *SE* = .21, *p* = .51). Additionally, we conducted a systematic set of analyses to test whether the effect of debate training was moderated by ethnicity. Specifically, we examined "ethnicity" as a moderator by setting each ethnic group against the rest (e.g., East Asian vs. others; South Asian vs. others) and setting each ethnic group against another group (e.g., East Asian vs. White); none of the ethnicity interaction effects were significant (all *p*s > .05). Together, these results suggest that the training (a) influenced US-born individuals' and foreign-born individuals' assertiveness similarly, (b) influenced men's and women's assertiveness similarly, and (c) influenced different ethnic groups' assertiveness similarly.

**Leadership emergence.** Similarly, the effect of debate training (vs. the two control conditions) on leadership emergence was not significantly moderated by US/foreign-born status (*B* = -.28, *SE* = .39, *p* = .47), by gender (*B* = -.29, *SE* = .30, *p* = .34), or ethnicity (all *p*s > .05). These results suggest that the debate training (a) influenced US-born individuals' and foreign-born individuals' leadership emergence similarly, (b) influenced men's and women's leadership emergence similarly, and (c) influenced different ethnic groups' leadership emergence similarly.

**Deviations from the Preregistration** (https://aspredicted.org/XL6_CYN)

1. The preregistration forgot to mention assertiveness as a key variable.
2. The preregistration forgot to provide details of the attention check.

**Table S1. Components of Public Forum Debate**

| Component | Explanation |
|---|---|
| Constructive | In the Constructive speech, debaters build their case either for or against the resolution via contentions. |
| Crossfire | Crossfire is a questioning period during which debaters ask and answer questions of each other. |
| Rebuttal | Debaters focus on challenging their opponent's Constructive contentions, making a series of arguments and counterarguments. |
| Summary | Debaters summarize their main arguments and extend their answers to their opponent's main Constructive and Rebuttal arguments. |
| Final Focus | Debaters focus the judges on the primary reasons to vote for their side. Final Focus also includes their strongest answers to their opponent's main Constructive and Rebuttal arguments. |

Reference: https://new.debateus.org/2-the-format-of-public-forum-debate-2/

**Table S2. Experiment 1 Debate Training Syllabus**

| Week | Topic | Example Knowledge Points |
|---|---|---|
| 1 | Introduction to Public Forum Debate | ○ The importance of communication in personal and professional contexts.<br>○ An overview of the history, structure, and rules of Public Forum debate.<br>○ How debate trains individuals to be effective communicators.<br>○ How debate trains individuals to step outside their psychological comfort zones and assert their views. |
| 2 | The Constructive Speech: Making Compelling & Creative Arguments | ○ Use the 3-Part Argument Structure (claim + warrant + impact) to articulate logical and compelling arguments.<br>○ Use effective delivery techniques like pacing and intonation to maintain the audience's attention.<br>○ Repeat and reinforce key points to convey strong conviction and enhance persuasion. |
| 3 | The Crossfire | ○ Develop "Goldilocks" assertiveness that is neither passive nor aggressive.<br>○ Effective content strategies:<br>▪ Warrant evidence<br>▪ Constrain the opponent's ground<br>▪ Listing off points<br>▪ Don't dwell on a single point<br>▪ Don't hog the clock<br>▪ Ask as an answer<br>▪ Don't ask lengthy questions<br>○ Effective style strategies:<br>▪ Maintain a respectful tone<br>▪ Don't be dismissive<br>▪ Don't be accusatory ("You" vs. "I" Perspective)<br>▪ Don't self-victimize |
| 4 | The Rebuttal Speech: Improvisation & Analytical Thinking | ○ How to challenge opposing arguments:<br>▪ Non-Unique: an outcome/scenario is inevitable<br>▪ De-Link: broken causality<br>▪ Link-Turn: the opposite of a claim is true<br>▪ Impact-Turn: the opposite of an impact is true<br>○ How to strengthen arguments:<br>▪ Develop an overarching narrative<br>▪ Clearly structure arguments via signposting<br>▪ Emphasize the consequences of arguments |
| 5 | The Summary Speech | ○ Identify and focus on the core messages. Unnecessary details will dilute and weaken the arguments.<br>○ Be concise and avoid filler words (e.g., "um," "like") to speak with certainty and enhance persuasiveness.<br>○ Maintain a clear narrative to reinforce one's own arguments while addressing counterarguments. |
| 6 | Final Focus | ○ Brevity and clarity are essential for assertive communication. |

| | | |
|---|---|---|
| | | ○ Within limited time, weigh key factors (e.g., uniqueness, urgency, and clarity of impact) to persuade the audience.<br>○ Begin and end with directive language.<br>○ Summarize key points to reinforce the overall message and guide the audience's understanding. |
| 7 | The Whole Picture | ○ Observe a real debate to analyze the debate techniques used.<br>○ Deliver a final focus to apply these debate techniques in real-world situations. |
| 8 | Mass Appeal | ○ Use non-verbal interpersonal skills to show confidence:<br>▪ Make focused eye contact<br>▪ Avoid defensive body language<br>▪ Adopt powerful and trustworthy gestures (e.g., the "palms-up" pose)<br>○ Use unifying language (e.g., "we" and "our") to foster cooperation and inclusiveness.<br>○ Take others' perspectives to deliver persuasive and non-offensive arguments. |
| 9 | Conclusion | ○ Summary and class takeaways. |

**Table S3**

*Experiment 1: Treatment and Control Conditions Did Not Differ in Any Wave 1 Measures (i.e., Before Debate Training)*

| **Variable** | **Treatment Condition** (*N* = 236) | | **Control Condition** (*N* = 235) | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | *Mean* | *SD* | *t* | *p* |
| Leadership level | 4.18 | 1.10 | 4.20 | 1.26 | -.20 | .84 |
| Assertiveness | 4.75 | 1.05 | 4.71 | 1.17 | .40 | .69 |
| Age | 31.10 | 6.09 | 31.46 | 6.46 | -.62 | .53 |
| Tenure at company before Wave 1 (years) | 3.05 | 3.05 | 3.24 | 3.17 | -.66 | .51 |
| Time in the job title before Wave 1 (years) | 1.58 | 1.57 | 1.57 | 1.46 | .08 | .93 |
| Self-esteem | 5.09 | 1.26 | 5.07 | 1.28 | .18 | .86 |
| Job satisfaction | 5.24 | 1.05 | 5.17 | 1.14 | .75 | .45 |
| Affective commitment | 4.74 | .93 | 4.78 | .96 | -.46 | .64 |
| Motivation to lead | 4.54 | .97 | 4.45 | .96 | 1.04 | .30 |

*Note.* Each row reports *t* and *p* values for independent-samples *t*-tests.

**Exploratory variables:** self-esteem, job satisfaction, affective commitment, motivation to lead

**Table S4**

*Experiment 1: Descriptive Statistics and Bivariate Correlations*

| Variables | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Condition (1 = debate, 0 = control) | 0.50 | 0.50 | | | | | | | | | | | | | | | | | | | |
| 2. Assertiveness (Wave 1) | 4.73 | 1.11 | .02 | | | | | | | | | | | | | | | | | | |
| 3. Assertiveness (Wave 2) | 5.03 | 1.09 | .23** | .70** | | | | | | | | | | | | | | | | | |
| 4. Assertiveness (Wave 3) | 5.10 | 1.03 | .22** | .65** | .73** | | | | | | | | | | | | | | | | |
| 5. Self-esteem (Wave 1) | 5.08 | 1.27 | .01 | .33** | .17** | .21** | | | | | | | | | | | | | | | |
| 6. Self-esteem (Wave 2) | 5.29 | 1.08 | .11* | .35** | .26** | .26** | .66** | | | | | | | | | | | | | | |
| 7. Self-esteem (Wave 3) | 5.31 | 1.14 | .11 | .38** | .30** | .44** | .58** | .61** | | | | | | | | | | | | | |
| 8. Job satisfaction (Wave 1) | 5.20 | 1.09 | .03 | .11* | .08 | .17** | .32** | .28** | .26** | | | | | | | | | | | | |
| 9. Job satisfaction (Wave 2) | 5.36 | 1.02 | .04 | .12* | .17** | .17** | .21** | .36** | .24** | .56** | | | | | | | | | | | |
| 10. Job satisfaction (Wave 3) | 5.15 | 1.15 | .12* | .08 | .16** | .24** | .18** | .23** | .39** | .54** | .52** | | | | | | | | | | |
| 11. Affective commitment (Wave 1) | 4.76 | 0.95 | -.02 | .05 | .02 | -.03 | .15** | .19** | .13* | .48** | .37** | .24** | | | | | | | | | |
| 12. Affective commitment (Wave 2) | 4.75 | 1.03 | .04 | .09 | .12* | .04 | .09 | .17** | .09 | .36** | .48** | .27** | .69** | | | | | | | | |
| 13. Affective commitment (Wave 3) | 4.55 | 1.05 | -.10 | .00 | -.01 | -.05 | .07 | .10 | .15* | .31** | .33** | .43** | .55** | .62** | | | | | | | |
| 14. Motivation to lead (Wave 1) | 4.50 | 0.97 | .05 | .19** | .18** | .18** | .08 | .19** | .06 | .11* | .21** | .06 | .21** | .17** | .02 | | | | | | |
| 15. Motivation to lead (Wave 2) | 4.40 | 1.00 | .10 | .24** | .26** | .24** | .15** | .20** | .17** | .14** | .20** | .07 | .24** | .22** | .06 | .68** | | | | | |
| 16. Motivation to lead (Wave 3) | 4.28 | 0.99 | .03 | .18** | .18** | .19** | .12 | .13* | .12* | .06 | .08 | .04 | .20** | .14* | .09 | .60** | .62** | | | | |
| 17. Age (Wave 1) | 31.28 | 6.27 | -.03 | .02 | .14** | .07 | -.04 | -.04 | .00 | -.07 | .07 | -.05 | .14** | .17** | .18** | .05 | .05 | .02 | | | |
| 18. Gender (0 = female, 1 = male) | 0.41 | 0.49 | -.07 | .13** | .09 | .14* | .10* | .09 | .11 | .06 | -.02 | .02 | .00 | -.12* | .02 | .01 | -.04 | .03 | .14** | | |
| 19. US born (0 = no, 1 = yes) | 0.30 | 0.46 | -.02 | .00 | .01 | -.01 | -.02 | .00 | -.07 | .02 | .02 | .05 | .04 | -.04 | -.07 | .02 | -.03 | -.02 | -.14** | -.01 | |
| 20. Tenure at company (Wave 1) | 3.14 | 3.11 | -.03 | -.03 | .08 | -.01 | -.05 | -.10 | -.10 | -.11* | -.05 | -.08 | .03 | .02 | .07 | .11* | .00 | .03 | .47** | .05 | -.03 |

*Note.* * $p < .05$. ** $p < .01$.

**Exploratory variables:** self-esteem, job satisfaction, affective commitment, motivation to lead

**Table S5**

*Experiment 1: Wave 2 Analyses Using Different Models*

| **Bodner and Bliese's (2018) three analytic models** | **R Code** | **Wave 2 Results for "condition"** |
|---|---|---|
| The posttest only model | `t.test(Assert_w2 ~ condition, data=df)` | $t = 4.16$, $p < .001$ |
| The ANCOVA model | `summary(lm(Assert_w2 ~ condition + Assert_w1, data=df))` | $t = 5.89$, $p < .001$; $B = .48$, $SE = .08$ |
| The difference in mean change model | `df$Assert_w2_w1 <- df$Assert_w2 - df$Assert_w1`<br>`t.test(Assert_w2_w1 ~ condition, data=df)` | $t = 5.18$, $p < .001$ |

**Table S6**

*Experiment 1: Wave 3 Analyses Using Different Models*

| **Bodner & Bliese's (2018) three analytic models** | **R Code** | **Wave 3 Results for "condition"** |
|---|---|---|
| The posttest only model | `t.test(Assert_w3 ~ condition, data=df)` | $t = 3.75$, $p < .001$ |
| The ANCOVA model | `summary(lm(Assert_w3 ~ condition + Assert_w1, data=df))` | $t = 5.44$, $p < .001$; $B = .48$, $SE = .09$ |
| The difference in mean change model | `df$Assert_w3_w1 <- df$Assert_w3 - df$Assert_w1`<br>`t.test(Assert_w3_w1 ~ condition, data=df)` | $t = 4.89$, $p < .001$ |

**Table S7**

*Experiment 1: Logistic Regressions Predicting Leadership Advancement (1 = yes, 0 = no) from Wave 1 to Wave 3*

| | **Model 1** | **Model 2** | **Model 3** |
|---|---|---|---|
| **Debate training (vs. control condition)** | .53** | .55** | .57** |
| | (.20) | (.21) | (.21) |
| Leadership level at Wave 1 | | -.26** | -.28** |
| | | (.09) | (.11) |
| Time in the job title before Wave 1 (years) | | .20** | .18* |
| | | (.07) | (.08) |
| Tenure at company before Wave 1 (years) | | | .01 |
| | | | (.05) |
| Gender (0 = female, 1 = male) | | | .27 |
| | | | (.21) |
| US born (0 = no, 1 = yes) | | | .10 |
| | | | (.23) |
| AIC | 561.71 | 552.30 | 556.48 |
| BIC | 569.91 | 568.69 | 585.17 |
| Log likelihood | -278.86 | -272.15 | -271.24 |
| *N* | 445 | 445 | 445 |

*Note.* * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$. Unstandardized regression coefficients are displayed, with standard errors in parentheses.

As expected, Wave 1 leadership level negatively predicted leadership advancement because leadership advancement is more difficult if a person is already at a high (vs. low) leadership level (e.g., it is more difficult to advance from Level 6 to Level 7 than from Level 3 to Level 4). As expected, time in the job title before Wave 1 positively predicted leadership advancement because a recently promoted person is less likely to be promoted again in the short run. These results provide supplemental support for the validity of our experiment.

**Table S8**

*Experiment 1: Means and Standard Deviations of Exploratory Variables by Condition and Wave*

| | **Wave 1** (*N* = 471) | | | | **Wave 2** (*N* = 332) | | | | **Wave 3** (*N* = 287) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Treatment | | Control | | Treatment | | Control | | Treatment | | Control | |
| | *M* | *SD* | *M* | *SD* | *M* | *SD* | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| Self-esteem | 5.09 | 1.26 | 5.07 | 1.28 | 5.41 | 0.99 | 5.16 | 1.16 | 5.43 | 1.04 | 5.18 | 1.24 |
| Job satisfaction | 5.24 | 1.05 | 5.17 | 1.14 | 5.40 | 0.96 | 5.31 | 1.08 | 5.29 | 0.99 | 5.00 | 1.29 |
| Affective commitment | 4.74 | 0.93 | 4.78 | 0.96 | 4.79 | 1.05 | 4.70 | 1.01 | 4.45 | 1.03 | 4.67 | 1.05 |
| Motivation to lead | 4.54 | 0.97 | 4.45 | 0.96 | 4.49 | 1.05 | 4.29 | 0.93 | 4.31 | 1.05 | 4.25 | 0.92 |

**Table S9**

*Experiment 1: Analyses of Exploratory Variables*

| | **Change from Wave 1 to Wave 2** | | | **Change from Wave 1 to Wave 3** | | |
|---|---|---|---|---|---|---|
| | Within treatment condition | Within control condition | **Difference in mean change between two conditions** | Within treatment condition | Within control condition | **Difference in mean change between two conditions** |
| Self-esteem | $t = 4.44$, $p < .001$ | $t = -.89$, $p = .38$ | ***t* = 3.99, *p* < .001** | $t = 4.39$, $p < .001$ | $t = 1.17$, $p = .24$ | ***t* = 2.16, *p* = .03** |
| Job satisfaction | $t = 2.50$, $p = .01$ | $t = -.91$, $p = .36$ | ***t* = 2.48, *p* = .014** | $t = .37$, $p = .71$ | $t = -3.03$, $p = .003$ | ***t* = 2.34, *p* = .02** |
| Affective commitment | $t = .66$, $p = .51$ | $t = -3.79$, $p < .001$ | ***t* = 3.04, *p* = .003** | $t = -3.49$, $p < .001$ | $t = -3.79$, $p < .001$ | ***t* = .09, *p* = .93** |
| Motivation to lead | $t = -.57$, $p = .57$ | $t = -1.83$, $p = .07$ | ***t* = .80, *p* = .42** | $t = -2.31$, $p = .02$ | $t = -2.55$, $p = .01$ | ***t* = .12, *p* = .90** |

**Table S10**

*Experiment 2: Descriptive Statistics and Bivariate Correlations for Focal Participants* (*N* = 325)

| Variables | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Condition (1 = debate training, 0 = active/passive control) | 0.33 | 0.47 | | | | | | | | | |
| 2. Leadership emergence (group-member-rated) | 4.70 | 1.26 | .17** | | | | | | | | |
| 3. Assertiveness (coder-rated) | 5.05 | 0.88 | .21** | .53** | | | | | | | |
| 4. Self-esteem (self-rated) | 5.33 | 1.34 | .01 | .06 | .03 | | | | | | |
| 5. Task satisfaction (self-rated) | 5.80 | 1.18 | -.03 | .04 | .08 | .27** | | | | | |
| 6. Positive affect (self-rated) | 5.25 | 1.20 | .04 | .00 | .00 | .35** | .55** | | | | |
| 7. Negative affect (self-rated) | 2.23 | 1.25 | -.03 | -.02 | -.08 | -.15** | -.40** | -.65** | | | |
| 8. Age | 26.58 | 12.12 | -.05 | -.08 | -.07 | -.04 | .14* | .19** | -.21** | | |
| 9. Gender (0 = female, 1 = male) | 0.38 | 0.49 | .05 | -.01 | -.07 | .10 | -.02 | .03 | .05 | .03 | |
| 10. US born (0 = no, 1 = yes) | 0.82 | 0.38 | .01 | .10 | .09 | .04 | .00 | -.01 | .09 | .00 | .08 |

*Note.* * $p < .05$. ** $p < .01$.

**Exploratory variables**: self-esteem, task satisfaction, positive affect, negative affect

**Table S11**

*Experiment 2: Means and Standard Deviations of Exploratory Variables by Condition, for Focal Participants* (*N* = 325)

| | Debate Training Condition (*N* = 107) | | Cultural Training Condition (*N* = 109) | | Passive Control Condition (*N* = 109) | |
|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| Self-esteem | 5.36 | 1.39 | 5.36 | 1.29 | 5.28 | 1.37 |
| Task satisfaction | 5.75 | 1.15 | 5.76 | 1.29 | 5.91 | 1.09 |
| Positive affect | 5.31 | 1.08 | 5.17 | 1.36 | 5.28 | 1.16 |
| Negative affect | 2.17 | 1.14 | 2.19 | 1.31 | 2.33 | 1.29 |

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