Perfectionism and Achievement Goal Relationships

Abstract

The purpose of this research is to determine whether relations between achievement goals and achievement outcomes are mediated by state perfectionism. We tested mediation models derived from Whole Trait Theory (Fleeson, 2012), which proposes that context-specific goals can cause changes in personality states and relevant outcomes. In Study 1, we found that different achievement goals on a typing test predicted typing accuracy and state positive affect, and these relations were mediated by different dimensions of state perfectionism. Most notably, the results suggest that mastery-approach goals (either self or task related) predict both typing accuracy and positive affect through state high personal standards. Hence, in Study 2, we situationally-induced high personal standards by emphasizing typing accuracy, and compared this perfectionism condition with two control conditions (i.e., speed control and do-you-best control). In line with the findings in Study 1, the results show that typing accuracy (but not positive affect) increased the most in the perfectionism condition. Implications of these results for future investigations of achievement processes are discussed.

The improvement and prediction of successful performance has been a heavily researched topic across many domains of psychology, each domain exploring various constructs to explain how people can attain their full potential (Judge & Bono, 2001; Hatzigeorgiadis, Zourbanos, Galanis, & Theodorakis, 2011; Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004). Whether it is the athlete trying to beat the competition or the student trying to improve a poor grade, the key predictors for successful performance can vary greatly across achievement domains. While there may be different indices for successful performance, task accuracy is generally the common benchmark for success or failure across domains. At a fundamental level, accuracy is the effective utilization of resources on a task. Accuracy on exams generally means that the students have learned the course material. In an organizational context, accuracy means that colleagues can rely on each other to their job and not spend organizational resources fixing...
errors. However, successful performance also should include elements beyond concrete success and failure, such as its impact on one’s affect.

The purpose of this research is to determine whether desirable performance outcomes, specifically task accuracy and state positive affect, can be explained by achievement goals and state perfectionism. We focus on achievement goals that are aimed at acquiring positive outcomes (i.e., approach goals) because desirable performance outcomes typically has been found with approach goals only (Baranik, Stanley, Bynum, & Lance, 2010; Hulleman, Schrager, Bodmann, & Harackiewicz, 2010; Van Yperen, Blaga, & Postmes, 2014a). Specifically, in the present study, we investigated how approach goals predicted different types of state perfectionism, and subsequently, task accuracy and state positive affect. This is important for at least two reasons. First, our studies serve to explore different achievement processes to determine if state perfectionism can be used as a means to attain one’s achievement goals. Personality states can be viewed as a means to achieving one’s goals (McCabe & Fleeson, 2012), and this research applies this theoretical idea in achievement processes. Second, the present research tackles a debated question of whether perfectionism can actually benefit performance. Perfectionism is often viewed as a negative trait that causes people to second-guess themselves and become upset over their mistakes; however, perfectionism also has a positive element that pushes people to set high standards for themselves (Flett & Hewitt, 2002; Slaney, Rice, Mobley, Trippi, & Ashby, 2001). By investigating different types of achievement goals, different types of state perfectionism, and different types of performance outcomes, we intend to add new evidence to this debate.

Whole Trait Theory: Integrating Personality and Situations

Whole Trait Theory (Fleeson, 2001; 2012) proposes a process model that integrates personality traits and social contexts. This theory shifts attention from general, broad measures of personality traits to specific, momentary measures of personality states. While differences between-people are important, studies have shown that differences between people are less than the variation in individual behavior from moment to moment (Noftle & Fleeson, 2009). For
example, people may be very extraverted in one moment and very quiet the next moment—for extraverts and introverts alike. Whole Trait Theory proposes that these fluctuations in personality states are caused by external factors, such as changes in situations, or internal factors, such as changes in motivation.

One specific part of Whole Trait Theory is the Specific States and Functions Hypothesis (SSFH; McCabe & Fleeson, 2012). The SSFH proposes that changes in personality states are caused by changes in relevant context-specific goals that people are pursuing in a given moment. The personality state serves as the process or means by which people pursue their goals. As personality states change, they also cause subsequent changes in relevant outcomes (e.g., state extraversion increasing state positive affect or state conscientiousness improving performance; Ozer & Benet-Martinez, 2006). The current studies serve to apply this SSFH model of goal-state relations by examining whether achievement goals, through state perfectionism, predicted important achievement outcomes of performance and state affect. This model is presented in Figure 1, and we provide an overview of all variables and paths of this model in the following sections.

**Achievement Goals: The 3 x 2 Framework**

Traditionally, achievement goal research defined two types of goals: mastery and performance goals (Dweck, 1986; Nicholls, 1984). These goals differed in how individuals define their competence in an achievement context. Specifically, mastery goals use task-referenced competence standards (e.g., a student’s grade on homework in the same course) and self-referenced competence standards (e.g., a student’s grades in similar classes). Alternatively, performance goals are other-referenced competence standards (e.g., class average grade). Elliot and colleagues extended this dichotomous model, first with the 2 x 2 framework (Elliot & McGregor, 2001), and recently with the 3 x 2 framework (Elliot, Murayama, & Pekrun, 2011). Both frameworks comprise two dimensions for achievement goals. The first dimension is the definition of competence, which can be task-referenced, self-referenced, or other-referenced. The second dimension is the valence of competence, which indicates when people strive to
approach competence or to avoid incompetence. For this study, we focused solely on approach goals, which are the types of goals that positively related to task performance (Hulleman et al., 2010; Van Yperen et al., 2014a). In the present research, we evaluated participants’ performance on a typing task. We focused on specific achievement outcomes: typing accuracy and state affect (positive and negative). Our hypothesized relations between achievement goals and these outcomes are explained as foundations for the relevant achievement processes in our model (see Figure 5.1).

**Figure 5.1.** Theoretical Model.

**Task-approach goals and self-approach goals.** Task-approach goals and self-approach goals are branched from mastery-approach goals in the 2 x 2 framework. The key difference is that task-approach goals evaluate competence based on the demands of a task, while self-approach goals evaluate competence from previous experience or future potential (Elliot et al., 2011). As the 3 x 2 framework is still new, the achievement processes of task-referenced goals versus self-referenced goals are still in progress. Because these goals focus on task mastery and self-improvement, we expect task-accuracy to be a critical criterion for performance self-evaluation. Moreover, the pursuit of these task-approach and self-approach goals should be related to state positive affect. Both approach goals and positive affect share an underlying core of approach temperament (Elliot & Thrash, 2002). As such, we expect that both task-approach
goals and self-approach goals would only relate to typing accuracy and state positive affect. Empirical support for this prediction is from research on mastery-approach goals, which are related to intrinsic motivation, self-improvement, and cooperative behavior (Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008; Poortvliet et al., 2009). For outcomes relevant to this study, mastery-approach goals have been positively related to general performance attainment and trait positive affect in meta-analyses of self-report studies (Baranik et al., 2010; Hulleman et al., 2010) and a meta-analysis of experimental studies (Van Yperen, Blaga, & Postmes, 2015). In applying this evidence with our theoretical approach, we predict the following:

H1: Both task-approach goals and self-approach goals are positively related to typing accuracy and state positive affect during the task.

**Other-approach goals.** Other-approach goals are analogous to performance-approach goals from the 2 x 2 framework (Elliot et al., 2011). Other-approach goals are a hybrid of a positive component (approach valence) and a negative component (the focus on other-referenced competence). This hybrid construct is manifest in the achievement process, in which other-approach goals have both positive and negative antecedents and consequences. These antecedents include relations to both need for achievement and fear of failure (Elliot & McGregor, 2001), and both trait positive affect and trait negative affect (Van Yperen, 2006). Moreover, the consequences of other-approach goals include better performance and higher perceived competence (Baranik et al., 2010; Hulleman et al., 2010; Van Yperen et al., 2015; Van Yperen & Renkema, 2008), but also higher scores on affect, both positive and negative (Van Yperen, 2006). Indeed, other-approach goals have a “roller-coaster profile,” in which people may attain extreme positive consequences when successful, but also extreme low points when confronted with the chance of failure (Harackiewicz & Elliot, 1995; Van Yperen, 2006). Reflective of these findings, we expect that other-approach goals should have positive relations with performance. Moreover, we expect that state positive affect and state negative affect should be related to other-approach goals.
H₂: Other-approach goals will be positively related typing accuracy, state positive affect, and state negative affect.

**Achievement Goals and State Perfectionism**

State perfectionism is defined as striving for flawlessness in a given moment. State perfectionism is an extension of multidimensional perfectionism that was developed in the 1990’s (Frost et al., 1990; Hewitt & Flett, 1991). The State Multidimensional Perfectionism Scale (SMPS; Chapter 4) investigates three dimensions of state perfectionism: personal standards, concern over mistakes, and doubts about actions. Personal standards is setting very high standards for oneself (Flett & Hewitt, 2002). Concern over mistakes is aversion to making errors. Doubts about actions is second-guessing one’s ability to accomplish a task. All these dimensions are essentially facets of the broader perfectionism construct, but each of these states has divergent antecedents and consequences (Chapter 4).

**Task-approach goals and self-approach goals.** As with previous research with Big Five states, the principles of the Specific States and Functions Hypothesis (McCabe & Fleeson, 2012) also should apply to state perfectionism. If the perfectionism state is useful or relevant in the pursuit of the achievement goal, then changes in achievement goal pursuit should be related to changes in the perfectionism state. For example, as people pursue a self-approach or task-approach goal, then they should also be holding themselves to higher personal standards. State high personal standards may be the means by which people pursue their mastery-based, approach-directed achievement goals; as such, it should be related to both of these approach goals. Relevant empirical support shows that mastery-approach goals are positively related to trait personal standards (Stoeber, Stoll, Pescheck, & Otto, 2008; Stoeber, Uphill, & Hotham, 2009; Van Yperen, 2006; Zarghmi et al., 2010).

H₃: Task and self-approach goals will be positively related to state personal standards.
Other-approach goals. Other-approach goals, also known as performance-approach goals, should be positively related to state personal standards as well. As people pursue other-approach goals, then they should also be holding themselves to a higher standard because particularly other-approach goals are perceived as challenging (Senko & Harachiewicz, 2005). However, other-approach goals have a roller-coaster profile in shifting from positive to negative outcomes. As such, other-approach goals should be related to multiple (positive and negative) facets of state perfectionism. When people are trying to do better than others, they are holding themselves to a higher standard (high personal standards), but they also have concurrent fear of failure concerns that are inherent to other-approach goals. We expect the core part of this other-referenced competence—fear of failure (Elliot & Church, 1997)—should be related to relevant state perfectionism constructs: state concern over mistakes and state doubts about actions. There is empirical support for these hypothesized relations. The same research above also found positive relations between other-approach goals and trait personal standards (Stoeber, Stoll, Pescheck, & Otto, 2008; Stoeber, Uphill, & Hotham, 2009; Van Yperen, 2006; Zarghmi et al., 2010), and there is some support that other-approach goals are related to trait concern over mistakes (Stoeber, Stoll, Pescheck, & Otto, 2008; Stoeber et al., 2009) and trait doubts about actions (Fletcher, Shin, & Wang, 2012).

H₄: Other-approach goals will be positively related to state personal standards, state concern over mistakes, and state doubts about actions.

State Perfectionism and Achievement Outcomes

State personal standards. By holding oneself to a higher standard, state personal standards may serve as a means to excel and to realize one’s full potential (i.e., enhance performance attainment). As such, state personal standards should be related to positive outcomes such as typing accuracy and positive affect. In the literature, trait personal standards generally has positive outcomes because it reflects people who work hard and challenge themselves. As such, trait personal standards predicted better performance (Stoll, Lau, & Stoeber, 2008; Stoeber, Uphill, & Hotham, 2009), as well as similar constructs that are related to academic success,
including higher academic efficacy, fewer academic problems, lower test anxiety (Hanchon, 2010; Miquelon, Vallerand, Grouzet, & Cardinal, 2005; Van Yperen, 2006; Verner-Filion & Gaudreau, 2010; Weiner & Carton, 2012). Of particular interest to our studies, Stoeber, Chesterman, and Tarn (2009) found that people high in personal standards spent more time on a task, but they also had better performance. The authors proposed that the participants likely spent more time on the task to ensure a perfect performance. These results suggest that personal standards is positively related to typing accuracy.

As state personal standards should serve as the means by which people excel, this approach toward excellence should also positively relate to positive affect. Trait personal standards is related to trait positive affect (Kaye et al. 2008; Stoeber & Otto, 2006) and state positive affect (Flett, Blankstein, & Hewitt, 2009), particularly after a scenario in which participants are successful (Sagar & Stoeber, 2009). These trends found at the trait level were parallel to the state level, in which state personal standards was positively related to both performance and state positive affect (Chapter 4).

H5: State personal standards is positively related to typing accuracy and state positive affect.

**State concern over mistakes and state doubts about actions.** Concern over mistakes is aversion to making errors, while doubts about actions is second-guessing one’s ability to accomplish a task (Flett & Hewitt, 2002). As discussed above, both state doubts about actions and state concern over mistakes may be intended to monitor and to prevent errors respectively. However, the underlying self-criticism and self-doubt that are inherent to these states may interfere with any constructive processes to improve performance. As such, we expected both state concern over mistakes and state doubts about actions to relate to negative outcomes, specifically state negative affect. However, the relation with negative affect is likely stronger for doubts about actions because this state involves constant second-guessing of one’s competence prior to performance, not merely detecting errors (when they occur) following performance.
H₆: State doubts about actions and state concern over mistakes will be positively related to state negative affect.

Current Studies
In synthesizing our hypotheses from above, the present studies investigated whether approach goals are related, through state perfectionism, to accurate task performance and state affect (see Figure 1). We tested this model in two studies in which participants completed a series of typing tests. In Study 1, we tested the whole mediation model with self-reported measures of achievement goals, state perfectionism, state affect, and actual performance on the typing tests. In Study 2, we tested the second part of the model in an experiment that induced state perfectionism (i.e., state personal standards) and assessed its effects on actual performance and state affect.

Study 1 Method
Participants
Participants (77 women, 61 men) ranged from 18 to 64 years of age, with a mean of 32 years of age. Most participants (N = 82) reported that they solely used touch-typing (i.e., ability to type without looking at the keyboard); other participants reported using the “hunt-and-peck” or two-finger typing method (N = 11) or a mixture of both typing methods (N = 45). A small portion of the sample were self-reported professional typists (N = 18), although their performance did not significantly differ from non-professional participants.

Procedure
Participants living in the United States were recruited online from Amazon’s Mechanical Turk. After reading a brief description of the study, they followed a link to complete the study. Participants completed two versions of a typing test. After completing Version 1, participants received genuine performance feedback (number of correct characters and number of total characters) after both tasks. To fully evaluate their typing competence (i.e., relative to the task, their own performance, and others’ performance), we also gave participants normative
feedback. Below their task performance, they were informed that the average person types approximately 1,000 characters in five minutes, which was close to the mean performance on Version 1 and Version 2 (see Table 1). Before starting Version 2, participants completed measures of their approach goals for Version 2. After Version 2, participants received feedback and completed measures about Version 2, including state perfectionism and state affect. At the end of the study, participants received a code to enter into Mechanical Turk to receive payment. Out of the original sample of 140 participants, 2 participants were excluded due to errors with the typing task. All other participants were included in analyses.

**Typing Task.** We had an online typing task developed to provide control of typed content and record multiple performance variables. The content was basic touch-typing drills that increased in difficulty as the task progressed. Participants had five minutes to type as fast and as accurately as possible. In the instructions, participants were informed their typed content would appear below the characters they needed to type. Correct responses appeared in blue, while incorrect responses appeared in red. Participants could use the backspace key to correct any errors. Both versions were identical, with the exception that Version 2 had a counter at the bottom of the screen to show their current typing speed.

**Measures**

**Performance.** Typing accuracy was calculated as a percentage of correct characters divided by the total number of characters. In addition, typing speed was calculated as the total number of characters typed.

**Achievement goals.** After Version 1, participants were asked their approach goals for Version 2 using the other-approach, self-approach, and task approach three-item subscales (Elliot, Murayama, & Pekrun, 2011). We modified items from an educational context to fit the typing task context (for all items, see Appendix A). Participants responded using a 5-point scale from “not true of me” to “extremely true of me,” and reliabilities were excellent (Cronbach’s α > .83).
State Perfectionism. We measured state perfectionism after Version 2 with the State Multidimensional Perfectionism Scale (SMPS; Chapter 4) consisting of three 3-item subscales: state personal standards, state concern over mistakes, and state doubts about actions. The SMPS used a 5-point scale from “strongly disagree” to “strongly agree,” and all reliabilities were good (Cronbach’s αs > .76).

State Affect. State affect was measured after Version 2, using the 20 adjectives from the Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988). Participants were asked to reference their feelings “during Version 2 of the typing task.” The PANAS used a 5-point scale from “very slightly to not at all” to “extremely,” and both reliabilities were excellent (Cronbach’s αs > .91).

Study 1 Results

Correlations
Before testing our full model, we first analyzed the correlations between all variables in Table 5.1. Most of the goal-outcome hypotheses were supported. As expected, task-approach goals and self-approach goals were positively related to Version 2 typing accuracy (task-approach: \( r = .29, p < .01 \); self-approach \( r = .20, p < .05 \)) and state positive affect (task-approach \( r = .22, p < .05 \); self-approach: \( r = .41, p < .01 \)), fully supporting H1. Other-approach goals were related to state positive affect (\( r = .31, p < .01 \)) and state negative affect (\( r = .28, p < .01 \)), although they were unrelated to typing accuracy (\( r = .00, ns \)), which mostly supports H2. Note that other-approach goals were positively related to typing speed on Version 1 (\( r = .25, p < .01 \)) and Version 2 (\( r = .23, p < .01 \))The goal-perfectionism relations generally supported the hypotheses. Task-approach and self-approach goals had positive relations with state personal standards (task-approach: \( r = .22, p < .01 \); self-approach: \( r = .41, p < .01 \)), which supported H3. Other-approach goals related positively to state personal standards (\( r = .31, p < .01 \)) and state concern over mistakes (\( r = .21, p < .05 \)), although not significantly to state doubts about actions (partial support for H4).
Table 5.1
Study 1 Correlational Analyses

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<td>1. TAP</td>
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<td>0.51</td>
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<td>2. SAP</td>
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<td>3. OAP</td>
<td>3.22</td>
<td>1.06</td>
<td>0.11</td>
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<tr>
<td>4. PS</td>
<td>3.71</td>
<td>0.83</td>
<td>0.41</td>
<td>0.39</td>
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<td>7. PA</td>
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<td>0.22</td>
<td>0.41</td>
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<td>8. NA</td>
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<td>9. V1 S</td>
<td>989.09</td>
<td>321.54</td>
<td>0.07</td>
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<td>0.25</td>
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<tr>
<td>10. V1 A</td>
<td>99.19</td>
<td>2.51</td>
<td>0.08</td>
<td>0.06</td>
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<td>11. V2 S</td>
<td>1133.32</td>
<td>333.10</td>
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<td>0.23</td>
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<tr>
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Notes: Study 1 N = 138. Achievement Goals: task-approach (TAP), self-approach (SAP), other-approach (OAP); State Perfectionism: personal standards (PS), concern over mistakes (COM), doubts about actions (DAA); State Affect: positive affect (PA), negative affect (NA); Performance: Version 1 typing speed (V1 S), Version 1 typing accuracy (V1 A), Version 2 typing speed (V2 S), Version 2 typing accuracy (V2 A). Bold correlations are significant: r ≥ |.17|, p < .05, r ≥ |.22|, p < .01.
The perfectionism-performance relations generally followed the hypotheses. State personal standards was positively related to typing accuracy \((r = .26, p < .01)\) and state positive affect \((r = .48, p < .01)\), which supported H5. State concern over mistakes \((r = .42, p < .05)\) and state doubts about actions \((r = .55, p < .05)\) were both related to state negative affect, supporting H6. Interestingly, state doubts about actions was negatively related to both Version 2 typing speed \((r = -.19, p < .05)\) and typing accuracy \((r = -.18, p < .05)\).

**Task-approach Goals and Self-approach Goals Mediation Analyses**

For the supported hypotheses above, we developed a series of mediation models to test whether state perfectionism mediated the relations between achievement goals and achievement outcomes (see Figure 5.1; Baron & Kenny, 1986). Self-approach goals and task-approach goals were only significantly related to the possible mediator state personal standards \((H_3)\), and to the outcome variables typing accuracy and state positive affect \((H_1)\). Hence, we tested mediation models with these variables only. Specifically, we first tested whether state personal standards mediated the relation between each goal and typing accuracy. In these models, we used age as a control variable because it was significantly related to the performance measures and affect (see Table 5.1). Both models can be found in Figure 5.2. When controlling for age and Version 1 typing accuracy, state personal standards had marginal mediation relations between task-approach goals and Version 2 typing accuracy (Figure 5.2a: \(R^2 = .33\), with a \(\Delta R^2 = .02, p = .07\)) and fully mediated the relation between self-approach goals and typing accuracy (Figure 5.2b: \(R^2 = .31\), with a \(\Delta R^2 = .03, p = .02\)). These results suggest that mastery-approach goals (either self-approach or task-approach) predict typing accuracy through state personal standards, particularly goals that are related to self-competence standards.

Next, we tested whether state personal standards mediated the relations between the two mastery-based goals and state positive affect. When controlling for age, state personal standards completely mediated the relations between task-approach goals and positive affect (Figure 5.3a: \(R^2 = .23\), with a \(\Delta R^2 = .18, p < .01\)) and partially mediated the relation between self-approach goals and positive affect (Figure 5.3b: \(R^2 = .29\), with a \(\Delta R^2 = .12, p < .01\)).
Figure 5.2. Mastery Goals and Performance Mediation Analyses. Both mediation models used age and Version 1 Accuracy Percentage as a control variables (Age: $\beta = .16^*$ and $\beta = .17^*$ respectively; Version 1 Percentage: $\beta = .45^{**}$ for both models).

* $p < .05$

** $p < .01$

These results suggest that mastery goals (either task-approach or self-approach) predict positive affect through state personal standards.

**Other-approach Goal Mediation Analyses**

We also tested a series of mediation models for other-approach goals. As shown in Table 5.1, other-approach goals were related to both possible mediators of state personal standards and state concern over mistakes (H4), and to the outcome variables of state positive affect and state negative affect (H2). Hence, we tested mediation models with these variables only.
Because of its significant correlation with negative affect (see Table 5.1), age was again used as a control variable.

We first tested whether state personal standards mediated the relations between other-approach goals and state positive affect. The relation between other-approach goals and state positive affect was completely mediated by state personal standards (Figure 5.4a: $R^2 = .25$, with $\Delta R^2 = .15, p < .01$). Similarly, we tested if state concern over mistakes mediated the relations between other-approach goals and state negative affect, controlling for age. The results
showed that state concern over mistakes partially mediated the relation between other-approach goals and state negative affect (Figure 5.4b: $R^2 = .24$, with $\Delta R^2 = .12$, $p < .01$). Therefore, these results suggest that the hybrid relations of other-approach goals and state affect can be explained by two different perfectionism states. That is, other-approach goals predict state positive affect through state personal standards, and simultaneously, predict state negative affect through state concern over mistakes.

**Study 2**

The findings of Study 1 suggest that perfectionism may serve as a possible mechanism by which achievement goals may predict performance and affect. Most notably, the results suggest that mastery-approach goals (either self-approach or task-approach) predict both typing accuracy and state positive affect through state personal standards. Because we were unable to test whether state high personal standards *caused* any changes in typing accuracy and state positive affect, in Study 2, we designed an experiment in which we induced high personal standards. Specifically, based on the state personal standards subscale (Chapter 4) that emphasizes “striving to be perfect” and “demanding nothing less than perfection”, we developed an experimental state perfectionism manipulation in which task accuracy is emphasized as a way to cause participants to set higher personal standards.

We compared this perfectionism condition to two non-perfectionism control conditions: (1) a speed control condition which emphasized typing speed, and (2) a general “do-your-best” control condition, which emphasized neither speed nor accuracy. By inducing personal standards perfectionism, we expect participants to focus closely on excellence and task mastery, which should cause increases in both typing accuracy and state positive affect. In line our model and findings from Study 1, we hypothesized:

$H_8$: Participants assigned to the perfectionism condition will have higher typing accuracy and report more positive affect than the participants in the two control conditions.
Figure 5.4. Performance Goals and Affect Mediation Analyses. For Figure 3b, age was added to the model as a control variable. (Age: $\beta = -.15^*$).

*p < .05
**p < .01

Study 2 Method

Participants

Undergraduate students ($N = 231$; 176 women, 55 men) completed this study as a part of a research requirement. Participants ranged from 18 to 33 years of age, with a mean of 20 years of age. Participants’ native languages were Dutch ($N = 99$), German ($N = 96$), English ($N = 6$), or an assortment of other languages ($N = 30$).
Procedure
Participants were undergraduate students at a Dutch university, and they completed this study as a part of a research requirement. After completing the consent form, participants followed the same procedure as Study 1 through Version 1 of the task. Following Version 1, participants received performance feedback (number of correct characters and number of total characters) after both tasks. To emphasize the accuracy feedback, participants calculated and reported the number of mistakes they made during Version 1 (91 percent correctly). To provide some normative feedback, participants were informed that the average person types approximately 1,000 characters with 50 errors in five minutes, which was close to the mean performance on Version 1 (total number of characters: $M = 921$, $SD = 249$; mistakes $M = 43$, $SD = 25$). Before starting Version 2, all participants received their high personal standards manipulation.

High Personal Standards Manipulation. All participants were instructed to imagine that their performance on the typing task was a requirement for a job to which they were applying. After this instruction, participants were randomly assigned to one of three conditions: i) high personal standards condition, ii) speed control condition, and iii) do-your-best control condition.

Participants in all conditions read parallel statements why either accuracy or speed was an important skill. For the high personal standards condition ($N = 77$), we made the statement similar to the personal standards items in the SMPS (Chapter 4), emphasizing demands for perfection and striving for excellence. To enhance compliance, we added a clear rationale to explain why accuracy was important. Participants read the following:

We recommend that you type as accurately as possible by not making typing errors. Speed is a valuable skill, but it is not as important as accuracy. Many programs today use autofill and autocorrect to enhance speed, but they are prone to error. Accuracy allows more work to be done over a given day by decreasing errors. Particularly the skill of
typing accuracy is a critical requirement for the job. As such we recommend you to type as accurately as possible.

Similarly, the speed control condition (N = 78), participants read the following:

We recommend that you type as fast as possible. Accuracy is a valuable skill, but it is not as important as speed. Many programs today autocorrect typing errors or make mistakes easy to fix. Typing speed allows more work to be done over a given day by increasing output. Particularly the skill to type fast is a critical requirement for the job. As such we recommend you to type as fast as possible.

In the do-your-best control condition (N = 76), participants were advised “to type as fast and as accurately as possible” without any further explanation. This control serves as a measure between the extremes of the two other conditions, and the instructions are similar to participants in Study 1.

Following the condition assignment, participants were asked to elaborate on their condition assignment by thinking about their strategy they intended to use for Version 2 of the typing task

**Typing task.** Two changes were made to the typing task from Study 1. First, the character counter was not shown at the bottom of the screen of Version 2 to prevent feedback interference. Second, the Version 1 and Version 2 typing tests were two different sets of typing drills. The content was the same as Study 1, but the drills increased in difficulty, with Version 2 continuing from the progress made in Version 1.

**Measures**
The measures were the same as Study 1 with a few exceptions. Achievement goals were not assessed in Study 2 to prevent any interference with the condition assignment.
Manipulation check. After completing Version 2, participants in the accuracy and speed conditions were asked to indicate which option matched their instructions before Version 2: (a) to type as accurately as possible, (b) to type as fast as possible, or (c) to type as fast and accurately as possible. Eight participants failed the manipulation check (97 percent passed). Excluding these eight participants did not have any impact on the results.

Performance. Like Study 1, the key performance measures were typing speed and typing accuracy.

Affect. Like Study 1, the PANAS was used to assess state affect (Watson, Clark, & Tellegen, 1988). Reliabilities for both affect variables were high (α > .81).

Study 2 Results

Analysis of Variance
To test the effects of the condition assignment, a one-way ANOVA tested whether there were differences among the conditions in Version 2 performance, controlling for Version 1 performance by calculating change scores (i.e., subtracting Version 2 performance from Version 1 performance)¹. Typing accuracy significantly differed across all conditions, $F(2, 228) = 22.82, p < .001$, with follow-up analyses showed that there were significant differences across all conditions. As hypothesized, typing accuracy increased the most in the high personal standards condition ($M = 1.87, SD = 1.80$), followed by the do-your-best control condition ($M = 0.74, SD = 2.31$), and typing accuracy decreased in the speed control condition ($M = -0.77, SD = 303$). The differences in typing speed also were significant $F(2, 228) = 21.26, p < .001$, Follow-up analyses showed that typing speed increased the least in the high personal standards condition ($M = 96.18, SD = 88.05$), followed by the do-your-best control condition ($M = 148.26, SD = 81.02$), and increased the most in the speed control condition ($M = 181.44, SD = 76.56$).

¹ Change scores were used to simplify the results presentation. We also ran regression analyses to test these effects, in which Version 1 performance was a control variable and the conditions were dummy coded. The results were identical to the ANOVA analyses presented here.
As expected, there were no differences in state negative affect, $F(2, 228) = 0.09$, $ns$. Surprisingly, there also were no differences in state positive affect $F(2, 228) = 1.47$, $ns$. Follow-up analyses showed trends in the expected direction with higher levels of state positive affect in the state personal standards condition than the speed control condition, $t(151) = 1.45$, $p = .15$, and the do-your-best control condition $t(151) = 1.55$, $p = .12$.

**General Discussion**

The results from these studies provide compelling and complex processes in which people strive for success. First, the results provided support for our model, which shows that state perfectionism is an important mediator of the relations between achievement goals and achievement outcomes. While research on trait perfectionism and achievement goals has increased steadily over the past decade, this focus limits the potential variability of perfectionism in specific contexts. The inclusion of state perfectionism in an achievement goal process adds unique elements to the literature. First, state perfectionism implies that anyone—regardless of their dispositional trait level of perfectionism—can be perfectionistic in certain contexts. Moreover, these momentary levels of perfectionism are related to performance and affect. Study 2 provided support that when high personal standards is induced, it can cause changes in performance. Future research should continue to explore how perfectionism may influence achievement processes in other domains and across longer spans of time.

Second, Study 1 explored the different achievement processes within the $3 \times 2$ framework, with particular importance for exploring the distinction between task-approach and self-approach goals. While the results in Study 1 show that these constructs appear to be more similar than different, Elliot and colleagues (2011) emphasize that self-approach goals evaluate past competence by distinguishing between one’s personal motivations from the task demands. As such, the typing tasks used in these studies may have been too structured to allow any real differentiation between task and self to occur. This issue is of concern if we are to explore the different processes for task goals and self goals outside the classroom context alone.
Finally, in Study 1, other-approach goals were surprisingly unrelated to typing accuracy, yet it was related to our neutral performance variable, typing speed for both Version 1 and Version 2. This finding shows interesting differences in performance outcomes for the different approach goals. Specifically, both mastery goals were related to typing accuracy while other-approach goals were related to typing speed. Since other-approach goals were related to typing speed in both versions, typing speed may just be a reflection of perceived competence or high performance expectancy, which is an antecedent to other-goal pursuit (Van Yperen & Renkema, 2008). Yet it also may reflect on the importance of different types of performance as typing expertise develops. When working on a typing test, task-mastery and self-improvement are likely the main focus for people learning to type. Once people have some expertise in typing, then they may focus on increasing typing speed, particularly in comparison to other people. While there is a ceiling effect of typing accurately (perfect performance), there is no such ceiling effect for typing speed. While these results are rather puzzling, it is an interesting finding to explore how different metrics of performance may have different (causal) relations with achievement goal pursuit.

**Strengths and Limitations**

Study 1 and Study 2 provided critical support for our model and by extension, a new application of the Specific States and Functions Hypothesis. Achievement goals are related to changes in performance and affect through personality states, specifically state perfectionism. These relations are critical for key achievement outcomes, including task performance and state affect. Moreover, the typing task included time pressure and task feedback, which are two task features that are more detrimental for task-approach and self-approach goals than other-approach goals (Van Yperen et al., 2015). Nonetheless, we showed that when high personal standards is induced, it can cause changes in performance.

However, these studies are not without limitations. First, Study 1 cannot infer causality in state perfectionism and state affect relations because personality states are measured after the task is completed. It is possible that state affect may result in increases or decreases in
perfectionism. However, in accordance with Whole Trait Theory (Fleeson, 2012), affect is likely to be a consequence in engaging in specific personality states. Our results in Study 2 showed some support that state perfectionism can change performance, although the results with affect were only trending in our hypothesized direction.

Second, Study 1 focused only on the three approach goals in the $3 \times 2$ achievement goal framework; moreover, the task-approach goals and the self-approach goals were highly correlated with similar results. These goals patterns likely emerged because the task had no real consequences for poor performance, and participants found the task to be engaging and interesting. If the task had real consequences for poor performance, or participants do not find the task to be engaging and interesting, we expect stronger relations between other-approach goals, state concern over mistakes, state doubts about actions, and state negative affect. Ultimately, future work should work to address these limitations and further explore the complexities of this model. For example, participants could rate their goals and state perfectionism in applied settings with meaningful consequences for their performance, such as an exam or a sports competition.

**Conclusions**

These studies provide support for different paths to successful performance through achievement goal pursuit. Achievement processes within a specific context are critical to understanding how we can improve performance, which could be applied across an array of domains. Moreover, the investigation of other key outcomes, such as accuracy and state affect, reflects a more complex definition of successful performance. The role of personality states in the pursuit of goals continues to provide new insights for momentary goal processes that inform and extend findings from the trait level (Fletcher, Shin, & Wang, 2012; Stoeber, Stoll, Pescheck, & Otto, 2008; Stoeber, et al., 2009. Ultimately, the keys to successful performance remain complex, but these studies highlight how we can start breaking down specific and clear processes that synthesize traditions from personality and other areas of psychology. By
applying the SSFH to other contexts, we can hope to integrate an assortment of ways people can succeed and improve their performance.