



Universiteit Utrecht

**The influence of toys and curriculum on the task orientation of infants within the
classroom**

Final version

Master's thesis

Utrecht University

Master's programme in Clinical Child, Family and Education Studies

Name: Esther Meine

Student number: 5368367

Supervising lecturer: Bodine Romijn

Second assessor: Sümeyye Koskulu

Date: 30-06-2022

FETC approved number: 22-0582

Abstract

Background. Within the first years of a baby's life, a lot happens in terms of development. Important skills for infants to develop are self-reliance and task engagement. These skills will provide better outcomes in school for children. Childcare facilities are a big part of an infant's life. This study will focus on the play materials that contribute to fine and gross motor skill development and the activities offered in the areas of exploration and language, and will look at the influence of play materials and curriculum on the self-reliance and task engagement of infants between the ages of 0 and 2 years

Method. The sample included 63 childcare facilities with a total of 105 employed teachers. Ten horizontal and ten vertical groups participated in this study with a total of 44 infants. The ITERS-R has been used to examine the quality of toy materials for fine and gross motor skills. A questionnaire was completed to examine the quality of activities about exploration and language. To examine task orientation a pilot version of The inCLASS used.

Results. There has not been found a relation between toy materials for motor skills and task orientation. For curriculum there has not been found a relation between exploration and play and language on task orientation, however there was a very positive, strong correlation between these domains. Lastly, there was no effect found whether the quality of play materials and curriculum by subtype group gave different outcome for task orientation.

Introduction

The first years of a baby's life are crucial for its further development (Slot et al., 2020). Recognition of the importance of these years can be seen in the program *Kansrijke Start*, in which focus and attention is paid to a child's first 1000 days. This starts with interaction between the child and the environment. The first environment of a child is its home environment, so this concerns the interaction with parents and caregivers, but it also includes the quality of the care offered by pedagogical employee in the childcare facilities. About 353.000 children between the age of 0 and 4 years went to a childcare facility in the first quarter of 2021 in the Netherlands (Ministry of Social Affairs and Employment, 2021). The report of Ministry of Social Affairs and Employment (2021) show that a child in the Netherlands spends an average amount of 87.9 hours per month in a daycare center, so it can be concluded that teachers have a large share in the child's education. A high quality of child day care benefits optimal child development, as an international review study shows (Melhuis, et al., 2015). Within the current study we will focus on the quality of toys and curriculum within childcare facilities and what influence these two subjects have on child development, specifically the task orientation of infants.

Task orientation

Children's task engagement is operationally defined as a child's use of on-task, self-directed, and self-reliant behaviors in managing the classroom's social and academic/learning demands (NICHD Early Child Care Research Network, 2004). According to Downer et al. (2012) engagement within tasks is the degree to which a child is consistently and actively involved in classroom tasks and activities, including the amount of time the child remains focused, the proportion of time a child spends on assigned activities and the level of intensity and enthusiasm displayed. Children who display more enthusiasm and positive engagement with learning tasks have higher achievement outcomes in preschool and Beyond (McClelland et al., 2000; Stipek et al., 2010). Spere and Evans (2009) confirm this theory, they describe that children's active and positive engagement in the classroom will contribute to school readiness by increasing children's exposure to learning experiences. Conversely, negative classroom engagement would detract from children's learning opportunities, potentially inhibiting social and academic development (Sabol et al., 2017). Very little research has been done on task engagement and the self-reliance of infants. Most of the knowledge about task engagement and self-reliance within young children is based on research in toddlers.

Self-reliance has been defined as the degree to which children display “person initiative, behavioral self-regulation, persistence, and classroom engagement” (NICHD Early Child Care Research Network, 2008). Downer et al. (2012) defined self-reliance as the degree to which a child takes learning into their own hands, including seeking opportunities rather than passively waiting for teacher direction, and making best use of classroom resources.. Self-reliant behaviors are critical for children to function with autonomy in the classroom and take advantage of classroom learning opportunities (NICHD, 2008). The motivational constructs of autonomy and self-regulated learning have theoretical connections to the concept of self-reliance. According to Ryan and Deci (2000), autonomy, or "self-rule," is necessary for optimal development and enhanced intrinsic motivation. A sense of autonomy fosters an internalized self-regulation style in which individuals direct their own behaviors (Ryan & Deci, 2000). The degree to which children self-regulate their approaches to learning at school reflects their level of personal initiative, perseverance, and adaptive skills (Zimmerman, 2008). For these reasons, it is critical to investigate what influences children's task engagement and self-reliance.

A child’s development is influenced by a wide range of factors. A couple of these factors are playing with a child, this influences the development the fine and gross motor skills (Arora & Prakash, 2018). Second is the physical surroundings and an environment that stimulates the mental development (Arora & Prakash, 2018). This includes the amount of space the children get to explore and play. Furthermore, the supply of language is also influential. This involves listening to stories, nursery rhymes and ‘conversations’ held with the infants. Within this study, the focus will be on the following environmental factors: toy materials and curriculum.

Toy materials

So far, little research has been conducted into the impact of toy materials. This study will look specifically at play materials that influence in the development of fine and gross motor skills. Motor processes and social interaction skills are required to perform daily activities. Motor development is based on how a person interacts with and moves task objects and themselves around a task environment (Park, 2015; Uesugi et al., 2014). Fine motor development influences other aspects of development, particularly school performance in later childhood (Livesey et al. 2006). The emergence of motor milestones in infants is an important part of typical development (Adolph & Joh, 2007; Leonard & Hill, 2014). However, the importance of motor development extends beyond the acquisition of new motor skills. The development (and thus improvement) of motor skills will provide opportunities for infants to learn about their surroundings (Adolph & Joh, 2007: Von Hofsten, 2009). The question of the relationship between the motor domain and the cognitive and language domains is frequently raised in

research. There are some disagreements about whether or not these domains have a global-to-global relationship. Some studies found that certain cognitive skills are only associated with gross motor skills and not fine motor skills (Piek et al., 2008; Rigoli et al., 2012), while others found the opposite (Rigoli et al., 2013). Research has also shown that children's motor development is related to language development and that children's exploration behavior plays an important role here (Oudgenoeg-Paz et al., 2015). Because of fine and gross motor skills of infants begin at birth and affect many areas of development, they are included in this study through toy materials.

Curriculum

Exploration and play is a way for children to learn about their environment. Play has been considered an indicator of, and mediator in, young children's intellectual creative and social development (Bergen, 2002; Vygotsky; 1976). From an early age on, infants actively explore objects in their environment. Exploratory behaviors are first observable at 2 months of age (Lobo et al., 2014), they consistently improve with the onset of reaching and the emergence of the sitting posture that will occur around 4-5 months of age (Berthenthal & Von Hofsten, 1998; Lobo & Galloway, 2013). Language is a big factor in the environment of infants. Bart & Parke (1993), Denham (1993) and Morrison et al. (2003) found in their studies of toddlers that for young children, social/relational and expressive language skills expressed within adult-child interactions are one of the best predictors of children's success in the early school years and even into late elementary school. Little research has been done on the influence of exploration and language for infants. because these factors influence different areas of development they are included within this study.

Current study

This research will focus on the effects of different toys and curriculum on the task orientation (engagement within tasks/self-reliance) of infants between the age 0 to 24 months, and will compare the effects between horizontal (0-24 months) and vertical groups (0-48 months) in childcare facilities. Within Dutch child care facilities infants can be placed in two different types of groups: horizontal groups (ages 0 to 2 years) and vertical groups (ages 0 to 4 years). The "Landelijke Kwaliteitsmonitor Kinderopvang (LKK)" researches the general quality of childcare facilities. Although the quality in the Netherlands is on average high, there are some questions whether vertical groups can optimally meet the unique developmental needs of infants (Slot et al., 2020). Horizontal groups appear to work out well on several aspects for infants. For example, the quality of interactions is higher and the space is better suited to the needs of these young infants. However, the quality of play materials and the activities appear to be better in

vertical groups (Slot et al., 2020). Since it appears that there are differences between these two groups, the effects for those two groups will be compared.

The following hypotheses were formulated; (1) A higher quality of toys for fine motor skills and active physical play will provide children with more task orientation, (2) higher quality of activities supporting language and exploration and play will result in a higher level of task orientation and (3) the general quality of childcare for infants, up to the age of 2 years, will result in a higher level of task orientation within horizontal group in comparison with vertical groups.

Method

Research design

This study has used data from the LKK study. The consortium of Utrecht University and Sardes ran the Landelijke kwaliteitsmonitor Kinderopvang (LKK) from 2017 to 2019. The desired sample size contained data from groups for child day care, preschool, out-of-school care and host families for guest parent care. Only data from the child day care, including horizontal and vertical groups, were used in this study. Because it met the stratification criteria, the sample was representative of the population. The informed consent procedure was initiated once participation was confirmed. The participating sites received letters, information leaflets, and the informed consent form. Active consent was obtained after full disclosure of the study's purpose, research methods, and data confidentiality. The form explicitly stated that an informant or a child's parent had the right to withdraw from the study at any time and have the informant's data destroyed. There is a distinction between response and non-response rates. Non-response refers to both technical and content non-response. Technical non-response involved reasons of a "technical nature" that caused the reception site to be unable to participate. In 2017 the percentage of response was 43% and the percentage of non-response was 57% for childcare facilities. Video material collected at out-of-school care groups was used for the purpose of the CLASS Pre-K training. All training was conducted by an experienced and licensed trainer. Observers were admitted if they had at least 80 percent agreement with the trainers' scores. The trained observers went to the locations in pairs to collect the video material, assess the quality of the material, and administer questionnaires to the teachers. For a detailed description of the procedures and sample, please refer to the 2017 and 2018 LKK reports (Slot et al., 2017, 2018).

Participants

In total, 63 different childcare facilities took part in this study. At almost all locations, there is information about toy materials extracted. In addition, 105 teachers were employed. The mean age was 33.51 years (SD=9.61) and the mean years of work experience is 11.13 years (SD=8.93). Curriculum data has been collected for over 55 locations. Finally, a sub-sample of data for task orientation was collected. Ten horizontal groups (ages 0 to 24 months) and ten vertical groups (ages 0 to 48 months) of videotapes were used. An average of two to three children are observed per location. In total 44 infants have participated within this study.

Measuring instruments

Toy materials

The Infant/Toddler Environment Rating Scale – Revised Edition (ITERS-R) (Harms et al., 2015) was used to measure the quality of toys that influence fine and gross motor skills. These categories were scored using a scale from 1 to 7. A score of 1 indicates inadequate quality and a score of 7 indicates and excellent quality of the materials. The current study focusses on two subitems item 15; fine motor skills and item 16; active physical play. To achieve a score of 7 for fine motor skills, materials should be rotated to offer variety and materials with differentiation in difficulty should be present. For active physical play, there should be two or more types of surfaces in the outdoor space to allow for different types of play and the outdoor space should have some protection from the weather (example; shade and windbreaks). Within the study of La Paro et al. (2014) the category activities with subcategories; fine motor skills and active physical play had an Cronbach's Alpha of .86. the internal consistency can be seen as good. Within the study of Bjørnstad & Os (2018) the internal consistency for the full scale was good with a Cronbach's Alpha of .87. The internal consistency of the subscale activities was poor with an Cronbach's Alpha of .56.

Curriculum

To determine to what extent the range of regularly recurring activities corresponds to important learning, experience and development domains, a questionnaire for the teachers was created consisting of various types of activities that are considered relevant for babies regarding to exploration-motor development and language development. The questionnaire scales were designed to cover the entire age range with age-specific concrete activity items. As a result, separate scales have been developed for activities suitable for babies under one year old and activities better suited for dreumesen. The two domains that will be researched are; language, and exploration and play (see appendix 1). For domain language, 7 items were used consisting of questions, such as "Children do a game with exchanging sounds (gibberish), looking and

gesturing, as if you are having a conversation" and "Children have a circle discussion, e.g. about what they have experienced or about a topic from a booklet". The domain exploration and play consist of 5 items with questions, such as "Children play, alone or next to each other, with objects, feeling and tasting them, often repeating their play actions such as moving, dropping, turning" and "Children play roles together (e.g. father and mother)." These domains were scored from 1 'almost never' to 7 'at least twice a day'. The Cronbach's Alpha for sub category exploration and play was .753, so the internal consistency was acceptable. For the sub category language the internal consistency was acceptable with a Cronbach's Alpha of .697 (Slot et al., 2020).

Task orientation; engagement within tasks and self-reliance

The Individualized Classroom Assessment Scoring System (inCLASS) is an observational instrument that assesses toddlers competence in classroom interactions, with adults, peers, and play or learning activities (Downer et al., 2012). The inCLASS is only available for toddlers and is used all over the world. A specially developed baby version was used in this study. Because this special version has never been used before, there is no information on its validity and reliability. The observer in this study underwent special training to ensure maximum reliability. The inCLASS focuses on task orientation, which is divided into two dimensions: task engagement and self-reliance. The sustained attention and active engagement of a child are used to assess engagement within task domains. The child's personal initiative and independence are used to determine self-reliance. The inCLASS requires the observer to assign one code to each dimension per observation cycle based on how well certain indicators characterize the child's behavior during that cycle. Each dimension is assigned a code ranging from 1 (least characteristic) to 7 (highly characteristic), which represents the extent to which that dimension is characteristic of the child's observed behaviors. Each cycle of observation consists of a 10-minute period during which the observer watches the child's interactions and takes notes, followed by a 5 minute coding period for assigning codes. To complete the coding, the observer must make judgments based on the range, frequency, intensity, consistency and quality of the interactions and behaviors during the observation time using a standardized coding manual. Prior to coding, the observer received training from an experienced professor on the measurement instrument. Within this training, the various dimensions are explained and when a child is in the low or high range. After the training, the observer was asked to code two sample videos. The results of the coding were later discussed with the professor to determine what the observer should focus on. After all of this, the observer was given permission to begin coding the videos for this study.

Data analyses

This research used the statistical analysis program SPSS-version 27.0. Task orientation was included as dependent variable. The independent variables within this study were toy materials that stimulate active physical play and fine motor skills and curriculum consisting of language and exploration and play. Within this study pre-existing data was used from the 2017 to 2019 LKK measurements and new data consisting of coding videos. After collecting all the data, the different variables were created. For the variable Toy materials the mean score for item 15 and 16 were used. The variable Curriculum consisting of language an exploration and play was created as follows. The mean scores for the items in the domain Language were added together. This also applies to items in the Exploration and Play domain. Because the curriculum questionnaire was completed by more than one teacher per location, these two domains were aggregated to mean scores per location. Each video was given a code in order to create the variable Task Orientation. Each location had two or three videos coded. The mean scores of these codes were aggregated by location. All variables were sorted according to their location number and subtype group. The group subtype is coded as follows: 0 = horizontal group, 1 = vertical group. Using a multiple regression analysis, the main effect of toy materials that influence fine and gross motor skills on task orientation and the main effect of curriculum consisting of exploration and play and language on taks orientation were examined first. Then the effect of toy materials and curriculum on task orientation and the differences between horizontal and vertical groups were examined. In order to perform the multiple regression, the assumptions were first checked to see if they had been met. For instance, it was checked whether there was a linear relationship between the variables. Further, the homoscedasticity, presence of outliers, normal distribution and multicollinearity were examined.

Results

Descriptive statistics and data-inspection

Prior to running the multiple regression analysis, several assumptions had to be checked. Within the analysis of curriculum and materials/toys on task orientation, not all assumptions were met. The assumption of homoscedasticity is invalid. It can be referred to as pure heteroscedasticity. This means that there isn't a constant variance, to eliminated this problem a weighted least squares regression is implemented. To be able to compute the weights of the regression and add them to the multiple regression analysis the next few steps are completed. At first a linear regression with Unstandardized Residuals is performed. The next step is to compute the absolute value of the unstandardized residuals. Following is the auxiliary regression with the

absolute values of the residuals as the dependent variable and the original predictors with unstandardized predictive values is run. The last step is to compute the weight variable by transforming the unstandardized predicted values through $1/(\text{unstandardized predicted values})^2$. Now the weight variable is made. The assumption about outliers has been met, the standardized residuals (-1.393 and 1.502) satisfy the rule, as do Mahalanobis distance (7.826) and Cook's distance (.485). The assumptions of the regression analysis; linear relation. Multicollinearity and normal distribution, are not violated.

In Table 1 the descriptive statistics can be found. On average, children score averagely on Task Orientation. The scores on both fine and gross motor skills (active physical play) are quite high on average. It can be seen that locations score higher on play materials aimed at fine motor skills. Exploration activities are somewhat more frequent than language activities, but on average they both occur about 2 to 4 times a day.

Table 1

Descriptive Statistics of variables in multiple regression

Variable	N	M	SD	Minimum	Maximum
1. Task orientation	19	4.29	1.10	2.75	6.50
2. Fine motor skills	61	5.77	1.67	1.00	7.00
3. Active physical play	61	5.39	1.68	1.00	7.00
4. Exploration and play	56	5.25	1.16	2.00	7.00
5. Language	55	4.82	1.18	1.79	6.71

Effect of material/toys on task orientation

Within the first step of the multiple regression analysis two variables *Fine motor skills* and *Active Physical Play* are added; together they form Model 1. The results of this analysis can be found in Table 2.

This model is not useful to predict the task orientation, because no significant result is found and this model explains 6.7% of the variance. It can be said that there is a very weak relationship, $F(2, 13) = .470, p = .635, R^2 = .067$. A Pearson product-moment correlation

coefficient was computed to assess the relationship between the quality of toys for fine and gross motor skills. There was a weak positive correlation between Fine Motor Skills and Active Physical Play, $r = .045$, $N = 61$ (see Table 3); however the relationship was not significant ($p = .732$). The toy materials for fine motor skills appear not to be associated with toy materials for gross motor skills (active physical play).

Table 2

Results of Multiple Regression for Model 1, Model 2 and Model 3

Model	Predictors	<i>B</i>	<i>SE</i>	<i>β</i>	<i>t</i>	<i>p</i>
1	Intercept	3.479	1.473		2.362	.034
	Fine Motor skills	-.35	.139	-.75	-.254	.804
	Active Physical play	.151	.202	.220	.745	.469
2	Intercept	2.891	.939		3.176	.007
	Exploration and Play	.588	.362	.817	.745	.469
	Language	-.393	.403	-.490	1.625	.128
3	Intercept	2.805	1.828		1.534	.156
	Fine Motor skills	.008	.147	.018	.058	.955
	Active Physical play	.147	.202	.214	.727	.484
	Exploration and Play	.549	.418	.762	1.312	.219
	Language	-.569	.503	-.709	-1.131	.285
	Subtype group	.669	.752	.344	.889	.395

Note. Dependent variable: Task orientation

Table 3

Pearson Correlations of the variables

Variables		Fine Motor Skills	Active Physical Play	Exploration and Play	Language
Fine Motor Skills	Pearson correlation	1	.045	.071	.083
	Sig. (2-tailed)		.732	.612	.555
	<i>N</i>	61	61	54	53
Active Physical Play	Pearson correlation	.045	1	-.009	.037
	Sig. (2-tailed)	.732		.951	.794
	<i>N</i>	61	61	54	53
Exploration and Play	Pearson correlation	.071	-.009	1	.737**
	Sig. (2-tailed)	.612	.951		.000
	<i>N</i>	54	54	56	55
Language	Pearson correlation	.083	.037	.737**	1
	Sig. (2-tailed)	.555	.794	.000	
	<i>N</i>	53	53	55	55

** Correlation is significant at the .01 level (2-tailed).

Effect of curriculum on task orientation

The second step in the analysis was to research the effect of curriculum, with the domains *Exploration and Play and Language*, and form Model 2. The results of this analysis can be found in Table 2.

This model is not useful to explain the influence of curriculum on task orientation. This model would have explained 21% of the variance, but it is not significant. $F(2,13) = 1.726, p$

= .216, $R^2 = .210$. A Pearson product-moment correlation coefficient was computed to assess the relationship between the activities offered in the area exploration and play and language. There was a strong, positive correlation between Exploration and Play and Language (see Table 3), $r = .737$, $N = 55$. This relationship was significant, $p = <.001$. The increases of the quality of activities about exploration and play were correlated with increases in the quality of language activities.

Differences between horizontal and vertical groups for the effects of material/toys and curriculum on task orientation

In the final step of the analysis, all the above predictors are added and a new predictor; subtype group. Through this analysis, it examines whether the quality of curriculum and materials/toys within vertical and horizontal groups has different effects on the task orientation of infants. All these variables together form Model 3, the results can be found in Table 2. In Model 3 there has not been found a significant effect. This model explains 29.8% of the variance. $F(5,10) = .849$, $p = .546$, $R^2 = .298$.

Discussion

About 353.000 children between the age of 0 and 4 years went to a childcare facility in the first quarter of 2021 in the Netherlands (Ministry of Social Affairs and Employment, 2021). Childcare facilities provide more than just care for the children. According to neurological research, the first two years of life are the most important for brain development; therefore, stimulating this development is one of the tasks of childcare facilities. Aside from that, task orientation is essential for children. A child's exertion of self-control within classroom activities reflects behavior control and regulation. The significance of these abilities is demonstrated by the discovery that is a key mediator of children's achievements in the early schooling period (NICHD ECCRN, 2005 in Downer et al., 2012).

Within this study, an endeavor was made to answer the research question: "What are the effects of different toys/materials and curriculum on the task orientation of infants between the age 0 to 24 months, and what are the differences of the effects between horizontal and vertical groups in childcare facilities in the Netherlands?". It can be said that infants generally develop an average self-reliance and task engagement. The quality of toy materials within childcare facilities is relatively low and there is no relationship between materials for fine and gross motor skills. The quality of curriculum for exploration and play is high, but the quality of curriculum for language is low. There is a strong relationship between activities for exploration and play and language. The more often these activities are offered around these domains, the better the

quality will be. Further, there has been found that there is no relationship between the quality of materials for fine and gross motor skills on task orientation. This means that the degree of self-reliance and task engagement in infants is not affected by the quality of toy materials. The first hypothesis that has been drawn cannot be accepted. Because toys that affect motor skills were examined and knowing that motor skills affect task orientation, this is seen as two-stage reasoning. This may have ensured that there is no direct relationship between toys aimed at motor skills and task orientation, because the influence of toys on children's motor skills is not that great. A second explanation can be de range of age.

No relationship was found either for the quality of activities in the areas language and exploration and play on the task engagement and self-reliance. This means that the degree of self-reliance and task engagement in infants is not affected by the quality of the curriculum. The second hypothesis that has been drawn cannot be accepted. Bart & Parke (1993), Denham (1993) and Morrison et al. (2003) found in their studies of toddlers that for young children, social/relational and expressive language skills expressed within adult-child interactions are one of the best predictors of children's success in the early school years and even into late elementary school. Within the study activities about exploration and language were examined, not the actual influence of exploration and language. Another explanation for both the first and second effects may be the age range of the study. Young children develop very quickly, so there is a large variation in level of development. This ensures that there are actually very many different levels of motor skills, exploration and language being examined. This could ensure that no clear relationship can be found.

The last hypothesis predicted that the degree of task orientation is higher for infants in horizontal groups than in vertical groups. Within the results, this relationship was not found and therefore no statement can be made about the differences by group in degree of task orientation. So also this hypothesis cannot be accepted. According to Pridham et al. (2001) focused exploration of toys increases the likelihood that an infant is gathering and acting on information. Further they speak about responsiveness; "Responsiveness to care is a function of capacity to regulate arousal, which is needed for employment of attention" (Pridham et al, 2001). Porges and Dousserd-Roosevelt (1997) and Huffman et al. (1998) add to this that an infant's responsiveness to care is a temperament characteristic that may affect focused exploration of toys. According to these findings there can be said that exploration and toy materials are more interrelated than has emerged in this study. This can explain why there is no relationship for the variables toy material and curriculum on task orientation. Assuming the aforementioned

literature, an interaction between the two variables would predict that there is indeed a relationship for task orientation.

Within this study there are a number of limitations and strengths. The biggest limitation was the small sample of task orientation scores. In addition, the instrument used to investigate this was a pilot version, so the reliability and validity for task orientation could not be guaranteed. Within the video coding, it should always be taken into account that it has a subjective character. Despite the training and the manual, there is a chance that not every observer had assigned the same coding to the videos. A strength within this study is that this topic focused on infants is very new. Little research has been done on this topic, but because of this, this study could serve as a pilot for follow-up research. This could mean that the current study increases the validity and reliability of follow-up research. The next area of strength is the quality of the play material and curriculum measurement tools. Both instruments used for this purpose have medium to high internal consistency, this ensures validity and reliability.

Recommendations than can be done for further research are to combine the variables for this research. Looking at the study of Pridham et al. (2001) toy materials and exploration are more connected and interact with each other. Therefore, follow-up research should examine the interaction effect of these two variables on infants' engagement and self-reliance. another recommendation would be to start looking at curriculum specifically in the areas of exploration and language only. A strong relationship was present between these two domains, therefore, follow-up research should first look at whether there is a specific relationship and to what extent these two domains influence each other. Finally, the differences between horizontal and vertical groups should be considered in a different way. a larger sample for both types of groups could positively influence this result.

In conclusion it can be said that there is no relationship between the level of quality of toy materials on fine motor skills and active physical play, as well as the level of quality of curriculum focused on language and exploration and play on task engagement and self-reliance. However, there is a strong relationship between exploration and play and language. No further statement can be made about the degree of task orientation for horizontal or vertical groups.

References

- Adolph, K. E., & Joh, A. S. (2007). Motor development: How infants get into the act. In A. Slater & M. Lewis (Eds.), *Introduction to infant development* (2nd ed., pp. 63–80). New York, NY: Oxford University Press. DOI: 10.1002/9781118963418.childpsy204
- Arora, M., & Prakash, D. R. (2018) *5 Important Factors That Influence Early Childhood Development*. FirstCry Parenting. Geraadpleegd op 28 juni 2022, van <https://parenting.firstcry.com/articles/5-environmental-factors-influencing-early-childhood-development/>
- Bergen, D. (2002). The role of pretend play in children's cognitive development. *Early Childhood Research and Practice, 4*(1), 1–12.
- Bjørnestad, E., & Os, E. (2017). Quality in Norwegian childcare for toddlers using ITERS-R. *European Early Childhood Education Research Journal, 26*(1), 111–127. <https://doi.org/10.1080/1350293x.2018.1412051>
- Denham, S. A. (1993). Maternal emotional responsiveness and toddler's social-emotional competence. *Journal Child Psychol Psychiatry, 34*(5), 15-28. DOI:
- Downer, J. T., Booren, L. M., Hamre, B. K., Pianta, R. C., & Williford, A. P. (2012). The Individualized Classroom Assessment Scoring System (inCLASS): Pre-K Coding Manual. *Center for Advanced Study of Teaching and Learning (CASTL)*. University of Virginia
- Harms, T., Cryer, D., & Clifford, R. M. (2015). Beoordelingsschaal pedagogische kwaliteit; leer- en leefomgeving voor baby's en dreumesen.
- La Paro, K. M., Williamson, A. C., & Hatfield, B. (2014). Assessing Quality in Toddler Classrooms Using the CLASS-Toddler and the ITERS-R. *Early Education and Development, 25*(6), 875–893. <https://doi.org/10.1080/10409289.2014.883586>
- Leonard, H. C., & Hill, E. L. (2014). The impact of motor development on typical and atypical social cognition and language: A systematic review. *Child and Adolescent Mental Health, 19*(3), 163–170. DOI: <http://dx.doi.org/10.1111/camh.12055>
- Livesey, D., Keen, J., Rouse, J., & White, F. (2006). The relationship between measures of executive function, motor performance and externalizing behaviour in 5- and 6-year-old children. *Human Movement Science, 25*(1), 50–64. DOI: 10.1016/j.humov.2005.10.008

- Lobo, M. A., & Galloway, J. C. (2013). The onset of reaching significantly impacts how infant explore both objects and their bodies. *Infant Behavior and Development*, 36(1), 14-24. DOI: <https://doi.org/10.1016/j.infbeh.2012.09.003>
- Lobo, M. A., Kokkoni, E., de Campos, A. C., & Galloway, J. C. (2014). Not just playing around: Infants' behaviors with objects reflects ability, constraints, and object properties. *Infant Behavior and Development* 37(3), 334-351. DOI: 10.1016/j.infbeh.2014.05.003
- Ministry of Social Affairs and Employment (2021, 17 december). Cijfers kinderopvang derde kwartaal 2021. *Publicatie | Rijksoverheid.nl*. <https://www.rijksoverheid.nl/documenten/publicaties/2021/12/17/cijfers-kinderopvang-derde-kwartaal-2021>
- Morrison, E. F., Rimm-Kaufman, S., & Pianta, R. C. (2003). A longitudinal study of mother-child interactions at school entry and social and academic outcomes in middle school. *Journal of School Psychology*, 41(3), 185-200. DOI: [https://doi.org/10.1016/S0022-4405\(03\)00044-X](https://doi.org/10.1016/S0022-4405(03)00044-X)
- National Institute of Child Health and Human Development, Early Child Care Research Network (2004). Does class size in first grade relate to children's academic and social performance or observed classroom processes? *NICHD Early Child Care Research Network*, 40(5), 651-664. DOI:10.1037/0012-1649.40.5.651
- National Institute of Child Health and Human Development, Early Child Care Research Network (2005). A day in third grade: A large-scale study of classroom quality and teacher and student behavior. *The Elementary School Journal*, 105(3), 305-323.
- National Institute of Child Health and Human Development, Early Child Care Research Network. (2008). *Mothers' and fathers' support for child autonomy and early school achievement*. *Developmental Psychology*, 44(4), 895-907. DOI: <http://dx.doi.org/10.1037/0012-1649.44.4.895>
- Oudgenoeg-Paz, O., Leseman, P. P. M., & Volman, M. (C.) J. M. (2015). Exploration as a mediator of the relation between the attainment of motor milestones and the development of spatial cognition and spatial language. *Developmental Psychology*, 51(9), 1241-1253. DOI: 10.1037/a0039572
- Park, M. O. (2015). Comparison of motor and process skills among children with different developmental disabilities. *Journal of Physical Therapy Science*. 27(10), 3183-3184. DOI: 10.1589/jpts.27.3183

- Piek, J. P., Dawson, L., Smith, L. M., & Gasson, N. (2008). The role of early fine and gross motor development on later motor and cognitive ability. *Human Movement Science*, 27(5), 668–681. DOI: <http://dx.doi.org/10.1016/j.humov.2007.11.002>
- Porges S.W. & Doussard-Roosevelt J. (1997) The psychophysiology of temperament. In *Handbook of Child and Adolescent Psychiatry, Volume 1. Infants and Preschoolers: Development and Syndromes* (Greenspan S., Wieder S. & Osofsky J. eds), John Wiley & Sons, New York, pp. 250–286
- Pridham, K., Becker, P., & Brown, R. (2001). Effects of infant and caregiving conditions on an infant's focused exploration of toys. *Journal of Advanced Nursing*, 31(6), 1439–1448. <https://doi.org/10.1046/j.1365-2648.2000.01448.x>
- Rigoli, D., Piek, J. P., Kane, R., & Oosterlaan, J. (2012). An examination of the relationship between motor coordination and executive functions in adolescents. *Developmental Medicine & Child Neurology*, 54(11), 1025–1031. DOI: 10.1111/j.1469-8749.2012.04403.x
- Rigoli, D., Piek, J. P., Kane, R. T., Whillier, A., Baxter, C., & Wilson, P. H. (2013). An 18-month follow-up investigation of motor coordination and working memory in primary school children. *Human Movement Science*, 32(5), 1116–1126. DOI: 10.1016/j.humov.2013.07.014
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and Extrinsic Motivations: Classic Definitions and New directions. *Contemporary Educational Psychology*, 35(1), 54-67. DOI:10.1006/ceps.1999.1020.
- Sabol, T. J., Bohlmann, N. L., & Downer, J. T. (2017). Low-income ethnically diverse children's engagement as a predictor of school readiness above preschool classroom quality. *Child Development*, 89(2), 556-576. DOI: [10.1111/cdev.12832](https://doi.org/10.1111/cdev.12832)
- Slot, P., Bekkering, C., Romijn, B., & Leseman, P. (2020). Kwaliteit van de babyopvang in Nederland; Verklarende analyses op basis van de gecombineerde gegevens metingen 2017-2019. *Landelijke Kwaliteitsmonitor Kinderopvang*.
- Slot, P., Jepma, Ij., Muller, P., Romijn, B., & Leseman, P. (2018). Kwaliteit van de Nederlandse kinderdagopvang, peuteropvang, buitenschoolse opvang en gastouderopvang; gecombineerde metingen 2017-2018. *Landelijke Kwaliteitsmonitor Kinderopvang*.
- Slot, P., Jepma, Ij., Muller, P., Romijn, B., Leseman P (2017). Kwaliteit van de Nederlandse kinderdagopvang, peuteropvangm buitenschoolse opvang en gastouderopvang: meting 2017. *Landelijke kwaliteitsmonitor Kinderopvang*.

- Spere, K., & Evans, M. A. (2009). Shyness as a continuous dimension and emergent literacy in young children: Is there are relation? *Infant and Child Development, 18*(3), 216–237. DOI: <https://doi.org/10.1002/icd.621>
- Stipek, D., Newton, S., & Chudgar, A. (2010). Learning-related behaviors and literacy achievement in elementary school-aged children. *Early Childhood Research Quarterly, 25*(3), 385–396. <https://doi.org/10.1016/j.ecresq.2009.12.001>.
- Uesugi, M., Araki, T., Fuji, S., Itotani, K., Otani, Y., & Seiichi, T. (2014). Relationships between Gross Motor Abilities and Problematic Behaviors of Handicapped Children in Different Age Groups. *Journal of Physical Therapy Science, 26*(12), 1907-1909. DOI:10.1589/jpts.26.1907
- Von Hofsten, C. (2009). Action, the foundation for cognitive development. *Scandinavian Journal of Psychology, 50*, 617–623.<http://dx.doi.org/10.1111/j.1467-9450.2009.00780.x>
- Vygotsky, L.S. (1976). Play and its role in the mental development of the child. In J. Bruner, A. Jolly, & K. Sylva (Eds.), *Play: Its role in development and evolution* (pp. 536–552). New York: Basic Books.
- Zimmerman, B. J. (2008). Investigating Self-Regulation and Motivation: Historical Background, Methodological Developments, and Future Prospects. *American Educational Research Journal, 45*(1), 166-183. DOI: 10.3102/0002831207312909

Appendices

Appendix 1 – Domains Language and Exploration and Play

	Baby	Dreumes
Domein		
Exploratie en spel	<p>Kinderen pakken verschillende voorwerpen, voelen eraan, sabbelen erop, laten het vallen (bijv. mobiel, bijtring, pop, ...)</p> <p>Kinderen spelen met voorwerpen (blokjes, bakjes, doos, bal) die ze kunnen stapelen , in elkaar doen, uit een bakje of doos halen, er in stoppen, op een rijtje leggen, weg rollen</p> <p>Kinderen spelen, alleen of naast elkaar, met voorwerpen, voelen en proeven eraan, herhalen vaak hun spelhandelingen zoals verplaatsen, laten vallen, draaien</p>	<p>Kinderen kruipen of lopen door de groepsruimte, verkennen actief de ruimte, verstoppem zich onder de tafel, in een andere ruimte, klimmen op een verhoging</p> <p>Kinderen rijden op loopfietsjes, stappen, klimmen op een glijbaan, bewegen op een vrije manier, spelen met een bal of springtouw</p> <p>Kinderen bouwen , alleen of naast elkaar, dingen met houten blokken, Duplo, Lego, Knexx, ze maken een Brio treinbaan</p>
Taal	<p>Kinderen doen een spelletje met klanken uitwisselen (brabbelen), aankijken en gebaartjes maken, alsof je een gesprekje voert</p> <p>Kinderen luisteren actief naar melodieën, kinderliedjes en ritmes, klappen ritmes, zingen en neuriën met de melodie mee</p>	<p>Kinderen doen een spelletje met voorwerpen aanwijzen, de vorm (bijv. de rondheid van een bal) uitbeelden en benoemen van voorwerpen of handelingen ('dit is een...')</p> <p>Kinderen lezen een plaatjesboek of bespreken een praatplaat, er wordt een verhaaltje verteld aan de hand van de plaatjes</p> <p>Kinderen luisteren actief naar melodieën, kinderliedjes en ritmes, klappen ritmes, zingen en neuriën met de melodie mee</p>