

# Loneliness and Attachment Anxiety Affect the Viewing-From-Above Bias While Viewing Stick-Figure Walkers

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## INTRODUCTION

Our perception of ambiguous objects is affected by perceptual biases that may cause us to prefer one percept over another.

### The Viewing-From-Above (VFA) Bias

The VFA bias, or the tendency to perceive ambiguous objects as viewing them from above, has been demonstrated with ambiguous line drawings<sup>1</sup> and curved surfaces.<sup>2</sup>

The Necker cube, for instance, is more often perceived from above than below.<sup>3</sup>

Similarly, participants have a tendency to perceive ambiguous stick-figure walkers from above rather than below.<sup>4</sup>

More anxious individuals have been found to display different perceptual biases than individuals who are less anxious.<sup>5</sup>

Previously, we observed that men have greater VFA biases, and that more anxious individuals demonstrate weaker VFA biases. The VFA bias may therefore have social relevance; i.e., anxious people may perceive themselves less often as "looking down" upon others.



**Purpose:** To observe whether there is a relationship between attachment anxiety and the VFA bias for stick-figure walkers.

**Hypothesis:** Those high in attachment anxiety will demonstrate weaker VFA biases and this will be exacerbated by loneliness induction.

## REFERENCES

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## METHOD

### Participants

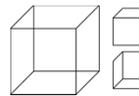
- $N = 143$
- Undergraduate students (85 women, 58 men)

### Two Conditions:

- Control group exposed to innocuous script
- Experimental group exposed to loneliness induction script

### Stimuli

- Stick-figure walkers (80%) and Necker cubes (20%)
- 0.5 s presentation, response prompt, 0.5 s ITI
- Orthographic projection, no occlusion or other depth cues
- Camera Azimuth: 0, 30, 60, ... , 330 degrees
- Camera Elevation: -30, -20, -10, 0, 10, 20, 30 degrees
- Rotation: 45 degrees/s



### Procedure & Design

- Experiences in Close Relationships-Revised (ECR-R) Questionnaire
- 420 trials: 12 (camera azimuth) x 7 (camera elevation) x 5 (repetitions)
- "Is the stimulus rotating clockwise or counterclockwise?"

### A Generalized Linear Model (GLM):

$$r(\alpha, \beta) = S[a + b\beta + c f(\alpha)]$$

$r$  = rate of counter-clockwise responses

$\alpha$  = camera azimuth in degrees

$\beta$  = camera elevation in degrees/30

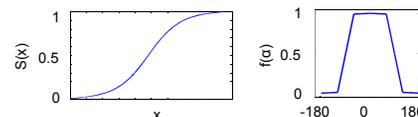
$a$  = counter-clockwise bias

$b$  = viewing-from-above (VFA) bias

$c$  = facing-the-viewer (FTV) bias

$S$  = the logistic function:  $S(x) = 1/(1+e^{-x})$

$f$  = a rectangular function which adopts a value of 1 if  $-90 < \alpha < 90$ , -1 if  $90 < \alpha < 270$ , and 0.5 if  $\alpha$  is either -90 or 90



## RESULTS

### Moderated Linear Regression

We predicted VFA biases (the dependent variable) using several predictor variables (gender, condition, and attachment anxiety) and all possible higher-order interactions.

This model accounted for a significant amount of the variance in VFA biases,  $R^2 = .14$ ,  $F(7,135) = 3.10$ ,  $p = .005$ .

Here, there was a significant Gender X Attachment Anxiety X Condition interaction,  $\beta = 0.58$ ,  $t = 3.10$ ,  $p = .010$ .

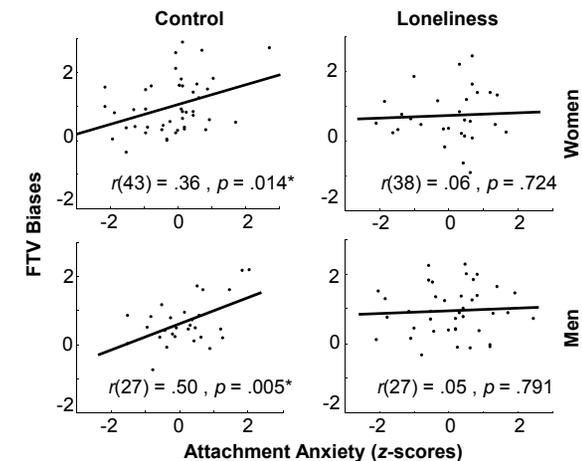
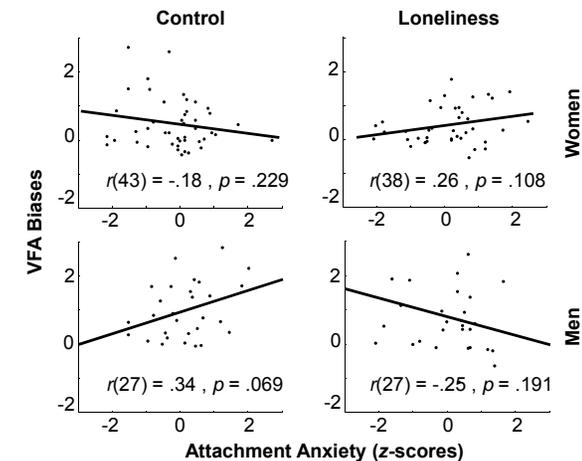
Men had significantly greater VFA biases than women  $t(141) = 3.00$ ,  $p = .003$ .

We used a second model to predict FTV biases (the dependent variable) using 2 predictor variables (condition and attachment anxiety).

This model accounted for a significant amount of the variance in FTV biases,  $R^2 = .07$ ,  $F(3,139) = 3.57$ ,  $p = .016$

This time, there was a significant Condition X Attachment Anxiety interaction,  $\beta = -.24$ ,  $t = -1.99$ ,  $p = .049$ .

Women had significantly greater FTV biases than men  $t(141) = 2.22$ ,  $p = .028$ .



## SUMMARY & DISCUSSION

While women in the control group with greater attachment anxiety were less likely to perceive ambiguous stick-figure walkers from above (i.e., the VFA bias), men with greater attachment anxiety were more so.

The inverse relationship was true when people were induced to feel lonely.

Thus, we find mixed support for our hypothesis that anxious people will be less likely to perceive themselves as "looking down" upon others.

Both men and women are more likely to perceive ambiguous stick-figure walkers as if they are facing them (i.e., FTV bias) when they have greater attachment anxiety.

This bias is nullified when they are induced to feel lonely.

Thus, both trait (attachment anxiety) and state (induced loneliness) factors can affect visual perception of ambiguous figures