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WHAT MOTIVATES STUDENT TRAINEES TO BECOME A PHYSICAL EDUCATION TEACHER?

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ABSTRACT

Grounded in Self-Determination Theory (SDT; Deci & Ryan, 2002), the purpose of this study was to examine the role of perceived autonomy support, structure, and involvement experienced by trainee teachers from parents/guardians, professors, and high school teachers on the motivation to become a physical education teacher (PET). Using a non-experimental design, student trainees at a mid-sized Canadian university (N = 137) completed a self-report instrument on a single occasion. Multiple regression analysis indicated that perceived involvement from parents/guardians and perceived structure from high school teachers were key predictors of motivation to become a PET. No link was evident between any type of perceived support experienced by student trainees from university professors and motivation to become a PET. Overall, the results of this study support Deci and Ryan's (2002) contentions within the framework of SDT by verifying that perceptions of structure and involvement can be key mechanisms fueling optimal motivation for career planning with reference to becoming a PET..

Keywords: *Self-determination theory, autonomy support, structure, involvement, career motivation, physical education teacher training.*

1. INTRODUCTION

Emerging research supports the importance of understanding motivational processes in educational contexts (Reeve, 2002). One theory that appears useful for understanding motivation for academic learning, including physical education

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(Standage, Gillson, & Treasure, 2007), is Self-Determination Theory (SDT; Deci & Ryan, 2002). Within the SDT framework, motivation is postulated to reside along a continuum of regulations that range in terms of the degree to which they have been internalized and assimilated with the self (Deci & Ryan, 2002). Controlling motives regulate behavior through compliance with environmental constraints (external regulation) or to appease intrapsychic pressure (introjected regulation). At the other end of the continuum, more self-determined or autonomous motives (Deci & Ryan, 2002) regulate behavior via the instrumental value placed on the activity's outcomes (identified regulation), the incorporation of the activity within the person's identity (integrated regulation), or for the self-rewarding nature of participation in the activity itself (intrinsic motivation).

The distinction between controlling and autonomous motives proposed by Deci and Ryan (2002) has practical merit in educational contexts. Previous studies indicate that more self-determined motives are linked with greater academic success and better adjustment in students (Chirkov, Vansteenkiste, Tao, & Lynch, 2007; Soenens & Vansteenkiste, 2005), as well as, greater persistence over time when learning (Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). Complimenting this line of research is work in physical education that shows pupils who display more autonomous motives exhibit greater concentration accompanied by less negative affect (Ntoumanis, 2005) and report greater preference to accept challenging tasks (Standage, Duda, & Ntoumanis, 2005). Collectively, these findings highlight the importance of understanding the quality of motivation operating within educational settings given that more positive consequences appear linked with autonomous rather than controlled motives.

Central to SDT is the notion of internalization which represents the processes used by people to actively transform external cues or sanctions (e.g., praise, rewards, etc.) into more integrated motivational structures (Deci & Ryan, 2002). While the process of internalization occurs naturally, it can be augmented (or forestalled) by different sources of interpersonal support an individual perceives to be operating in a given domain (Deci & Ryan, 2002). Three specific types of interpersonal support have been proposed within SDT labelled autonomy support, structure, and involvement (Deci & Ryan, 2002). Autonomy support concerns the degree to which important social agents (e.g., parents, teachers, etc.) encourage flexible problem solving through individual decision-making, provide options and choices, and acknowledge other people's perspectives with reference to target behaviors (Deci & Ryan, 2002; Grolnick & Ryan, 1989). Structure involves the extent to which social agents (e.g., coaches, etc.) foster realistic outcome expectations by offering clear and consistent guidelines with respect to task performance and goal achievement (Deci & Ryan, 2002; Grolnick & Ryan, 1989). Finally, involvement refers to the level of active participation taken in a person's life that includes showing genuine interest in conjunction with empathy

when engaged in the process of another person's development (Deci & Ryan, 2002; Grolnick & Ryan, 1989). Deci and Ryan (2002) contend that people who experience autonomy support from important others accompanied by structure and sense of genuine involvement will internalize behavioral regulation for more autonomous rather than controlling reasons. Partial support has emerged for the association between perceived interpersonal supports and endorsement of more autonomous (as opposed to controlling) motives across various life domains including sport (Wilson, Gregson, & Mack, 2009) and education (Ratelle, Larose, Guay, & Senècal, 2005).

Despite the importance of interpersonal supports outlined by Deci and Ryan (2002) for understanding motivational processes, a number of issues warrant further inquiry to fully understanding how these mechanisms impact motivational development. First, very few studies have examined all three forms of interpersonal support proposed within SDT (c.f., Wilson et al., 2009). Therefore it remains unclear 'how' (or 'if') the different sources of interpersonal support advanced by Deci and Ryan (2002) within the framework of SDT combine to shape motivation to become a physical education teacher (PET). Second, most studies using physical education as a context to test SDT focus principally on the role of perceived autonomy support from a restricted number of social agents (e.g., parents or teachers, etc.) with the main target being physical educators (Standage et al., 2007). One consequence of this approach within the research concerning physical education has been that the network of social agents considered to impact motivation is narrow at best in scope and diversity. To date, very little is known about the role played by other social agents (e.g., university professors, etc.) who are positioned to provide interpersonal support that can motivate trainees to become a PET.

The present study was conducted to address these limitations in the context of student trainees preparing for a career as a PET. Overall, the purpose of this study was to examine the relationship between perceived interpersonal support dimensions and motivation to teach physical education as a future career option. More specifically, this study sought to examine the relationships between perceptions of autonomy support, structure, and involvement from multiple socializing agents (namely parents/guardians, university professors, and high school teachers) and the motivation to teach physical education as a future career path for university students enrolled in teacher preparation degree programs.

The hypotheses for this study were drawn largely from Deci and Ryan's (2002) contentions, as well as, previous studies using SDT to examine issues of perceived interpersonal support from others in various settings (e.g., Wilson & Rodgers, 2004). First, it was hypothesized that greater perceptions of interpersonal support would be positively associated with one another. This hypothesis was drawn largely from propositions put forth within SDT by Deci and

Ryan (2002) and previous empirical work examining parental styles (Grolnick & Ryan, 1989) which attests to the complimentary rather than antagonistic nature of these provisions within contexts. Second, it was hypothesized that greater perceptions of autonomy support, structure, and involvement from different sources would be associated with more internalized motivation for becoming a PET. This hypothesis was developed based on previous research in physical education that supports a link between perceptions of interpersonal support and more internalized motivation endorsed by physical education students (Ntoumanis, 2005; Standage, *et al.*, 2007).

2. METHODS AND MATERIALS

2.1 Participants

Participants were 44 men (M_{age} = 20.74 years ±1.08 years) and 93 women (M_{age} = 20.51 years ±1.54 years) recruited from a medium-sized Canadian university. Most participants (76.6 percent) were students in the Faculty of Applied Health Sciences enrolled in either a physical education (PE; 63.5 percent) or a physical education/concurrent education (PE/CC; 21.9 percent) undergraduate degree program. The PE/CC stream offers direct entry into a certification program for teachers assuming a minimal standard of achievement is maintained throughout the degree program. Participants included first (25.5 percent), second (14.6 percent), third (32.1 percent), and fourth (27.7 percent) year students. Most (63.9 percent) respondents did not have family members who were certified teachers at the time of data collection.

2.2 Instrumentation

2.2.1 Demographics: Participants completed a series of self-report items concerning their faculty affiliation within the university system, year in school, and sex.

2.2.2 Interpersonal Supports: Participants completed 6 items measuring perceived autonomy support (Sample item: "I feel understood by my professors"; Williams, 2002), 6 items measuring structure (Sample item: "My professors make it clear to me what I need to do to learn the course material"; Markland & Tobin, 2010), and 6 items assessing perceived involvement (Sample item: "My professors put time and energy into helping me"; Markland & Tobin, 2010). Items for each dimension of interpersonal support were completed with reference to both high school teachers and university professors. Only autonomy support and involvement items targeting parents/guardians were assessed in this study.

2.2.3 Motivation: Participants completed 16 items modified from existing SDT-based instruments designed to assess the reasons motivating student trainees' plans to become a PET (e.g., Mullan, Markland, & Ingledew, 1997; Pelletier, Fortier, Vallerand, & Briére, 2001). Following a stem (i.e., "I would like to become a physical education teacher because…"), responses were provided to each item on a 7-point Likert scale anchored at the extremes by 1 (Not at all true), 3 (Somewhat true), and 7 (Very true). Three items were used to measure each of the following motives: (a) External regulation (Sample item: "…others would be angry at me if I did not"), (b) Introjected regulation (Sample item: "…I would feel guilty if I did not teach regularly"), (c) Identified regulation (Sample item: "…teaching is an important value for me"), and (d) Intrinsic regulation (Sample item: "…teaching is fun"). A self-determination index (SDI; Wilson, Sabiston, Mack, & Blanchard, 2012) was calculated to provide a global score assessing the overall degree (or lack thereof) of self-determination motivating student's desire to become a PET. The SDI was created using this formula: SDI = Σ [(External Regulation × -2) + (Introjected Regulation × -1) + Identified Regulation × 1) + (Intrinsic Regulation × 2)]. The theoretical range of SDI scores using this protocol is -21.0 to 21.0 with higher and positive scores indicating greater levels of self-determined (or autonomous) motivation whereas lower and negative scores signify greater reliance on more controlling motives.

2.3 Study Design

This study used a non-experimental, cross-sectional research design with purposive sampling techniques used to recruit participants for the study (Trochim & Donnelly, 2007).

2.4 Data Collection

Clearance from a university-based Research Ethics Board was secured prior to any contact with study participants. The principal investigator used standardized verbal and/or electronic scripts to inform participants of the study purpose, the nature of the study, and provide an opportunity for questions to be answered. Each participant received a standardized e-mail from the study investigators directing them to a website where in sequential fashion they received a letter of invitation to participate followed by the informed consent document. Participants consenting to complete the study where then directed to the start of the survey whereas those who declined to provide consent where redirected to another website that did not contain the study questionnaire. All responses were provided using an electronic interface (www.surveymonkey.com) customized for this study to include the instrumentation previously described.

2.5 Data Analysis

Data analysis proceeded in an iterative fashion using IBM® SPSS® (Version 22). First, the data were screened for missing values, statistical outliers, and tested for conformity with pertinent statistical assumptions. Second, estimates of score reliability were calculated using coefficient α (Cronbach, 1951). Third, descriptive statistics were calculated. Fourth, Pearson correlations were calculated to examine bivariate associations between study variables. Finally, a multiple regression analysis with simultaneous variable entry was used to examine the relationships between perceptions of autonomy support, structure, and involvement with motivation to become a PET. Conventional indices (e.g., Adjusted R^2, Standardized beta coefficients, etc.) combined with structure coefficients (r_s) and unique variance calculations ($r_{Y,Xn}$) were used to evaluate model parameters in the multiple regression analysis.

3. RESULTS

Inspection of the data indicated that 20.81 percent of the 173 participants who accessed the online survey elected to consent but provided no other data. These cases were removed from further consideration. No other missing data was evident in the remaining 137 participant's scores. Univariate skewness and kurtosis values presented in Table 1 indicated minimal deviation from normality in the data across study variables.

Table 1: Descriptive statistics and estimates of score reliability

Variables	*M*	*SD*	*Skew.*	*Kurt.*	*α*
University Professors					
Autonomy Support	3.34	0.66	0.06	0.13	0.81
Structure	3.53	0.63	-0.14	0.43	0.82
Involvement	3.97	0.75	-0.37	0.43	0.65
High School Teachers					
Autonomy Support	3.98	0.72	-0.84	0.95	0.86
Structure	4.13	0.67	-0.65	-0.17	0.91
Involvement	4.91	0.66	-0.65	-0.17	0.79
Parent(s)/Guardian(s)					
Autonomy Support	4.16	0.82	-1.32	1.83	0.89
Involvement	5.39	0.67	-1.77	4.42	0.80
Motivation to be a PET					
SDI	9.08	2.42	-1.16	1.14	-

Note. *SDI* = Self-Determination Index. *M* = Mean. *SD* = Standard deviation. *Skew*. = Univariate Skewness. *Kurt*. = Univariate Kurtosis. α = Cronbach's (1951) internal consistency reliability coefficient. Item: total statistics indicated no candidate items for deletion that would improve the reliability of perceived involvement scores attributed to university professors.

Table 1 presents the descriptive statistics and score reliability estimates across study variables. Perceptions of autonomy support were consistently rated lowest while feelings of involvement were consistently rated highest by student trainees in terms of the degree of interpersonal support experienced from the same target. Student trainees endorsed more self-determined than controlled reasons for becoming a PET. Students' year of study (Range 1-4) did not produce any statistical differences in SDI ($F_{3,133} = 0.25$, $p = .86$) or perceptions of interpersonal support across potential sources (Wilks' $\Lambda = 0.85$, $F_{24,366} = 0.86$, $p = .66$, partial $\eta^2 = 0.05$). Choice of undergraduate degree program (i.e., PE vs. PE/CE) did not produce any statistical differences in SDI ($t_{115} = 0.56$, p = .58) or perceptions of interpersonal support across potential sources (Wilks' $\Lambda = 0.94$, $F_{8,108} = 0.82$, p = .59, partial $\eta^2 = 0.06$). Table 1 presents the score reliability estimates which ranged from 0.65 to 0.91 in this study.

Table 2: Pearson correlations between study variables

Variables	***1.***	***2.***	***3.***	***4.***
University Professors				
1. Autonomy Support	-			
2. Structure	0.66	-		
3. Involvement	0.62	0.58	-	
4. SDI-Motives to be a PET	0.05	-0.02	0.01	-
High School Teachers				
1. Autonomy Support	-			
2. Structure	0.71	-		
3. Involvement	0.61	0.53	-	
4. SDI-Motives to be a PET	0.13	0.22	0.13	-
Parents/Guardians				
1. Autonomy Support	-			
2. Involvement	0.69	-		
3. SDI-Motives to be a PET	0.24	0.29	-	

Note. SDI = Self-Determination Index. Correlation matrix is based on pairwise comparison between variable scores and sample size is consistent (n = 137) across each comparison made in the matrix. All r-values greater than |0.20| are statistical significant at $p < .05$ (two-tailed).

Table 2 presents the bivariate correlations between scores for each variable measured in this study and reveals several noteworthy patterns in the data. First, moderate-to-strong associations were evident between dimensions of interpersonal support (Mean r_{12} = 0.63). Second, SDI values were not correlated with any dimension of interpersonal support from university professors or the provision of autonomy support or involvement from high school teachers (Mean r_{12} = 0.08). Finally, provision of structure from high school teachers, as well as, provision of autonomy support and involvement from parents/guardians were positively correlated with higher SDI scores although the magnitude of this association was weak-to-moderate in nature (Mean r_{12} = 0.25).

Table 3: Predicting motivation to become a PET from perceived interpersonal supports

Predictor Variables	***β***	***t-values***	***p-values***	r_s	$r_{Y,Xn}$
University Professors					
Autonomy Support	0.08	0.65	0.52	.05	.00
Structure	-0.12	-1.03	0.30	-0.05	.01
Involvement	-0.00	-0.03	0.98	-0.04	.00
High School Teachers					
Autonomy Support	-0.06	-0.49	0.62	0.50	.00
Structure	0.28	2.28	0.02	0.73	.04
Involvement	0.04	0.35	0.73	0.40	.00
Parent(s)/Guardian(s)					
Autonomy Support	0.01	0.05	0.96	0.54	.00
Involvement	0.24	2.10	0.04	0.69	.03

Note. β = Standardized Beta Coefficients. r_s = Structure Coefficient (Courville & Thompson, 2001). $r_{Y,Xn}$ = Unique variance ($[r_{Y,Xn}]^2$ where $r_{Y,Xn}$ is the part correlation coefficient controlling for all other predictors; Hair et al., 2006). The Multiple R value used in to calculate r_s was 0.367 in this data set.

The results of the multiple regression analysis specifying SDI scores as the criterion variable and dimensions of perceived interpersonal support from each of three sources as predictor variables are presented in Table 3. Inspection of the Variance Inflation Factor (1.73-2.45) and Tolerance Values (0.41-0.54) implied collinearity in the data yet no pair of Variance Proportion Values exceeded 0.50

when the Condition Index (range 1.00-46.08) was greater than |10.0| (c.f., Pedhazur, 1997). Overall, the multiple regression model was tenable as specified in these data ($F_{8, 127}$ = 2.47, Adjusted R^2 = .08; p < .05). Notably, a small portion of the SDI variance was accounted for within this regression model whereby perceived involvement from parents/guardians and structure from high school teachers had the strongest predictive associations accounting for 3-4 percent unique variance in greater SDI scores.

4. DISCUSSION

Grounded in SDT (Deci & Ryan, 2002), the overall purpose of this study was to examine relationships between the provision of interpersonal supports from university professors, high school teachers, and parents/guardians with motivation to pursue a career as a PET in university students. Examination of the data from this preliminary study indicates that parents/guardians along with high school teachers may be important support targets motivating the decision to pursue a career as a physical educator especially when their interactions are characterized by the provision of structure and a sense of authentic involvement. The results of this study are mostly in line with Deci and Ryan's (2002) theorizing given that providing different types of interpersonal support from different social agents seemingly impacts the endorsement of optimal motives for career development when focused on the role of becoming a physical educator. Contrary to expectations, however, provisions of support from university professors in any form demonstrated no meaningful relationship with the motivation to seek out a teaching career in physical education. Furthermore, perceived autonomy support was not a key contributor to future motivation to teach physical education when considered simultaneously with both perceived structure and involvement.

Support for the first hypothesis concerning the symbiotic nature of interpersonal support dimensions forwarded by Deci and Ryan (2002) within SDT seems tenable based on the findings of this study. The data reported in Table 2 make it apparent that medium-to-large effects (Cohen, 1992) in a uniformly positive direction exist between dimensions of perceived autonomy support, structure and involvement at least in this cohort of trainee physical educators. Extrapolating from this study, it would appear that social agents (e.g., parent(s)/guardian(s), etc.) who shape the motives underlying career decisions in student trainees can support personal decision making in a caring environment yet still offer pointers for personal growth and achievement. Such observations do nothing to undermine Reeve's (2002) contentions that providing structure in an autonomy supportive and involved way is complimentary and can enhance (rather than derail) the process of optimizing motivation.

Mixed support was evident for the second hypothesis since few (not all) interpersonal style dimensions from high school teachers and parent(s)/guardian(s) only (not university professors) accounted for more self-determined motives to pursue teaching physical education as a future profession. Table 2 and 3 make it apparent that links between dimensions of interpersonal support and motives to teach physical education appear weak in magnitude amongst the student trainees providing data in this study. One explanation for these weak effects may be linked to the measurement of interpersonal supports and motivation to teach physical education. Neither instrument underwent extensive psychometric evaluation prior to (or during) use in this study. Future work in this area using the construct validation approach advanced by Mesick (1995) seems warranted.

Examination of the data in Table 3 make it apparent that providing support in any fashion from university professors seems unlikely to motivate the pursuit of a career as a physical educator in student trainees. Conversely, it seems that parents/guardians who confer a sense of involvement in their child's life and high school teachers who provide structure could be among the factors that impact career motivation. Two important points are worthy of note from these findings. First, in line with previous research focused on younger children (Reeve, 2002), the results of this study lend credence to the idea that multiple forms of support extending beyond merely support for autonomy can play a role at least in the context of shaping the motivation to become a PET. Future studies would do well to consider exploring more than just autonomy support when utilizing SDT as a guiding framework for understanding the interpersonal dynamics shaping motivation. Second, and perhaps equally as interesting from the standpoint of training programs within higher education, this study implies that motivation to become a PET is not linked to the types of interpersonal support experienced by student trainees from university professors. It is plausible that the sample of student trainees providing data in this study interpreted the items concerning university professors broadly rather than focusing specifically on the university faculty responsible for delivering courses focused predominantly on teacher training. An alternative explanation for these observations is that provisions of interpersonal support from university professors in teacher training programs simply does not impact the quality of motivation regulating career-related choices specific to physical education. Future studies will ultimately determine if this is an anomalous finding specific to this study or a widespread issue that warrants more serious consideration from teacher training programs housed within university systems.

While the results of this study are informative and novel, a number of limitations should be recognized and future directions offered to advance the study of motivation underpinning career choices within physical education. First,

this study used non-probability based sampling techniques within a non-experimental design. Such approaches provide minimal confidence in the external validity of the sample data and fail to address the complexities associated with causal inference despite the assumptions made in the multiple regression models (Pedhazur, 1997). Future studies could adopt more sophisticated sampling procedures that lend greater credence to the generalizability of the data, as well as, collect data over meaningful time periods to disentangle the direction of causal flow between perceived interpersonal supports and motivation to become a PET. Second, this investigation was restricted to self-report data that did not include an assessment of motivational outcomes such as actual career choices or behaviors directing occupational decision-making. Future studies could explore the links between other factors considered to shape motivation to become a physical educator (such as perceptions of psychological need satisfaction; Deci & Ryan, 2002) plus additional socio-contextual factors theorized to impact interpersonal supports (e.g., faculty perceptions of student behavior, parents beliefs about being a PET, etc.).

5. CONCLUSIONS

The practical worth of this study is tied to the benefits of motivation that is more self-determined (or autonomous) in nature that seems linked to involvement from parent(s)/guardian(s) and structure from high school teachers for student trainees considering becoming a PET. It would appear that interpersonal support from university professors plays little (if any) role in motivating the pursuit of physical educator as a career option in student trainees. Few studies have tested the collaborative effects of all interpersonal support dimensions central to SDT (Deci & Ryan, 2002) yet this study implies continued investigation of autonomy support, structure, and involvement is warranted as potential intervention targets fostering optimal motivation.

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