Child Psychological Centre Laboratory; Possible determinants through the lens of Proximal Development Theory

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Abstract

This paper will discuss the possible determinants of proximal developments within child through the ZPD theory. Child development have always drawn attention to the importance of peer's intelligence, interaction and instruction, especially in adolescence, when peers may facilitate each other's antisocial behavior. It has often been assumed that peers are less critical in early childhood when relationships with family members are more influential. To understand why some children find it hard to relate to peers, it is crucial to study the early development of peer relations. This paper will emphasize the finding from three determinant of peers' factors.

Keyword: ZPD

1.   Introduction

Child Psychological Centre Laboratory (WILPSYCH) is one of the initiate program which emphasize on psychological development responsibility and awareness towards society. This awareness programme started as Widad became one of the hub research institution which care on the psychological research part especially on child psychology. The institution believes with the initiatives, exploring the possible determinants will be helpful for future care of WILPSYCH Centre**.** This paper will discuss the possibilities of determinants through ZPD theory. The Zone of proximal development as known as ZPD, is a set of actions that children cannot perform without assistance. The word "proximal" is used concerning activities that children cannot perform independently but can be handled with assistance. Children need more

guidance and help to learn how to handle the tasks independently. is the distance between the actual developmental level as determined by independent problem solving and the level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers (Vygotsky, 1978 in (Boutwell et al. 2017).

It is a concept often used in the classroom to help students with skill development. The development is conceived of as self-propulsion creating new higher psychological functions by reorganizing lower ones (Schneuwly, 1994). The core idea of ZPD is that a more knowledgeable person can enhance a student's learning by guiding them through a task slightly above their ability level.

The ability level or the cognitive development occurs through intelligence, social interaction and instruction that is between one or more other people that pupils make intellectual progress (Saharudin, 2020; Loyd, 2007). Peer teaching or collaboration involves the development of children's higher mental functions through collaboration with an expert (Smith, 2012). Vygotsky also believes that cognitive development occurred in two-part which are biological and social influence. Through biological development, we can observe reflexes and responses, cause and effect type of learning, and the intelligence process such as memory and attention. Meanwhile, social cognitive development involved higher mental functioning consciously used by the learner, such as planning, abstract reasoning, decision making, and targeted attention (Smith, 2012).

There is a study from United Kingdom's researcher that discuss their higher education. The study reports the Higher Education Academy Economics Network-funded research for international students' experience with peer assessment and feedback innovation using Vygotsky's Zone of Proximal Development (ZPD) theoretical framework to analyze students' experience. The result showed that peer assessment practice enhances assessment and feedback experience (Chew et al, 2016).

2.0 Literature Review
2.1. ZPD theory

Intelligence reflects the general ability to process information, which promotes learning, understanding, reasoning, and problem-solving. This paper will discuss the correlation between the ZPD theory and having a peer group among children that can help them adapting language.

There is substantial evidence of intelligence similarity among friends. In a sample of nearly 7000 people, Burgess et al. (2018) found that children's IQs were highly associated with their current friends' IQs at both 8 and 16 years old. Boutwell et al. (2017) studied this topic more recently by assessing the intellect levels of 810 fourth graders as well as the intelligence levels of each subject's best friend. Even after controlling for a variety of family and demographic factors, their findings revealed that preadolescent friendship dyads are concurrently associated

with IQ assessments. Surprisingly, this link was found in both race and gender subgroups of the data. Some of the essential correlates of intelligence, such as academic achievement, have also piqued the interest of intelligence experts. An analysis of a nationwide sample of around 10,000 American teenagers indicated that an individual's grade point average was highly related to peer GPA, and other research supports the notion of peer socialization's impacts on GPA. Given the preceding research threads, a correlation between friends' intellect levels (and GPA) appears to exist. What is less apparent is whether a long-term relationship between a peer and adolescent intelligence reappears if earlier levels of intelligence are considered.

In a theoretical standpoint, Harris (1995) proposed a theory of personality that aimed to bring together essential data from several domains. At the time, many developmental scientists believed that parental influences were the most crucial aspect in understanding long-term personality development. Nonetheless, quantitative genetic investigations have consistently demonstrated a scarcity of variance related to shared environmental factors (Rowe, 1994; Turkheimer, 2000). Nonetheless, those research revealed the significance of environmental factors that are unique to each child in the family (Turkheimer, 2000).

Intelligent peers are more academically inclined, associating with them may contribute to the intellectual ability by exposing an adolescent to cultural values favorable to learning and, more importantly, to the application and use of knowledge to solve problems (i.e., crystallized intelligence). Prior research has demonstrated a link between peer academic involvement and subject motivation, even across time (Kinderman et. al., 2016). In addition, a body of research has argued for the presence of school-level impacts on academic achievement that develop as a result of SES effects on student performance (Marks, 2015). The argument is that higher levels of SES within a school may improve student performance in a variety of academic domains, and there is some empirical data to support this claim (e.g., math, language abilities). (Marks, 2015; Perry & McConney, 2010). Furthermore, to the extent that such effects occur, they may be caused in part by individuals being exposed to peers with greater levels of intelligence, resulting in the environmental influences mentioned above.

2.2. *Hypothesis Development*

To understand the determinants of proximal development in child, this paper only focus to the three determinants illustrated. The three hypotheses are presented in the following part.

2.2.1. *Intelligence towards proximal developments*

In particular, the heritability of intelligence in childhood is moderate, accompanied by some shared environmental influences. Nonetheless, as development progresses, heritable effects rapidly rise, shared environmental effects drop, and nonshared environmental effects persist (Plomin & Deary, 2015). The apparent significance of nonshared environmental impacts during adolescence suggests that key variables outside the family should be explored, and Harris' work identifies peers as a plausible choice for research. The distinction between fluid

and crystallized intellect is the second attribute of intelligence worth mentioning. Friends can impact one other's crystallized intellectual talents, which are the application of existing knowledge and experience to solve issues and tend to last longer in life than fluid intellectual abilities (Ritchie, 2015; Salthouse, 2004). Thus, despite self-selection into friendships based on intelligence similarity, individuals may experience a socialization effect of their friends' cognitive talents that increases their crystallized, and potentially to a lesser extent fluid, intelligence. Thus, the proposed hypothesis is presented as:

H1: Intelligence positively affects proximal developments within child

2.2.2. Social Interaction and Instruction

Social interaction is an exchange between two or more individuals. A fundamental feature of social life is social interaction, or the ways in which people act with other people and react to how other people are acting (Ru, Wang, & Yan, 2018; Wang et al., 2018). Students of child development have always drawn attention to the importance of peers, especially in adolescence, when peers may facilitate each other's social behavior and instruction given. It has often been assumed that peers are less critical in early childhood when relationships with family members are more influential. Early problems with peers have negative consequences for the child's later social and emotional development. To understand why some children find it hard to relate to peers, it is crucial to study the early development of peer relations. Thus, the proposed hypothesis is presented as:

H2: Social Interaction have a positive influence on proximal developments within child
H3: Instruction positively affects proximal developments within child

3.0 Methodology

3.1. Data collection

Data was collected via an online questionnaire. The respondents are Malaysian 87 teachers who have taught in the primary school. The selected participants were split evenly among each of the city at Sandakan, Sabah and ranged from 30 to 40 years of age.

4.0 Data Analysis and Results

The data analysis is based on the two stage PLS-SEM using SmartPLS 3. The first stage evaluates the measurement model by investigating the reliability and discriminant validity of constructs. The second level assesses the structural model by testing the proposed hypotheses through variables' path coefficients and statistical significance.Thus, PLS-SEM can determine the most successful variable in understanding possible determinants in this study.

4.1. Measurement Model

The measurement model is the first stage in the PLS-SEM method that specifies the constructs' internal consistency reliability, convergent validity, and discriminant validity. The reliability of the constructs was measured through Cronbach's alpha and composite reliability.

A considerable threshold for the reliability should be more than 0.60 for exploratory research (Hair, Risher, Sarstedt, & Ringle, 2019). Figure 2 shows that the range of Cronbach's alpha is 0.616–0.936, denoting strong internal consistency reliability. Convergent validity was assessed through the indicator loadings and average variance extracted (AVE).

Figure 1 Reliability and validity analysis.
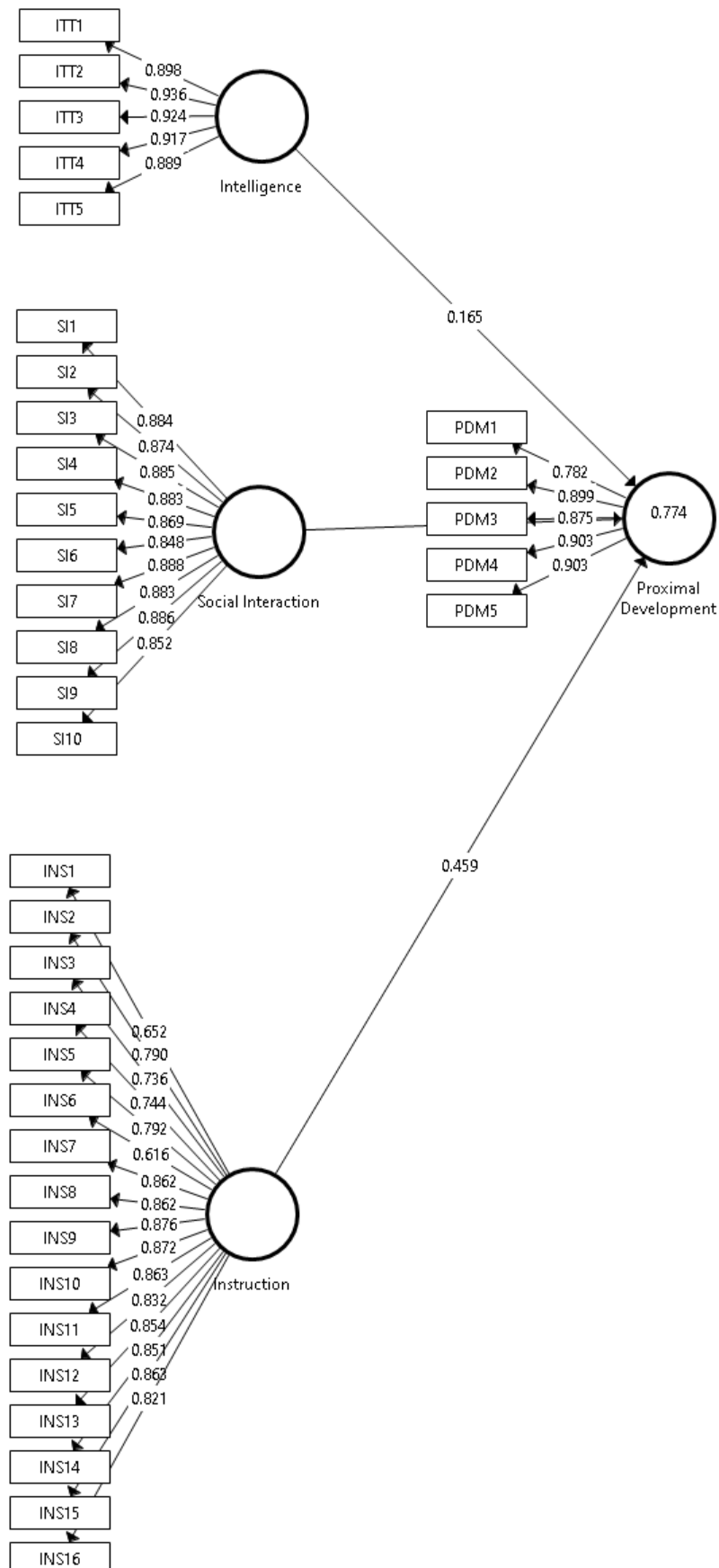
4.2. Structural Model and Hypothesis Testing Analysis

This study used the bootstrapping method (10000 resample) to test the model with different research hypotheses. To assess the structural model, the path coefficient of exogenous to endogenous variables, the t-values, and squared multiple correlation (R^2) values of explained variance on the endogenous variable were evaluated. The path coefficient value ranges from -1 to +1, where a path coefficient estimated close to +1 shows a strong positive relationship while -1 shows a strong negative relationship with an annotation of path coefficients (β).

Based on three predictors of Proximal Developments (PDM), the coefficient of determination, R^2 was 0.774, and statistically significant evidence was found in support of H1(ITT → PDM, $\beta = 0.165$, $p < 0.01$). H2 (SI → PDM, $\beta = 0.875$, $p < 0.01$) and H3 (INS → PDM, $\beta = 0.459$, $p < 0.01$). Table 1 shows the outcomes of the hypothesis testing.

Table 1. Hypothesis testing results.

Hypothesis	Relation	Path coefficient (β)	T-value	P-value	Result
H1	ITT → PDM	0.165	1.119	0.005	Supported
H2	SI → PDM	0.875	1.367	0.021	Supported
H3	INS → PDM	0.459	1.598	0.29	Supported

5.0 Discussion

This study determined the determinants that influence proximal developments in Malaysian. According to the findings, all the determinants have a positive and significant impact on proximal developments within child. This research has a wide range of explanations on how certain factors can influence the proximal developments. Hence the finding of this research will be explored more on another determinants and applying the retention data of FAROKAM Virtual System.

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