



The Study of Mediating Role of Private Speech in Conceptual Model of Relationship between Language Development, Secure Attachment and Behavioral Self-Regulation

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Abstract

The aim of this study conducted to examine mediator role of private speech in conceptual model relation between language development and secure attachment with self-regulation in children. Using available sampling method, 128 children from kindergarten centers of Tehran city were selected. Test of language development (Newcomer and Hammill, 1997), Disturbances of Attachment Interview (Smyke & Zeanah, 1999), self-regulation scale (Hassanzadeh & Amrai, 2015), Preschool Children Behavioral Disorder (Shahim and Yousefi, 1999) and Structured Observation of Behavioral Regulation (Ponitz and et al, 2008) were administered with both mothers and their children. Path analysis was employed in order to analyze the data. The results showed that model have fitness in which language development and secure attachment have direct and indirect effects on behavioral self-regulation. In addition, private speech showed mediated role for relationship of language development and secure attachment as well as self-regulation. The findings of present study showed prediction of children self-regulation based on language development and secure attachment with mediator role of private speech. Therefore it is reasonable to suggest considering language development and attachment style of children as a way to reduce behavioral problem and improve self-regulation.

Keyword: Private Speech, Language Development, Secure Attachment, Self-Regulation



Introduction

Self-regulation and ability to control and direct behavior are main aspects of psychological development during preschool (Winsler, Diaz & Chabay,1999;Calkins & Dedmon,2000; Rubio,Medline,&Garcia,2014). Accordingly, children need to perform regulatory actions and engage automatically and based on social norms and without adults supervision, thus the main objective during childhood is socialization (Day & Smith,2013). Based upon this goal, we expect children be able in behavioral, emotional, and physiological regulation when they are at the end of their Childhood (,Calkins & dedmon,2000).It is certain that, biology and mood are effective factors in personal differences which influence behavioral control and self-regulation (Winsler·Diaz,1999). According to conceptual model of Grolinck & Farkas (2002),communication ability and language development are among the most important cognitive factors in self-regulation, and they increase the child's ability in early self-regulation (Thompson,1990), and are very essential to regulate negative emotions. Verbal ability enhancement should lead to more external regulation because, language gives the child the ability of describing emotions and receiving feedback to understand how his/her emotions affect others (Amraei, Hasan zade, Afrouz, and Pirzadi, 1391, Kopp), and how his/her thought language can be used in disappointment situations as a tool to regulate disappointment situation (Cole, Armestrong, & Pemberton, 2010; Eisenberg, Sadovsky, & Spinrad, 2005).

In this manner, Vygotsky (quoted from Miller & Cohen, 2002) believes that, language has a fundamental role in formation of higher mental processes. In his opinion, the language and thoughts arise from two separate genetic sources and after going through various routes, they merge somewhere. Then, thought is stated verbally so, ideas are formed with the help of words (Vygotsky, 1962). Vygotsky suggests three stages for language development and its role in thought and behavior regulation: in the first stage, namely social speech, the private speech function is mainly controlling others behavior and expressing some incomprehensible concepts. In the second stage, Ego-central speech, the child tries to regulate and direct his/her function through private speech. Finally, in the third stage, private speech stage, the child directs his/het thought and behavior through subtle-inner speech (Jones, 2009). According to



Vygotsky(1962, quoted from Daugherty, 1993), private speech is a stage of language development that appears before inner speech stage and is in charged with intellectual function and has a structure similar to inner speech. On the other word, language, as a social-cultural tools, is used for communicating others and thus, it is combined with recognition, and in the form of private speech is used by children to guide, plan, and regulate their behavior and thought(Ostad & Askeland, 2008; Nagileri, 2003; Askeland, 2012; Rubio, Medina, & Garcia, 2014), because private speech, auditory speech for your guidance, is one of the cognitional self-regulation aspects(Winsler, 2009; Winsler & Diaz,Atencio, McCarthy, Chabay, 2000).

On the other hand, attachment, parent-child interaction, parenting style, and parental discipline strategies play an important role in behavioral regulation of child (Winsler,Diaz, and Chabay,1999; Escobara, Pereirac, & Santelicesa, 2014). Parenting variables are suitable predictors for positive children's self-regulation (Escobara, Perirac, and Santelicesa, 2014). Accordingly, Vygotsky claimed that, development and change in self-regulation is reflection of gradual change in transferring regulatory responsibility from child career to child, on the other word it is a movement from other-regulation to communal regulation and self-regulation. Children self-regulation increases under responsive and powerful parenting. On the other hand, a parent-child relationship that lacks of proper attachment and quality accompanying with increase in conflicting orders such as, numerous interference, negativism, or punishment-oriented control, lead to increase in self-regulation problems, impulsiveness, lack of competence, attention deficit, hyperactivity, and behavioral problems (Shaw, Kenan, 1994; kochanska, 1993; winsler, Diaz, Chabay, 1999).

Therefore, attachment, early interaction (Tompson, 1994; Roskame &Stievenarta, 2011) and potential mechanism like language development (Winsler, Diaz, &Chabay, 1999; Winsler, Naglieri, Askeland, 2012) are among the main contributive factors in children's self-regulation change.

The recent study is aimed at answering to the question that, given to indispensable role of private speech in self-regulation, do language development and secure attachment components influence on self-regulation through speech?



Methodology

The research project, in terms of the used method, is correlation one that is a non-experimental research. In this method of study, the relation between variables is analyzed based on the research objective, which one of these includes correlation matrix or covariance. Structural equation model is one research in which correlation matrix or covariance is analyzed, and in structural equations of the objective, structural relations test is based on the recent research findings and theories.

The statistical universe of the recent study includes all pre-school students in Tehran, which are selected of children aging between 3-7years of age who are eligible for the study, Census method is used in the study, and 128 students who were eligible for the study were selected, and 3 students were excluded due to having mistake and being in the field of rambling data, then a total of 125 students was obtained.

To examine language development, the imitation subscale of test of language development (TOLD-3) was used. In this study, according to whether imitation part of correlation term has a score higher than total score is used as score of language development. This study is used for children aging between 3-8, which includes 9 subtest (6 main subscale and 3 complementary subscale). The primary transcription of language development test was set in 1977 by Newcomer and Hammill to assess language development of English-language children's aging between 0-4 (full 4 years) to 8-11 (8years and 11 months) in America, and in 2001 is normalized for 1235 children (609 girls and 626 boys) in the age range of original norm in Tehran. Reliability of the test was obtained through inner consistency of alpha coefficient in subscales, and considering age norms of 0.74 to 0.96 of variable. Through test-retest method, reliability is shown for all subscales ranging from 0.82 to 0.88 of variable. Validity is applied through content validity methods (speeches rational basis and classic method), proof validity, and construct validity (Hasanzadeh, Minaei,2001,2002).

Disturbances of attachment interview, which was set by Smyke and Zeaneh(1994) was used to assess secure attachment. This semi-structured interview includes 12 items which assesses the presence of derangement or Disturbances of attachment. If behavioral syndromes don't have distinctive presence, the items will be given zero code, code 1 refers to the situations where there is some evidences for syndromes, code 2 is used for situations that evidences are



distinctive (Smyke, Dumitrescu, Zeanah, 2002). Validity between proofreaders (Kappa coefficient) in Jonkman et al (2014) research that was based on the agreement between two interviewers for all items in two parts, was between 0.88 to 1. In Smyke, Dumitrescu, and Zeanah (2002), the coefficient of agreement between interviewer was 0.88 and inner consistency of the interview were 0.80 and 0.83. Based on factorial analysis of the main component, Oosterman & Shuengel (2007) showed that, 0.71 of the variance of total items will be explained.

To assess behavioral self-regulation, structured observation of behavioral regulation (Ponitz & et al, 2008) was used. This tool includes head –toe – knee – shoulder task. This test includes 20 experimental test and is designed for pre-school children. After acclimatizing with two verbal requests (for example, put your hand on your head, put your hand on your toe), the child is asked to respond to two requests (10 first tests for toe-head task) then respond to four types of requests (in the second test) in an illogical method. For example, if the examiner says: "put your hand on your toe" , the right respond for the child is that he/she puts his/her hand on his/her head.

To assess private speech, the researcher with consultant team collect a tool based on mother's report which is based on fact, more mastery of mother on child's behavior in different situations, observing behavior of child in different situations of doing tasks, playing, and other situations such as eating, bathing, buying, achieving goal, disappointment and so on.. In this scholar made questionnaire, the report of a mother who is aware of private speech nature and the ways of expressing it by child is not limited to an artificial situation, rather is based on child's behavior in different situations and natural conditions. This scale has 20 questions which are asked of mother and is scored in Likert spectrum. The questions selected based on theoretical bases of private speech, which are more derived from Vygotsky, Luria theory and behaviorism (Hasanzadeh and Amraei, underpublication).

To assess private speech variable, two common statistical technique, that is validity and reliability, are used. In the recent study, the validity analysis of private speech scale was performed through inner consistency (alpha chronback coefficient) and re-test (with an interval of approximately two weeks). The alpha coefficient for measuring inner consistency in a multi-speech scale, developed by Chronbach (1951). This method is counted as efficient statistical techniques for validity estimation of multi-questions scales (Peterson, 1994). The



inner consistency of private speech was obtained 0.88 through alpha cronbach. Re-test also points to the fact that , when the same subjects answer to the same questions of a test in two different times and there hasn't done any actions affecting knowledge, skill, and learning of subject, the consistency degree of similar results shows stability, accuracy, and validity of the test(Hernon & Schwartz,2009). The correlation coefficient for test-pretest was obtained for 0.74. Furthermore, concurrent validity of the tool with behavioral problem questionnaire that is based on theoretical bases arising from weak in private speech and lack of the person's management on his/her behavior, was -0.61, that it shows those who have more behavioral problems take less advantage of private speech, which it is in line with validity proof of scholar made scale.

Another criterion is measuring a validity tool. Validity is counted as an important criteria for judging about effectiveness of a tool (Alagamali & ourtise, 2005) and usefulness of the tool in measuring selected structure (McGoei et al, 2010). To validate private speech in the recent study, formal and content validity, and validity of structure methods were used. Content and formal validity: to assign content and formal validity, speeches made by 8 professors and Phd students were examined. The unanimity degree between proofreaders, which was obtained in confirming questions relevancy in line with private speech, was 0.82.

To assess behavioral problems, preschool children behavior disorder questionnaire (Shahim & Yousefi, 1999) was used. The questionnaire includes classified questions that its scoring is done based on a three-level scale: most of the time, sometimes, and never, with zero, one, and two scores respectively. Phrases have positive and negative content, which negative phrases are scored conversely. The questionnaire is normalized on 746 parents of children in kinder garden, private and state preschool classes. Its structure validity is proofed by use. its recognition validity is also shown by excluding 41 children with pre-recognition of behavioral problems. The reliability of the questionnaire is examined through assigning its 0.38 correlation coefficient with teachers' report. The reliability coefficient of retesting the questionnaire is obtained 0.77 (Shahim, & Yousefi,1999).

To analyze findings of the study, given to causal structure that is present between research's variables, and the presence of private speech mediating variable that on the one hand is a depended variable for language development and secure attachment variables, and on the other hand is predictive variable for behavioral self-regulation, methods of Path analysis and



linear Structural Relations 8.72 (LISREL) were used that three assumptions, Linearity, Causal closure, Unitary variables are established in the recent study.

Findings

To answer research hypothesizes and to test fitness of the research's models, first assumptions of normality, homogeneity, and variance are reported.

Table 1. Mean; standard deviation; Normality, and variance consistency hypothesizes

variable	Descriptive index		Normality		Variance consistency	
	M	SD	Skewness	Sig	F	Sig
Language development	189.68	13.48	-0.97	0.10	1.85	0.31
Secure attachment	5.85	3.14	0.65	0.12	1.94	0.28
Private speech	30.20	10.70	0.38	0.18	2.60	0.12
Self-regulation	28.57	14.27	-0.90	0.09	1.81	0.26

Assumptions show that normality and variance consistency are established. In addition, first, the structural model of relations between variables is shown. The fit indexes of the assumed model are examined, and then standard coefficients for direct, in-direct, and total effects and percentages of variance explanation will present. Given to the indexes we can conclude that, the assumed model has good and near-to perfect fit to data.

The fit indexes derived from executing path analysis through Likelihood of maximum show linearity between variables, and also show a good fit between model and data ($X^2/df = 3.57$, RMSEA=0.09, NNFI=.093, CFI=0.98, GFI=0.97).

Table 2. Direct, Indirect, and Total effects in experimental model

Paths	Direct	Indirect	Total effect	Explained
Private speech				0.24
Language	0.29**	-	0.29**	
Secure attachment	-0.26**	-	-0.26**	
Self-regulation				0.77



Language	0.74**	0.03	0.77**
Secure attachment	-0.13*	-0.3	-0.16*
Private speech	0.11*	-	0.11*

**-P<0.01

For the paths tested in table 2, effects of language development ($p < 0.01$, $\beta = 0.29$), secure attachment ($p < 0.01$, $\beta = -0.26$) on private speech are significant, and these two predict 0.24 of private speech variance. This means that, by increase in language development, private speech in child increases too but, in increased attachment that actually shows disturbance of attachment, the degree of private speech decreases. So, these two variables can predict private speech variance. Thus, results of path analysis show that, direct effect ($p < 0.01$, $\beta = 0.74$), indirect effect ($p < 0.05$, $\beta = 0.03$), and total effect ($p < 0.01$, $\beta = 0.77$) of language development, and direct effect ($p < 0.05$, $\beta = -0.13$), indirect effect ($p < 0.05$, $\beta = -0.03$), and total effect ($p < 0.01$, $\beta = -0.16$) of secure attachment, and direct effect of private speech ($p < 0.05$, $\beta = 0.11$) on self-regulation are significant. So, language development and secure attachment, by their mediating self-regulation role, can predict 0.77 of behavioral self-regulation variance. The graphical representation of the variables relation structure is shown.

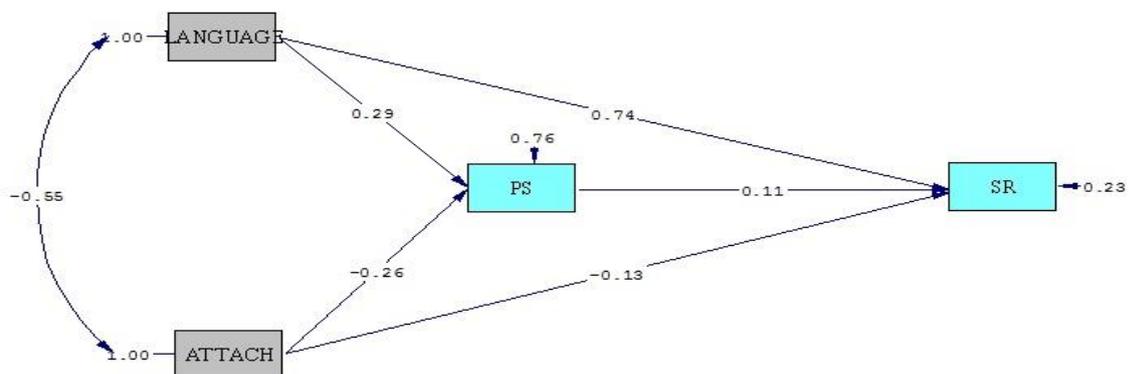


Figure 1. Experimental model with standard coefficients of graphical paths

So, the research model has fitness, and private speech variable can be a mediator between language development and secure attachment with self-regulation. On the other word, language development and attachment variables not only directly, but also through private speech affect children's behavior.



Discussion and Conclusion

The recent study, which is aimed at examining preschool children's self-regulation based on language development and secure attachment and the mediating role of private speech, shows that private speech can be a predictive mediator for preschool children's behavioral self-regulation based on language development and secure attachment. Results of the study shows that there is a predictive role for self-regulation and behavioral problems, and this finding is consistent with Koop(1989); Tompson(1990); Cole, Armstrong, & Pemberton(2010); Eisenberg, Sadovsky, & Spinard(2005); Ostad, Askeland(2008); Winsler & Niglieri(2003); Askeland(2012); Rubio, Medina, & Garcia(2014).

Private speech is internalized form of external regulator (Koop, 1989; Walvton and Ayoub, 2011). On the other word, those children who interact with their parents and caregivers internalize their speech which is symbolic form of their regulation. Thus, we can conclude that, a child develops his/her language skill and vocabulary during the process of learning from their caregiver, then in the next processes he/she applies his/her learned language for himself/herself but, its external aspect and appearance is marked and audible for the listener. But, in the next step this linguistic ability makes apparent change and doesn't have external appearance for others, and only one's own enjoys it and is its listener.

Koop (1989) believes that enhancing verbal ability should lead to more external regulation, because language gives the child the ability to express emotions and receive feedback until he/she understands how his/her excitements affect others, and how his/her thinking language can be a tool for regulating disappointment and defeat in disappointment situations (Cole, Armstrong, & Pemberton (2010); Eisenberg, Sadovsky, Spinrad (2005). Vygotsky (quoted from Miller, & Cohen, 2002) believes that, language plays a fundamental role in formation of higher processes of mind, he believes that words and thoughts rise from two separate genetic origin, and after going through different paths they merge somewhere. Then, thinking expresses verbally, so ideas are formed with the help of words (Vygotsky, 1962). On the other word, language is used as a social-cultural tool for making communication with others thus, it is mixed with understanding, and children use language in the form of private speech, as a tool for directing, planning, and regulating their thoughts and behavior (Ostad, Askeland, 2008; Winsler, Niglieri, 2003; Askeland, 2012; Rubio, Medina, * Garcia, 014), because private speech, audible speech for directing your guidance, is one of the aspects of



cognitive self-regulation(Winsler,2009; Winsler et al,2000). Vygotsky suggests three stages for language development and its role in thought and behavior regulation: at the first phase, the social speech,, function of private speech is more controlling others' behavior and expressing some incomprehensible concepts. At the second phase, Ego,Central Speech, child tries to regulate and direct his/her performance through private speech. Finally, at the third phase, private speech, the child tries to direct his/her thoughts and behavior through subtle internal word (Johms, 2009).

On the other hand, the role of secure attachment in predicting behavioral problems and behavioral regulation is significant, that this finding is consistent with Winsler, Diaz, Chabay,1999;Escobara, Pereirac, & Santelicesa,2014; Shaw,Keenan, &Nodra1994 ; Kochanska,1993 ; Winsler, Diaz, & Chabay,1999. According;y, Vygotsky believes that, development and change of self-regulation is a reflection of gradual change in transferring regulation responsibility from caregiver to the child. On the other word, it is a move from other-regulation toward joint regulation and self-regulation. Children's self-regulation increases under powerful and responsive parenting. On the other hand, child-parent relation that lacks of proper attachment and quality with increased contrasting orders , like lots of punishment oriented control, bring about increased self-regulation, impulsiveness, incompetence, attention deficiency , and behavioral problems(Shaw, Keenan, Nodra,1994; Kochanska,1993; Winsler, Diaz, Chabay,1999). According to Ainsworth (1991; quoted from Brumariu & Kerns,2008), attachment behavior in adults is basically a secure event in the core of human life. He states that , secure attachment facilitates performance and competency in interpersonal relationships. For example, children who have intense attachment in their mothers are socially extroverted, they pay attention to surrounding environment, tend to investigate surrounding environment, and can deal with their problems. On the other hand, factors disturbing this attachment can lead to problem in social ground of child growth in future.

Clinically, children who have secure attachment use their attachment picture as a secure base, explore surrounding, and whenever feel stress and pressure, they come back to their secure base. Daily frequent experiences with attachment pictures enable children in predicting availability of their caregivers. Attached children understand their caregiver's secure as responsive and available (Bolbey ,1973; quoted fromBrumariu & Kerns, 2008). The main



caregiver- child experience of secure base is made of three components: A) a set of behaviors activated by threat; B) the caregiver's responses to these behaviors; C) bodily- mental state as the end result of these behaviors. Responses related to secure attachment from caregiver side include: responsiveness, sensitivity, consistency, reliability, attunement, capacity to absorb and represent the child's embodiments; ability to consider disturbed child as an independent creature with perceptions, feelings, and conceptions of its own. Mental-bodily state is formed of physiologic elements such as this idea that is "everything is ok", "everything is safe and secure", and "everything is under control" (Basharat, 2001).

The recent study, like any other study, is not without limitation, the main limitation of the study is limited number of participants who were available, and the limited sample can also affect results of the study. Another limitation of the study is correlation project in the form of path analysis, which measurement error of research variables is not considered in path analysis. So, it is suggested that, limitations of the recent study must be considered in future studies.

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