

**Winning Ambitions or Losing Fears: The Effect of Achievement Goal Orientations on
Future Performance in Youth Tennis**

Livia Jasmin Stein

s4660587

Department of Psychology, University of Groningen

PSB3E-BT15: Bachelor Thesis

Group number: 5

Supervisor: Barbara C.H. Huijgen, PhD; Koen Rikken, MSc

Second evaluator: Solomiia Myroniuk, MSc

In collaboration with: Annemaike de Vries, Gitte Preusting, Joris Mers, Silke Doorn, Tessa
Post

June 24, 2024

A thesis is an aptitude test for students. The approval of the thesis is proof that the student has sufficient research and reporting skills to graduate, but does not guarantee the quality of the research and the results of the research as such, and the thesis is therefore not necessarily suitable to be used as an academic source to refer to. If you would like to know more about the research discussed in this thesis and any publications based on it, to which you could refer, please contact the supervisor mentioned.

Acknowledgements

I would like to express my genuine appreciation to Barbara Huijgen and Koen Rikken for their supervision and guidance throughout this Bachelor thesis project. Their feedback, knowledge and expertise was incredibly valuable in writing this thesis, which would not have been possible without them. Furthermore, special thanks to my thesis group for always trying to answer any questions I encountered, as well as for their feedback, suggestions and moral support. Knowing that we are all in this together made this thesis project seem much more achievable and helped to stay motivated, even in the face of challenges.

Abstract

Achievement goal orientations and their impact on performance outcomes have been a recurring topic of interest in sport psychology and talent identification and development. Theoretical considerations and the existing evidence suggest that both mastery- and performance-approach goals are generally beneficial for performance outcomes, while mastery- and performance-avoidance goals tend to have negative consequences. Perceived ability has been proposed as a potential moderator, especially with regard to performance goals. The current study intends to investigate this relationship and its impact on future performance in the context of tennis. We hypothesise that both approach goals positively affect performance, especially when confidence in ability is high, whereas, when confidence in ability is low, performance-avoidance goals will be more detrimental than mastery-avoidance goals. Using a prospective design with a sample of young Dutch tennis players ($N = 171$), we performed a multiple regression analysis with interaction effects, including confidence in ability as a potential moderator. Results showed that neither of the four achievement goal orientations were significant predictors of tennis performance five years later, tentatively suggesting that they might have no value for identifying and developing future elite players. While this contradicts previous findings, actual longitudinal studies are needed to confirm our results. Practical and theoretical implications are discussed.

Keywords: sport performance, achievement goal orientations, talent development, confidence in ability, youth tennis

Winning Ambitions or Losing Fears: The Effect of Achievement Goal Orientations on Future Performance in Youth Tennis

In sport psychology, understanding achievement motivation and their relation with performance outcomes has been a recurring topic of interest (Lochbaum & Gottardy, 2015, Roberts, 2012). Rooted in Achievement goal theory, the dichotomy of mastery versus performance goal orientations has been researched across a variety of sports, revealing that mastery goals are generally related to adaptive performance or performance-related outcomes (Biddle, 2001; Duda & Whitehead, 1998; Newton & Duda, 1993; Ntoumanis, 2001; Roberts, 2001; Sari, 2015; Standage et al., 2003; van de Pol & Kavussanu, 2011), whereas the results for performance goals tend to be more mixed (Dweck, 1986; Harwood et al., 2008; Newton & Duda, 1993; Nicholls, 1989; Roberts & Nerstad, 2020).

Later the dichotomous approach was extended by Elliot and colleagues (Conroy et al., 2003; Elliot, 1999, 2005; Elliot & McGregor, 2001) to a 2x2 achievement goal framework, consisting of mastery- and performance-approach goal orientations as well as mastery- and performance-avoidance goal orientations. This new framework was suggested to be less rudimentary and to potentially explain the mixed results for performance goals. While the 2x2 framework has been widely researched in the classroom context (e.g. Barron & Harackiewicz, 2001; Cury, et al., 2006; Elliot & Church, 1997; Elliot & McGregor, 2001; Harackiewicz, et al., 2002), only a limited number of studies has investigated its role in the sport context and even less have focussed on the effect on performance outcomes specifically. The available literature from both classroom and sports context, provides tentative evidence that overall approach goal orientations are more beneficial than avoidance goal orientations and also suggest a potential moderating role of perceived ability (e.g. Dweck, 1986; Harwood et al., 2008; Lochbaum & Gottardy, 2015; Nicholls, 1989; Roberts et al., 2007; Roberts & Nerstad, 2020).

Given this background, the potential of applying this framework to specific sport contexts becomes evident. In tennis talent identification and development programs (TID) for example, the selection of young players with the potential for future elite performance is crucial, especially considering the notion of tennis being an early specialisation sport (Faber et al., 2016). Further investigating the relationship between achievement goal orientations and performance might open new doors to maximise the effectiveness of these programmes and identify young tennis talents earlier.

In this study we aim to extend the research on the 2x2 framework to the field of tennis. More specifically, we intend to investigate whether the adoption of a specific achievement goal orientation predicts future performance in young dutch tennis players and whether the potential relationship is moderated by confidence in ability. We thereby aim to contribute to a better understanding of the theoretical framework in tennis, but to also offer practical implications for trainers and sport psychologists that strive to optimise performance among young tennis players.

Achievement Goal Theory

The Dichotomous Framework (Mastery vs Performance)

One topic that has received considerable attention in sport psychology is that of achievement goal theory (Biddle et al., 2003; Lochbaum & Gottardy, 2015). This theory proposes that individuals engage in achievement situations with the motivation to attain and demonstrate competence or ability (van de Pol & Kavussanu, 2011), which can be defined in two different ways: relative to one's own effort and past performance, or relative to the performance of others (Nicholls, 1984;1989). This results in the conceptualisation of two distinct achievement goal orientations, namely mastery goal orientation (also known as task orientation) and performance goal orientation (also known as ego orientation). Individuals who are mastery oriented use self-referenced criteria to assess their competence and feel

successful when mastering a skill, improving relative to previous performance or learning something new (Moreno-Murcia et al., 2011). They are intrinsically motivated to improve through effort and perceive tasks that require more effort as leading to more mastery and hence higher feelings of competence (Nicholls, 1989). In contrast, individuals who are performance oriented evaluate their competence based on normative or peer comparisons (Newton & Duda, 1993) and attain a feeling of success when outperforming others, especially when doing so with less effort (Nicholls, 1989). Overall, the two achievement goal orientations were found to be prevalent among athletes (Newton & Duda, 1993).

Achievement Goal Orientations in Sport Psychology

For decades the dichotomous framework has been the preferred model among researchers (Isoard-Gauthier et al., 2013; Lochbaum & Gottardy, 2015), leading to numerous studies in the sport context (Bonney, 2006). Mastery goals were overall found to positively impact future performance and achievement-related outcomes (e.g., Biddle, 2001; Ntoumanis, 2001; Standage et al., 2003). This effect might be attributable to the association of mastery goals with generally more adaptive psychological and behavioural outcomes in young athletes, such as higher self efficacy (Sari, 2015), satisfaction, enjoyment, challenge, interest and investment (Duda & Whitehead, 1998; Newton & Duda, 1993; Roberts, 2001; van de Pol & Kavussanu, 2011). Furthermore, Altintas et al. (2010) found that youth soccer players, high in mastery orientation, had higher motivation to improve their skills. Overall, mastery orientation, possibly via these adaptive outcomes, appears to promote long-term involvement in sports (Nicholls, 1989), which is required to improve skill and subsequently performance.

Regarding performance goals the results are more mixed. Depending on the study, research reports elite athletes to be lower on performance orientation than mastery orientation, higher on performance orientation or high on both performance and mastery orientation (Jordet, 2015; Pensgaard & Roberts, 2000). The latter combination, considering achievement

goals as orthogonal, was found to be related to achievement behaviour (Roberts & Nerstad, 2020). When considering other outcome measures, that might indirectly affect performance, performance orientation has been primarily linked to maladaptive outcomes, such as the belief that success stems from ability rather than effort (Newton & Duda, 1993), a fixed mindset and a higher susceptibility to helpless behavioural patterns (Roberts & Nerstad, 2020). This was more the case when perceived ability or competence was low (Dweck, 1986; Harwood et al., 2008; Nicholls, 1989; Roberts, 2012; Roberts & Nerstad, 2020), whereas those high in perceived competence are assumed to function well when adopting performance goals (Roberts, 2012). This suggests that the ultimate effect of performance orientation might depend on additional factors, explaining the overall mixed results.

Achievement Goal Orientations in Tennis

In tennis specifically findings suggest that young elite tennis players are primarily mastery oriented (Newton & Duda, 1993), which further emphasises the potential value of this orientation for performance and agrees with general sport psychology findings. Mastery orientation was moreover linked to enjoyment and interest in the training and competition context (van de Pol & Kavussanu, 2011), which might indirectly promote performance.

Performance orientation was associated with effort and performance, as assessed by the coach, in the competition context, but not in the training context (Cervelló et al., 2007; van de Pol & Kavussanu, 2011), suggesting that a potential indirect effect on performance, via effort, might depend on the context. In line with that, theoretical considerations also proposed that performance orientation might be specifically beneficial in a competition context, as it is the perfect environment to demonstrate normative ability and competence (van de Pol & Kavussanu, 2011), thereby providing a potential explanation for this finding. Overall, this suggests that the relationship between performance orientation and performance in tennis

specifically is less straightforward, while mastery orientation appears to benefit motivational and performance outcomes. This is in line with findings from the general sports context.

The 2x2 Framework of Achievement Goal Orientation

Since the dichotomous framework was criticised as simplistic and limited in explaining the ambiguous findings regarding performance goal orientation, Elliot and colleagues (Conroy et al., 2003; Elliot, 1999, 2005; Elliot & Church, 1997; Elliot & McGregor, 2001) proposed a 2x2 achievement goal framework, with an added valence dimension, distinguishing between approach versus avoidance orientation. Approach-oriented people strive for success, while avoidance-oriented people wish to avoid failure (Elliot & Harackiewicz, 1996).

This new framework consists of four types of goal orientations, namely mastery-approach, mastery-avoidance, performance-approach and performance-avoidance goals. In particular, mastery-approach goals centre on achieving absolute competence or doing better compared to one's previous performance, while mastery-avoidance goals focus on avoiding absolute incompetence or doing worse than previously (Elliot, 1999). Performance-approach goals prioritise attaining normative competence, whereas performance-avoidance goals focus on avoiding normative incompetence, i.e. doing worse than others (Elliot, 1999).

The 2x2 Framework in the General Sport Context

While mastery and performance goals have been well studied in the sports context, research incorporating the approach-avoidance dimension is still novel and emerging (Bonney, 2006), with the 2x2 framework generally being underutilised in sports research (Li et al., 2011). Hence, the available literature applying the 2x2 framework to sports and investigating how it relates to future performance is sparse.

Existing research suggests that overall approach orientation benefits achievement outcomes, such as performance, whereas avoidance orientation relates to maladaptive achievement processes, namely low performance (Roberts et al., 2007). These findings are suggested to be attributable to approach motivation potentially eliciting adaptive motivational processes, such as challenge appraisal and excitement, whereas avoidance motivation might evoke threat-based processes, resulting in maladaptive motivational outcomes that ultimately diminish performance (Elliot, 1999, 2005). In line with this, a meta-analytic review by Lochbaum and Gottardy (2015) found that, across different types of sports, adopting a mastery- or performance-approach orientation positively affects sports performance, whereas both mastery- and performance-avoidance orientation were detrimental to performance.

Since mastery goals compared to performance goals seem to have more adaptive outcomes (Altintas et al., 2010; Biddle, 2001; Duda & Whitehead, 1998; Newton & Duda, 1993; Ntoumanis, 2001; Roberts, 2001; Standage et al., 2003; van de Pol & Kavussanu, 2011), it was suggested that mastery-avoidance goals should have relatively less detrimental effects on performance than performance-avoidance goals (Elliot, 1999, 2005). The same could be proposed for mastery approach compared to performance approach goals, however, Li et al. (2011) suggested that specifically in an achievement or competition context, which emphasises externally imposed evaluation criteria and normative performance outcomes, performance-approach goals might direct individual's efforts towards meeting those criteria, thereby promoting performance.

Overall these suggestions for both types of approach- and avoidance-orientation goals have been confirmed by studies in a classroom setting (Barron & Harackiewicz, 2001; Cury, et al., 2006; Elliot & Church, 1997; Elliot & McGregor, 2001; Harackiewicz, et al., 2002), where most of the research on the 2x2 framework has been conducted. In the sport context the results could so far only be partially replicated. Li et al. (2011) for example found that

mastery-approach orientation positively predicted performance, while performance-avoidance orientation negatively predicted performance in a sample of handball high school athletes. Furthermore, track and field athletes with higher rankings were found to score higher on mastery- and performance-approach orientation than those with lower rankings (Stoeber & Crombie, 2010) and triathletes with generally higher approach- than avoidance orientation performed better during competition (Stoeber et al., 2009). Results regarding the effect of mastery-avoidance goal orientation have been reported to be more mixed (Roberts et al., 2007).

The 2x2 Framework in Tennis

Considering tennis specifically, only one study, conducted by Puente-Díaz (2012), investigated the effect of achievement goal orientations from the 2x2 framework on tennis performance as well as effort. The study used a sample of competitive tennis players from Mexico aged 14.13 on average, with the majority being male. Performance was rated by the coach on a scale from 1 to 10, with higher ratings indicating better performance. The study found evidence for a positive indirect effect of mastery-approach goals on performance via enjoyment (Puente-Díaz, 2012). However, neither performance-approach nor performance-avoidance goals were found to relate to performance (Puente-Díaz, 2012). The effect of mastery-avoidance goals on performance was not investigated but they were found to be unrelated to effort (Puente-Díaz, 2012), which might indirectly affect performance. The results are in contrast to findings from general sport psychology, suggesting that they might not be transferable to tennis specifically.

Perceived Ability as a Potential Moderator

In the reviewed literature it was more than once suggested that the effect of achievement goal orientations on performance or performance related outcomes might be moderated by perceived ability (e.g. Dweck, 1986; Harwood et al., 2008; Nicholls, 1989;

Roberts & Nerstad, 2020), especially regarding the more ambiguous findings for performance goals. Research in the classroom setting provides some evidence for this suggestion. Cho et al. (2011) for example found that high levels of perceived ability were associated with higher performance for performance-approach goals and also augmented the positive effect of mastery goals on performance.

To our knowledge barely any studies in sport psychology have actually investigated the potential moderating effect of confidence in ability on the relationship between goal orientation and performance. The existing ones report overall mixed results. While it was suggested that performance goals would lead to maladaptive outcomes, especially when perceived ability is low, but not when high (Dweck, 1986; Harwood et al., 2008; Nicholls, 1989; Roberts & Nerstad, 2020), there is only little empirical support for that assumption (e.g., Li & Chi, 2007; Standage, et al., 2003). However, this might be due to the fact that these studies didn't distinguish between approach and avoidance goals (Li et al., 2011), suggesting a potential direction for future research to further investigate and clarify this relationship.

The Present Study

The present study intends to further investigate the role of the 2x2 achievement goal framework specifically in tennis with the aim to draw conclusions about the relevance and predictive value of achievement goal orientations for future performance and talent development. Taking into account that theoretical considerations (Dweck, 1986; Harwood et al., 2008; Nicholls, 1989; Roberts & Nerstad, 2020) as well as some empirical evidence (Cho et al., 2011; Li et al., 2011) suggests a potential moderating effect of perceived ability, the present study will investigate a similar construct, namely confidence in ability, as a potential moderator. In conclusion our research question is as follows: Does the adoption of a specific achievement goal orientation predict future performance in young dutch tennis players and is the potential relationship moderated by confidence in ability? Considering that overall

approach goals and mastery goals were positively related to performance, whereas performance goals had varying effects and avoidance goals were more negative for performance outcomes (Lochbaum & Gottardy, 2015; Roberts et al., 2007), the following hypotheses were formulated:

1. Mastery approach and performance approach goals have positive effects on future performance and more so if confidence in ability is high.
2.
 - a. Performance-avoidance goals and mastery-avoidance goals have a negative effect on future performance.
 - b. When confidence in ability is low, performance-avoidance goals are more detrimental to future performance than mastery-avoidance goals.

Method

Participants

A total of 171 Dutch tennis players (boys $N = 98$, girls $N = 73$) with an age range of 8-19 ($M = 13.14$, $SD = 2.13$) participated in this study. These players took part in the training programs of the Dutch National Lawn Tennis Association (KNLTB) and the majority of them ($N = 163$) were ranked among the top 200 of the Dutch National Youth ranking list for their year of birth. In order to recruit participants, different tennis academies in the Netherlands were contacted. Interested academies informed players and their parents about the study, giving them the choice to participate. Participation was voluntary, not incentivized and could be withdrawn at any moment. Only if the written consent of the player and both parents was obtained, as well as approval to use the data for future research, the player was included in the study. Their data was pseudonymised.

Data collection took place between September 2017 and May 2018 by Kramer (2020) and followed the ethical guidelines for sports medicine research (Kramer, 2020). Ethical

approval was given by the ethics committee of the faculty of Health and Social Studies at the HAN university of Applied Sciences on March 17, 2017, EACO 62.03/17.

Materials and Procedure

The demographic and psychometric data used in the present study stems from a test battery including several short demographic questions as well as different psychological questionnaires. The battery was administered before or after the training in a silent room at the tennis centre where the players were training. Instructions on how to fill in the battery were given by the researcher, who emphasised that the data will be processed anonymously, not shared with others, and that there were no wrong or right answers. Overall, players completed the battery in about 15 minutes.

Tennis performance data were collected in April 2024 from the official website of the KNLTB. This data is publicly accessible to anyone with internet access.

Tennis Performance

Tennis performance was operationalised using the official individual tennis rating of the player, based on the rating system used by the KNLTB. According to this system, players receive a rating on a scale from 0 to 9, with four decimals. A lower rating indicates a better player, meaning that a rating of 9 represents a beginner, while a rating of 0 represents an elite or professional level player. The rating at the end of each season (in November) determines the playing strength for the subsequent season. Throughout the year the rating is dynamic, meaning that it changes after every game, depending on the opponent's rating and the match outcome. In the present study, we used the players' end ratings of the 2022/2023 season.

Achievement Goal Orientation

The players' orientation regarding the four different achievement goals was assessed using a Dutch translation of the questionnaire developed by Van Yperen (2006) to determine a person's dominant achievement goal. The questionnaire consists of 6 forced-choice items,

contrasting each of the four achievement goals against each other respectively. Participants can score between 0 and 3 points on these goals. The dominant achievement goal is the one with a score of 3, meaning that the participant preferred this goal in all three contrasts with the other goals. However, it is also possible for a participant not to have a dominant achievement goal, which would be indicated by a score of 2 for more than one goal. The used questionnaire is provided in appendix A.

Confidence in Ability

Confidence in ability was assessed using a dutch translation of the corresponding subscale of the Mental Toughness Questionnaire (MTQ48), provided in appendix B. The MTQ48 conceptualises confidence in ability as one's self-belief in achieving personal goals and completing tasks, along with a lower perceived dependency on external influences (Vaughan et al., 2018). The subscale is composed of 9 items, with answers given on a 5-point Likert scale ranging from strongly disagree to strongly agree. Higher scores refer to higher confidence in ability, with scores ranging from 1 to 5. The internal consistency (Ω) of the MTQ48 has been shown to be acceptable in a large sample ($N = 1096$) of nonathletes, amateur and elite athletes with McDonald's Omega ranging from .72 to .84 (Vaughan et al., 2018). The internal consistency of the confidence in ability subscale was shown to be good ($\Omega = .82$), indicating acceptable composite reliability (Vaughan et al., 2018).

Design and Data Analytic Strategy

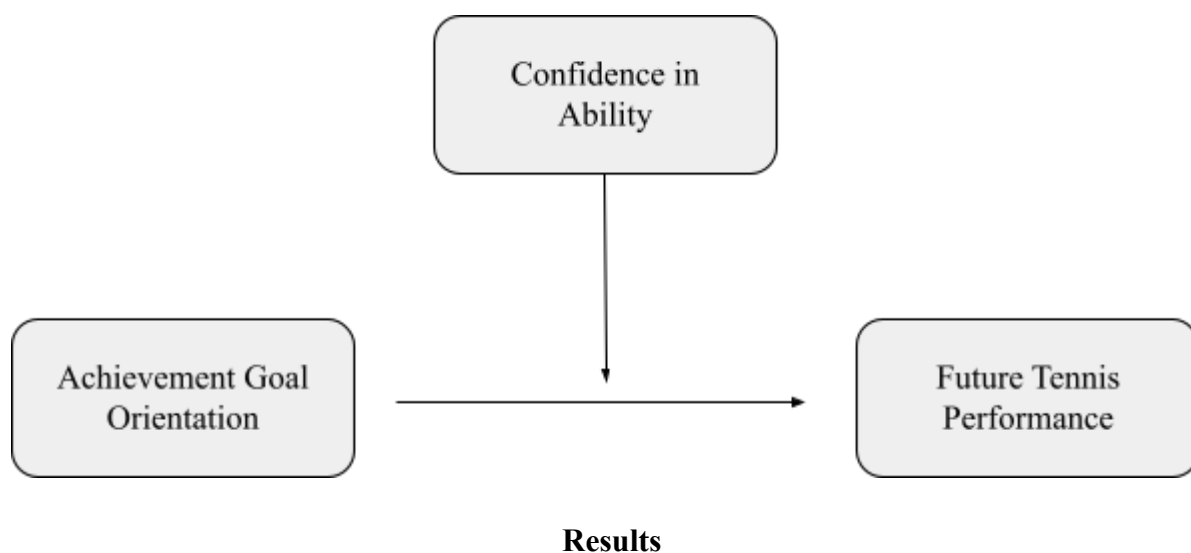
Data was screened for missing values and potential outliers. Participants were excluded listwise from the analysis when no rating was available for the 2022/2023 season. Descriptive statistics and correlations were calculated with IBM SPSS 28 (Version 28.0.1.1) and the assumptions of normality, linearity and homoscedasticity were checked using QQ-Plots, residual plots and the Shapiro-Wilk test. Additionally, multicollinearity between all independent variables, moderators and covariates that entered the analysis was inspected.

A multiple regression analysis with interaction effects was run, using tennis performance as the dependent variable, the four achievement goals as predictors, age as a covariate and confidence in ability as a moderator. The moderation model is shown in Figure 1. The decision to include age as a control variable stems from the assumption that older players might have better ratings due to more tennis experience. The study employs a prospective design, as it follows the same group over five years, using psychological data from the 2017/2018 season and performance data from the 2022/2023 season.

The obtained achievement goal data was of ordinal nature. Yet, they were treated as continuous variables in the statistical analysis, given that this is often common practice and considered defensible if there are 3-6 response categories that are assumed to be evenly spaced, and if continuous variables are assumed to underlie the ordinal variables (Robitzsch, 2020). We expected this to be the case for achievement goal orientations. A significance level of alpha equal to .05 was used for all tests performed as part of the analysis.

Figure 1

The Moderation Model



Data Pre-Processing

Data pre-processing was done in RStudio (Version 2023.06.2+561) and IBM SPSS Statistics 28 (Version 28.0.1.1). The a and b responses to the forced choice items of the 2x2 achievement goal questionnaire were re-coded in R, resulting in four variables, each representing one goal orientation. Participants could score 0, 1, 2 or 3 points on these goals. Three participants had no performance rating for the 2022/2023 season and were hence excluded from the analysis, resulting in the final sample size of $N = 171$.

Preliminary Analysis and Regression Analysis

Descriptive statistics and Pearson correlations were calculated in SPSS 28. The measures of central tendency and spread for each variable can be found in Table 1.

Results showed that of all variables only age ($r = -.210$; $p = .006$) and confidence in ability ($r = -.213$; $p = .005$) were significantly and negatively correlated with tennis performance, meaning that older players and those with higher confidence in ability tended to have lower and hence better ratings. Furthermore, a small but significant negative correlation was found between performance-approach goal orientation and performance rating ($r = -.150$; $p = .050$), indicating that players who were predominantly performance-approach oriented during the 2017/2018 tennis season had lower and hence better tennis ratings five years later.

Table 1

Means and Standard Deviations for Tennis Performance Rating, Age, the Four Achievement Goals and Confidence in Ability

	Mean	Std Deviation
Rating 2023	3.83	1.90
Age	13.14	2.13
Performance Approach	1.52	.88
Performance Avoidance	.47	.73
Mastery Approach	2.57	.70
Mastery Avoidance	1.40	.80

Confidence in ability	3.59	.42
-----------------------	------	-----

Before proceeding with the regression analysis, a check for multicollinearity between predictors, as well as a check for the statistical assumptions of normality, linearity and homoscedasticity was conducted. Inspection of the Variance Inflation Factor (VIF) indicated no concern for multicollinearity, as indicated by VIF values around 1 for all predictors (see Tables 3 and 4). Normality of the dependent variable, i.e. tennis performance, was assessed using the Shapiro-Wilk test and QQ-Plots. While the Shapiro-Wilk test indicated a violation of the normality assumption for tennis performance ($W = 0.978, p = .007$), the corresponding QQ-Plot showed no severe deviations from normality. The same applied to the normality of the regression model's residuals. Again, the Shapiro-Wilk test indicated a violation of the normality assumption ($W = 0.979, p = .012$), while the QQ-Plot suggested no severe deviations from normality. Since potential data transformations that might have resolved this issue lay beyond the scope of this thesis, it was decided to proceed with the analysis without further transformations. A scatterplot of the standardised residuals of the regression model against the standardised predicted values, showed no specific pattern of data points, confirming adherence to the assumptions of homoscedasticity and linearity.

Subsequently, a multiple regression analysis was run to test whether the four achievement goal orientations significantly influence future tennis performance and whether these main effects are moderated by confidence in ability. Furthermore, based on theoretical considerations and the small but significant correlation between tennis performance and age ($r = -.210; p = .006$), age was included as a control variable. The Forward method was used to add variables to the model, ensuring that only significant predictors are included and preventing the model from becoming unnecessarily complex. The criterion for variable entry was set to a probability of F-to-enter $\leq .05$.

The final model was significant and explained 12.2% of the variance in tennis performance ($R_{adj}^2 = .122$, $F(1,168) = 2.52$, $p < .001$), as shown in Table 2.

Table 2

Model Summary^c

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.213 ^a	.045	.040	1.86	.045	8.00	1	169	.005
2	.364 ^b	.132	.122	1.79	.087	16.9	1	168	<.001

a. Predictors: (Constant), Confidence in Ability

b. Predictors: (Constant), Confidence in Ability, Age

c. Dependent Variable: Tennis Performance

The results further showed that neither performance-approach orientation ($\beta = -.116$, $p = .108$), nor performance-avoidance orientation ($\beta = .042$, $p = .577$) were significant predictors of tennis performance, when controlling for age, and the same applied to mastery-approach orientation ($\beta = .024$, $p = .741$) and mastery-avoidance orientation ($\beta = .065$, $p = .372$) (see Table 4). None of these variables passed the criterion to enter the regression model and were hence excluded from the model (see Table 4), indicating that players' achievement goal orientation does not significantly predict tennis performance five years later, regardless of age.

The analysis showed that only confidence in ability ($b = -1.424$, $p < .001$, 95% *CI* [-2.103, -0.744]) and age ($b = -.278$, $p < .001$, 95% *CI* [-0.412, -0.145]) were significant predictors of future tennis performance and included in the model, as seen in Table 3. This exploratory finding suggests that only age and confidence in ability appear to have an impact on tennis performance five years later.

Table 3*Coefficients^a*

Model		Unstandardised Coefficients		t	Sig.	95.0% Confidence Interval for B		VIF
		B	Std. Error			Lower Bound	Upper Bound	
1	(Constant)	7.28	1.23	5.93	< .001	4.86	9.71	
	Confidence in Ability	-.962	.340	-2.83	.005	-1.63	-.291	1.00
2	(Constant)	12.6	1.75	7.21	< .001	9.15	16.0	
	Confidence in Ability	-1.42	.344	-4.14	< .001	-2.10	-.744	1.12
	Age	-.278	.068	-4.11	< .001	-.412	-.145	1.12

a. Dependent Variable: Tennis Performance

Table 4*Excluded Variables (excluding the interaction terms)*

Model		Beta In	t	Sig.	Partial Correlation	Change Statistics		
						Tolerance	VIF	Minimum Tolerance
2	PerfAp	-.116 ^b	-1.16	.108	-.124	.991	1.01	.887
	PerfAv	.042 ^b	.559	.577	.043	.939	1.07	.849
	MastAp	.024 ^b	.331	.741	.026	.978	1.02	.877
	MastAv	.065 ^b	.896	.372	.069	.994	1.01	.889

a. Dependent Variable: Tennis Performance

b. Predictors in the Model: (Constant), Confidence in Ability, Age

In conclusion, the results provide no evidence in favour of either hypothesis one, nor hypothesis 2a or 2b. According to the findings, mastery-approach and performance-approach goal orientations do not have a positive effect on future tennis performance and hence also no moderating effect of confidence in ability was found. Furthermore, no evidence was found

that either one of the avoidance goals has a negative impact on future tennis performance or that, when confidence in ability is low, performance-avoidance goals would be more detrimental than mastery-avoidance goals.

Discussion

Interpretation of Results

The purpose of this study was to investigate the relationship between achievement goal orientations and tennis performance as well as the potential moderating role of confidence in ability. Thereby we aimed to extend the limited, but existing research on the 2x2 achievement goal framework, as proposed by Elliot and colleagues (Conroy et al., 2003; Elliot, 1999, 2005; Elliot & McGregor, 2001), to the field of sport psychology and tennis performance specifically. Based on a review of the existing literature, we intended to investigate whether the adoption of a specific achievement goal orientation predicts future performance in young dutch tennis players and whether the potential relationship is moderated by confidence in ability. Given this research question, three testable hypotheses were formulated. First of all we predicted that mastery approach and performance approach goals would have positive effects on future performance and more so if confidence in ability is high. Secondly, we predicted that performance-avoidance goals as well as mastery-avoidance goals negatively affect future performance. Finally, we proposed that, when confidence in ability is low, performance-avoidance goals are more detrimental to future performance than mastery-avoidance goals.

Regarding the first hypothesis, our results do not support our prediction. No significant main effects of mastery- or performance-approach goals on future tennis performance were found and hence there was no relationship that could have been moderated by confidence in ability. This means that, according to our findings, there is no evidence suggesting that either of the two approach goals plays a significant role with regard to tennis

performance five years later. This is in contrast to findings from prior research that did indeed find approach goals to have a positive effect on performance in other sports (Stoeber et al., 2009; Stoeber & Crombie, 2010; Li et al., 2011) and in tennis specifically with regard to mastery-approach goals (Puente-Díaz, 2012).

Hypothesis 2a was not supported either by the statistical evidence. Neither performance-avoidance goals, nor mastery-avoidance goals had a significant main effect on tennis performance five years later. This suggests that neither of these goals is relevant for predicting future performance in young dutch tennis players. Regarding performance-avoidance goals, these findings are in contrast to existing evidence which found performance-avoidance goals to be detrimental to sport performance outcomes (Li et al., 2011; Lochbaum & Gottardy, 2015; Roberts et al., 2007). However, considering the diffuse results for mastery-avoidance goals from previous studies (Puente-Díaz, 2012; Roberts et al., 2007), as well as the fact this orientation is the least understood and researched of the four orientations (Puente-Díaz, 2012), our results are not too surprising. Instead they reflect the uncertainty regarding the role of this type of goal orientation and indicate a need for further research.

Finally, our study also failed to yield evidence in support of hypothesis 2b. It was not supported that, when confidence in ability is low, performance-avoidance goals would be more detrimental to performance than mastery-avoidance goals, meaning that there was no moderating effect of confidence in ability. This was expected, given the lack of significant main effects for these orientations. Overall the findings are in contrast to theoretical considerations based on the dichotomous framework that proposed a moderating role of perceived ability (Dweck, 1986; Harwood et al., 2008; Nicholls, 1989; Roberts & Nerstad, 2020), especially for performance goals. However, the results are in line with the few studies that actually investigated the moderation effect (e.g. Li & Chi, 2007; Standage et al., 2003)

and only found little empirical support for it. While it was suggested that this could be attributed to not taking into account the approach-avoidance dimension, our findings suggest that, also when considering them, no moderating effect seems to be present.

Overall, our results fail to provide evidence for either of our hypotheses. According to our findings, achievement goal orientations, as conceptualised by Elliot's 2x2 framework (Conroy et al., 2003; Elliot, 1999, 2005; Elliot & McGregor, 2001), are not relevant for predicting tennis performance five years later, questioning their importance for talent development and identification is questionable. However, certain aspects of our study might aid in explaining the results. First of all, the used questionnaire operationalises achievement goals slightly different than other common measures. While other measures, specifically regarding performance-avoidance goals, emphasise the aim to avoid poor performance or looking stupid, the present questionnaire defines both types of performance goals as other-referenced, with items focussing on performance compared to others only. Furthermore, both mastery orientations are defined as self-referenced only, while other measures often also incorporate task mastery and improvement over time (Elliot, 2005). Accordingly, the measure employed in the present study only targets the core aspects of achievement goal orientations, disregarding additional dimensions, such as the need to prove your ability to others (Elliot & Church, 1997; VandeWalle, 1997) or evaluation concerns (Meece et al., 1988; Midgley et al., 1998). This more narrow scope is assumed to improve interpretability of the results (Elliot, 2005; Elliot & Fryer, 2006), however, in our case it possibly contributed to measuring a slightly different version of the achievement goals than previous studies, finding significant results.

Secondly, the employed questionnaire does not measure achievement goals independently of each other, but assesses a person's dominant achievement goal, which is also a slightly different approach than taken by other studies. Since this approach does not allow

people to score high on more than one goal orientation, our study might have overlooked the potential interactive effects of holding multiple achievement goal orientations.

A final consideration regarding our findings is that, despite the prospective research design, our study is not actually longitudinal. Accordingly, we could not assess whether achievement goal orientations are stable across years and were still the same at the time performance ratings were obtained. Furthermore, achievement goals might also vary depending on context. While prior research suggests that people might have a general predisposition for a certain goal orientation, which is proposed to be relatively enduring in sports (Duda & Whitehead, 1998; Roberts et al., 1998), it also states that these orientations are not traits and might change across time, context and the information processed (Roberts, 2012). For example, van de Pol & Kavussanu (2011) found goal orientation to differ between training and competition, with tennis players reporting higher mastery orientation during training, but higher performance orientation during competition. This in turn would be in line with the suggestion that a competitive environment promotes normative comparison, related to performance goals, while a training environment might promote self-comparison, as related to mastery goals (van de Pol & Kavussanu, 2011).

Altogether, these aspects might explain why, despite significant results being found by previous research, our study failed to do so. However, considering that our study is the first one implementing a prospective design, it is possible that across time there is simply no effect of achievement goal orientations on tennis performance, maybe exactly because goal orientations can change across time and context, resulting in a low predictive value.

Strengths and Limitations

The current study has a number of considerable strengths and limitations. To our knowledge it is the first of its kind to employ a prospective design with regard to the 2x2 framework, investigating the effect of achievement goal orientation on performance ratings

obtained five years later. Prior research primarily employed cross-sectional designs with limited predictive power, whereas our design provides a better approximation of the potential predictive value of achievement goals on future tennis performance. This is of relevance for talent identification and development programmes, which depend on the predictive validity of the factors used to identify talents at a young age. Another advantage of this study is the relatively large sample of young top tennis players. Considering that tennis is an early specialisation sport (Faber et al., 2016), meaning that effective talent development and promotion should take place at an early age, our results can provide helpful information for the development of TID programmes. A final strength of this study is the use of objective performance ratings. While ratings from coaches, parents or players themselves are subjective and potentially biased, the ratings from the KNLTB are objective, standardised and grounded in mathematical theory, potentially allowing for comparison of results among different studies and also reducing the amount of bias.

Some limitations of our study need to be taken into account as well. First of all, while our dataset includes primarily participants that were among the top 200 for their year of birth when the test battery was administered, some participants stopped competing in later seasons, hinting at a potential attrition bias. This is a general challenge for prospective and longitudinal designs in the field of talent development and acquisition, as each year players might be re-selected for the programme or not (Elferink-Gemser et al., 2018). When a player stops to compete, their rating remains essentially the same and only decreases minimally with each season they do not play. This might have potentially affected the strength of the associations between goal orientation and tennis performance operationalised by these ratings.

Secondly, there might have been more suitable methods of data analysis given the type and characteristics of our variables. For example, we opted for a normal multiple regression analysis, despite having ordinal data. Even though we found support in the literature for our

decision, there still remains controversy regarding the suitability of this approach. Additionally, due to the 2x2 achievement questionnaire consisting of forced-choice items only, we were not able to calculate the internal consistency of this measure. Hence we do not know how well the questionnaire captures the different constructs, i.e. the four goal orientations, that it measures. Finally, we encountered some issues regarding the normality assumptions for multiple linear regression. However, since the methods used to resolve these kinds of issues were beyond the scope of the bachelor thesis project, we had to accept these limitations and continue with the methods available to us. This might have however resulted in slightly biased outcomes.

Implications and Future Research

Despite the mentioned limitations, our results have some theoretical and practical implications. Given our findings, psychologists and coaches might reconsider the relevance of achievement goal orientations as predictors of future performance. This however, does not mean that they might not be important with regard to current performance, as suggested by previous research (e.g. Cervelló et al., 2007; Lochbaum & Gottardy, 2015; Roberts et al., 2007; Stoeber et al., 2009; van de Pol & Kavussanu, 2011). Furthermore, our findings strongly suggest that more research is needed that investigates the role of the 2x2 achievement goal framework in the context of tennis specifically. The existing literature does at this point not provide a sufficient base for drawing meaningful conclusions about the effect of achievement goal orientations on future tennis performance.

Future research should try to replicate the findings from the classroom settings and from sports in general in the tennis context, using similar questionnaires and operationalizations of the 2x2 achievement goals as used in studies that yielded significant results and questionnaires with a broader conceptualisation than our questionnaire. This would allow us to assess whether our non-significant results stem from differing

operationalisations of the achievement goals or not. Additionally, actual longitudinal studies, which are lacking in this research area so far (Biddle et al., 2003; Nijenhuis et al., 2024), would allow us to investigate the stability of achievement goals over time and to establish or disprove a causal relationship with future performance, given that they remain relatively stable across time and context.

Conclusion

In conclusion, even though our study did not find significant results supporting the predictive value of the 2x2 achievement goal orientations on future tennis performance, it adds value to the existing literature due to its prospective design, objective performance ratings and sample characteristics which provide a great basis for investigating which psychological factors are of relevance for future performance in young players and the identification of young talents. Furthermore, our research highlights important methodological considerations and potential limitations that could have influenced our results and should be considered in future research. Overall, our findings suggest the need for more longitudinal research and consistent operationalisations to investigate the role of achievement goal orientations in tennis. Future studies should also consider the influence of changing goal orientations over time and context to provide a more comprehensive understanding of their impact on athletic performance.

References

- Altintas, A., Hacıoglu, O., Sagturk, B., Belman, C., & Asci, F. H. (2010). An examination of the relationship between perception of success and participation motivation among youth soccer players. *Turkiye Klinikleri Journal of Sports Sciences*, 2(1), 26-31.
- Barron, K. E., & Harackiewicz, J. M. (2001). Achievement goals and optimal motivation: testing multiple goal models. *Journal of Personality and Social Psychology*, 80(5), 706–722. <https://doi.org/10.1037//0022-3514.80.5.706>

- Biddle, S. J. H. (2001). Enhancing motivation in physical education. In G. C. Roberts (Ed.), *Advances in motivation in sport and exercise* (pp. 101-127). Champaign, IL: Human Kinetics.
- Biddle, S., Wang, C. K. J., Kavussanu, M., & Spray, C. (2003). Correlates of achievement goal orientations in physical activity: A systematic review of research. *European Journal of Sport Science: EJSS: Official Journal of the European College of Sport Science*, 3(5), 1–20. <https://doi.org/10.1080/17461390300073504>
- Bonney, C. R. (2006). Investigating the influence of the 2 x 2 achievement goal framework on college athletes' motivation and performance [ProQuest Information & Learning]. In *Dissertation Abstracts International Section A: Humanities and Social Sciences* (Vol. 67, Issue 2–A, p. 457).
- Cervelló, E., Santos Rosa, F. J., Calvo, T. G., Jiménez, R., & Iglesias, D. (2007). Young tennis players' competitive task involvement and performance: The role of goal orientations, contextual motivational climate, and coach-initiated motivational climate. *Journal of Applied Sport Psychology*, 19(3), 304–321. <https://doi.org/10.1080/10413200701329134>
- Cho, Y., Weinstein, C. E., & Wicker, F. (2011). Perceived competence and autonomy as moderators of the effects of achievement goal orientations. *Educational Psychology*, 31(4), 393–411. <https://doi.org/10.1080/01443410.2011.560597>
- Conroy, D. E., Elliot, A. J., & Hofer, S. M. (2003). A 2 × 2 achievement goals questionnaire for sport: Evidence for factorial invariance, temporal stability, and external validity. *Journal of Sport & Exercise Psychology*, 25(4), 456–476. <https://doi.org/10.1123/jsep.25.4.456>

Cury, F., Elliot, A. J., Da Fonseca, D., & Moller, A. C. (2006). The social-cognitive model of achievement motivation and the 2 x 2 achievement goal framework. *Journal of Personality and Social Psychology*, *90*(4), 666–679.

<https://doi.org/10.1037/0022-3514.90.4.666>

Duda, J. L., & Whitehead, J. (1998). Measurement of Goal Perspectives in the Physical Domain. In J. Duda (Ed.), *Advances in Sport and Exercise Psychology Measurement* (pp. 21-48). Morgantown, WV: Fitness Information Technologies.

Dweck, C. S. (1986). Motivational processes affecting learning. *The American Psychologist*, *41*(10), 1040–1048. <https://doi.org/10.1037/0003-066x.41.10.1040>

Elferink-Gemser, M. T., te Wierike, S. C. M., & Visscher, C. (2018). Multidisciplinary longitudinal studies: A perspective from the field of sports. In *The Cambridge Handbook of Expertise and Expert Performance* (pp. 271–290). Cambridge University Press.

Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist*, *34*(3), 169–189. https://doi.org/10.1207/s15326985ep3403_3

Elliot, A. J. (2005). A Conceptual History of the Achievement Goal Construct. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation*. (pp. 52–72). Guilford Publications.

Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology*, *72*(1), 218–232. <https://doi.org/10.1037/0022-3514.72.1.218>

Elliot, A. J., & Fryer, J. W. (2008). The goal construct in psychology. In J. Y. Shah & W. L. Gardner (Eds.), *Handbook of motivation science*. (pp. 235–250). The Guilford Press.

- Elliot, A. J., & Harackiewicz, J. M. (1996). Approach and avoidance achievement goals and intrinsic motivation: A mediational analysis. *Journal of Personality and Social Psychology, 70*(3), 461–475. <https://doi.org/10.1037/0022-3514.70.3.461>
- Elliot, A. J., & McGregor, H. A. (2001). A 2 × 2 achievement goal framework. *Journal of Personality and Social Psychology, 80*(3), 501–519. <https://doi.org/10.1037//0022-3514.80.3.501>
- Faber, I. R., Bustin, P. M. J., Oosterveld, F. G. J., Elferink-Gemser, M. T., & Nijhuis-Van der Sanden, M. W. G. (2016). Assessing personal talent determinants in young racquet sport players: a systematic review. *Journal of Sports Sciences, 34*(5), 395–410. <https://doi.org/10.1080/02640414.2015.1061201>
- Harackiewicz, J. M., Barron, K. E., Tauer, J. M., & Elliot, A. J. (2002). Predicting success in college: A longitudinal study of achievement goals and ability measures as predictors of interest and performance from freshman year through graduation. *Journal of Educational Psychology, 94*(3), 562–575. <https://doi.org/10.1037/0022-0663.94.3.562>
- Harwood, C., Spray, C. M., & Keegan, R. (2008). Achievement goal theories in sport. In T. S. Horn (Ed.), *Advances in sport psychology., 3rd ed.* (pp. 157–185). Human Kinetics.
- Isoard-Gauthier, S., Guillet-Descas, E., & Duda, J. L. (2013). How to achieve in elite training centers without burning out? An achievement goal theory perspective. *Psychology of Sport and Exercise, 14*(1), 72–83. <https://doi.org/10.1016/j.psychsport.2012.08.001>
- Jordet, G. (2015). Psychological Characteristics of Expert Performers. In J. Baker & D. Farrow (Eds.), *Routledge Handbook of Sport Expertise* (1st ed., pp. 106-120). Routledge.

- Kramer, T. (2020). How to develop a Grand Slam winner...physical and psychological skills in Dutch junior tennis players. [Thesis fully internal (DIV), University of Groningen]. Rijksuniversiteit Groningen. <https://doi.org/10.33612/diss.117141631>
- Li, C.-H., & Chi, L. (2007). Prediction of goal orientation and perceived competence on intensity and direction of precompetitive anxiety among adolescent handball players. *Perceptual and Motor Skills*, *105*(1), 83–101. <https://doi.org/10.2466/pms.105.1.83-10>
- Li, C.-H., Chi, L., Yeh, S.-R., Guo, K.-B., Ou, C.-T., & Kao, C.-C. (2011). Prediction of Intrinsic Motivation and sports performance using 2×2 achievement goal framework. *Psychological Reports*, *108*(2), 625–637. <https://doi.org/10.2466/05.11.14.pr0.108.2.625-637>
- Lochbaum, M., & Gottardy, J. (2015). A meta-analytic review of the approach-avoidance achievement goals and performance relationships in the sport psychology literature. *Journal of Sport and Health Science*, *4*(2), 164–173. <https://doi.org/10.1016/j.jshs.2013.12.004>
- Meece, J. L., Blumenfeld, P. C., & Hoyle, R. H. (1988). Students' goal orientations and cognitive engagement in classroom activities. *Journal of Educational Psychology*, *80*(4), 514–523. <https://doi.org/10.1037/0022-0663.80.4.514>
- Midgley, C., Kaplan, A., Middleton, M., Maehr, M. L., Urdan, T., Anderman, L. H., Anderman, E., & Roeser, R. (1998). The development and validation of scales assessing students' achievement goal orientations. *Contemporary Educational Psychology*, *23*(2), 113–131. <https://doi.org/10.1006/ceps.1998.0965>
- Moreno-Murcia, J. A., Sicilia, A., Cervelló, E., Huéscar, E., & Dumitru, D. C. (2011). The relationship between goal orientations, motivational climate and selfreported

- discipline in physical education. *Journal of Sports Science & Medicine*, 10(1), 119–129.
- Newton, M., & Duda, J. L. (1993). Elite adolescent athletes' achievement goals and beliefs concerning success in tennis. *Journal of Sport & Exercise Psychology*, 15(4), 437–448. <https://doi.org/10.1123/jsep.15.4.437>
- Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review*, 91(3), 328–346. <https://doi.org/10.1037/0033-295x.91.3.328>
- Nicholls, J. G. (1989). *The competitive ethos and democratic education*. Harvard University Press.
- Nijenhuis, S. B., Koopmann, T., Mulder, J., Elferink-Gemser, M. T., & Faber, I. R. (2024). Multidimensional and longitudinal approaches in talent identification and development in racket sports: A systematic review. *Sports Medicine - Open*, 10(1). <https://doi.org/10.1186/s40798-023-00669-2>
- Ntoumanis, N. (2001). Empirical links between achievement goal theory and self-determination theory in sport. *Journal of Sports Sciences*, 19(6), 397–409. <https://doi.org/10.1080/026404101300149357>
- Pensgaard, A. M., & Roberts, G. C. (2000). The relationship between motivational climate, perceived ability and sources of distress among elite athletes. *Journal of Sports Sciences*, 18(3), 191–200. <https://doi.org/10.1080/026404100365090>
- Puente-Díaz, R. (2012). The effect of achievement goals on enjoyment, effort, satisfaction and performance. *International Journal of Psychology: Journal International de Psychologie*, 47(2), 102–110. <https://doi.org/10.1080/00207594.2011.585159>

- Roberts, G. C. (2001). Understanding the dynamics of motivation in physical activity: The influence of achievement goals on motivational processes. In G. C. Roberts (Ed.), *Advances in motivation in sport and exercise* (pp. 1-50). Champaign, Ill. : Human Kinetics.
- Roberts, G. C. (2012). Motivation in sport and exercise from an achievement goal theory perspective: After 30 years where are we? In G. C. Roberts & D. C. Treasure (Eds.), *Advances in motivation in sport and exercise* (pp. 5-58). Champaign, Ill. : Human Kinetics.
- Roberts, G. C., Treasure, D. C., & Balague, G. (1998). Achievement goals in sport: the development and validation of the Perception of Success Questionnaire. *Journal of Sports Sciences*, 16(4), 337-347. <https://doi.org/10.1080/02640419808559362>
- Roberts, G. C., Treasure, D. C., & Conroy, D. E. (2007). The dynamics of motivation in sport: The influence of achievement goals on motivation processes. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology* (pp. 3-30). Wiley & Sons.
- Roberts, Glyn C., & Nerstad, C. G. L. (2020). Motivation: Achievement Goal Theory in Sport and Physical Activity. In D. Hackfort & R. Schinke (Eds.), *The Routledge International Encyclopedia of Sport and Exercise Psychology*. Routledge.
- Robitzsch, A. (2020). Why ordinal variables can (almost) always be treated as continuous variables: Clarifying assumptions of robust continuous and ordinal factor analysis estimation methods. *Frontiers in Education*, 5. <https://doi.org/10.3389/feduc.2020.589965>
- Sari, I. (2015). Does goal orientation matter for trait anxiety, self-efficacy and performance? an investigation in university athletes. *Education*, 136(2), 169-178.

- Standage, M., Duda, J. L., & Ntoumanis, N. (2003). Predicting motivational regulations in physical education: the interplay between dispositional goal orientations, motivational climate and perceived competence. *Journal of Sports Sciences, 21*(8), 631–647. <https://doi.org/10.1080/0264041031000101962>
- Stoeber, J., & Crombie, R. (2010). Achievement goals and championship performance: Predicting absolute performance and qualification success. *Psychology of Sport and Exercise, 11*(6), 513–521. <https://doi.org/10.1016/j.psychsport.2010.07.007>
- Stoeber, J., Uphill, M. A., & Hotham, S. (2009). Predicting race performance in triathlon: the role of perfectionism, achievement goals, and personal goal setting. *Journal of Sport & Exercise Psychology, 31*(2), 211–245. <https://doi.org/10.1123/jsep.31.2.211>
- van de Pol, P. K. C., & Kavussanu, M. (2011). Achievement goals and motivational responses in tennis: Does the context matter? *Psychology of Sport and Exercise, 12*(2), 176–183. <https://doi.org/10.1016/j.psychsport.2010.09.005>
- Vandewalle, D. (1997). Development and validation of a work domain goal orientation instrument. *Educational and Psychological Measurement, 57*(6), 995–1015. <https://doi.org/10.1177/0013164497057006009>
- Van Yperen, N. W. (2006). A Novel Approach to Assessing Achievement Goals in the Context of the 2 × 2 Framework: Identifying Distinct Profiles of Individuals with Different Dominant Achievement Goals. *Personality and Social Psychology Bulletin, 32*(11), 1432–1445. <https://doi-org.proxy-ub.rug.nl/10.1177/0146167206292093>
- Vaughan, R., Hanna, D., & Breslin, G. (2018). Psychometric properties of the Mental Toughness Questionnaire 48 (MTQ48) in elite, amateur and nonathletes. *Sport,*

Exercise, and Performance Psychology, 7(2), 128–140.

<https://doi.org/10.1037/spy0000114>

Appendix A

Questionnaire Achievement Goal Orientations

De volgende lijst bestaat uit zes vragen. Je krijgt bij elke vraag twee stellingen voorgelegd waaruit je er één moet kiezen. Kies per vraag of optie A of optie B meer op jou slaat. Denk niet te lang na en ga af op je eerste indruk. Omcirkel of onderstreep de letter van jouw keuze en ga dan door met de volgende vraag.

Omcirkel PER VRAAG de letter "A" of "B"

In mijn tennis vind ik het *meest* belangrijk om

1	A ... het <i>beter</i> te doen dan de meeste anderen van mijn niveau.	of	B ... het <i>niet slechter</i> te doen dan de meeste anderen van mijn niveau.
---	--	----	--

2	A ... het <i>beter</i> te doen dan waar ik normaal gesproken toe in staat ben.	of	B ... het <i>niet slechter</i> te doen dan waar ik normaal gesproken toe in staat ben.
---	---	----	---

3	A ... het <i>beter</i> te doen dan de meeste anderen van mijn niveau.	of	B ... het <i>beter</i> te doen dan waar ik normaal gesproken toe in staat ben.
---	--	----	---

4	A ... het <i>niet slechter</i> te doen dan waar ik normaal gesproken toe in staat ben.	of	B ... het <i>niet slechter</i> te doen dan de meeste anderen van mijn niveau.
---	---	----	--

5	A ... het <i>niet slechter</i> te doen dan de meeste anderen van mijn niveau.	of	B ... het <i>beter</i> te doen dan waar ik normaal gesproken toe in staat ben.
---	--	----	---

6	A ... het <i>niet slechter</i> te doen dan waar ik normaal gesproken toe in staat ben.	of	B ... het <i>beter</i> te doen dan de meeste anderen van mijn niveau.
---	---	----	--

Appendix B

MTQ 48

Geef nauwkeurig antwoord en overweeg hoe je over het algemeen op de betreffende stelling reageert. Besteed niet te veel tijd per vraag. Het gaat bij deze stellingen om algemene situaties in het leven. Er zijn steeds vijf antwoord mogelijkheden waar je uit moet kiezen.

- | | | | | | |
|-----|--|---------------|-------------------------------------|-----------------|----------------------|
| 1. | Ik vind meestal wel iets om me te motiveren. | | | | |
| | Zeer mee oneens | Oneens | Nog mee eens, nog mee oneens | Mee eens | Zeer mee eens |
| 2. | Over het algemeen vind ik dat ik alles onder controle heb. | | | | |
| | Zeer mee oneens | Oneens | Nog mee eens, nog mee oneens | Mee eens | Zeer mee eens |
| 3. | Ik vind dat ik over het algemeen een waardevol persoon ben. (Bijv. dat je tevreden bent met wie je bent) | | | | |
| | Zeer mee oneens | Oneens | Nog mee eens, nog mee oneens | Mee eens | Zeer mee eens |
| 4. | Uitdagingen brengen gewoonlijk het beste in mij naar boven. | | | | |
| | Zeer mee oneens | Oneens | Nog mee eens, nog mee oneens | Mee eens | Zeer mee eens |
| 5. | Als ik met andere mensen werk ben ik meestal invloedrijk. (Bijv. dat er naar jou geluisterd wordt) | | | | |
| | Zeer mee oneens | Oneens | Nog mee eens, nog mee oneens | Mee eens | Zeer mee eens |
| 6. | Onverwachte veranderingen in mijn planning brengen me over het algemeen van de wijs. | | | | |
| | Zeer mee oneens | Oneens | Nog mee eens, nog mee oneens | Mee eens | Zeer mee eens |
| 7. | Ik geef meestal niet op onder druk. | | | | |
| | Zeer mee oneens | Oneens | Nog mee eens, nog mee oneens | Mee eens | Zeer mee eens |
| 8. | Ik heb over het algemeen veel vertrouwen in mijn eigen bekwaamheden. (Bijv. in de dingen die je kunt) | | | | |
| | Zeer mee oneens | Oneens | Nog mee eens, nog mee oneens | Mee eens | Zeer mee eens |
| 9. | Ik doe dingen meestal plichtsmatig. (Bijv. omdat de dingen moeten) | | | | |
| | Zeer mee oneens | Oneens | Nog mee eens, nog mee oneens | Mee eens | Zeer mee eens |
| 10. | Ik verwacht dat dingen soms verkeerd gaan. | | | | |
| | Zeer mee oneens | Oneens | Nog mee eens, nog mee oneens | Mee eens | Zeer mee eens |
| 11. | Ik heb vaak een gevoel van 'ik weet niet waarmee te beginnen' wanneer ik verschillende dingen op hetzelfde moment moet doen. | | | | |
| | Zeer mee oneens | Oneens | Nog mee eens, nog mee oneens | Mee eens | Zeer mee eens |
| 12. | Ik heb meestal het gevoel dat ik controle heb over de dingen die gebeuren in mijn leven. | | | | |

	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
13	Hoe slecht dingen ook zijn, ik heb meestal het gevoel dat ze positief aflopen.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
14	Ik wens vaak dat mijn leven meer voorspelbaar was. (Bijv. omdat je weet wat er komen gaat)				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
15	Als ik dingen plan zijn er vaak onvoorziene zaken/factoren die het verpesten.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
16	Ik zie het leven meestal van de zonnige kant.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
17	Ik zeg meestal mijn mening als ik iets wil zeggen.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
18	Af en toe voel ik me compleet waardeloos.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
19	Als me een taak wordt gegeven kan men er meestal op vertrouwen dat ik het uitvoer.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
20	Ik neem meestal het initiatief in een situatie wanneer ik denk dat het nodig is.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
21	Ik vind het over het algemeen moeilijk om te ontspannen.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
22	Ik ben gemakkelijk afgeleid van taken waar ik mee bezig ben.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
23	Ik weet meestal goed om te gaan met problemen die zich voordoen.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
24	Ik bekritiseer mezelf zelden zelfs als dingen verkeerd gaan.				

	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
25	Ik geef me meestal voor de volle 100%.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
26	Ik laat anderen meestal weten wanneer ik overstuur ben of geïrriteerd.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
27	Ik maak me meestal van te voren druk over dingen die nog moeten gebeuren.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
28	Ik voel me vaak ongemakkelijk tijdens sociale bijeenkomsten.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
29	Als ik moeilijkheden tegen kom geef ik meestal op.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
30	Ik ben meestal in staat vlug te reageren wanneer er onverwachte dingen gebeuren.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
31	Zelfs onder aanzienlijke druk blijf ik meestal kalm.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
32	Als er dingen verkeerd kunnen gaan, gaan ze meestal ook verkeerd.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
33	Vaak overkomen dingen me gewoon.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
34	Ik laat mijn gevoelens over het algemeen niet zien.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee

35	Ik vind het vaak moeilijk om een mentale inspanning te verrichten wanneer ik moe ben.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
36	Als ik fouten maak, dan maak ik me daar nog dagen zorgen over.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
37	Als ik moe ben, vind ik het moeilijk om door te gaan.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
38	Ik vind het gemakkelijk om mensen te vertellen wat te doen.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
39	Ik kan meestal een hoog niveau van mentale inspanning voor een langere tijd vasthouden.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
40	Ik kijk meestal uit naar veranderingen in mijn routine.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
41	Ik heb het idee dat wat ik doe geen verschil maakt.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
42	Ik ben bijna nooit enthousiast voor de taken die ik moet doen.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
43	Als ik vind dat iemand geen gelijk heeft, dan ben ik niet bang om met deze persoon hierover in discussie te gaan.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
44	Ik houd meestal van een uitdaging.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
45	Ik heb meestal mijn zenuwen onder controle.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee
46	In discussies geef ik meestal toe, zelfs wanneer ik een duidelijke mening heb.				
	Zeer mee oneens eens	Oneens	Nog mee eens, nog mee oneens	Mee eens	Zeer mee

- 47 Bij tegenslag vind ik het meestal moeilijk om vast te houden aan mijn doel.
.
Zeer mee oneens **Oneens** **Nog mee eens, nog mee oneens** **Mee eens** **Zeer mee eens**
- 48 Ik kan me meestal aanpassen aan uitdagingen die ik op mijn weg tegenkom.
.
Zeer mee oneens **Oneens** **Nog mee eens, nog mee oneens** **Mee eens** **Zeer mee eens**