



Coaching Beginning Teachers: The Moderating  
Role of Perceptual (Dis)Agreement and  
Personality in Basic Psychological Need Support,  
Satisfaction, and Autonomous Motivation

Patrick Lumumba Kadjo

Master Thesis – Talent Development & Creativity

[S3673537]  
[July] [2023]  
Department of Psychology  
University of Groningen  
Examiner/Daily supervisor:  
MSc Hugh J. Liu

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.

### Abstract

In this research, the relationship between coach and beginning teacher in an educational context has been examined with respect to the Self-Determination Theory (SDT). More precisely, it focused on the moderating effect of perceptual (dis-)agreement between coach ( $n = 72$ ) and beginning teacher ( $n = 72$ ) regarding coach's basic psychological need (BPN) supportive behavior on the relationship between teacher's perceived BPN supportive behavior of coach and teacher's BPN satisfaction. We hypothesized that perceptual agreement between the two actors positively moderates the described relationship. Apart from perceptual differences, personality of beginning teacher (conscientiousness and extraversion) has been tested as a moderator between teacher's BPN satisfaction and autonomous motivation. Conscientiousness as well as extraversion were hypothesized to have a positive relationship in moderation. Coaches as well as beginning teachers filled out questionnaires measuring perceived BPN supportive behaviors, BPN satisfaction, personality and autonomous motivation after each coaching session. Overall, the results partially support our first hypothesis and perceptual agreement between coach and teacher seems to lead to higher satisfaction of the BPN for autonomy and competence. Increased disagreement in perception between both actors led to higher satisfaction of the BPN for relatedness. Personality was found to be an insignificant moderator between BPN satisfaction and autonomous motivation in beginning teacher. We argue that teacher's self-criticism as well as educational context might have led to finding only partial support for our hypotheses. Available research on coaching have only focused on a sports environment while our results reveal new important contributions and implications in the field of educational coaching. Lastly, several limitations in our study and future research recommendations are discussed.

*Keyword:* coaching, basic psychological needs, need satisfaction, perception, conscientiousness, extraversion, autonomous motivation

### **Coaching Beginning Teachers: The Moderating Role of Perception and Personality in Basic Psychological Need Support, Satisfaction, and Autonomous Motivation**

In the educational setting, workload and responsibilities as a teacher remain the same regardless of an individual's level of professionalism (Ingersoll & Strong, 2011). Consequently, beginning teachers often face situations which seem to be beyond their competence as their low level of experience yields difficulties to meet the expected standards (e.g., Evelein et al., 2008; Ingersoll & Strong, 2011; Veenman et al., 1998; Veenman & Denessen, 2001). For this reason, individuals start to feel incompetent and unable to fulfill their duties which lead to a loss of motivation. To help teachers facing these difficulties in the beginning of their career, various facilities offer support through coaching programs (Green et al., 2006; Reddy et al., 2021; Witherspoon et al., 2021). Coaching in this context was shown to increase teacher's autonomous motivation (Lindner et al., 2021; Evelei et al., 2008; Rocchi & Pelletier, 2018). Autonomous motivation is characterized by a behavioral regulation which is determined by a low degree of external control and a high degree of internal control (Ryan & Moller, 2017). Hence, reasons which motivate an individual to perform in a specific context are highly inherent and less influenced by external cues or factors (Ryan & Moller, 2017; Rocchi et al., 2017). Higher levels of autonomous motivation were related to performance-related advantages including higher persistency, deeper processing of information and other improvements in self-regulatory skills (Ryan & Moller, 2017). Therefore, possessing high levels of autonomous motivation can be expected to provide a behavioral and cognitive repertoire needed for beginning teachers to cope with the difficult circumstances in their career (Ingledeew et al., 2004). Even though coaching reflects a crucial factor which was shown to determine beginning teacher's level of autonomous motivation, the supportive effect of coaching seems to vary across different coaches. A widely used theory to

understand ongoing processes in this context is the Self-Determination Theory (Ryan & Moller, 2017; Rocchi & Pelletier, 2018).

### **Basic Psychological Need Support, Satisfaction, and Autonomous Motivation**

The Self-Determination theory (SDT) implies that each individual possesses a total of three basic psychological needs (BPN). The BPN for autonomy reflects how individuals thrive for a feeling of ownership about one's actions (Ryan & Moller, 2017). This feeling is assumed to promote a sense of self-actualization. Second, the BPN for competence comprises the need to control one's environment and its influence on an individual. Finally, the BPN for relatedness urges humans to maintain strong, stable and positive relationships (Ryan & Moller, 2017). According to the SDT, experiencing BPN support is necessary to ensure BPN satisfaction. Moreover, humans innately thrive to satisfy their BPNs throughout life (Ryan & Moller, 2017). In light of the SDT, coaching was shown to support BPNs through stimulating self-awareness and goal-oriented behavior in beginning teachers (Rocchi & Pelletier, 2018). Therefore, BPN supportive behavior of coach perceived by teacher leads to BPN satisfaction. In return, satisfying the three BPNs was shown to promote an individual's autonomous motivation which is essential for beginning teachers facing the difficulties as noted above (Evelei et al., 2008; Rocchi & Pelletier, 2018). Even though BPN support in coaching may account for BPN satisfaction and, thus, autonomous motivation in beginning teachers, two crucial factors seem to account for the strength of this relationship (e.g., Rocchi et al., 2017; Rocchi & Pelletier, 2018).

### **First-Stage Moderator: Perceptual (Dis)Agreement in Coach's BPN Supportive Behavior**

With regard to the SDT, multiple studies highlighted the role of perception in coaching (Jöesaar et al., 2012; Matosic & Cox, 2014; Pelletier et al., 2001; Stebbings et al., 2012). As for the majority of related research, Jöesaar and colleagues (2012) focused on BPN support

perceived by coaching participant in particular. Their study investigated the effects of perceived BPN support of coach on BPN satisfaction in coaching participant in various disciplines in sports (Jõesaar et al., 2012). Results revealed that more positive perceptions of coach's BPN supportive behavior may lead to higher BPN satisfaction in athletes. Thus, an athlete perceiving coaches' BPN supportive behavior more positively seemed to increase the satisfaction of BPNs implying a more successful coaching outcome (Jõesaar et al., 2012). Other research supported these findings by revealing similar results (Matosic & Cox, 2014; Pelletier et al., 2001; Stebbings et al., 2012).

Considering other related research, only few studies have examined the combined effect of coach's as well as coaching participant's perception on BPN satisfaction (Rocchi & Pelletier, 2018; Smith et al., 2016). To fill this gap in research, Rocchi and Pelletier (2018) highlighted the effect of differences in perceived BPN supportive behavior between coach and participant in the field of sports. In their study, the researchers tested how perceptual differences between coach and athlete regarding coach's BPN supportive behavior moderates the relationship between athlete's perceived BPN supportive behavior and athlete's BPN satisfaction. Rocchi and Pelletier (2018) focused on the effect of underreporting (i.e., coach falsely reported lower BPN supportive behavior than perceived by athlete) and overreporting (i.e., coach falsely reported higher BPN supportive behavior than actually perceived by athlete) BPN supportive behavior of coach. Results revealed a low BPN satisfaction in cases in which the coach was falsely overrating own skills. Cases in which a coach rated own behavior lower than perceived by athlete led to a comparably higher satisfaction of BPNs (Rocchi & Pelletier, 2018). Thus, athletes perceiving the BPN supportive skills of a coach more positively than the coach experience a higher BPN satisfaction compared to athletes perceiving the BPN supportive behavior of a coach as less supportive than the coach (Rocchi

& Pelletier, 2018). Despite the comparably more positive effect of underreports, BPN satisfaction was still impaired by perceptual disagreement in both conditions.

With a focus on perceptual agreement instead of disagreement, Smith and colleagues (2016) conducted a research which highlighted the importance of alignment in the perception of coach and coaching participant. Examining coaching in sports, the researchers tested the relationship between perceptual agreement of coach and athlete with regard to perceived BPN supportive behavior of coach and BPN satisfaction in athletes (Smith et al., 2016). Higher perceptual agreement between coach and athletes was considered as more empowering for the athlete, therefore, yielding a higher satisfaction of BPNs (Smith et al., 2016). Results supported the hypothesis and increasing agreement was found to lead to higher BPN satisfaction in athletes.

The presented studies highlight the crucial role of perception in coaching (Jöesaar et al., 2012; Rocchi & Pelletier, 2018; Smith et al., 2016). In particular, previous research showed how perceptual (dis)agreement between coach and coaching participant may account for BPN satisfaction in participants (Rocchi & Pelletier, 2018; Smith et al., 2016). However, the majority of related research focused on coaching in the sports domain. So far, the presented relationship in an educational context has not received enough attention. For this reason, this paper aims at filling the gap in research by investigating conditions for highest BPN satisfaction in relation to perceptions of coach and participant regarding coach's BPN supportive behavior within the educational domain.

### **Second-Stage Moderator: Personality – Conscientiousness and Extraversion**

Considering the promoting effect of BPN satisfaction on autonomous motivation in coaching as described in the introduction, personality was found to play an important role accounting for the strength of this effect (Chlue, 2015; Lindner et al., 2021; Rocchi & Pelletier, 2018). Ingledeu and his colleagues (2004) conducted a study to test how different

personal traits moderate the positive effect of individual's BPN satisfaction on autonomous motivation in the context of exercising. The results supported their assumptions and personality seemed to increase an individual's internal behavioral regulation when BPN satisfaction was experienced. Thus, personality might determine how much BPN satisfaction leads to an increase in autonomous motivation (Ingledeu et al., 2004). For this reason, personality should be seen as a crucial determinant for coaching outcome. More particular, study results entailed extraversion and conscientiousness as crucial moderators in the presented relationship (Ingledeu et al., 2004).

### ***Extraversion***

Extraversion reflects personal characteristics like feeling highly comfortable and seeking to be among people (Dwan et al., 2017). Therefore, an extraverted person adores the company of others which in turn energizes the individual. Ingledeu and his colleagues (2004) demonstrated the influence of this trait on the effect of BPN satisfaction in promoting autonomous motivation. The more extraverted an individual is the more autonomous motivation should be promoted in this individual given that BPN satisfaction is experienced. In this context, extraversion yields an important moderating effect for a successful outcome in coaching (Chlue, 2015; Ingledeu et al., 2004).

### ***Conscientiousness***

Conscientiousness is characterized by good impulse control as well as goal directed behavior and high levels of thoughtfulness (Dwan et al., 2017). An individual who scores high on this trait can be expected to be a highly structured and organized person who likes planning ahead and who is able to control his or her focus by avoiding distractions. Moreover, based on the findings of Ingledeu and colleagues (2004), more conscientiousness increases the positive effects of BPN satisfaction on autonomous motivation. As for extraversion, higher levels of conscientiousness were related to higher degrees of autonomous behavioral



regulation when BPN satisfaction is experienced. In this regard, conscientiousness reflects an influential moderator in the relationship between BPN satisfaction and autonomous motivation accounting for successful coaching (Ingledeu et al., 2004).

Transferring these findings to our present context, the two personality traits discussed above both represent important factors in educational coaching. Based on the findings of Ingledeu and colleagues (2004), extraversion and conscientiousness can be expected to promote autonomous motivation. Higher levels of the two personal traits seem to moderate and increase the positive relationship between BPN satisfaction and autonomous motivation. To our knowledge, only Ingledeu and colleagues (2004) have included and tested personality as a moderator as described above making it a highly unexplored variable in the context of coaching. Moreover, their research has only investigated the effects of personality in coaching in sports. Regarding these circumstances, our present study aims at shining more light on the widely overlooked variable to create a better understanding about the relationship between participant's BPN satisfaction and autonomous motivation in educational coaching.

### **The Present Study**

Considering available research dealing with BPN support and satisfaction in coaching, we find many studies which focus on the sports domain but only few studies taking the educational domain into account (Ingledeu et al., 2004; Jõesaar et al., 2012; Lindner et al., 2021; Rocchi et al., 2017; Rocchi & Pelletier, 2018; Stenling et al., 2017). In the same way, studies which highlighted and tested the influence of perceptual (dis)agreement between coach and coaching participant regarding coach's BPN supportive behavior as well as personality of coaching participant in coaching dealt with coaching in sports (Ingledeu et al., 2004; Rocchi & Pelletier, 2018). Moreover, despite the fact that personality has been found to play a crucial role moderating the relationship between BPN satisfaction and autonomous motivation, it has rarely been focus of research (Ingledeu et al., 2004). The present study

aims at increasing the insufficient research as it is described above by investigating the effects of coach's and coaching participant's perceived BPN support of coach and participant's personality in educational coaching. With regard to the Self-Determination Theory, it was tested how perceptual (dis)agreement between coach and beginning teacher regarding coach's BPN supportive behavior affects and moderates the effect of BPN supportive behavior perceived by teacher on beginning teacher's BPN satisfaction. This procedure relates to the first-stage moderation depicted in Figure 1. Furthermore, it was investigated how beginning teacher's personality might account for a varying effect of BPN satisfaction in promoting autonomous motivation in teacher. In this regard and based on previous research findings, conscientiousness and extraversion were tested as moderators of the relationship between beginning teacher's BPN satisfaction and autonomous motivation (Ingledeu et al., 2004). This procedure relates to the second-stage moderation in the present research model (see Figure 1). Based on previous research findings, we hypothesize following (Ingledeu et al., 2004; Rocchi & Pelletier, 2018):

**Hypothesis 1:** Perceptual (dis)agreement in coach-teacher dyads moderates the relationship between beginning teachers' perceived basic psychological need (i.e., BPN) support and BPN satisfaction, such that the positive relationship is stronger when coaches agree with beginning teachers about their BPN supportive behaviors than when they under-report, and over-report, respectively.

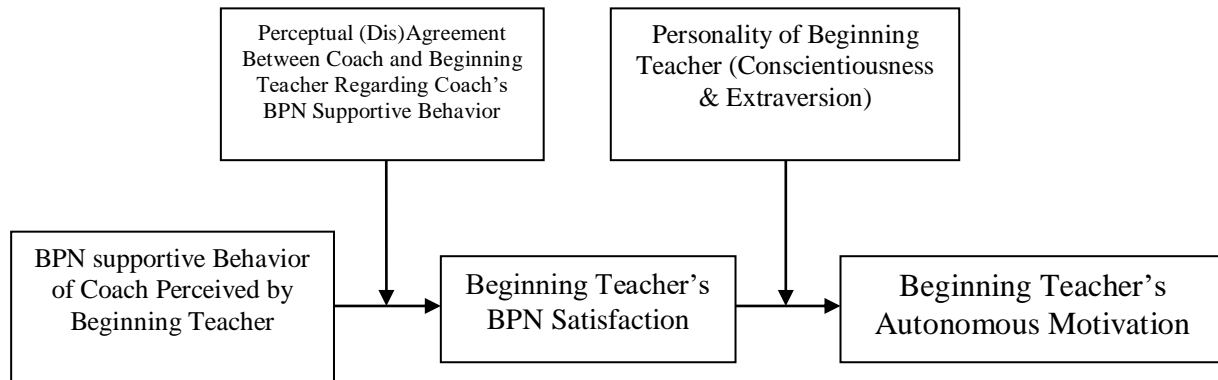
**Hypothesis 2:** Personality trait extraversion moderates the relationship between basic psychological need satisfaction and autonomous motivation, such that the positive relationship is stronger when the beginning teachers' extraversion is higher than those who are lower.

**Hypothesis 3:** Personality trait conscientiousness moderates the relationship between basic psychological need satisfaction and autonomous motivation, such that the positive

relationship is stronger when the beginning teachers' conscientiousness is higher than those who are lower.

### Figure 1

#### Research Model



*Note.* Vertical arrows correspond to the first stage moderator effect on the relationship between BPN supportive behavior perceived by coach and beginning teacher's BPN satisfaction as well as the second-stage moderator effect on the relationship between BPN satisfaction and beginning teacher's autonomous motivation.

## Method

### Participants

A cross-sectional analysis with a sample consisting of students recruited from the University of Groningen was conducted. The sample included a total of 144 Psychology students who were involved in coaching sessions as either coach or beginning teacher who is being coached. Coaches were 81 Master students of which 9 individuals were removed from further analysis due to incomplete data (Coaches:  $n_{\text{females}} = 49$ ,  $n_{\text{males}} = 18$ ,  $n_{\text{other}} = 5$ ). Age ranged from 21 to 35 years with an average of 24 years ( $SD = 2.42$ ). Coaches were taking a coaching course at the university in which individuals acquired crucial practical coaching skills which they needed to apply in three sessions with third-year Bachelor students who were teaching lower-year students. These teachers represent the second half of our sample. As for coaches in our sample, 72 beginning teachers remained after excluding individuals which

provided incomplete data ( $n_{\text{females}} = 48$ ,  $n_{\text{males}} = 17$ ,  $n_{\text{other}} = 7$ ). Age of beginning teachers ranged from 18 to 41 years with an average of 23 years ( $SD = 3.54$ ). The coaching sessions took place in a time span of four weeks and each coach was individually paired with one of the beginning teachers.

### **Procedure**

Before the start of data collection, the questionnaires used in our study were approved by the Ethics Committee of the University of Groningen. The invitation to the study was completed via e-mail. Moreover, participation in our study was voluntary and only students who were taking part in the coaching session meaning coach or beginning teacher were eligible to participate. Participants gave informed consent for participation as well as for use and storage of provided individual information. All participants were asked to fill out a questionnaire after each of three coaching sessions. Participants received the questionnaire via e-mail after each corresponding session and it was filled out online independently. The answers were subsequently saved to our data pool. As the second coaching session involved the highest amount of actual coaching compared to the first and last session, only information of the second questionnaire was used for our analysis.

### **Material**

The questionnaire included different scales that assess four variables. Participants had to answer using a 7-point Likert-Scale ranging from 1 (*Do not agree at all*) to 7 (*Completely agree*) or by answering in their own words.

#### ***BPN Supportive Behaviors***

To measure coach's BPN supportive behavior rated by coach and beginning teacher, two adapted 12-item versions of the Interpersonal Behavior Questionnaire (IBQ) were used (Rocchi et al., 2017). This scale assessed coach's BPN supportive behavior perceived by coach and teacher. Beginning Teacher and coaches each received different versions of the test

to measure perceived behavior of coach with respect to their individual point of view (see Appendix A and B). It included statements like “At three coaching sessions in the past coaching trajectory, when I coach my coachee, I supported his/her divisions” for coaches (Rocchi et al., 2017). In comparison, beginning teachers rated statements which included “During the past coaching trajectory, my coach supported my decisions”.

### ***Basic Psychological Need Satisfaction***

Beginning teacher’s BPN satisfaction was measured respectively by using two adapted 12-item versions of the Basic Psychological Need Satisfaction and Frustration Scale: Domain-Specific Measures: Training (BPNSFS-Training; Aelterman et al., 2016). This scale consists of three subscales corresponding to and assessing the satisfaction of each of the three basic psychological needs respectfully (*Autonomy satisfaction, Competence satisfaction, Relatedness satisfaction*; see Appendix C). Each subscale entailed four test items (Aelterman et al., 2016). For example, beginning teachers were asked to rate statements including “During the coaching trajectory, I felt a sense of choice and freedom in the things I thought and did” measuring the satisfaction of need for autonomy, “During the coaching trajectory, I felt competent to achieve proposed coaching goals” measuring the competence need satisfaction and “During the coaching trajectory, I felt close and connected to my coach” measuring the satisfaction of the need for relatedness.

### ***Personality***

A brief version of the Big Five Personality Inventory (Big Five Inventory-10) with 10 test items was included to measure beginning teachers’ personality including conscientiousness and extraversion (Goldberg, 1990). In this scale, participants needed to rate statements like “I tend to see myself as someone who is reserved” measuring conscientiousness or “I tend to see myself as someone who is outgoing, sociable” which assessed extraversion within an individual (see Appendix D).

### ***Autonomous Motivation***

Finally, beginning teachers' autonomous motivation toward individual coaching goals was measured respectively by using two adapted 9-item versions of the Revised Sport Motivation Scale (SMS-II; Pelletier et al., 2013; see Appendix E). Here, beginning teachers received statements which for example included "I pursue the coaching goal, because I find it enjoyable to discover new goal attainment strategies".

## **Results**

### **Checking Assumptions**

The data analysis was completed using the Statistical Package for the Social Sciences (SPSS). A random sampling method was applied implying that the first assumption of independent samples was met. Moreover, the assumption of independent errors was met in our data (Durbin-Watson Value = 2.35). Furthermore, the scoring distribution of model variables was examined and found to be acceptable as skewness is between -1.25 to .14 and kurtosis is between -.747 to 1.51 (Soberón & Stute, 2017). Since models were tested by using bootstrapping and maximum likelihood robustness, which is robust to nonnormality, no adjustments were made to the variable distributions. Additionally, to test the multicollinearity, the Variance Inflation Factors (VIF) were calculated. Although there is no conventional rule of thumb, it is suggested that VIF-values above 10 signifies the presence of multicollinearity (Tabachnick & Fidell, 2013). As the data show VIF-values smaller than 10, multicollinearity was not assumed.

### **Correlations**

Based on coach's and beginning teacher's self-reports, correlations among all study variables have been computed. Table 1 depicts relevant descriptive statistics. Calculated correlations are shown in Table 2. Perceived BPN support from coach and beginning teacher as well as BPN satisfaction with regard to autonomy, competence and relatedness were

significantly positively related to autonomous motivation. Moreover, BPN supportive behavior was positively and significantly related to BPN satisfaction for each of the BPN respectfully. With regard to personality, only extraversion was positively significantly associated with teacher's autonomous motivation. Conscientiousness was only positively and significantly related to perceived BPN supportive behavior by coach. Furthermore, a significant positive correlation between Extraversion and Conscientiousness was found.

**Table 1***Descriptive Statistics of all Study Variables*

Variables	N	Range	Minimum	Maximum	Mean	Std. Deviation
Coach's perceived						
Autonomy support	72	1-7	3.00	7.00	5.99	.71
Relatedness support	72	1-7	3.00	7.00	5.82	.87
Competence support	72	1-7	4.00	7.00	5.98	.63
Teacher's perceived						
Autonomy support	72	1-7	3.00	7.00	5.86	.95
Relatedness support	72	1-7	2.00	7.00	5.57	1.13
Competence support	72	1-7	3.00	7.00	5.95	.83
Teacher's autonomy satisfaction	72	1-7	3.63	7.00	5.83	.95
Teacher's competence satisfaction	72	1-7	3.25	7.00	5.98	.84
Teacher's relatedness satisfaction	72	1-7	3.00	7.00	5.55	1.08
Teacher's autonomous motivation	72	1-7	3.67	7.00	5.37	.83
Teacher extraversion	72	1-7	1.75	6.25	4.48	.87
Teacher conscientiousness	72	1-7	3.25	6.25	4.56	.78
Valid N (list-wise)	72					

*Note.* n = 72 coaches; n = 72 beginning teachers.

### Main Analysis

The following analysis comprised two main parts in which our hypotheses were tested. In the first analytical part, a polynomial analysis was conducted to test the first-stage moderator effect of our research model as well as our first hypothesis (Rocchi & Pelletier, 2018). Following this step, a moderator analysis was conducted to test the second-stage moderator effect of our research model and, therefore, our second and third hypothesis.

**Table 2**  
*Correlations Between all Study Variables*

		1	2	3	4	5	6	7	8	9	10	11	12
1. Autonomy Support Perceived by Coach	Pearson Correlation	/											
2. Relatedness Support Perceived by Coach	Pearson Correlation	.36*	/										
3. Competence Support Perceived by Coach	Pearson Correlation	.61*	.39*	/									
4. Autonomy Support Perceived by Beginning Teacher	Pearson Correlation	.50*	.15	.36*	/								
5. Relatedness Support Perceived by Beginning Teacher	Pearson Correlation	.28*	.25*	.23	.46*	/							
6. Competence Support Perceived by Beginning Teacher	Pearson Correlation	.40*	.26*	.46*	.56*	.64*	/						
7. Beginning Teacher's Autonomy Satisfaction	Pearson Correlation	.46*	.23	.45*	.84*	.43*	.58*	/					
8. Beginning Teacher's Relatedness Satisfaction	Pearson Correlation	.26*	.26*	.21	.47*	.89*	.63*	.50*	/				
9. Beginning Teacher's Competence Satisfaction	Pearson Correlation	.42*	.17	.57*	.54*	.44*	.79*	.67*	.51*	/			
10. Beginning Teacher's Autonomous Motivation	Pearson Correlation	.34*	.25*	.29*	.33*	.43*	.57*	.39*	.42*	.49*	/		
11. Beginning Teacher's Extraversion	Pearson Correlation	-.05	.11	-.00	-.07	.22	.11	.03	.21	.13	.28*	/	
12. Beginning Teacher's Conscientiousness	Pearson Correlation	.30*	.30*	.33*	.18	.21	.19	.22	.20	.18	.19	.36*	/

*Note.* n = 72 coaches; n = 72 beginning teachers, \*  $p < .05$ .



*Perceptual (Dis)Agreement in Perceived BPN Support of Coach*

A discrepancy analysis revealed the number of cases in which coach over- or underrated BPN supportive behavior (i.e., coach falsely reported higher or lower BPN supportive behavior than actually perceived by teacher) and in how many cases coach and teacher had no perceptual disagreement. This analytical procedure was based on a previous study conducted by Fleenor and Prince (1997). First, self-report scores of coach and teacher regarding perceived autonomy support (AS), competence support (CS) and relatedness support (RS) were standardized. Moreover, teacher scores were subtracted from coaches' scores. In this way, percentages of coach-teacher dyads representing a disagreement in which coach scored higher (i.e., coach overreporting), or in which beginning teacher scored higher (i.e., coach underreporting) were calculated for autonomy support, competence support, and relatedness support. Here, any difference between the score of coach and teacher which was smaller or larger than half a standard deviation reflected a disagreement in BPN supportive behavior perception.

Results reveal a similar distribution of underreport, agreement and overreport among scores of coach and teacher on perceived AS, CS and RS (see table 3). For AS and RS, coaches falsely report their BPN supportive behavior in approximately 60% of the cases in our sample. Coaches' perception of CS is not aligned with the perception of teacher in around 53% of the cases. In all conditions (AS, CS and RS) coaches falsely underreport their BPN supportive behavior approximately 26-28% of the time. Comparably, they overreported their skills in approximately 26-33% of all cases in the sample.

A polynomial analysis tested the strength of our first-stage moderator effect. Thus, the moderating effect of perceptual difference between coach and teacher regarding coach's BPN supportive behavior on the relationship between teacher's perceived BPN supportive behavior of coach and BPN satisfaction was tested. It was run three times using a different

model for each of the three BPN. Here, unstandardized self-report scores were centered to reduce multicollinearity-related issues and to compute five predictor variables for each associated BPN. These predictor variables were needed for each BPN-related polynomial regression analysis (Aiken et al., 1991). The centered scores of perceived BPN supportive behavior of coach ( $X_1$ ) and beginning teacher ( $X_2$ ) were then used to test the linear relationship between self-report scores and BPN satisfaction. Additionally, the nonlinear relationship between coach's and beginning teacher's self-report scores and BPN satisfaction was tested by squaring both centered variables ( $X_1^2$  and  $X_2^2$ ). Lastly, the product of both centered scores ( $X_1$  and  $X_2$ ) was calculated to test the interaction effect between coach's and beginning teacher's self-report scores with regard to BPN satisfaction and resulting levels of autonomous motivation.

**Table 3**

*Frequencies of Agreement or Disagreement (Underreport or Overreport) Between Coach's and Teacher's Perceived BPN Supportive behavior of Coach*

Groups	Frequency	Percentage (entire sample)	Percentage (adjusted sample)
<b>Autonomy support</b>			
Underreport (coach < teacher)	20	24.7	27.8
Agreement (coach = teacher)	29	35.8	40.3
Overreport (coach > teacher)	23	28.4	31.9
<b>Competence support</b>			
Underreport (coach < teacher)	19	23.5	26.4
Agreement (coach = teacher)	34	42.0	47.2
Overreport (coach > teacher)	19	23.5	26.4
<b>Relatedness support</b>			
Underreport (coach < teacher)	19	23.5	26.4
Agreement (coach = teacher)	29	35.8	40.3
Overreport (coach > teacher)	24	29.6	33.3
	72	88.9	100

*Note.* n = 72 coaches; n = 72 beginning teachers.

The surface analysis included and tested the strength of four surface values (see Table 4 and Figure 2). Using model #1 as an example, the first ( $a_1$ ) reveals the strength of the linear relationship between coach's and beginning teacher's reported BPN supportive behavior of

the coach regarding the BPN for autonomy and beginning teacher's BPN satisfaction. The degree to which coach and beginning teacher's reports are in agreement and result in an increase in autonomy satisfaction in this case reflects a significant positive value.

Comparably, the degree of agreement between coach and teacher's reports leading to a decrease in autonomy satisfaction reflects a significant negative value. The nonlinear relationship between self-report-agreement of the two actors represents the second surface value ( $a_2$ ). Here, a positive significant value reflects that higher levels of agreement yield a stronger effect on BPN satisfaction while a negative significant value implies a weaker effect at higher levels of agreement. The third ( $a_3$ ) surface value indicates the degree to which disagreement between the reports of coach and beginning teacher is associated to autonomy satisfaction. It is positively significant if coach reports a higher perceived level of AS than teacher which increases autonomy satisfaction and is negatively significant if underreporting own BPN supportive behavior leads to more autonomy satisfaction. Finally, the degree to which coach and teacher's ratings on perceived BPN supportive behavior differ and how this difference affects autonomy satisfaction is reflected in the fourth ( $a_4$ ) surface value. In this case, a significant positive value implies a higher autonomy satisfaction if there is a higher positive disagreement (coach overreports own BPN supportive behavior). On the other hand, a significant negative value implies a lower autonomy satisfaction if there is a higher negative disagreement (coach underreports own BPN supportive behavior).

**Table 4**

*Results of the Polynomial Regression Analysis and Surface Values Predicting Beginning Teacher's BPN Satisfaction*

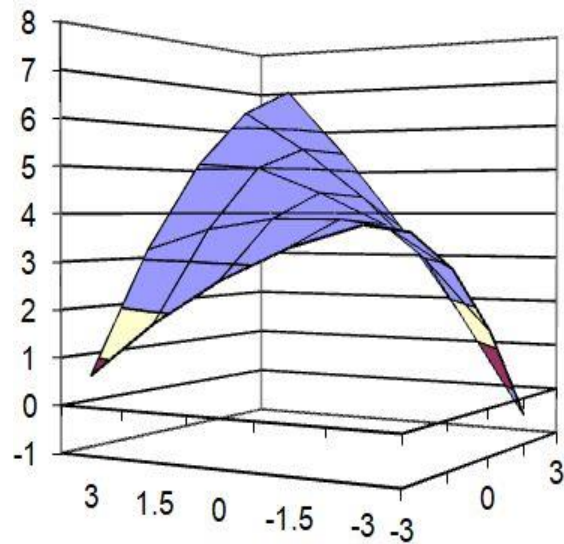
Models	Variance		Unstandardized regression coefficients							
	$r^2$	$a_1$	$a_2$	$a_3$	$a_4$	Coach Perception (bx <sub>1</sub> )	Beginning Teacher Perception (bx <sub>2</sub> )	Coach Perception Squared (bx <sub>3</sub> )	Beginning Teacher Perception Squared (bx <sub>4</sub> )	Coach x Beginning Teacher (bx <sub>5</sub> )
1. Autonomy	.74	.54*	.11*	-.22	-.49	.16	.38	-.14	-.05	.30
2. Competence	.70	.86*	.04	.09	-.36	0.34	.24	-.16	-.00	.20
3. Relatedness	.83	.31	.21*	-.80*	.10	.25	.55	.06	.10	.05

*Note.* In the table above,  $r^2$  is explained variance,  $a_1$  is the strength of the linear relationship between beginning teacher's and coach's reported BPN supportive behavior of the coach regarding BPN satisfaction,  $a_2$  is nonlinear relationship between self-report-agreement of the two actors,  $a_3$  indicates the degree to which disagreement between the reports of coach and beginning teacher is associated to BPN satisfaction,  $a_4$  the degree to which coach and beginning teacher's ratings on perceived BPN supportive behavior differ and how this difference affects BPN satisfaction, \*  $p < .05$ .

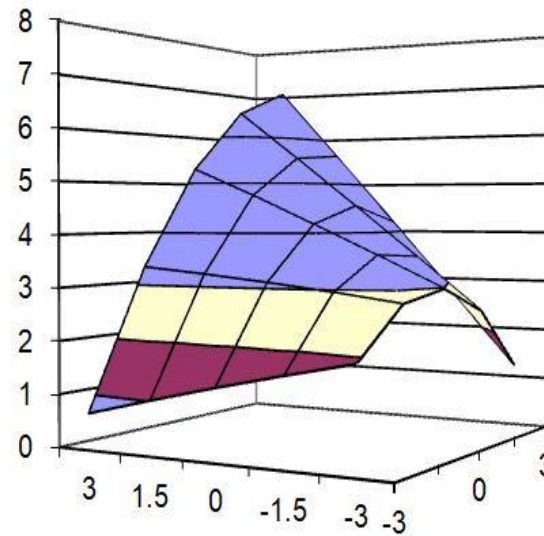
Results of the polynomial regression analysis are depicted in Table 4 revealing significant regression models which explained 70% to 83% of the variance in BPN satisfaction. The surface analysis depicts that agreement on perceived BPN supportive behavior of coach leads to higher BPN satisfaction for perceived AS and CS (significant positive  $a_1$  value) yielding partial support for our first hypothesis. Higher levels of agreement were significantly related to an even stronger effect for Model 1 and Model 3 (significant positive  $a_2$  value). Only for the BPN for relatedness, disagreement between coach and beginning teacher was significantly related with higher BPN satisfaction (significant  $a_3$  value). In all Models, degree to which ratings of coach and beginning teacher regarding perceived BPN supportive behavior differ did not significantly affect BPN satisfaction (significant negative  $a_4$  value).

**Figure 2**

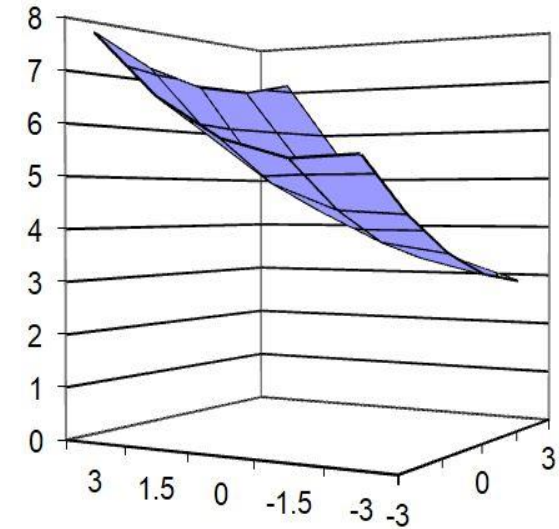
*Effect of Coach-Teacher Perception Regarding Coach's BPN Supportive Behavior on BPN Satisfaction*



1)Autonomy Support on  
Autonomy Satisfaction



2)Competence Support on  
Competence Satisfaction



3)Relatedness Support on  
Relatedness Satisfaction

*Note.* Beginning teacher BPN satisfaction as predicted by agreement in self-reports of coach's and beginning teacher's perceived BPN supportive behavior of coach; Z axis = beginning teacher's BPN satisfaction; X axis = self-report of BPN supportive behavior perceived by coach (centered); Y axis = self-report of BPN supportive behavior perceived by beginning teacher (centered). The colors do not have any significance.

### *Personality – Conscientiousness and Extraversion*

Following the polynomial analysis, a multiple linear regression as well as a stepwise multiple linear regression was conducted. To complete these analyses, standardized self-report scores of coach and beginning teacher regarding perceived AS, CS and RS were used. Results of the multiple linear regression analysis yielded that personality (conscientiousness and extraversion) explains 9% of variance in autonomous motivation (see Table 5). Results of a stepwise multiple linear regression analysis are presented in Table 6. It revealed that extraversion significantly expresses most variance compared to conscientiousness ( $R^2 = 8\%$ ;  $SE = .81$ ). Conscientiousness did not significantly explain any additional variance in autonomous motivation.

**Table 5**

*Multiple Linear Regression of BPN Satisfaction (Autonomy Satisfaction, Competence Satisfaction and Relatedness Satisfaction) and Personality (Conscientiousness and Extraversion) on Teacher's Autonomous Motivation*

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	SE
1	.29	.09	.06	.81

*Note.* In the table above, R is the correlation between predictor variables and autonomous motivation, R<sup>2</sup> is the explained variance in autonomous motivation, SE is the standard error.

A moderator effect analysis was completed to determine the moderator effect of personality on the relationship between BPN satisfaction and autonomous motivation in beginning teacher. In this step, the second-stage moderator effect of our research model and, therefore, our second and third hypothesis were tested. Here, the difference between scores of coach and beginning teacher with regard to perceived BPN supportive behavior was calculated for each participant and used as indicator for perceptual difference. The moderator effect analysis was completed by using the PROCESS macro (Model 14) involving 5,000 resamples in a bootstrapping procedure. In this moderated mediation model, the conditioned indirect effect of conscientiousness in the relationship between BPN satisfaction

and autonomous motivation was calculated and tested for significance. This procedure was completed three times with respect to each of the three BPNs. Extraversion was tested in the same regard.

**Table 6**

*Stepwise Multiple Linear Regression of BPN Satisfaction (Autonomy Satisfaction, Competence Satisfaction and Relatedness Satisfaction) and Personality (Conscientiousness and Extraversion) on Beginning Teacher's Autonomous Motivation*

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	SE
1. Extraversion	.28	.08	.06	.81

*Note.* In the table above, R is the correlation between predictor variables and autonomous motivation, R<sup>2</sup> is the explained variance in autonomous motivation, SE is the standard error.

Table 7 and Table 8 show the results from PROCESS Model 14 including conscientiousness and extraversion as a moderator respectfully. As depicted in Table 7, in the path of Autonomy Satisfaction, the index of moderated mediation (IMM) of conscientiousness was insignificant (index = -.01; 95% CI = [-.18, .15]). As for the Autonomy Satisfaction, the IMM of conscientiousness in Competence Satisfaction was insignificant (index = -.00; 95% CI = [-.15, .12]). Regarding the condition of Relatedness Satisfaction, the IMM of conscientiousness was insignificant (index = -.02; 95% CI = [-.14, .09]).



**Table 7**

*Summary of Indirect Effect of BPN Satisfaction on Autonomous Motivation Moderated by Conscientiousness*

Paths and effects	Estimates	SE	95% confidence intervals
Autonomy Satisfaction – Conscientiousness			
Moderated mediation			
Lower Conscientiousness (-1SD)	-.24	.09	[-.45, -.10]
Neutral Conscientiousness (0)	-.25	.08	[-.44, -.12]
Higher Conscientiousness (+1SD)	-.26	.11	[-.52, -.07]
Index of moderated mediation	-.01	.08	[-.18, .15]
Competence Satisfaction – Conscientiousness			
Moderated mediation			
Lower Conscientiousness (-1SD)	-.16	.09	[-.40, -.03]
Neutral Conscientiousness (0)	-.16	.09	[-.40, -.04]
Higher Conscientiousness (+1SD)	-.16	.11	[-.48, -.03]
Index of moderated mediation	-.00	.07	[-.16, .12]
Relatedness Satisfaction – Conscientiousness			
Moderated mediation			
Lower Conscientiousness (-1SD)	-.16	.07	[-.33, -.04]
Neutral Conscientiousness (0)	-.18	.07	[-.34, .08]
Higher Conscientiousness (-1SD)	-.20	.09	[-.40, -.06]
Index of moderated mediation	-.02	.06	[-.14, .09]

*Note*, n = 72 coaches; n = 72 beginning teachers.

Table 8 presents results of PROCESS Model 14 which include extraversion as a moderator. The index of moderated mediation of extraversion for the case of Autonomy Satisfaction was insignificant (index = .02; 95% CI = [-.12, .16]). For Competence Satisfaction, the IMM was insignificant (index = .04; 95% CI = [-.08, .19]). Moreover, for Relatedness Satisfaction, extraversion as moderator reveals an insignificant IMM (index = .01; 95% CI = [-.10, .10]).

**Table 8**

*Summary of Indirect Effect of BPN Satisfaction on Autonomous Motivation Moderated by Extraversion*

Paths and effects	Estimates	SE	95% confidence intervals
<b>Autonomy Satisfaction – Extraversion</b>			
Moderated mediation			
Lower Extraversion (-1SD)	-.27	.11	[-.50, -.08]
Neutral Conscientiousness (0)	-.26	.08	[-.43, -.13]
Higher Extraversion (+1SD)	-.24	.09	[-.43, -.09]
Index of moderated mediation	.02	.07	[-.12, .16]
<b>Competence Satisfaction – Extraversion</b>			
Moderated mediation			
Lower Extraversion (-1SD)	-.19	.12	[-.51, -.04]
Neutral Extraversion (0)	-.16	.09	[-.40, .05]
Higher Extraversion (+1SD)	-.13	.09	[-.37, -.02]
Index of moderated mediation	.04	.07	[-.09, .19]
<b>Relatedness Satisfaction – Extraversion</b>			
Moderated mediation			
Lower Extraversion (-1SD)	-.17	.08	[-.35, -.05]
Neutral Extraversion (0)	-.18	.07	[-.34, -.08]
Higher Extraversion (+1SD)	-.19	.08	[-.38, -.07]
Index of moderated mediation	-.01	.05	[-.10, .10]

*Note, n = 72 coaches; n = 72 beginning teachers.*

## Discussion

Our study investigated and tested the effects of coaching on autonomous motivation. Perceptual differences between coach and beginning teacher regarding coach's BPN supportive behavior as well as personality of teacher (extraversion and conscientiousness) were focus of our research. Even though both variables have been found to be influential factors accounting for a successful coaching outcome, their effect in the relationship between BPN support, BPN satisfaction and autonomous motivation has mostly only been studied in the sports context (Rocchi & Pelletier, 2018; Pulido et al., 2020; Ingledew et al., 2004). In the present study, our research model including the variables and effects of interest have been tested in a so far unexplored educational domain. Thus, the moderator effect of perceptual (dis)agreement between coach and beginning teacher regarding coach's BPN supportive behavior on the relationship between beginning teacher's perceived BPN supportive behavior

of coach and teacher's BPN satisfaction was tested. Furthermore, the moderator effect of conscientious and extraversion of beginning teacher on the relationship between teacher's BPN satisfaction and autonomous motivation was tested.

### **Theoretical Implications**

#### ***Perceptual (Dis)Agreement in Perceived BPN Support and BPN satisfaction***

Present results show that autonomous motivation in beginning teachers is promoted through experienced BPN supportive behavior of coach as it satisfies BPNs supporting the assumptions of the SDT (Ryan & Moller, 2017). Our first objective focused on perceptual differences between coach and teacher in relation to coach's BPN supportive behavior. In our sample, we found approximately half of all reports involving perceptual disagreement while the other half presented perceptual agreement between coach and teacher.

As we hypothesized, the more perceptual agreement there is between coach and beginning teacher, the higher the BPN satisfaction will be. However, this was only the case for the satisfaction of the BPN for autonomy and competence. These results contradict results by Smith and colleagues (2016), who found that increases in perceived agreement between coach and coaching participant regarding coach's BPN supportive behavior lead to increased BPN satisfaction for all three BPN. However, their research focused on coaching in a sports context while our research dealt with educational coaching. The different contexts of coaching might give a possible explanation for the different results. As described in the introduction, beginning teachers deal with a high pressure being forced to meet expected high standards in their profession (Evelein et al., 2008; Stenling et al., 2017). This pressure has been related to increased self-criticism about professional skills and competence (Algie, 1983). The increased self-criticism can be described as cognitive reaction to pressuring circumstances in the beginning of a teacher career. Being more self-critical is suggested to help beginning teachers control their current teaching skills to avoid failure in meeting expected standards in their

profession. In this regard, research by Lear and colleagues (2020) showed that higher self-criticism increases the satisfaction of BPN for relatedness when there is less BPN supportive behavior for the BPN for relatedness. Therefore, higher self-criticism might lead to a reduced positive effect of BPN supportive behavior on the satisfaction of BPN for relatedness.

Considering that beginning teachers in our sample might have experienced high levels of self-criticism, finding no significant positive effect of perceptual differences in perceived BPN supportive behavior of coach between coach and teacher on satisfaction of the BPN for relatedness seems plausible. According to Lear and colleagues (2020), self-criticism might have reduced the positive relationship BPN supportive behavior and BPN satisfaction for the BPN for relatedness.

Apart from the results discussed above, we found that degree in BPN satisfaction increased in higher levels of perceptual agreement for the BPN for autonomy as well as the BPN for relatedness. However, degree of BPN satisfaction of the BPN for competence steadily increases the more coach's and beginning teacher's perception of coach's BPN supportive behavior is in agreement. The study by Rocchi and Pelletier (2018) did not reveal such a steady relationship for any BPN contradicting our findings. However, their study involved a sample consisting of highly experienced coaches and athletes. Comparably, our participants were individuals who applied their coaching skills for the first time in a university course and teachers in the beginning of their professional career. In this regard, available research reveals that more work-related experience accounts for higher feelings of competence in various domains (Garavan & McGuire, 2001; Kuittinen et al., 2014). Thus, our participants having only little experience in coaching or teaching should possess lower levels of competence compared to the participants in the study of Rocchi and Pelletier (2018). For this reason, our results might only yield a steady increase in the satisfaction for the BPN for competence triggered by increased perceptual agreement between coach and beginning

teacher regarding coach's BPN supportive behavior instead of a nonlinear increase. Being more experienced might reinforce increases in degree of satisfaction for BPN for competence in higher levels of perceptual agreement. BPN for autonomy and relatedness did not seem to be influenced by the level of experience in participants.

Considering other findings of the present study, disagreement in perception of coach's BPN supportive behavior significantly only led to increased satisfaction of the BPN for relatedness but not for the BPN for autonomy and competence. Therefore, increased disagreement in the perception of coach and teacher regarding coach's BPN supportive behavior for the BPN for relatedness should increase the satisfaction of the BPN for relatedness implying support against hypothesis 1. According to Rocchi and Pelletier (2018) increased disagreement should lead to a reduced BPN satisfaction for all three BPNs. As described earlier, this difference in findings might be explained by differences between coaching in sports and educational context. Thus, higher levels of self-criticism in beginning teachers could have led to the opposing results (Lear et al., 2020). As stated above, being more self-critical might imply a satisfaction of the BPN for relatedness when low BPN supportive behavior is experienced. With regard to the present results, disagreement in perceived BPN supportive behavior of coach between coach and beginning teacher might have yielded more satisfaction for the BPN for relatedness due to the influence of individual self-criticism. Being more self-critical implies that a person is more focused on him or herself (Algie, 1983). Therefore, being more distant due to increased disagreement between coach and beginning teacher in perceived support for the BPN for relatedness of a coach in the context of educational coaching might account for a higher satisfaction of the BPN for relatedness in beginning teachers. Thus, increased perceptual disagreement between coach and beginning teacher regarding coach's BPN supportive behavior might allow beginning teachers to be more self-critical which in turn satisfies their BPN for relatedness.

Finally, results regarding our first objective reveal that degree to which coach and beginning teacher's ratings on perceived BPN supportive behavior of coach differed did not relate to changes in BPN satisfaction. Therefore, the degree to which coach and beginning teacher rate perceived BPN supportive behavior of coach differently does not seem to account for the relationship between teacher's perceived BPN supportive behavior and BPN satisfaction. These findings are in line with those of Rocchi and Pelletier (2018).

### ***Personality, BPN satisfaction, and Autonomous Motivation***

The second objective of the present paper was to test and investigate how conscientiousness and extraversion in beginning teacher impacts the relationship between beginning teacher's BPN satisfaction and teacher's autonomous motivation. We based our approach on previous research conducted by Ingledeu and colleagues (2004).

In the present results, only higher levels of extraversion in beginning teacher were linked to increases in autonomous motivation. These findings differ from previous research findings in which more conscientiousness as well as extraversion both led to more autonomous motivation (Ingledeu et al., 2004). A possible explanation could be differences between methodological approaches of previous research compared to our research. Ingledeu and colleagues (2004) investigated the effect of conscientiousness and extraversion on the relationship between BPN satisfaction and various personal characteristics which contribute to autonomous motivation instead of viewing autonomous motivation as a whole entity. Therefore, the previously tested relationships were much more specific than the relationship tested in our study (Ingledeu et al., 2004). For this reason, we might have only received partially similar results. In the study by Ingledeu and colleagues (2004), extraversion was shown to be a stronger predictor for attributes of autonomous motivation than conscientiousness. Therefore, finding only extraversion to be associated with autonomous

motivation as a whole but not conscientiousness seems plausible. Viewing autonomous motivation as a whole entity might be too broad to find an association with conscientiousness.

Further results reveal that neither high levels of conscientiousness nor extraversion in beginning teacher were related to any BPN satisfaction. This absent association between the two personality traits and BPN satisfaction reflects support against hypothesis 2 and 3. The findings discussed above imply that only extraversion is associated with autonomous motivation, however, the personality trait is in no relation with BPN satisfaction. Despite the absence of an association between beginning teacher's personality and BPN satisfaction, higher extraversion seems to increase autonomous motivation. Finding an absent association of conscientiousness and extraversion with BPN satisfaction opposes results of Ingledew and colleagues (2004) who revealed that personality and BPN satisfaction are related to each other. Thomas and colleagues (2020) suggest that a stronger positive relationship between personality and BPN satisfaction might be accounted for by situational context. According to the researchers, favorable contexts might decrease this relationship. Beginning teachers in our study could be expected to desire seeking support through coaching sessions being aware of the benefits of coaching related to high pressures in the beginning of their career (Ingersoll & Strong, 2011). Therefore, coaching sessions reflect a highly favorable situation for beginning teachers which could account for the absent association of conscientiousness and extraversion with BPN satisfaction.

Compared to extraversion, conscientiousness in beginning teachers was positively associated with coach's perceived BPN supportive behavior. This relationship implies that higher levels of conscientiousness in teacher may increase coach's perception of own BPN supportive behavior. Therefore, higher levels of conscientiousness could be trigger of increased perceptual disagreement. Moreover, we found a somewhat strong relation between conscientiousness and extraversion in beginning teacher which indicating that higher

levels of conscientiousness lead to higher levels of extraversion. Latter results are in line with the findings of Ingledew and colleagues (2004).

Further findings of our study going beyond pervious research reveal that personality of beginning teachers only seems to account for increases in autonomous motivation to a very small degree (Ingledew et al., 2004). Moreover, extraversion was a stronger predictor than conscientiousness which highlights the comparably low strength of conscientiousness in explaining autonomous motivation. Again we found more evidence for the positive association between extraversion and beginning teacher's autonomous motivation. However, conscientiousness did not seem to significantly predict teacher's autonomous motivation. Testing the moderator effect of the two personality traits, we found no support for hypothesis 2 and 3. Therefore, neither conscientiousness nor extraversion was found to account for the effect of beginning teacher's BPN satisfaction on teacher's autonomous motivation. Considering, research findings by Thomas and colleagues (2020), educational coaching sessions reflect a favorable context for beginning teachers. As described above, more favorable contexts can be expected to decreases the positive association between personality and BPN satisfaction. For this reason, facing a favorable situational context might have decreased the effect of personality on BPN satisfaction in beginning teachers. Moreover, including autonomous as a whole instead of several attributes might have decreased the relationship between personality and autonomous motivation as described above (Ingledew et al., 2004). Considering these issues, conscientiousness and extraversion might not have been found to account for the strength of the relationship between beginning teacher's BPN satisfaction and autonomous motivation.

### **Practical implications**

Apart from theoretical implications described above, the present study provides multiple practical implications for educational coaching. On the base of our findings,



coaching programs can be improved by increasing their effectiveness in helping beginning teachers who are facing difficulties as described in the introduction. Based on our results, educational coaches should implement strategies which promote perceptual agreement between coach and beginning teacher regarding perceived BPN supportive behavior of coach in relation to the BPN for autonomy and competence. As such perceptual agreement was shown to increase BPN satisfaction in beginning teachers, it would yield a more positive coaching outcome. Furthermore, educational facilities should implement strategies in coaching programs which could increase perceptual disagreement between coach and beginning teacher regarding coach's supportive behavior for the BPN for relatedness. Consequently, perceptual disagreement regarding the BPN for relatedness can be expected to allow beginning teachers to be more self-critical which could further increase their BPN satisfaction. In this way, coaching outcome could additionally be improved and beginning teachers would benefit even more from coaching.

With regard to personality, coaches in educational settings should be made aware of the promoting relationship between extraversion and autonomous motivation. Knowing how extraversion can impact participants' motivation as well as behavioral regulation should allow coaches to use personality as an indicator for coaching approach. Participants with high extraversion can be expected to have higher levels of autonomous motivation. Therefore, coaching in this case should be focused on maintaining these levels. Lower extraversion in participants would imply that individuals' lower autonomous motivation should be substantially increased through coaching.

### **Strengths and Limitations**

Our study yields various strengths related to our research model. Our study goes beyond previous research and moves from traditional individual levels of analysis to a dyadic and interpersonal level of analysis. Involving the perception of coach additionally to the

perception of beginning teacher, thereby testing how perceptual (dis)agreement may account for coaching outcome reveals new insights regarding the effects of perception in coaching. Moreover, including the effect of personality in a model which, therefore, allowed testing for moderation at two stages additionally increases the importance of our contributions to available research. As perception and personality both have been found to be important factors accounting for successful coaching with regard to BPNs, combining and testing their separate effects in a unified model reflects a methodologically strong approach (Ingledeu et al., 2004; Jõesaar et al., 2012; Lindner et al., 2021; Rocchi et al., 2017).

Despite that our study revealed new important insights for the present topic of research, limitations can be found within the applied research design. Firstly, the time gap between coaching session and the moment of filling out the questionnaire was not controlled for. As information which was provided in answers in questionnaires was related to emotions and thoughts in a corresponding previous coaching session, a larger time gap could have reduced participants' memory and, therefore, might have impaired the precision and quality of self-reports. Moreover, our study involved a cross-sectional design which focused on several variables at one specific point of time. Considering that the relationship between beginning teacher and coach could change throughout a coaching trajectory, the measured variables could have changed over time revealing new findings regarding the research topic and hypotheses. Lastly, several confounding factors have not been controlled for which might have influenced our findings. These factors include self-criticism in beginning teachers and favorability of context.

### **Future Directions**

To increase the understanding of perception of coach and beginning teacher as well as beginning teacher's personality as promoting factors for successful educational coaching, more research should be done built on the base of our study. By doing so our research design

should be replicated, however, controlling for any present limitations. To prevent described limitations of our study, questionnaires should be filled out immediately after each coaching session. In this way, memory of participants could not be impaired by time and even more precise information could be collected. Moreover, the present research model should be tested in a longitudinal design. In this way, it could be investigated whether the relationship between coach and teacher is rather static or dynamic. Moreover, it could be tested whether changes in the relationship between coach and teacher could lead to different research findings. Thus, a replication of our study without present limitations would allow making more empirically established conclusions about the effect of perception of coach and teacher on BPN satisfaction.

Furthermore, future research needs to control for any potential confounding factors. In this regard, the suggested effect of self-criticism on the satisfaction of the BPN for relatedness should be investigated. Thus, more evidence needs to be found to support our implications about self-criticism in beginning teachers with regard to the satisfaction of the BPN for relatedness. Moreover, testing the positive influence of conscientiousness and extraversion on BPN satisfaction and autonomous motivation should be main target in future research. By doing so, different individual characteristics which account for autonomous motivation should represent autonomous motivation instead of viewing it as a whole entity. Moreover, the confounding effect of favorability regarding the coaching context should be controlled for. Thus, it should be tested whether coaching participants experiencing a less favorable coaching context leads to a stronger positive association of BPN satisfaction with conscientiousness and extraversion. This will allow us to make more supported conclusions about the moderating power of personality in coaching.

### **Conclusion**

With regard to the Self-Determination Theory, the current study contributes new valuable findings to research on coaching in a so far unexplored educational setting. It highlights the important role of perceptual agreement between coach and beginning teacher regarding coach's BPN supportive behavior as a moderator of the relationship between beginning teacher's perceived BPN supportive behavior and BPN satisfaction. Hence, more perceptual agreement implied a more successful coaching outcome. However, perceptual agreement was only found to increase BPN satisfaction for the BPN for autonomy and competence. Increased perceptual agreement in perceived supportive behavior for the BPN for relatedness was found to decrease the satisfaction of the BPN for relatedness. Compared to perception, personality was not found to be a significant moderator in coaching. Thus, increased conscientiousness and extraversion did not seem to account for higher levels of autonomous motivation in teacher given that BPNs are satisfied. Nevertheless, extraversion seems to account for autonomous motivation in beginning teachers. Present results of this study can be used to improve educational coaching programs by increasing its effectiveness in helping beginning teachers.

### References

- Aelterman, N., Vansteenkiste, M., Van Keer, H., & Haerens, L. (2016). Changing teachers' beliefs regarding autonomy support and structure: The role of experienced psychological need satisfaction in teacher training. *Psychology of Sport and Exercise*, 23, 64-72. <https://doi.org/10.1016/j.psychsport.2015.10.007>
- Achinstein, B., Ogawa, R. T., Sexton, D., & Freitas, C. (2010). Retaining teachers of color: A pressing problem and a potential strategy for “hard-to-staff” schools. *Review of Educational Research*, 80 (1), 71-107. <https://doi.org/10.3102/0034654309355994>
- Aiken, L., West, S., & Reno, R. (1991). *Multiple regression: Testing and interpreting interactions*. Atlanta, GA: Sage.
- Algie, R. C. (1983). An investigation into the problems related to the adjustment of beginning-teachers leading to the development of an induction programme.
- Chue, K. L. (2015). Examining the influence of the big five personality traits on the relationship between autonomy, motivation and academic achievement in the twenty-first-century learner. *Motivation, leadership and curriculum design: engaging the Net Generation and 21st century learners*, 37-52.
- Dwan, T., Ownsworth, T., Donovan, C., & Lo, A. H. Y. (2017). Reliability of the NEO Five Factor Inventory short form for assessing personality after stroke. *International Psychogeriatrics*, 29(7), 1157–1168. <https://doi-org.proxy-ub.rug.nl/10.1017/S1041610217000382>
- Evelein, F., Korthagen, F., & Brekelmans, M. (2008). Fulfillment of the basic psychological needs of student teachers during their first teaching experiences. *Teaching and Teacher Education*, 24(5), 1137–1148. <https://doi-org.proxy-ub.rug.nl/10.1016/j.tate.2007.09.001>

- Fleenor, J. W., & Prince, J. M. (1997). Using 360-degree feedback in organizations. *Center for Creative Leadership, Greensboro, North Carolina.*
- Green, L. S., Oades, L. G., & Grant, A. M. (2006). Cognitive-behavioral, solution-focused life coaching: Enhancing goal striving, well-being, and hope. *The Journal of Positive Psychology, 1* (3), 142–149. <https://doi.org/10.1080/17439760600619849>
- Ingersoll, R. M. (2003). Is there really a teacher shortage? PsycEXTRA Dataset. <https://doi.org/10.1037/e382722004-001>
- Ingersoll, R. M., & Strong, M. (2011). The impact of induction and mentoring programs for beginning teachers: A critical review of the research. *Review of Educational Research, 81* (2), 201-233. <https://doi.org/10.3102/0034654311403323>
- Ingledeu, D. K., Markland, D., & Sheppard, K. E. (2004). Personality and self-determination of exercise behaviour. *Personality and Individual Differences, 36*(8), 1921–1932. <https://doi-org.proxy-ub.rug.nl/10.1016/j.paid.2003.08.021>
- Garavan, T. N., & McGuire, D. (2001). Competencies and workplace learning: Some reflections on the rhetoric and the reality. *Journal of Workplace Learning, 13*(4), 144–164. <https://doi-org.proxy-ub.rug.nl/10.1108/13665620110391097>
- Goldberg, L. R. (1990). An alternative" description of personality": The big-five factor structure. *Journal of Personality and Social Psychology, 59*(6), 1216–1229. <https://doi.org/10.1037/0022-3514.59.6.1216>
- Jõesaar, H., Hein, V., & Hagger, M. S. (2012). Youth athletes' perception of autonomy support from the coach, peer motivational climate and intrinsic motivation in sport setting: One-year effects. *Psychology of Sport and Exercise, 13*(3), 257–262. <https://doi-org.proxy-ub.rug.nl/10.1016/j.psychsport.2011.12.001>

- Kuittinen, M., Meriläinen, M., & Rätty, H. (2014). Professional competences of young psychologists: The dimensions of self-rated competence domains and their variation in the early years of the psychologist's career. *European Journal of Psychology of Education, 29*(1), 63–80. <https://doi-org.proxy-ub.rug.nl/10.1007/s10212-013-0187-0>
- Lear, M. K., Luoma, J. B., & Chwyl, C. (2020). The influence of self-criticism and relationship closeness on peer-reported relationship need satisfaction. *Personality and Individual Differences, 163*. <https://doi-org.proxy-ub.rug.nl/10.1016/j.paid.2020.110087>
- Lindner, S., Ghassemi, M., & Allemand, M. (2021). Does the expression of personality traits in daily life satisfy psychological needs of older adults? *Motivation Science, 7*(4), 400–409. <https://doi-org.proxy-ub.rug.nl/10.1037/mot0000238.supp> (Supplemental)
- Pelletier, L. G., Rocchi, M. A., Vallerand, R. J., Deci, E. L., & Ryan, R. M. (2013). Validation of the revised sport motivation scale (SMS-II). *Psychology of Sport and Exercise, 14*(3), 329-341. <https://doi.org/10.1016/j.psychsport.2012.12.002>
- Pulido, J. J., García-Calvo, T., Leo, F. M., Figueiredo, A. J., Sarmiento, H., & Sánchez-Oliva, D. (2020). Perceived coach interpersonal style and basic psychological needs as antecedents of athlete-perceived coaching competency and satisfaction with the coach: A multi-level analysis. *Sport, Exercise, and Performance Psychology, 9*(1), 16.
- Reddy, L. A., Lekwa, A., & Shernoff, E. (2021). Comparison of the effects of coaching for general and special education teachers in high-poverty urban elementary schools. *Journal of Learning Disabilities, 54*(1), 36–53. <https://doi-org.proxy-ub.rug.nl/10.1177/0022219420970194>
- Rocchi, M., Pelletier, L., Cheung, S., Baxter, D., & Beaudry, S. (2017). Assessing need-supportive and need-thwarting interpersonal behaviours: The Interpersonal Behaviours

- Questionnaire (IBQ). *Personality and Individual Differences*, 104, 423-433. <https://doi.org/10.1016/j.paid.2016.08.034>
- Rocchi, M., & Pelletier, L. (2018). How does coaches' reported interpersonal behavior align with athletes' perceptions? Consequences for female athletes' psychological needs in sport. *Sport, Exercise, and Performance Psychology*, 7(2), 141–154. <https://doi-org.proxy-ub.rug.nl/10.1037/spy0000116>
- Ryan, R. M., & Moller, A. C. (2017). Competence as central, but not sufficient, for high-quality motivation: A self-determination theory perspective. In A. J. Elliot, C. S. Dweck, & D. S. Yeager (Eds.), *Handbook of competence and motivation: Theory and application* (pp. 214–231). The Guilford Press
- Soberón, A., & Stute, W. (2017). Assessing skewness, kurtosis and normality in linear mixed models. *Journal of Multivariate Analysis*, 161, 123–140. <https://doi-org.proxy-ub.rug.nl/10.1016/j.jmva.2017.07.010>
- Stenling, A., Ivarsson, A., Hassmén, P., & Lindwall, M. (2017). Longitudinal associations between athletes' controlled motivation, ill-being, and perceptions of controlling coach behaviors: A Bayesian latent growth curve approach. *Psychology of Sport and Exercise*, 30, 205–214. <https://doi-org.proxy-ub.rug.nl/10.1016/j.psychsport.2017.03.002>
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics: Pearson*. Pearson Education Limited.
- Thomas, L. B., Fadeeva, A., & Oliver, E. J. (2020). The double negative: Personality differentially predicts sensitivity to need support and thwarting, and subsequent behavioural response planning. *Personality and Individual Differences*, 156. <https://doi-org.proxy-ub.rug.nl/10.1016/j.paid.2019.109767>



Veenman, S., de Laat, H., & Staring, C. (1998). Coaching Beginning Teachers.

Veenman, S., & Denessen, E. (2001). The Coaching of Teachers: Results of Five Training Studies. *Educational Research and Evaluation*, 7(4), 385–417.

<https://doi.org/10.1076/edre.7.4.385.8936>

Witherspoon, E. B., Ferrer, N. B., Correnti, R. R., Stein, M. K., & Schunn, C. D. (2021).

Coaching that supports teachers' learning to enact ambitious instruction. *Instructional Science*, 49(6), 877–898. <https://doi-org.proxy-ub.rug.nl/10.1007/s11251-021-09536-7>

**Appendix A**

**Coaches' Need-Supportive Behaviors (Coaches' Self-Report) Scale**

“Interpersonal Behaviours Questionnaire” (IBQ; Rocchi et al., 2017)											
The next statements tap into your experiences and how you perceive your clients' experiences during the past coaching trajectory. Please choose from 1 to 7 to indicate for each of the statements to what extent they are true for you.											
1	2	3	4	5	6	7					
Do not agree at all			Completely agree								
At the three coaching sessions in the past coaching trajectory, when I coach my coachee, I ...											
1. ... gave him/her the freedom to make his/her own choices.					1	2	3	4	5	6	7
2. ... supported his/her divisions.					1	2	3	4	5	6	7
3. ... supported the choices that he/she made for him/herself.					1	2	3	4	5	6	7
4. ... encouraged him/her to make his/her own decisions.					1	2	3	4	5	6	7
5. ... was interested in what he/she did.					1	2	3	4	5	6	7
6. ... took the time to get to know him/her.					1	2	3	4	5	6	7
7. ... honestly enjoyed spending time with him/her.					1	2	3	4	5	6	7
8. ... related to him/her.					1	2	3	4	5	6	7
9. ... encouraged him/her to improve his/her skills.					1	2	3	4	5	6	7
10. ... provided valuable feedback.					1	2	3	4	5	6	7
11. ... acknowledged his/her ability to achieve his/her goals.					1	2	3	4	5	6	7
12. ... told him/her that he/she could accomplish things.					1	2	3	4	5	6	7
Autonomy-supportive behavior: items 1, 2, 3, 4; Relatedness-supportive behavior: items 5, 6, 7, 8; Competence-supportive behavior: items 9, 10, 11, 12.											

**Appendix B**

**Coaches' Need-Supportive Behaviors (Beginning Teachers' Self-Report) Scale**

“Interpersonal Behaviours Questionnaire” (IBQ; Rocchi et al., 2017)						
The next statements tap into your experiences and how you perceive your clients' experiences during the past coaching trajectory. Please choose from 1 to 7 to indicate for each of the statements to what extent they are true for you.						
1 Do not agree at all	2	3	4	5	6	7 Completely agree
During the past coaching trajectory, my coach ...						
1. ... gave me the freedom to make my own choices.	1	2	3	4	5	6 7
2. ... supported my decisions.	1	2	3	4	5	6 7
3. ... supported the choices that I made for myself.	1	2	3	4	5	6 7
4. ... encouraged me to make my own decisions.	1	2	3	4	5	6 7
5. ... was interested in what I did.	1	2	3	4	5	6 7
6. ... took the time to get to know me.	1	2	3	4	5	6 7
7. ... enjoyed spending time with me.	1	2	3	4	5	6 7
8. ... related to me.	1	2	3	4	5	6 7
9. ... encouraged me to improve my skills.	1	2	3	4	5	6 7
10. ... provided valuable feedback.	1	2	3	4	5	6 7
11. ... acknowledged my ability to achieve my goals.	1	2	3	4	5	6 7
12. ... told me that I could accomplish things.	1	2	3	4	5	6 7
Autonomy-supportive behavior: items 1, 2, 3, 4; Relatedness-supportive behavior: items 5, 6, 7, 8; Competence-supportive behavior: items 9, 10, 11, 12.						

**Appendix C**

**Psychological Need Satisfaction (Beginning Teachers' Self-Report) Scale**

Adapted From the “Basic Psychological Need Satisfaction and Frustration Scale - Domain Specific Measures - Training “ (BPNSFS – Training; Aelterman et al., 2016)					
The next statements tap into your experiences during the past coaching trajectory. Please choose from 1 to 5 to indicate for each of the statements to what extent they are true for you.					
1	2	3	4	5	
Not at all true	Rather not true	Sometimes true / sometimes not true	Rather true	Totally true	
During the coaching trajectory ...					
1. ... I felt a sense of choice and freedom in the things I thought and did.	1	2	3	4	5
2. ... I felt like the solutions/strategies proposed in the coaching sessions reflected what I want myself.	1	2	3	4	5
3. ... I felt like the way the coaching was delivered reflected how I wanted it myself.	1	2	3	4	5
4. ... I felt like what we discussed in the coaching sessions really interested me.	1	2	3	4	5
5. ... I felt close and connected to my coach.	1	2	3	4	5
6. ... I experienced a warm feeling with my coach.	1	2	3	4	5
7. ... I experienced a good bond with my coach.	1	2	3	4	5
8. ... I felt that I belonged to the coaching dyad.	1	2	3	4	5
9. ... I felt confident that I could apply the proposed strategies well.	1	2	3	4	5
10. ... I felt competent to achieve the proposed coaching goals.	1	2	3	4	5
11. ... I felt capable at applying the proposed strategies into practice.	1	2	3	4	5
12. ... I felt that I could successfully complete the teaching tasks at hand.	1	2	3	4	5
Autonomy satisfaction: items 1, 2, 3, 4; Relatedness satisfaction: items 5, 6, 7, 8; Competence satisfaction: items 9, 10, 11, 12.					

**Appendix D**

**Big Five Personality Inventory**

“The Big Five Personality Inventory” (BFI-10; Goldberg, 1990)							
How well do the following statements describe your personality?							
1	2	3	4	5	6	7	
Not at all	To a very small extent	To a small extent	To a moderate extent	To a large extent	To a very large extent	To an extremely large extent	
I tend to see myself as someone who...							
1. ...is reserved.	1	2	3	4	5	6	7
2. ...is generally trusting.	1	2	3	4	5	6	7
3. ...tends to be lazy.	1	2	3	4	5	6	7
4. ...is relaxed, handles stress well.	1	2	3	4	5	6	7
5. ...has few artistic interests.	1	2	3	4	5	6	7
6. ...is outgoing, sociable.	1	2	3	4	5	6	7
7. ...tends to find fault with others.	1	2	3	4	5	6	7
8. ...does a thorough job.	1	2	3	4	5	6	7
9. ...gets nervous easily.	1	2	3	4	5	6	7
10. ...has an active imagination.	1	2	3	4	5	6	7
Extraversion: items 1, 5; Agreeableness: items 2, 7; Conscientiousness: items 3, 8; Neuroticism: items 4, 9; Openness to Experience: items 5, 10.							

**Appendix E**

**Autonomous Motivation Scale**

Adapted From the “Revised Sport Motivation Scale” (SMS-II; Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2013).							
The following questions relate to your reasons for the pursuit of the coaching goal. Please choose from 1 to 7 to indicate the degree to which the statement is true for you at this point in your coaching experience.							
1	2	3	4	5	6	7	
Not at all	To a very small extent	To a small extent	To a moderate extent	To a large extent	To a very large extent	To an extremely large extent	
I pursue the coaching goal, ...							
1. ... because it gives me pleasure to learn more about the coaching goal attainment.	1	2	3	4	5	6	7
2. ... because I find it enjoyable to discover new goal attainment strategies.	1	2	3	4	5	6	7
3. ... because it is very interesting to learn how I can improve.	1	2	3	4	5	6	7
4. ... because the pursuit of coaching goals reflects the essence of my coaching participation.	1	2	3	4	5	6	7
5. ... because the pursuit of coaching goals is an integral part of my coaching participation.	1	2	3	4	5	6	7
6. ... because through the pursuit of coaching goals, I am working in line with my deepest principles.	1	2	3	4	5	6	7
7. ... because I have chosen the pursuit of coaching goals as a way to develop myself.	1	2	3	4	5	6	7
8. ... because I found it is a good way to develop aspects of myself that I value.	1	2	3	4	5	6	7
9. ... because it is one of the best ways I have chosen to develop other aspects of myself.	1	2	3	4	5	6	7
Intrinsic Regulation: items 1, 2, 3; Integrated Regulation: items 4, 5, 6; Identified Regulation: items 7, 8, 9.							