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An Assessment of Physical Education Teacher Candidates' Dispositions

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Abstract

The study assessed physical education teacher candidates' (TCs) dispositions toward teaching. Participants included 72 physical education TCs (80.56% males and 19.44% females). TCs completed the Missouri Educator Profile (MEP) once, as part of the requirements for admission to the teacher education program at their institution. The MEP is a 10-point Likert scale with six subscales: Achievement (AT), Social Influence (SI), Interpersonal Effectiveness (IP), Self-Adjustment (SA), Conscientiousness (CN), and Practical Intelligence (PI). The predictor variables were TCs' sex, PE major status, cumulative GPA (GPA), number of hours attempted (HRA), number of hours passed (HRP) at the time of taking the MEP, transfer student status (TSS), and first semester of enrollment (FSE). Descriptive data indicated that the SA subscale (45.83%) had the highest percentage of TCs with high scores, followed by SI (33.33%). Conversely, the lowest percentage of TCs with high scores was in PI (5.56%). Nonparametric rank-based regression analyses showed that sex and PE major status were significant predictors of SI, IP, and PI. Female TCs had lower scores than their male counterparts on these subscales. TCs who maintained their status as PE majors after taking the MEP had lower scores than those who changed majors. Furthermore, HRA and HRP significantly predicted the IP and PI subscales. TCs with higher number of hours attempted had higher scores on the IP and PI subscales. Conversely, the higher the number of hours passed, the lower the score on the IP and PI subscales. All the predictor variables were not significant for subscales AT, SA, and CN. Finally, transfer student status was not a significant predictor of any of the dispositions. Physical Education Teacher Education programs need to teach and assess TCs' dispositions on a regular basis. Dispositional assessment data could serve as valuable source of feedback for teacher education program improvement.

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1. Introduction

Identifying the role dispositions play in teacher preparation programs (TPP) has led to an explosion of interest in teacher candidates' (TCs) dispositions resulting in a considerable body of literature (Rose, 2013). The interest in dispositions in teacher education dates to the 1990s when the term dispositions gained currency in the teacher education discourse (Villegas, 2007).

It was led by the movement toward standards-based teacher preparation changing the old formulation of "knowledge, skills, and attitudes" as goals of teacher education to "knowledge, skills, and dispositions," where the latter functions as an intermediary between knowing something, a skill and a performance (Freeman, 2003). In this era, TCs cannot rely only on content knowledge to be effective teachers. They need more than strong test scores, basic test skills, and grade point average (GPA) as these indicators are considered weak predictors of teaching performance (Wakefield, 2003). Thus, not all academically competent PTs would become effective teachers.

State and national accrediting bodies have underscored this importance by including teacher candidate dispositions as key a component within the standards (Hillman, Rothermel, & Hotchkiss-Scarano, 2010; Schussler, 2006). For example, the Council for the Accreditation of Educator Preparation (CAEP, 2019) requires that prospective TC demonstrate appropriate dispositions beyond academic ability as part of the admissions process and during their training.

Richardson and Onwuegbuzie (2004) defined dispositions not as behaviors but rather as determiners of behaviors that represent the ways in which one views the world. Teacher educators struggle to distinguish between dispositions that are desirable in any person in the workforce and those that appear to be more specifically related to "educating" (Freeman, 2003). Consequently, teacher certification programs must attend to this dimension as research shows that non-academic attributes and dispositions are better predictors of teaching quality than academic abilities (Duckworth, Peterson, Matthews, & Kelly, 2007; Salzman, 1991). However, dispositions are neither easily identified nor easily assessed (Hillman et al., 2010; Schussler, 2006) and even when ideal dispositions have been identified, Mueller and Hindin (2011) suggest that if programs have not agreed on definitions as a foundation, dispositions will continue to be difficult to measure.

In their study on backgrounds and perceptions of Physical Education Teacher Education (PETE) students, Ralph and MacPhail (2015) found that it is important for those delivering teacher education to identify, acknowledge and understand the experiences of those coming into teacher education, and their reasons for choosing teaching as a career. Those involved in delivering PETE programs need to understand TCs' school physical education experiences as these influence their dispositions which later become resistant to change (Doolittle, Dodds, & Placek, 1993). This has been a challenge to many teacher education programs (Lund, Wayda, Woodard, & Buck, 2007). Nevertheless, research has shown that TCs' perceptions of physical education can be modified to some extent through well-supervised field experiences (O'sullivan & Tsangaridou, 1992). Given the challenges of positively influencing TCs' dispositions, and the emphasis on dispositions as a program accreditation requirement, TC admission process should be considered a critical component of the teacher education programs (DiGiacinto, Bulger, & Wayda, 2017).

1.2. Purpose of the Study

Though TPPs research focuses mostly on methods used to promote the development of desirable dispositions (Rose, 2013) few PETE programs have assessed their students' dispositions beyond what is required for accreditation. The purpose of the current study, therefore, was to assess physical education teacher candidates' dispositions toward teaching. The study was guided by two research questions: 1. What are physical education teacher candidates' dispositions? 2. What are the predictors of physical education teacher candidates' dispositions?

2. Method

2.1. Participants

Participants included 72 physical education TCs (80.56% males and 19.44% females) in one PETE program in Midwestern United State. The TCs had Cumulative GPAs ranging from 2.14-3.90 (M = 3.07). The number of hours attempted at the time of completing the MEP ranged from 13-192 (M= 74.57). Number of hours passed ranged from 11-150 (M= 64.42). TCs who maintained their status as PE majors after taking the MEP were 58, while 14 changed their majors after completing the MEP.

2.2. Instrument

The Missouri Educator Profile (MEP) (Pearson, 2013) served as the data source for the study. The MEP is a 10-point Likert scale with six dimensions/categories: Achievement (AT), Social Influence (SI), Interpersonal Effectiveness (IP), Self-Adjustment (SA), Conscientiousness (CN), and Practical Intelligence (PI). Each category, in turn, consisted of two or three subcategories. AT consisted of two subcategories of effort and persistence. The SI category assessed teacher candidates' leadership and social orientations. IP measured cooperation and concern for others. SA assessed candidates' self-control, stress tolerance, and adaptability/flexibility. CN was related to dependability, attention to detail, and rule following. Finally, PI assessed innovation, analytical thinking, and independence. Teacher candidates completed the MEP once, as part of the requirements for admission to the teacher education program at their institution at the time of the study. The data for the study were extracted from the annual program evaluation reports for the PETE program that served as the site for the study. The Human Subjects Committee at the institution granted approval for study prior to the extraction of the data from the annual program reports.

2.3. Variables

The response variable was TCs' dispositions as assessed by the MEP (Pearson, 2013). The predictor variables were TCs' sex, PE major status, cumulative GPA (GPA), number of hours attempted (HRA), number of hours passed (HRP) at the time of taking the MEP, transfer student status (TSS), and first semester of enrollment (FSE).

2.4. Assumptions and Model

Linear regression is the most basic and commonly used type of statistical analytic tool in a variety of disciplines including education. Regression analysis concerns two things: 1. Is a set of predictors relevant in estimating the response variable? 2. Which predictors significantly predict the response variable? In fitting a linear regression model, one key assumption that is hardly met is the assumption that data are normally distributed. In this study, the average of the six subscales of the MEP were used as a measure of teachers' dispositions. Figure 1 presents boxplots of the six subscales. From the figure, it is obvious that apart from AT that looks symmetrical with the presence of an outlier, the rest were skewed. Skewness is an indication that a data set may not be normally distributed. Outliers, which are data points that are far away from other data points, can adversely impact the results of the study.

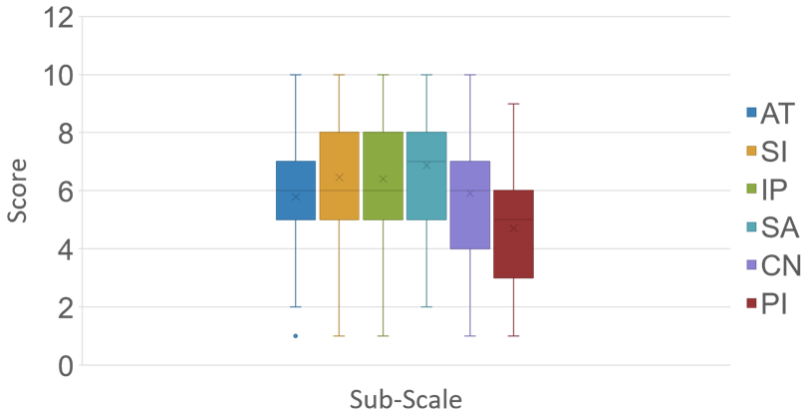

Figure-1. Boxplots of Sub-Scales.

To detect significant departure from normality, we performed the Shapiro-Wilk normality test (Shapiro & Wilk, 1965) for each of the six subscales. The test rejects the hypothesis of normality when the p-value is less than or equal to 0.05. Table 1 displays the test results of the Shapiro-Wilk normality test. From the table, apart from AT, all the other subscales showed significant departure from normality implying the linear regression model is not appropriate for this study. Semi-parametric models do not require data to satisfy the normality assumption, but it is inappropriate to fit a semi-parametric model because of their sensitivity to outliers.

Table-1. Shapiro-wilk normality test.

Disposition	W-Statistic	P-Value
Achievement	0.967	0.0559
Social Influence	0.960	0.0216
Interpersonal Effectiveness	0.958	0.0177
Self-Adjustment	0.938	0.0015
Conscientiousness	0.955	0.0112
Practical Intelligence	0.963	0.0349

Rank regression provides a more objective approach to dealing with non-normal data that include outliers. Therefore, this study used rank-based linear regression to study the relationship between the teacher candidates' dispositions and the set of predictors. Rank-based estimators were developed as a robust, nonparametric alternative to traditional least squares estimators (Hettmansperger & McKean, 2011; Jaeckel, 1972; Jureckova, 1971; McKean & Hettmansperger, 1978; McKean, 2004).

2.5. Statistical Analysis

The rank-based regression was implemented using the statistical package Rfit in RStudio. The package allows users to implement rank-based estimation and inference (Hettmansperger & McKean, 2011; Hollander & Wolfe, 1999). Descriptive and inferential statistics were utilized to analyze the data. First, means and percentages of TCs with high, moderate, and low levels of dispositions for each subscale and the overall mean

were computed. Second, a nonparametric, rank-based regression was computed to determine significant predictors of TCs' dispositions.

3. Results

3.1. Teacher Candidates' Dispositions

The first research question examined TCs' dispositions. Table 2 presents data on the number and percentages of TCs with high, moderate, and low dispositions. Overall, 66.67% of PTs reported high levels of dispositions while 26.71% and 6.62% showed moderate and low levels of dispositions respectively. The SA subscale (45.83%) had the highest percentage of TCs with high dispositions, followed by SI (33.33%) and IP (31.94%). Conversely, the PI subscale (42.14%) showed the highest percentage of PTs with low levels of dispositions, followed by CN (27.99%).

Table-2. Number and percentage of TCs with high, moderate, and low dispositions.

Disposition	High	Moderate	Low
	N(%)	N(%)	N(%)
Achievement	15(20.83)	40(55.56)	17(21.84)
Social Influence	24(33.33)	37(51.39)	11(13.53)
Interpersonal Effectiveness	23(31.94)	37(51.39)	12(14.83)
Self-Adjustment	33(45.83)	27(37.5)	12(14.15)
Conscientiousness	17(23.61)	33(45.83)	22(27.99)
Practical Intelligence	4(5.56)	37(51.39)	31(42.14)
Overall mean	48(66.67)	18(26.71)	6(6.62)

3.2. Predictors of Preservice Teachers' Dispositions

The second research question attempted to determine the predictors of TCs' dispositions. Table 3 shows the nonparametric ranked-based regression data for predictors and TCs' dispositions. PE Major was the only variable that significantly predicted TCs' overall disposition. Additionally, PE Major was a significant predictor of SI, IP, and PI. PTs who maintained their status as PE majors after completing the MEP had lower scores than those who changed majors. The number of hours attempted (HRA) and the number of hours passed (HRP) significantly predicted the IP and PI subscales. TCs with higher number of hours attempted had higher scores on the IP and PI subscales. Conversely, the higher the number of hours passed, the lower the score on the IP and PI subscales. None of the predictor variables were significant for subscales AT, SA, and CN. Finally, transfer student status and first semester enrollment were not significant predictors of any of the dispositions.

Table-3. Nonparametric, rank-based regression for predictors and teacher candidates' dispositions.

Predictor	AT	SI	IP	SA	CN	PI	Overall Mean
Intercept	2.4562	7.1704**	6.0332**	2.7573	0.5628	7.4592***	4.0325**
Cumulative GPA	1.1340	0.3843	0.6241	0.9094	1.3624	-0.2032	0.6707
Hours Attempted	0.0247	0.0252	0.0539	0.0083	0.0488	0.0501	0.0305
Hours Passed	-0.0196	-0.0190	-0.0565	0.0026	-0.0418	-0.0651	-0.0245
Sex	-0.3877	-1.5247	-1.0315	0.5819	1.1938	-1.2456**	-0.2818
Transfer Student Status	0.1650	0.0102	-0.3382	0.4439	-0.3012	-0.0713	0.1660
1st Semester of Enrollment	0.2791	0.8298	0.3773	0.6910	0.1672	0.2106	0.4926
PE Major Status	-1.0776	-1.8510**	-1.7467***	-0.5399	-1.3114	-1.1279	-1.3425**
Robust R^2	**10.50%**	**20.06%**	**22.86%**	**5.61%**	**16.13%**	**24.82%**	**19.26%**
Level of Significance	***1%	**5%	*10%				

4. Discussion and Conclusions

The current study assessed the dispositions of a sample of physical education teacher candidates in one PETE program in Midwestern United States. In this section, we discuss four major findings of the study. First, most TCs in the present study reported moderate to high levels of dispositions in each of the six subscales and the overall scale. It is reassuring to that most TCs perceived themselves to have the appropriate levels of the dispositions assessed by their institution. For, as Stevens (2001) asserted, a TC might perform marginally on academic tests but still develop the dispositions, content knowledge, and pedagogical skills needed to be a successful teacher.

Second, PE Major status was a significant predictor of SI, IP, PI, and the overall mean (disposition). TCs who maintained their status as PE majors after taking the MEP had lower scores than those who changed majors. Often, PE teacher candidates have high priority in content-oriented value orientations such as disciplinary mastery and learning process and low priority in affective-oriented value orientations such as

ecological integration, self-actualization, and social responsibility (Behets, 2001; Ennis, Ross, & Chen, 1992). Teachers with high priority in disciplinary mastery focus on skill acquisition, physical activity, and physical fitness. Teachers with high priority orientations in the affective orientations focus on students' psychological and social wellbeing. Furthermore, it is important that TCs are enthusiastic about physical education content and see connections to everyday life (CAEP, 2019). As Sternberg et al. (2000) noted, Practical Intelligence (PI) is the ability to adapt to everyday environment and apply intelligence in solving real world problems.

Third, the number of hours attempted (HRA) and the number of hours passed (HRP) significantly predicted IP and PI. The higher the number of hours attempted, the higher the scores on the IP and PI subscales. Conversely, the higher the number of hours passed, the lower the score on the IP and PI subscales. That is, the two variables had opposite effects on the two dispositions. The negative relationship between number of hours passed and dispositions could be a result of the GPA and standardized test score requirements (Wakefield, 2003) for admittance to the teacher education program. In order to meet these requirements TCs would have focused on their coursework and test preparation rather than on improving upon their dispositions.

Finally, male TCs reported higher scores than their female counterparts in Social Influence (SI) and Practical Intelligence (PI). This finding is inconsistent with Cubukcu (2006) who found no significant differences in the critical thinking dispositions of male and female teacher candidates. The finding of this study further contradicts that of Turan (2016) who reported that female teacher candidates had higher critical thinking dispositions than male candidates.

The findings from the present study suggest four main conclusions. First, most teacher candidates in this reported moderate to high scores on the dispositions assessed by their teacher education program. It is worth noting that the highest percentage of TCs with low levels of disposition was in the Practical Intelligence. Second, the number of hours attempted, and the number of hours passed significantly predicted three of the dispositions measured: social influence, interpersonal effectiveness, and practical intelligence. However, the two predictor variables had opposite effects on TCs' dispositions. Whereas the number of hours attempted had a positive effect on TCs' dispositions, the number of hours passed had the opposite effect. Third, physical education major status was another variable that significantly predicted three dispositions: social influence, interpersonal effectiveness, and practical intelligence. It is worrisome to note that physical education majors had lower scores on these three dispositions that those who changed their majors after completing the MEP. Finally, male TCs in this study had higher scores than their female colleagues in two dispositions: social influence and practical intelligence. Findings from this study suggest that dispositional assessment data could serve as valuable source of feedback for teacher education program improvement.

5. Implications for Teacher Education

Teacher preparation programs need to continue to assist TCs develop their dispositions throughout the duration of their training. Dispositions, habits of mind, must be seen, encouraged/orchestrated through student-student interaction, taught directly, and feedback provided (Dottin, 2009). Cummins and Asempapa (2013) suggested TPPs could intentionally use the four years of preparation to foster the dispositions where candidates showed weaknesses. TPPs must encourage teacher candidates (TC) to develop awareness and reflective abilities beyond their knowledge and skills intended to prepare them for the classroom setting (Schussler, 2006). Additionally, TTPs need to regularly assess TCs' dispositions. As Lund et al. (2007) asserted, the assessment of important dispositions appears to be a challenge to many PETE programs. They reported discrepancies between PETE faculty member's identification of the importance of dispositions and their assessment in their programs.

The present study shows that TCs had low scores for practical intelligence. Sternberg. and Hedlund (2002) suggest that PI encompasses the abilities one needs to succeed in everyday life, including in one's job or one's career and it can be characterized as "street smarts" or "common sense" and can be contrasted with academic intelligence or "book smarts." To augment candidates' PI, TPPs need to continue to provide positive field experiences where TCs will have the opportunity to become immersed into a class environment through observing and assisting a cooperating teacher and conducting teaching. During these experiences, TCs will benefit from the realities of teaching physical education (Larson, 2005). This is important as beginning physical educators are often more isolated and have less status than most of the other teachers (Mohr & Townsend, 2001). Another area with low scores was Interpersonal Effectiveness (collaboration and care for others) which represents a challenge for TPPs as the general finding is that in schools and universities, students are not often taught teamwork skills (Gentry, 2012). TPPs should focus on providing students with ample opportunities to work with their peers. One process would be to enable collaboration and teamwork skills to be taught and measured during collaborative work and class-wide activities (Cortez, Nussbaum, Woywood, & Aravena, 2009).

6. Future Research

The current study examined the dispositions of a sample of teacher candidates in one physical education teacher education program in Midwestern United States. It used a forced choice Likert scale instrument for

data collection. Further research is needed to better understand TCs' dispositions as they enter the teacher education program. Additionally, it would be appropriate for future research to use qualitative measures to understand how and why TCs scores vary on the different dispositions. Second, future studies should utilize longitudinal designs to determine how TCs dispositions evolve from entry to the end of their training. Finally, research on the relationships among TCs dispositions and their teaching performances during early field experiences and student teaching would teacher educators with valuable data. They could use these data to identify the components of their programs that would need remediations and to design and implement the appropriate interventions.

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