Coach Expectations and Athlete Lay Beliefs: Interactions When Predicting Adolescent Athletes’ Enjoyment and Intentions to Return

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To cite this article: M. Blair Evans, Matthew Vierimaa, Ross Budziszewski & Scott Graupensperger (2019): Coach Expectations and Athlete Lay Beliefs: Interactions When Predicting Adolescent Athletes’ Enjoyment and Intentions to Return, Journal of Applied Sport Psychology, DOI: 10.1080/10413200.2019.1570392

To link to this article: https://doi.org/10.1080/10413200.2019.1570392

Accepted author version posted online: 30 Jan 2019.
Published online: 26 Feb 2019.

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The purpose of this study was to explore how athlete lay beliefs and coach expectations for athletes’ capacity to change interact when predicting enjoyment and intentions to continue in sport. Athletes (N = 202) and their 19 coaches completed surveys. Athletes with strong incremental (i.e., growth) mind-sets reported more enjoyment from affiliation and expending effort. Athletes with strong entity (i.e., fixed) mind-sets reported lower enjoyment from self-improvement, affiliation, and excitement. Regarding interactions, although athletes reported lower intentions and self-improvement enjoyment when a coach believed they had little likelihood of developing, these associations were attenuated for athletes with strong incremental mind-sets.

Young athletes face a great deal of uncertainty regarding their potential to grow and develop. These beliefs are informed by numerous sources including comparisons with past performances as well as direct comparisons with peers and may provide evidence that often shifts from indicating they will be “all-stars” to stoking fears that their efforts to improve are futile. Faced with uncertainty, individuals look toward their lay beliefs as a “shortcut” or heuristic to predict development (Wilson & English, 2017). Specifically, people hold varying beliefs about the extent that talent and ability are fixed and described as a “gift” (entity beliefs), alongside beliefs about the degree that abilities are malleable with effort and can develop over time (incremental beliefs; Dweck, 1999). Like an intuition that individuals invest only when they think their money is well spent, individuals with an
innate belief that they can grow and develop are more willing to invest in their development—especially when faced with challenges that undermine their efforts (e.g., Levy, Stroessner, & Dweck, 1998).

Evidence from two decades of research support theoretical claims that incremental beliefs predict investment in educational tasks and educational attainment (Yeager & Dweck, 2012). When explaining this link, Dweck (2017) positioned lay beliefs as a valuable theoretical framework for understanding how personality, motivation, and development coalesce to influence behavior. Individuals use lay beliefs to view and judge their performances, and these beliefs contribute to mental representations related to their achievement-related beliefs, emotions, and action tendencies (Yeager & Dweck, 2012). Researchers and practitioners in educational settings thus commonly strive to encourage adaptive achievement behaviors by promoting incremental beliefs (termed a growth mindset) while reducing students’ entity beliefs (termed a fixed mindset). Nevertheless, it is important to note that a recent meta-analysis demonstrated only a weak association between lay beliefs and academic achievement (Sisk, Burgoyne, Sun, Butler, & Macnamara, 2018). The authors also revealed substantial heterogeneity, with results differing across context- and design-specific moderators (e.g., strongest relationship during childhood and adolescence; Sisk et al., 2018). As such, the impact of students’ lay beliefs may not have a strong effect on all achievement outcomes and may indeed differ depending on contextual factors.

Certainly, researchers from numerous domains have adopted lay theory constructs to understand conditions under which individuals succeed, including many contexts that differ from educational settings (Dweck, 1999). For instance, Warburton and Spray (2017) described how sport and physical activity contexts place unique pressures on lay beliefs because conceptions about athletic ability as “fixed” are often endorsed in these settings and shared among participants. Despite the value placed on abilities as a fixed characteristic in many sport environments, athletes who feel they have the potential to develop over time report greater enjoyment in sport and invest more into their involvement (e.g., Biddle, Wang, Chatzisarantis, & Spray, 2003). Furthermore, holding an incremental mindset is associated with outcomes or behaviors such as adopting mastery goals, reporting higher sport enjoyment, perceiving increased sport competence, and developing more autonomous motives among both adults and adolescents (Vella, Braithwaite, Gardner, & Spray, 2016). For instance, Gardner, Vella, and Magee (2018) conducted a study with 327 youth between 11 and 15 years of age, demonstrating that athletes’ enjoyment and intention to continue were both positively predicted by incremental beliefs, whereas athletes who endorsed high entity beliefs reported relatively lower enjoyment and intentions. Although sport places unique pressures on lay beliefs, the benefits of promoting incremental mind-sets are clear.

Lay beliefs also carry the property of being an individual difference, as incremental and entity beliefs are relatively consistent across contexts and over time (Dweck, 1999). Nevertheless, lay beliefs are also shaped within developmental environments. Specifically, in educational settings, learning environments can be structured in ways that foster a student’s beliefs in their ability to grow and develop (Yeager & Dweck, 2012). Accordingly, it is prudent for coaches to consider behaviors that convey incremental mind-sets by supporting task orientations and focusing on individual development (Vella, Cliff, Okely, Weintraub, & Robinson, 2014). In addition to promoting incremental mind-sets, the lay beliefs held by coaches and physical educators also shape their behavior (Leroy, Bressoux, Sarrazin, & Trouilloud, 2007). It is interesting, however, that little is known about the beliefs or expectations that coaches form about individual athletes’ potential to develop.
Research focusing on individualized coach expectations hearkens back to Pygmalion effects (Rosenthal & Jacobson, 1968) by focusing on how coach expectations lead to self-fulfilling behaviors. For example, Rejeski, Darracott, and Hutslar (1979) used coach observations and demonstrated how coaches directed less reinforcement and technical instruction toward athletes who they rated as low ability. Building from this foundation, Horn, Lox, and Labrador (2015) detailed a four-stage self-fulfilling process beginning with coach expectations, which in turn produce a sequence including (a) coach behaviors that convey these expectations (e.g., increased feedback or resources to athletes with higher expectations), (b) athletes interpreting expectations from others in their environment, and (c) athletes behave in ways that align with expectations. Although this process is often elicited by overt behavior (e.g., feedback), coaches also convey expectations in covert ways, such as those described in research involving relation-inferred self-efficacy (e.g., Saville et al., 2014). Despite research demonstrating self-fulfilling processes, research within physical education revealed that links between teacher expectations for a student’s swimming ability and the student’s outcomes were not because of self-fulfilling behaviors but, rather, because the teacher’s initial evaluations were accurate reflections of swimming standardized testing scores (Trouilloud, Sarrazin, Martinek, & Guillet, 2002).

Moving beyond the conflicting evidence about how coach expectations influence athlete outcomes, another pathway for studying coach expectations is to consider more generally what they convey about an athlete’s potential. How do athletes respond when confronted with coaches who believe they have relatively little potential for growth and development? This question is relevant considering that negative coach expectations, or even overt deselection, are widespread experiences for many young athletes (Neely, Dunn, McHugh, & Holt, 2016). Indeed, low coach expectations are a negative sport experience that could harm sport enjoyment and push youth away from sport (Barnett, Smoll, & Smith, 1992; Wilson, Cushion, & Stephens, 2006). By extension, it is important to contrast the relative role of coaches’ expectations alongside research findings demonstrating a link between athlete lay beliefs and sport enjoyment and intention to continue (Gardner et al., 2018; Vella et al., 2016).

Late adolescence is a particularly critical developmental period when coach and athlete beliefs may impact sport involvement. Coach evaluations of athletes and even overt deselection experiences are especially salient for athletes competing during adolescence (Neely et al., 2016) and are likely to shape sport enjoyment. Furthermore, although sport dropout emerges as a concern in early adolescence, patterns of youth withdrawing from sport continue to be a target for sport researchers throughout adolescence (Balish, McLaren, Rainham, & Blanchard, 2014; Fraser-Thomas, Côté, & Deakin, 2008). Especially as athletes progress through adolescence, social cognitions (i.e., intentions) become important predictors of whether youth remain in sport (e.g., Gardner, Magee, & Vella, 2017).

The purpose of the current study was to explore how athlete lay beliefs, and coach expectations for athletes’ capacity to change, interact when predicting athlete enjoyment and intentions to continue in sport. In line with recent evidence (e.g., Gardner et al., 2018), we expected that athletes would report high enjoyment across numerous dimensions and intentions to return to sport when they held high incremental beliefs, and low entity beliefs. Important to note, we expected that coach beliefs that an athlete has limited potential to develop with time would be associated with lower intentions to return and lower sport enjoyment. Perhaps most notably, we expected that athletes with strong incremental mind-sets may be less sensitive to coach beliefs that they cannot change. As such, we examined interactions between coach beliefs and athlete-reported lay beliefs, with the
expectation that the association between coach beliefs and athlete intentions/enjoyment would be weaker for youth with high incremental beliefs. In addition to the practical benefits of understanding coach beliefs, the theoretical implications of this research align with recent suggestions to examine how the effects of implicit beliefs on enjoyment may be shaped by interactions with social figures like coaches, parents, and peers (Gardner et al., 2018).

METHODS

Participants and Procedures

Participants included both athletes and their coaches from 19 teams with an average of 10.63 members ($SD = 3.75$). The sample included 202 adolescent athletes between the ages of 14 and 18 ($M_{age} = 15.40$ years, $SD = 1.20$, 70% male), located in one northeastern state as well as one western state within the United States. All participants reported competing at a regionally competitive level, whereby athletes traveled throughout their region. Teams and the athletes on them varied in competitive ability; however, at least some athletes and coaches reported that members intended to be selected to compete at higher levels (e.g., collegiate level; state or national level). Although the sample comprised primarily youth soccer players (72%), it also included baseball, basketball, volleyball, and jump rope teams. Athletes reported having participated in their current sport for 8.53 years ($SD = 3.32$), having played for their current coach for an average of 2.09 years ($SD = 2.65$), and reported training for an average of 5.63 hr per week ($SD = 3.07$). Nineteen coaches also completed surveys ($M_{age} = 31.48$, $SD = 9.62$, 84% male).

After obtaining approval from the authors’ Institutional Review Boards as well as sport organizations, coaches were invited to have their teams participate in the study. For interested teams, all athletes initially received a description of the study and were provided with consent documents to bring to their families. The research team returned to a later practice, where athletes provided assent and completed surveys. Coaches also provided consent and completed coach surveys following practice ($n = 11$) or using an online version ($n = 8$). All data collection took place during the latter portion of each team’s season (i.e., within the final 8 weeks of competition). Although 274 athletes from 25 teams completed the survey, this sample included only teams for which completed coach responses were received.

Measures

Athlete Descriptive Items

Athletes reported key items regarding themselves (e.g., age, sex) and their sport involvement (e.g., years of involvement, hours per week spent training with team).

Athlete Incremental and Entity Mindsets

Implicit incremental and entity mind-sets were measured using the Conceptions of the Nature of Athletic Ability Questionnaire–2 (CNAAQ-2; Biddle et al., 2003). The questionnaire includes 12 items targeting four subscales with three items each, whereby incremental beliefs represent a higher order factor for subscales of Learning (three items; e.g., “You need to learn and to work hard to be good at sport”) and
Improvement (three items; e.g., “How good you are at sport will always improve if you work at it”). Meanwhile, entity beliefs represent a higher order factor for Giftedness (three items; e.g., “To be good at sport you need to be naturally gifted”) and Stability subscales (three items; e.g., “It is difficult to change how good you are in sport”). Participants completed all items on a 5-point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). Despite this structure, it is common for researchers to cluster these within the higher order factors only (e.g., Gardner et al., 2018), which is the approach that we adopted. Considering the simplified factor structure of only entity and incremental beliefs, we reduced items to reduce survey length and to enhance readability, resulting in two five-item subscales. We removed two items that we identified as being more challenging for youth to interpret: “To reach a high level of performance in sport, you must go through periods of learning and training” and “To reach high levels of performance, you need to be born with the basic qualities that allow success.”

**Athlete Sources of Enjoyment**

The sources that athletes derive enjoyment through within sport were measured using the Sources of Enjoyment in Youth Sport Questionnaire (Wiersma, 2001). This scale uses the stem “During the times when I most enjoy sport, I usually experience that enjoyment from …” followed by items rated using a 5-point Likert-type scale from 1 (not at all) to 5 (very much so). We used 24 items spanning dimensions of self-referenced competency (four items; e.g., playing well compared to how I’ve played in the past), other-referenced competency (six items; e.g., doing skills other kids my age can’t), effort expenditure (five items; e.g., playing hard during competition), affiliation (five items; e.g., making new friends), and competitive excitement (four items; e.g., the excitement of competition). Although the original survey includes an additional four-item Parental subscale, this dimension was not central to the current study, and these items were therefore not used.

**Athlete Intentions to Return**

Athletes completed two items rating the likelihood of returning to their current coach and likelihood of returning to their current sport in the subsequent athletic season. Participants were specifically prompted with one item reflecting return to sport (i.e., “How likely are you to return to playing this sport next season?”) and one item reflecting return to coach (i.e., “If you had the choice to return to play with your current coach next season, would you?”). Participants responded using a 1 (not at all) to 5 (very likely) Likert-type scale. These items are similar to those used by Gardner et al. (2018), who demonstrated that intentions were significant predictors of sport dropout.

**Coach-Reported Items**

Coaches first completed items describing themselves and their background in coaching, followed by a set of three items specific to each athlete on their team roster representing their beliefs about the stability of each athletes’ athletic ability. They were prompted with a statement preceding sets of items for each member of their roster: “For each set of items, we ask that you indicate a single athlete from your team, and complete that set of items in regard to your experiences with that athlete. This questionnaire is designed to assess your mind-sets about your athletes.” Coaches reported their expectations for each athlete’s development using items adapted for this study from the Stable subscale of the validated
athlete-reported CNAAQ-2 (Biddle et al., 2003). Using a 1 (not at all) to 5 (very much so) scale, coaches reported the extent that they agreed with the three items for every athlete on their team (i.e., “Even if this athlete tries, the level he or she reaches will change very little”; “It is difficult to change how good this athlete is”; “The athlete has attained a certain level in sport, and cannot do much to change that level”).

Planned Analyses

We sought to analyze how coach and athlete beliefs interacted when predicting enjoyment and intentions to return using a mixed-effects (i.e., multilevel) model, accounting for nesting within 19 teams and coaches. Notably, in addition to the nonindependence introduced by the nesting of athlete responses within teams, repeated coach evaluations (i.e., coaches reported on numerous athletes) mean that responses from the same coach are likely to share variance. This clustering fails to meet assumptions of traditional regression. To assess the degree to which variance was attributable to clustering within teams and to assist when calculating the amount of variance predicted, null models were first estimated using random-intercepts. We then employed mixed-effects models with restricted maximal likelihood estimation using SPSS. Restricted maximal likelihood estimation is an estimation method that accounts for the nonindependence of observations within regressions while producing estimates that are more robust to a smaller number of clusters (McNeish & Stapleton, 2016). Because athlete-level data were of central interest and because of the small number of teams, we did not decompose athlete- and team-level effects. Considering this, conditional models included fixed effects for core predictors (i.e., athlete incremental mind-set, athlete entity mind-set, coach expectations) and interaction terms with all factorial combinations, whereby intercepts varied randomly by team. In cases where significant interaction terms were identified, simple slopes analyses were conducted to describe the nature of effects at different levels of the moderator.

RESULTS

Table 1 displays bivariate correlations and descriptive statistics, along with internal consistency values for scale-scored constructs. Although most variables met assumptions for mixed models, intentions to return items (coach and sport) were negatively skewed, whereby most athletes indicated a 5 on 1-to-5 scales. As such, both items were transformed using the square root of raw values.

Regarding the evaluation of scales, acceptable internal consistency was evident (see Table 1). Although Cronbach’s alpha values included .63 (entity belief) and .71 (incremental beliefs), these values are similar to those reported in past literature (e.g., Gardner et al., 2018). In addition, we conducted a confirmatory factor analysis to confirm factor structure for the CNAAQ-2, considering minor changes in items and scale structure. We tested a two-factor structure where the two latent dimensions were allowed to correlate, using the COMPLEX function (MPlus software) to account for data nested within coach/team (i.e., corrects chi-square statistics and standard errors; Muthén & Muthén, 2015). Fit statistics were acceptable (comparative fit index = 0.86, root mean square error of approximation = 0.07, standardized root mean square residual = 0.06), 90% confidence interval [0.05, 0.09]. Although these statistics near thresholds for fit, they demonstrate that the model fit acceptably and approximated values reported by Biddle et al. (2003) for a two-factor solution.
### Table 1: Bivariate Correlations with Coach- and Athlete-Reported Constructs

<table>
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<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<tbody>
<tr>
<td>1. Coach expectations&lt;sup&gt;a&lt;/sup&gt;</td>
<td>(.82)</td>
<td></td>
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<td></td>
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<tr>
<td>2. Incremental beliefs</td>
<td>-.01</td>
<td>(.71)</td>
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<td></td>
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<td></td>
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<tr>
<td>3. Entity beliefs</td>
<td>-.07</td>
<td>-.18&lt;sup&gt;b&lt;/sup&gt;</td>
<td>(.63)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4. Enj. self-referent</td>
<td>.02</td>
<td>.25&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.18&lt;sup&gt;*&lt;/sup&gt;</td>
<td>(.68)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>5. Enj. effort</td>
<td>.02</td>
<td>.29&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.10</td>
<td>.57&lt;sup&gt;***&lt;/sup&gt;</td>
<td>(.75)</td>
<td></td>
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<tr>
<td>6. Enj. other-referent</td>
<td>-.04</td>
<td>.03</td>
<td>-.04</td>
<td>.17&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.08</td>
<td>(.80)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Enj. affiliation</td>
<td>-.03</td>
<td>.29&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.14&lt;sup&gt;*&lt;/sup&gt;</td>
<td>.30&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.45&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.04</td>
<td>(.82)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Enj. excitement</td>
<td>-.04</td>
<td>.25&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.15&lt;sup&gt;*&lt;/sup&gt;</td>
<td>.51&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.52&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.31&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.33&lt;sup&gt;**&lt;/sup&gt;</td>
<td>(.65)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Intentions (sport)</td>
<td>-.30&lt;sup&gt;*&lt;/sup&gt;</td>
<td>.18&lt;sup&gt;*&lt;/sup&gt;</td>
<td>.02</td>
<td>.09</td>
<td>.08</td>
<td>.05</td>
<td>.02</td>
<td>.14&lt;sup&gt;*&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Intentions (coach)</td>
<td>-.08</td>
<td>.10</td>
<td>.03</td>
<td>.13</td>
<td>.08</td>
<td>-.05</td>
<td>.11</td>
<td>.05</td>
<td>.33&lt;sup&gt;**&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td><strong>M (SD)</strong></td>
<td>2.89 (1.12)</td>
<td>4.35 (.59)</td>
<td>2.13 (.60)</td>
<td>4.46 (.52)</td>
<td>4.31 (.57)</td>
<td>3.67 (.76)</td>
<td>4.12 (.70)</td>
<td>4.43 (.57)</td>
<td>4.78&lt;sup&gt;b&lt;/sup&gt; (.53)</td>
<td>4.49&lt;sup&gt;b&lt;/sup&gt; (.78)</td>
</tr>
</tbody>
</table>

<sup>Note</sup>. All variables scored from 1 to 5. Also note that Cronbach’s alpha values appear on the diagonal. Enj. = enjoyment.

<sup>a</sup>Note that coach expectations represented beliefs about stability for each athlete, so a high value indicated coach beliefs that an athlete had less potential for learning and development.

<sup>b</sup>Although untransformed means/standard deviations are reported for intentions to return, the values used for correlations and models were transformed using the square root.

<sup>*p < .05. **p < .01.</sup>
Regarding the clustering of responses within team, athlete responses varied primarily between individuals (see Table 2). Notably, intraclass correlation coefficients demonstrated that from 3% to 6% of variability in athlete-reported variables (e.g., lay beliefs) was attributable to the team level. Nevertheless, 41% of variability in coach beliefs was attributable to differences between teams—supporting our decision to specify random intercepts by group.

Table 2 reports results of the mixed-effect models. The marginal $R^2$ values are those associated with the fixed effects, whereas the conditional $R^2$ values are those of the fixed effects plus the random effects. Although no significant predictors were identified for athlete intentions to return to coach and other-referenced enjoyment, significant effects were evident in all remaining models. Regarding main effects, coach expectations were a significant predictor of athletes’ intentions to return to sport. Athlete incremental beliefs were positively associated with enjoyment from effort expenditure and enjoyment through affiliation. In contrast, athlete entity beliefs were negatively associated with enjoyment through self-improvement, enjoyment through affiliation, and enjoyment through competitive excitement.

These main effects were qualified by interactions in two models, whereby intentions to return to sport and enjoyment through self-improvement were predicted by interaction terms featuring athlete incremental mind-sets and coach expectations. Revealed in Figure 1a, intentions to return to the current sport were negatively associated with coach expectations for athletes with low incremental mind-sets ($B = -.11$, $p = .03$). For athletes with higher incremental mind-sets, the association between coach beliefs and intentions was not evident ($B = .01$, $p = .94$). As shown in Figure 1b, enjoyment derived from self-improvement held a weak negative association with coach beliefs for athletes with low incremental mind-sets ($B = -.16$, $p = .02$). For athletes with high incremental mind-sets, this association was not evident ($B = .14$, $p = .30$).

**DISCUSSION**

Although previous research has established connections between incremental mind-sets and adolescents’ experiences in sport (Gardner et al., 2018), the current research is the first to have explored interactions between coach and athlete beliefs within these associations. As expected, athletes’ own incremental beliefs about sport development were positively associated with enjoyment derived from expending effort and affiliation, whereas entity beliefs were negatively associated with several sources of enjoyment (i.e., self-improvement, affiliation, and competitive excitement). The interaction findings were most closely aligned with the goals of this study. Incremental beliefs moderated the association between coach beliefs and intention to return to sport as well as enjoyment from self-improvement, revealing that incremental mind-sets may protect athlete experiences, even when young athletes are faced with challenging beliefs from important others.

From a theoretical and methodological perspective, the novelty in this research is that it examined coach beliefs about the stability of individual athletes’ ability on their team, whereas previous research targeted beliefs pertaining to current skill levels (e.g., Trouilloud et al., 2002). Given the novelty of examining such beliefs, it is important to consider that although coach beliefs had limited main effects on variables measured in the current study, their interaction with incremental mind-sets signals that those expectations could be communicated to athletes through unspoken or overt channels. Generally, these findings echo recommendations of Sisk et al. (2018), who revealed weak direct associations between lay beliefs and academic achievement through meta-analysis but who
Table 2
Mixed-Effect Models

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Intentions</th>
<th>Enjoyment sources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Return to sport</td>
<td>Return to coach</td>
</tr>
<tr>
<td><strong>Fixed effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>2.22 (.01)**</td>
<td>2.11 (.03)**</td>
</tr>
<tr>
<td>Incremental beliefs</td>
<td>.01 (.02)</td>
<td>.03 (.03)</td>
</tr>
<tr>
<td>Entity beliefs</td>
<td>-.15 (.07)†</td>
<td>-.05 (.07)</td>
</tr>
<tr>
<td>Coach beliefs</td>
<td>-.05 (.01)**</td>
<td>-.01 (.01)</td>
</tr>
<tr>
<td>Incremental × Entity</td>
<td>.01 (.03)</td>
<td>-.02 (.04)</td>
</tr>
<tr>
<td>Incremental × Coach</td>
<td>.06 (.02)**</td>
<td>.03 (.02)</td>
</tr>
<tr>
<td>Entity × Coach</td>
<td>.03 (.02)</td>
<td>-.02 (.02)</td>
</tr>
<tr>
<td>Incremental × Entity × Coach</td>
<td>-.02 (.03)</td>
<td>-.05 (.04)</td>
</tr>
<tr>
<td><strong>Model fit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICC (Null / Final)</td>
<td>.02/.04</td>
<td>.13/.15</td>
</tr>
</tbody>
</table>

Note. ICC = intraclass correlation coefficient.

*There are numerous approaches to calculating $R^2$ when using mixed-effect models. In the current case, conditional $R^2$ values represent the total variance accounted for when combining the fixed effects (predictors) plus random effects (team membership), whereas marginal $R^2$ values are those associated with only the fixed effects.

†$p < .05$. **$p < .001$.

Bolded values indicate significant coefficients ($p < .05$).
encouraged researchers to explore context-specific moderators—in our case, the interaction between coach and athlete beliefs.

Of interest, coach beliefs were not correlated with athletes’ fixed or incremental beliefs. We identify two explanations for this lack of an association. First, it could be that coaches look toward different sources than athletes when judging potential or that coach expectations are not directly communicated. For example, coaches consider a diverse set of sources of information when assessing athlete ability and provide differential feedback and praise to athletes depending on evaluations (Solomon, 2008). Second, although theories of coaching behavior indicate that coach beliefs about athlete ability impact their interactions with youth (Horn et al., 2015), it could be that athletes’ lay beliefs are resistant to the behaviors of a given coach. Regardless of the explanation, these findings support the notion of incremental beliefs as a protective factor for youth athletes (Gardner et al., 2018), because athletes with strongly held incremental mind-sets may retain intentions to return to their current sport and enjoyment from self-improvement despite coach beliefs that may conflict with their own.

These results should be considered alongside limitations of this research. Notably, athlete reports for intentions and enjoyment were near the highest value of their scales, which constrained variability in athlete responses and may reduce the generalizability of these findings to athletes with more negative sport experiences. Of interest, although the data revealed that most participants intended to remain in their sport, this is consistent with related research in which only 8% of youth dropped out in a given year (Gardner et al., 2017). Pertaining to measurement of intentions, it should also be noted that we asked youth about the “likelihood” of continuing with sport. Our measurement approach follows that of previous sport researchers, using likelihood of returning to represent intentions for future sport involvement (e.g., Donkers, Martin, & Evans, 2018). However, it is possible that youth respond differently to regarding likelihood than discrete intentions, whereby unique factors influence likelihood of returning compared to other forms of intention. Furthermore, although coach belief items were adapted from the gold standard tool for athlete lay beliefs (Biddle et al., 2003), the scale is not yet validated for coach respondents. As such, future validation research is critical and should specifically seek to validate a
scale used to examine coach expectations across numerous dimensions (e.g., stability, giftedness, learning, development) and assess potential confounders.

The interpretation of these findings should also be considered in light of the current context of community-based competitive sport for youth 14–18 years of age. Compared to the current study, youth sport researchers have studied a broader age range (e.g., 7–20 years of age) and has demonstrated that sport dropout often begins in early adolescence (Balish et al., 2014). Indeed, existing studies that examined how lay beliefs are associated with sport attrition considered younger age groups (Gardner et al., 2018). Although there is limited evidence to predict how these processes will differ across development, we expect that younger athletes’ lay beliefs may be more responsive to social influences, and it may be comparatively more important to incorporate perceptions of those beyond the coach (e.g., parent beliefs). To best understand the unique ways that lay beliefs relate to sport engagement throughout development, it may be theoretically important to study these associations in samples spanning developmental phases.

In relation to youth sport coaching, these findings provide further support for holding strong incremental beliefs and weaker entity beliefs. Focusing on the potential to mold and shift lay beliefs, it is essential that coaches signal to athletes that there is potential to develop and that athletic ability is changeable. Indeed, sport coaching interventions have been designed to teach coach behaviors that convey incremental mind-sets by supporting task orientations and focusing on individual development (Vella et al., 2014). As such, coaches can act in ways that promote incremental mind-sets through strategies that direct youth’s attention and coach feedback toward personal development.

Although researchers have focused on coaches’ skill sets for promoting an incremental mind-set among athletes, the current findings highlight the potential to (a) influence coaches’ own beliefs about athletes’ potential to develop and (b) identify other mechanisms to support athletes’ incremental beliefs. Within the educational setting, for example, negative teacher beliefs about a student’s potential to develop are particularly harmful for low-achieving students, as it produces shared helplessness among both student and teacher (Heyder & Brunner, 2018). Efforts to shift leaders’ mind-sets about their followers have been met with some success, as demonstrated by an incremental mind-set induction intervention that effectively shifted workplace managers’ mind-sets about their followers and produced more helping behaviors (Heslin, Vandewalle, & Latham, 2006). Heslin et al. (2006) specifically engaged managers in a 90-min workshop, including scientific testimony regarding an incremental mind-set, counter attitudinal ideas and reflections (e.g., reflect on one’s own personal growth), and cognitive dissonance induction (e.g., recalling situations where proteges developed, who they did not expect would improve). Considering the impact of coach beliefs, it may even be useful to find ways to support athlete incremental beliefs in ways that may “work around” the coach. Specifically, sport programs could consider employing tactics used to promote incremental mind-sets directly to youth athletes, as opposed to through their coaches. Drawing from the strategies used in large-scale educational interventions (see Yeager & Dweck, 2012), such interventions may entail educating youth about malleability in sport skills, asking youth to provide feedback to teammates about their potential to develop, and providing youth with information about the forms of training they may use to improve.

In conclusion, the current study identified how athletes’ incremental beliefs as well as coach expectations independently predicted enjoyment and intentions and identified two cases in which the interaction between coach and athlete beliefs was significant—indicating a meaningful moderation effect. These findings contribute to growing evidence that social environments may interact with athletes’ beliefs and orientations (e.g., Gardner et al., 2018) and support the development of practical strategies to influence coach behavior.
FUNDING
Scott A. Graupensperger is supported by the National Center for Advancing Translational Sciences of the National Institutes of Health (NIH) Award TL1TR002016. The content is solely the responsibility of the authors and does not necessarily represent the official views of NIH.

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