Regulatory Fit from Stereotypes Advantageous for Golf Putting Novices

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Research Goal

- To demonstrate stereotype fit (i.e., a match between the stereotype and task characteristics) effects in the golf performance of novices.
- We used the stereotype manipulation from Stone et al. (1999) to induce regulatory focus states and created matching or mismatching task reward structures
- We find better performance by match relative to mismatch participants

Introduction

Stereotype Threat and Lift
- Research documents the negative impact on performance given the activation of a negative stereotype
  - These performance decrements are known as stereotype threat effects (Steele & Aronson, 1995; Aronson, Lustina, Good, Keough, & Steele, 1999; Stone, Lynch, Sjomeling, & Darley, 1999)
- There is evidence of improved performance given the activation of positive stereotypes (Watson & Cohen, 2003), known as stereotype lift effects.

- For example, when a golf putting task was framed as diagnostic of "sports intelligence" White participants performed better than a control group, but when the task was framed as diagnostic of "natural athletic ability" they performed worse than control. The opposite pattern was found for Black participants (Stone et al., 1999).

Regulatory Focus
- A motivational mechanism that tunes sensitivity to gains and losses in the environment (Higgins, 1997)
  - Promotion focus increases sensitivity to gains
  - Prevention focus increases sensitivity to losses

- Posited as a stereotype threat mechanism
  - A negative stereotype induces a prevention focus and a positive stereotype induces a promotion focus (Seibt & Förster, 2004)

Regulatory Fit and Stereotype Fit
- Regulatory focus and stereotype effects depend on the match between focus and environment (Maddox, Markman, & Baldwin, 2007; Maddox, Baldwin, & Markman, 2006, Grimm, Markman, Maddox, & Baldwin, 2009)

	Gains	Losses
Positive stereotype ("Promotion")	Match	Mismatch
Negative Stereotype ("Prevention")	Mismatch	Match

- Match states tend to improve performance because individuals experiencing a match are more cognitively flexible than those in a mismatch, likely due to the engaged neural systems (e.g., Maddox & Ashby, 2004)
  - For example, women perform better on a GRE math test when focused on minimizing losses rather than maximizing gains (Grimm et al., 2009), in fact eliminating the classic stereotype threat effect for women in math. This improvement is due to the match between their negative math-related stereotype and the losses reward structure of the task.

Method

- 87 White undergraduates participated for course credit
- Fit was created between the focus (induced by stereotypes) and the reward structure of the golf putting task

Golf Putting Task with captured motor measures
- Each participant took 75 putts (15 putts in each of 5 blocks) on an indoor putting surface at a target 6 feet away

Stereotype (Global task stereotype): Between-subjects
- Told research on "natural athletic ability" OR "sports intelligence"
  - "Natural athletic ability" = Negative stereotype for White participants
  - "Sports Intelligence" = Positive stereotype for White participants

Reward structure (Local task goal): Between-subjects
- Half gained more points for good putts (Gains)
  - gained 4 points if on target or within 1 inch
  - gained 3 points if within 2 inches (but no better)
  - gained 2 points if within 3 inches (but no better)
  - or gained 1 point if more than 3 inches away

- Half lost fewer points for good putts (Losses)
  - lost 1 point if on target or within 1 inch
  - lost 2 points if within 2 inches (but no better)
  - lost 3 points if within 3 inches (but no better)
  - or lost 4 points if more than 3 inches away

- Participants recorded their gained/lost points after every putt
- They tracked their progress using a point meter on the screen and were trying to do better than the average putt reward (2.5 points) on every putt across the block

Gains

Losses

Gain points on every trial.
Gain more points for good putts

OR

Lose points on every trial.
Lose fewer points for good putts
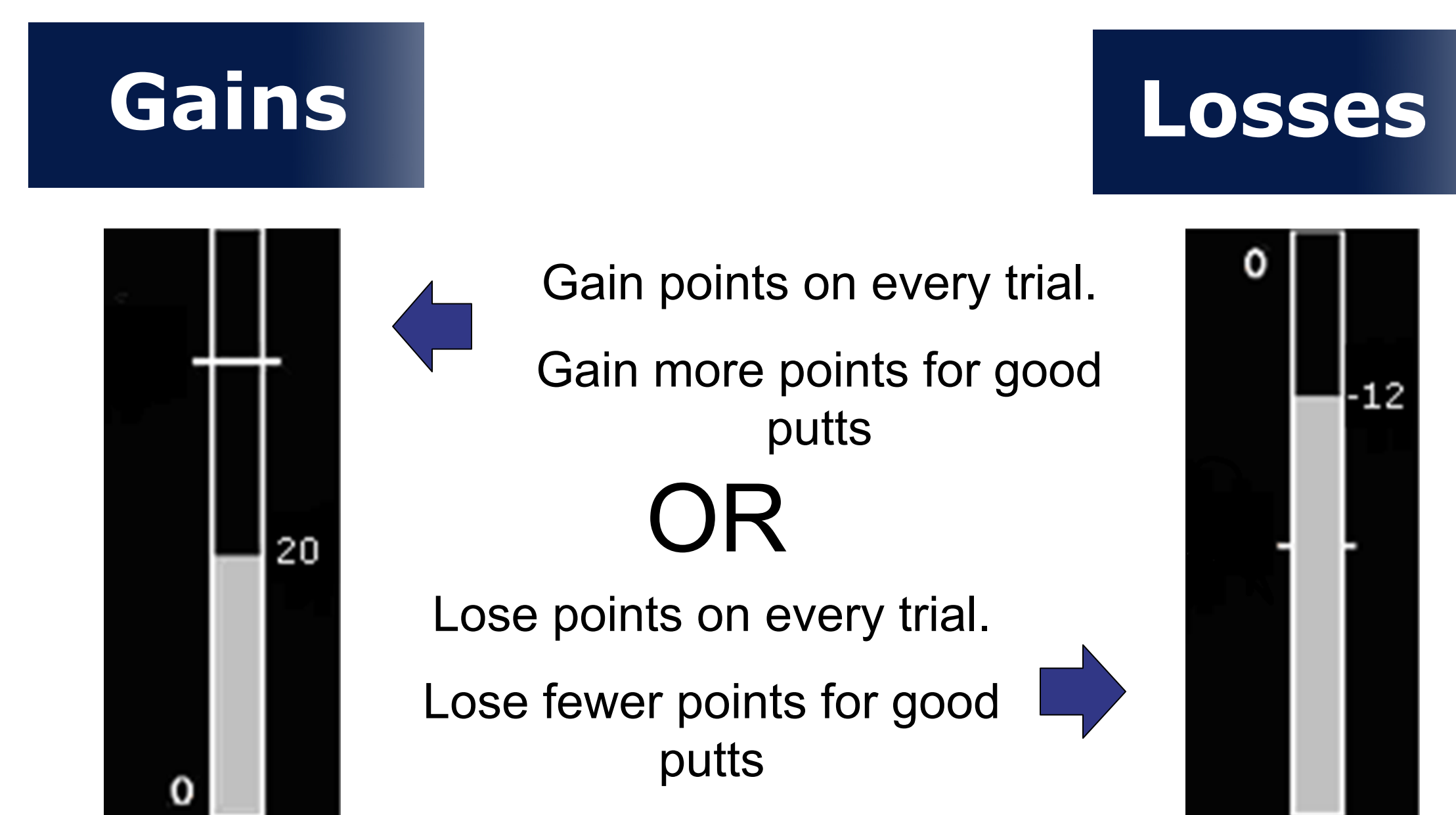
Hypotheses

- We predict that match groups will outperform mismatch groups during initial learning of the putting task. Our prior research demonstrated learning benefits of stereotype fit (Grimm et al., 2009) in category learning. For novice golfers, we expect that large shifts in technique are required to initially improve performance.
  - In the gains task, Sports Intelligence > Natural Athletic Ability
  - In the losses task, Natural Athletic Ability > Sports Intelligence
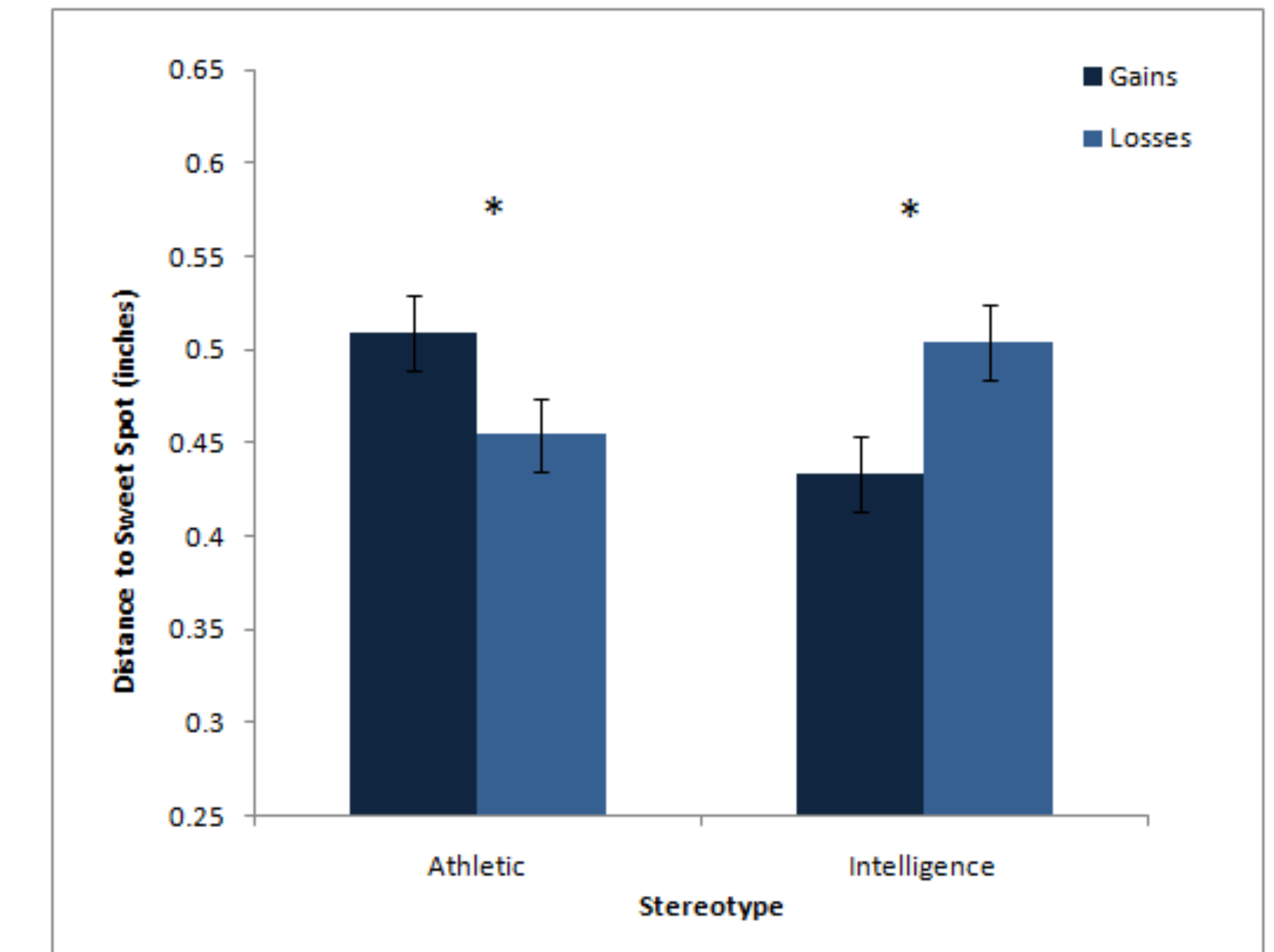
Results

Task Outcome Measures (losses groups reverse-scored)
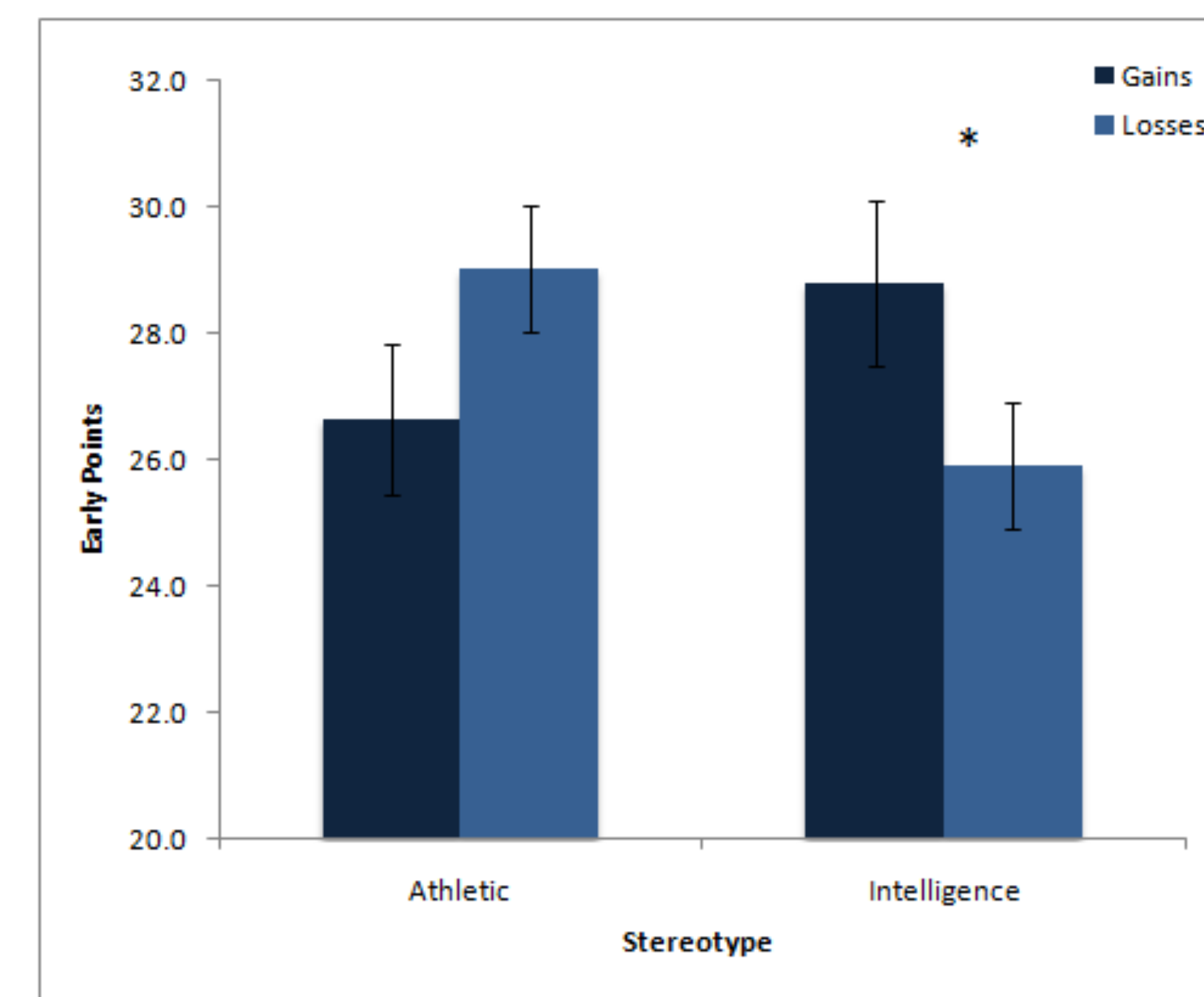
- Interactions found early in learning (above) and in overall performance (below)
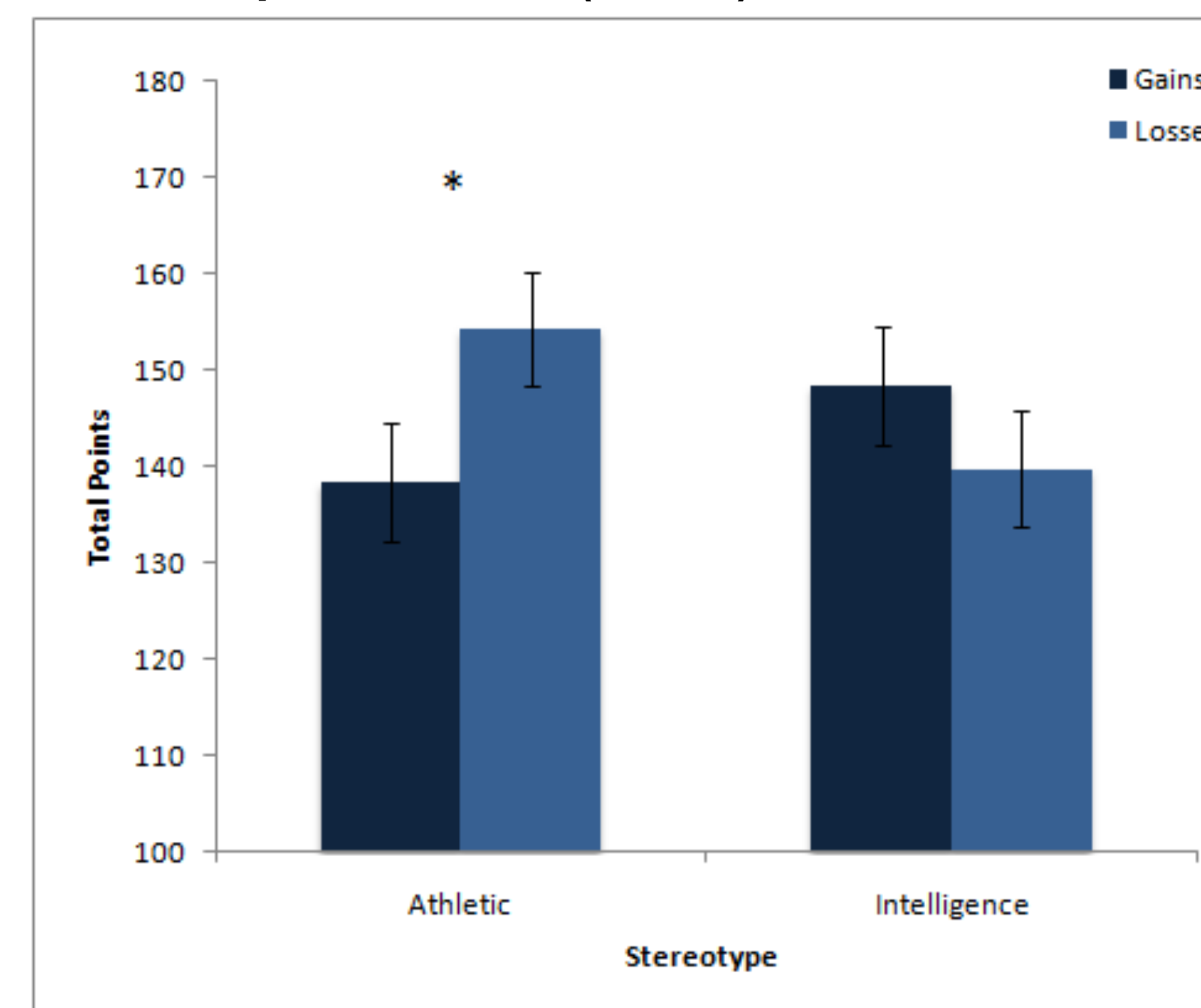
Motor Skill Measure as Covariate

- Distance to the sweet spot on the putter (measured in inches) is a covariate
  - Hitting the sweet spot eliminates putter rotation and so lower numbers are more optimal
  - Fit participants got consistently closer to the sweet spot as compared to mismatch participants.
  - Eliminates our fit interactions in task outcome measures
- Results Summary:
  - Significant interaction of Stereotype and Reward Structure both early in learning and overall using block points
    - White participants told the task assessed "natural athletic ability" performed better in the losses version relative to the gains version
    - White participants told the task assessed "sports intelligence" performed better in the gains version of the task relative to the losses version
  - Distance to the sweet spot is a covariate

Concluding Remarks

- Regulatory focus states interact with task reward structures to influence task performance.
- We demonstrate that primed stereotypes induce regulatory focus states. The athletic ability primed group (prevention focus) benefited significantly by being placed in a losses reward structure because this reward structure matches their induced focus, while the sports intelligence primed group (promotion focus) benefited by being placed in a gains reward structure because this structure matches their induced focus.
- Future research will focus on expert golfers to demonstrate the effects of fit and to demonstrate a reversal of all of the effects shown here by using Black students as research participants.

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