



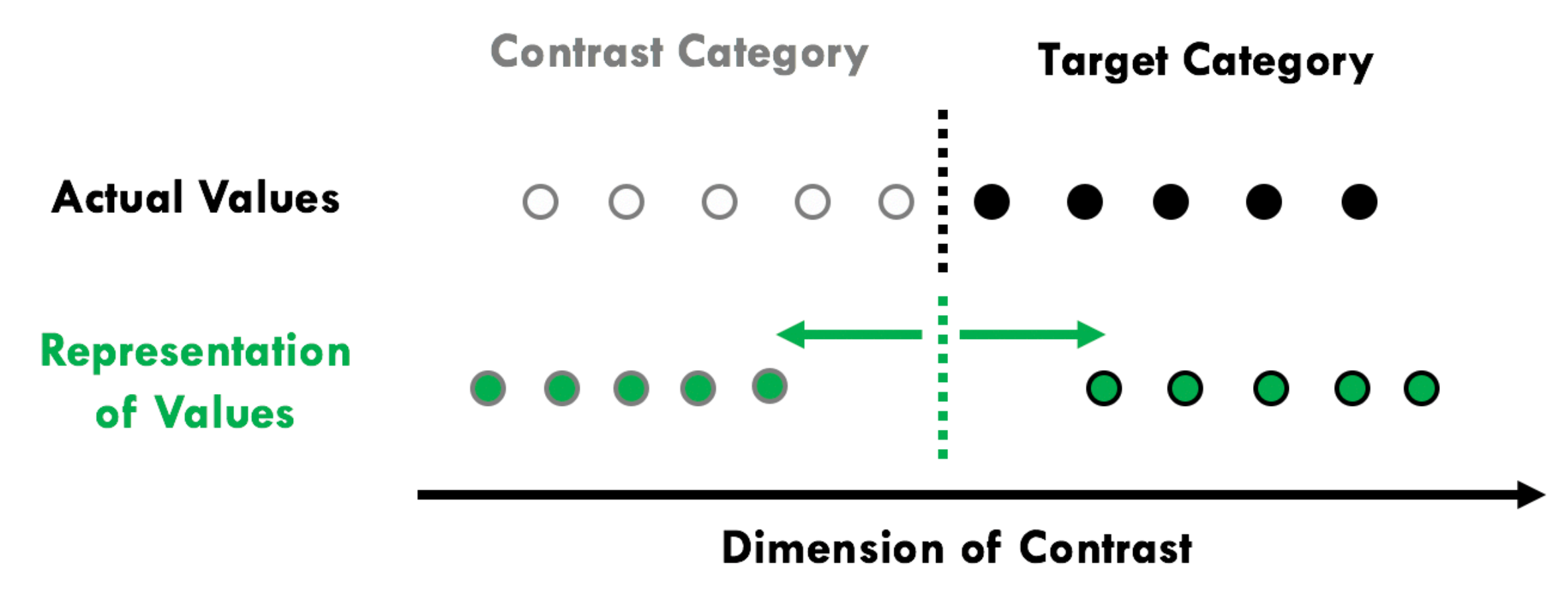
The Effect of Contrast Category on Illusory Correlations When Learning Social Groups

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Prior research shows that the representation of a category is determined in large part by co-learned contrast categories. In this experiment, we investigate contrast effects in social categories and explore their influence on illusory correlations between psychological traits. Participants learned to assign students varying along psychological traits (academic, athletic, social) to residence halls before estimating average values for each dorm. The same target category was learned alongside one of two co-learned contrast categories with either higher or lower values along a diagnostic dimension. In addition to predicted contrast effects, these effects extended to ratings along completely non-diagnostic and uncorrelated dimensions. These data have implications for the study of illusory correlations.

INTRODUCTION

- Associating category labels with exemplars varying along a continuous dimension has been shown to result in:
 - Decreased perceived similarity between members straddling the boundary (Tajfel & Wilkes, 1963).
 - Faster classification, more accurate classification, and higher typicality ratings for items furthest from the category boundary (Goldstone, 1996).
 - Memory for average values shifted away from contrast categories (Davis & Love, 2010).
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- Davis & Love (2010) found that contrast effects were limited to the dimensions of contrast (and not to irrelevant dimensions)
 - Social dimensions are often considered to correlate with each other, often despite a lack of evidence in the data itself.
 - Perhaps contrast effects do extend beyond diagnostic dimensions when one holds beliefs (incorrect or not) of inherent correlations.

The Current Experiment

Participants will learn to differentiate between categories of people based on psychological traits (interest in athletics, interest in academics, interest in socializing). A target category will be learned alongside a category of either lower or higher values along one trait. The other two dimensions will be irrelevant (not diagnostic of membership).

Predictions

1. Traditional contrast effects will be found along the diagnostic dimension (i.e., a target category with central values will be represented differently depending on what it is learned alongside.)
2. Illusory correlations will arise along non-diagnostic and uncorrelated feature dimensions, despite a lack of category (or cue) validity.

METHOD

Participants 147 Marist College undergraduate students

Materials

Stimuli

Student Profile Cards varying along three dimensions: Athletics, Social, Academic Scores.



Name: [redacted]
Student ID: [redacted]
Year: [redacted]

Athletics	Social	Academics
3.56	5.16	2.60

Cover Story: "Imagine that you have just been hired to be the Residence Hall Director of a small private college. At this college, dorms are often separated by gender, or separated based on academic and lifestyle factors like level of interest in athletics and socializing. In your new role, you are being asked to decide which male dorm some new male transfer students should be placed in. ... It is now your task to review a set of students who were assigned to Mydro Hall and Sorsen Hall last semester (before the previous Resident Hall Director quit) to determine the pattern of who is assigned to which dorm.

Academic Score: ...Combination of the student's GPA, their grade on a combined math and reading test, and their self-reported interest in academics.
Socialization Preference Score: ...Combination of how social the student indicated they were on a survey, their involvement in college clubs, and their performance on a series of questions evaluating extroversion (how outgoing they are).
Athleticism Interest Score: ...Combination of information about whether they play on college team, are in any sports-related clubs, self-reported interest in athletics, and a measure of how much they spend exercising each week.

Category Structure

- Participants learned a target category (B) and a contrast category (either A or C).
- There was always a diagnostic dimension (F2, counterbalanced) that was perfectly predictive.
 - Target category had higher (vs. A) or lower (vs. C) values
- The other two dimensions were nondiagnostic ($M_s = 5.00$) and uncorrelated ($r_s < .16$).

	CATEGORY A			CATEGORY B			CATEGORY C		
	F1	F2	F3	F1	F2	F3	F1	F2	F3
	9.00	0.36	9.32	9.64	3.56	9.32	9.00	6.76	9.32
	1.00	0.68	4.20	4.52	3.88	0.68	1.00	7.08	4.20
	8.04	1.00	0.68	0.36	4.20	8.36	8.04	7.40	0.68
	1.96	1.32	5.80	5.48	4.52	1.64	1.96	7.72	5.80
	7.08	1.64	8.68	8.36	4.84	7.40	7.08	8.04	8.68
	2.92	1.96	3.24	3.56	5.16	2.60	2.92	8.36	3.24
	6.12	2.28	1.32	1.64	5.48	6.44	6.12	8.68	1.32
	3.88	2.60	6.76	6.44	5.80	3.56	3.88	9.00	6.76
	5.16	2.92	7.72	7.40	6.12	5.48	5.16	9.32	7.72
	4.84	3.24	2.28	2.60	6.44	4.52	4.84	9.64	2.28
Mean	5.00	1.80	5.00	5.00	5.00	5.00	5.00	8.20	5.00
SD	2.62	0.97	3.10	3.01	0.97	2.91	2.62	0.97	3.10
	F1/F2	F1/F3	F2/F3	F1/F2	F1/F3	F2/F3	F1/F2	F1/F3	F2/F3
<i>r</i>	-0.15	0.15	-0.16	-0.18	0.15	-0.15	-0.15	0.15	-0.16

Procedure

Learning Phase: Traditional Supervised Classification Learning

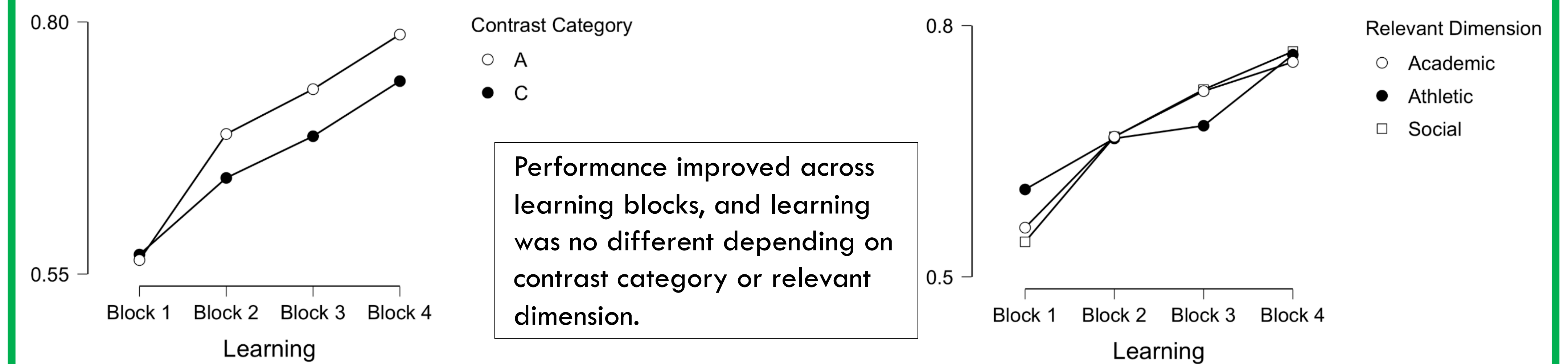
- Student profiles were presented one at a time
- Participants were asked to indicate category membership
- Corrective feedback provided
- 4 presentations of each of the 20 item (80 trials in total)

Testing Phase

- Participants estimated the mean score for each feature for each category.
- Participants classified (without feedback) examples from the target category and new examples from the category they were not exposed to during learning

RESULTS and DISCUSSION

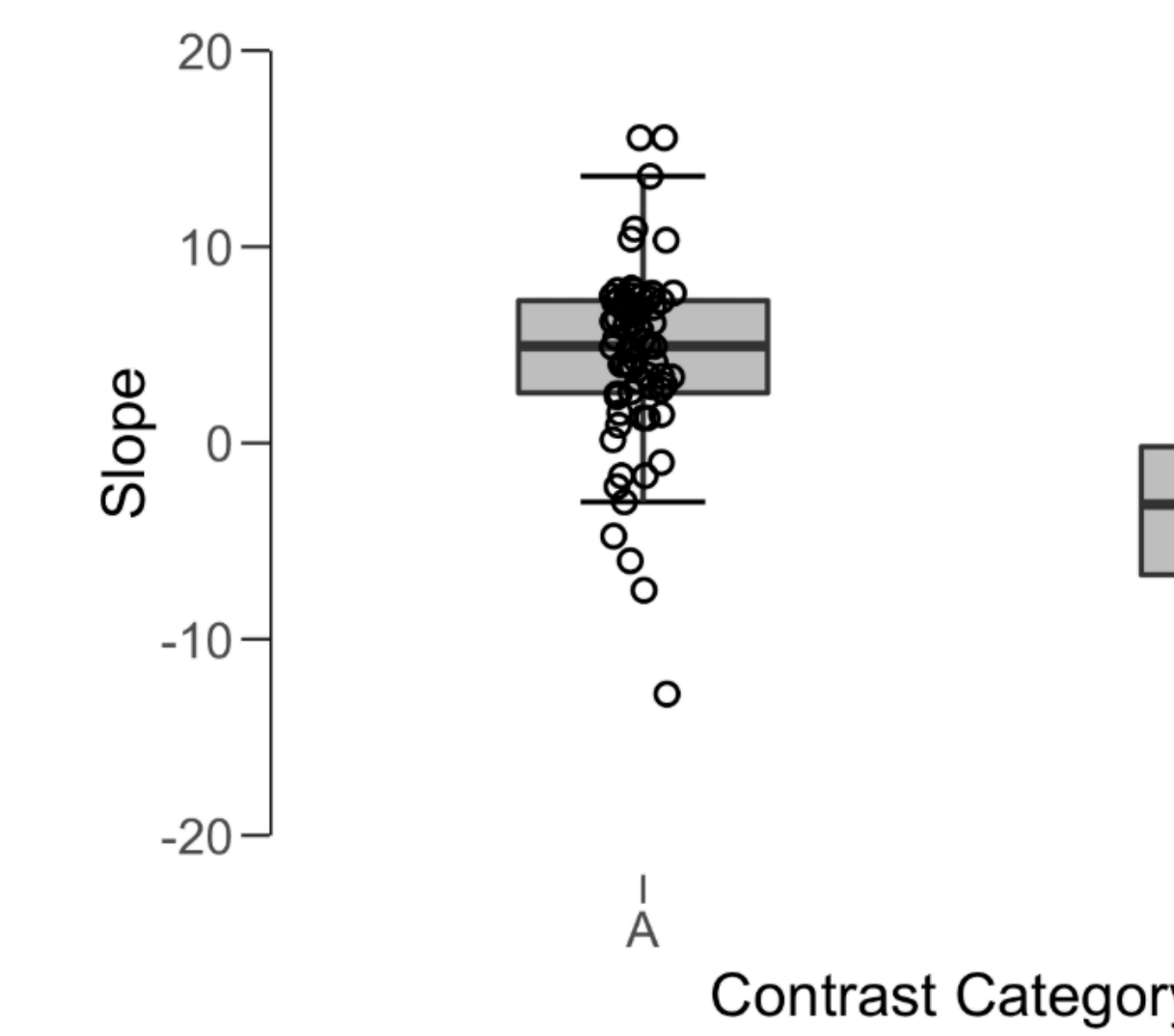
Overall Learning Performance



Contrast Effects along Diagnostic Dimensions

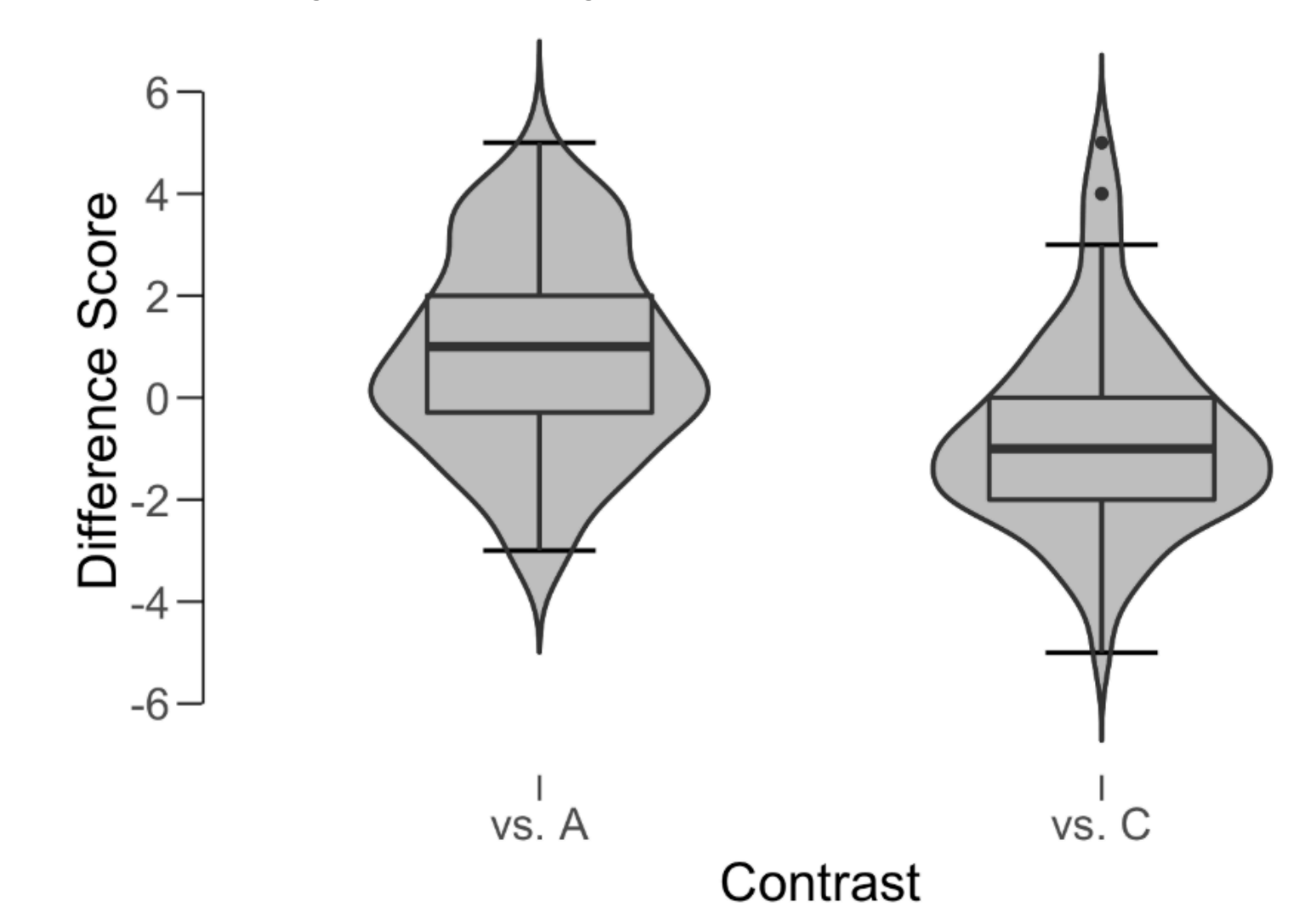
Learning Data

For each participant, we calculated the slope of the regression line based on their learning performance on items B01 through B10. A slope greater than zero indicates that learning performance increased as values along the contrasted dimension of B items increased.



Testing Data

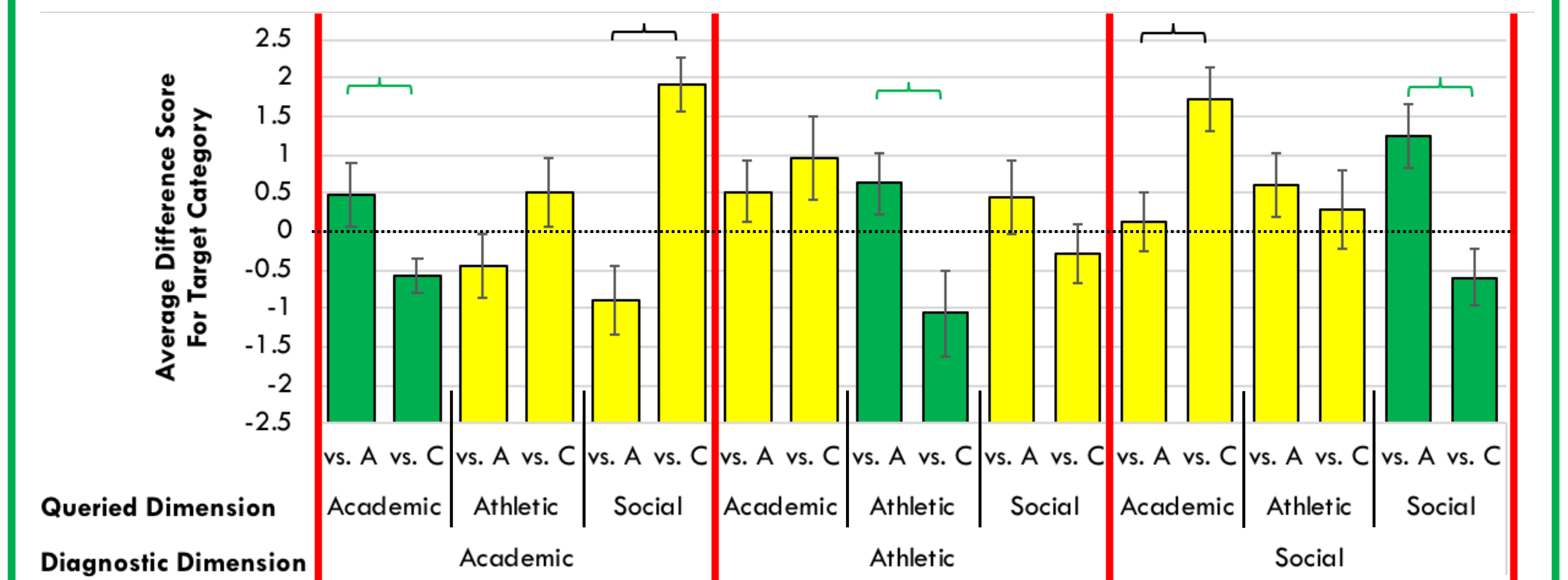
For each participant, we computed a difference score based on how much each participant's perceived average along a dimension differed from the actual average of the category. A positive difference score indicates that the perceived average was higher than the actual average.



During learning, participants classified items more accurately as they got further from the contrast category.

After learning, participants remembered the average value along the diagnostic dimension to be further from the contrast category than it was.

Contrast Effects along Nondiagnostic Dimensions



Participants misperceived an indirect (negative) relationship between social and academic scores, affecting memory for nondiagnostic dimensions.

- When the contrast category made participants think of the target dorm as valuing academics, they also remembered members of that dorm to be less social.
- When the contrast category made participants think of the target dorm as valuing socialization, participants remembered members of that dorm to have lower academic scores as well.

References

- Goldstone, R. L. (1996). Isolated and interrelated concepts. *Memory and Cognition*, 24(5), 608-628.
- Tajfel, H. & Wilkes, A. L. (1963). Classification and quantitative judgement. *British Journal of Psychology*, 54(2), 101-114.
- Davis, T. & Love, B. C. (2010). Memory for category information is idealized through contrast with competing options. *Psychological Science*, 21(2), 234-242.