

# **Influence of Music Lessons on the Vocabulary of Bilingual Children**

*A study among 16 bilingual children living in mixed  
communicative environment in Oslo, Norway*

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## Abstract

A number of studies in the field of bilingualism and early childhood education have been made. Very few studies, from the ones I found, focus specifically on using music activities with the bilingual children, which raises interest for this particular research. Being a teacher of music myself it made me especially interested in such kind of research. The study may lead to a better understanding of influence of music lessons on extending of vocabulary of children living in mixed communicative environment in Oslo.

The study was conducted for 16 bilingual (Norwegian-Russian) children 4-5 years old who are attending Russian Sunday Pre-School once a week and where I work as a music teacher. All children had at least one of the parents with Russian as a native language.

It is worth to note that my study task can be characterized as qualitative research rather than quantitative (however, with using quantitative procedures). The main purpose was not to estimate “exactly” Russian language development level for children but to find (if there any) differences between first (pre-test) and the second (post-test) vocabulary estimations. Music lessons have been conducted between those assessments.

However, due to the restricted amount of time for the whole research I realized that a significant change in such a stable characteristic as development of vocabulary for the selected children would be difficult to expect.



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## **Chapter 1. Introduction.**

This chapter overviews research problem and research question, definitions of main concepts, expectations, justification and significance of the study.

### **1.1. Research problem and research question.**

The topic of the study is “Influence of music lessons on the vocabulary of bilingual children living in mixed communicative environment in Oslo, Norway”.

Therefore research problem of study can be expounded as follows:

The study may lead to a better understanding of influence of music to extending of vocabulary of bilingual (Russian-Norwegian) children.

All children had at least one Russian speaking parent and are attending Russian Sunday Pre-School once a week.

The study tried to estimate the level of language development of bilingual children and impact of music lessons on child’s vocabulary.

So the research question can be formulated as:

Has children's vocabulary development been influenced by practicing music activities that stimulate auditory memory, melodic and harmonic improvements?

Based on the goal of the study, an educational program was designed around music activities that would promote children's vocabulary development using songs and activities such as repeating rhythmic patterns; remembering sequences of sound; discriminating timbres, rhythms, and melodic lines.

## 1.2 Clarification of concepts.

Main theoretical concepts used in the study are: bilingualism, mixed communicative environment, vocabulary, music lessons and activities.

According to classical definition **bilingualism** [from Latin *bi-* two, *lingua-* language] is the ability to know two natural languages and alternating using of two language systems subject to conditions of communication.

Bilingualism – more generally, multilingualism – is a major fact of life in the world today. To begin with, the world's estimated 5,000 languages are spoken in the world's 200 sovereign states (or 25 languages per state), so that communication among the citizens of many of the world's countries clearly requires extensive bi- (if not multi-)lingualism. In fact, David Crystal (1997) estimates that two-thirds of the world's children grow up in a bilingual environment.

The next is what we understand by the concept of mixed communicative environment.

All of children are going to Norwegian kindergartens, so they are constantly under the influence of two **communicative environments**: on the one hand kindergartens and surrounding society and the family on the other hand. It is important to emphasize that the first environment is dominated with respect to the second. Permanently they have contacts with Norwegian language, culture, leading in kindergarten, communicating with peers and talking Norwegian to one of the parents. They have not enough opportunities to speak Russian, so they learn language in a passive way.

Concept **vocabulary** is the aggregate of words in the use or comprehension of a specified person. Here it is worth to note for two kinds of vocabularies: active (productive) vocabulary and passive (receptive) vocabulary. Active vocabulary is the range of words that somebody normally uses in speech or writing, as opposed to passive vocabulary which are words he or she understands when used by others.

**Music activities** are the prescribed use of music and musical interventions in order to restore, maintain, and improve emotional, physical, physiological, and spiritual functioning and well-being. Teacher can use music to establish a trusting relationship with the child through carefully structured activities. Examples can include singing, listening, playing instruments, composition, moving to music, and music and imagery exercises. Musical activities are developed and used by the teacher based on his/her knowledge of the music's affect on behaviour, the child's strengths and weaknesses, and the educational goals. Music activities work towards specific goals and objectives. Goal area includes communicative, academic, motor, emotional, and social skills.

### **1.3 Expectation for the study.**

I had some expectations for the study based on theoretical researches and my experience of working as a music teacher.

- Mechanisms of interaction between language and music as expressive means can influence the child as a subject of education, his psychic, emotional, esthetical and speech development.
- Music as one of the forms of cognition must “work” to developing, extending conceptions about world and providing better adaptation of children to the conditions of learning. Therefore it is possible to motivate, to stimulate and to optimize learning of language with cooperation of music lessons.
- Emotional development of a child can be considered as one of the essential conditions providing effectiveness of process of education. Music can be one of basic activators for wish for speak out, to form the thought on the base of imagination, dream.

- Songs as one of forms of music and speech communication can be considered to be means for learning and extending of vocabulary solidly because of including new words and expressions. In songs known vocabulary is being met in new contextual surrounding and that helps its activation.

-However the lack of time for the whole process of study and observations (only two months) can be main limitative factor for confirmations of expectations.

## **1.4 Justification and significance of the study.**

Each activity, especially, intellectual is being provided by cerebation connected with perception and processing of information. Nervous system of the child is very plastic and sensitive to external exposures. Just early age is very auspicious for elaboration of activity of sense organs, concepts accumulation about surrounding. As set many researches, using music as additional sensor supply improves significantly abilities of preschoolers (C.Hoskins, 1988), improves memorizing of key phrases and makes easier learning of information (Chan, A., Ho, Y., & Cheung, M., 1998). Under influence of music improvements of short-time verbal memory occur, colors, names of geometries, pictures are being memorized better (L.L.Morton, 1990).

Thereby possibilities of music art are of special interest. Beginning from ancient ages there was information about that. Usually three basic directions of music influence to man's organism are being sorted out: 1) to physical body, 2) to spiritual essence, 3) to intellect. The problem of music's influence to the man was considered by many famous philosophers (Pythagoras, Platon, Aristotle, B. Spinoza, J.J Russo, G.F. Hegel, A. Schopenhauer), psychologists and neurophysiologists (G.F. Helmholtz, V. Bekhterev, K. Lehtonen, X. Leng, G. Shaw, F. Rausher, S. Trehub, N.M. Weinberger), pedagogues and musicians (J. Komensky, C. Orff, Z. Kodaly).

In XX century the interest in influence of music to formation of man's spiritual world and psychic is being increased in the world over. Greater number of medics, psychologists and pedagogues tried to inform about importance of music education.

In pedagogical science, interconnection between speech (language) and music are being used in creation of new didactical concepts based on integration of music and learning materials. Famous German composer, pedagogue, creator of child music instruments Carl Orff in 1924 founded school in Munich where teaching was being made on system of rhythmic movements (gymnastics, dance, pantomime) in combination with collective playing of music. Czech pedagogue Jan Komensky introduced music as obligatory subject in his system.

Hungarian pedagogue Zoltan Kodaly in 1951 created school with extended teaching of music. In his schools he had big progress in comparison with others schools. And this despite of fact that he had to reduce the amount of teaching of other subjects in favor of music. That experiment was repeated in Swiss (1988-1991) and also discovered positive results.

Prof. Overi.K (2000) formulated aspects of so called "intellectual benefits" of music. She pointed out such effects as 1) Increasing level of reading abilities, 2) Increasing level of speech abilities, 3) Improvement of abilities required for solving of spatial and time problems, 4) Improvement of verbal and calculating abilities, 5) Improvement of attention concentration, 6) Improvement of memory, 7) Improvement of motor coordination

As we can see influence of music is type of multiple-aspect. So it requires setting certain boundaries to the research problem of music influence. The goal of the project is researching how music lessons can be helpful for children who speak two languages in mixed communicative environments.

Despite of fact that there are many works about bilingualism and music art separately, the need in searching new original forms and methods for learning bilingual children

in cooperation with music art is not quite met. That is why the problem of using music in learning of language can be considered topical and worthy of special research.

## **1.5. Organization of the thesis paper.**

The thesis has five chapters. The content of each chapter is briefly presented below.

Chapter 1 contains research problem and questions, main concept clarifications, expectation for the study and justification and significance of the study.

Chapter 2 contains theoretical overview of main theoretical guidelines and current research findings in field of bilingualism and relations between language development and music activities.

Chapter 3 describes methodology of the study. It starts by presenting design of the study and instrument and materials used in it. Then it goes description of test and participants. Then it follows with descriptions of music activity and lessons with one of conducted lessons as a sample. At the end of chapter validity, reliability, applicability of vocabulary test and ethical considerations were presented.

Chapter 4 contains the data presentation and analysis. It starts with definitions of main characteristics used in data presentation. Then it follows by presentation and statistical analysis of data done by means of Statistical package for Social Sciences (SPSS) computer program.

Chapter 5 gives a discussion of findings, conclusions and suggestions for the study.

The thesis concludes with the references for the study and appendices.

## Chapter 2. Theoretical background.

The theoretical framework of the study will focus on studies and theories in fields of bilingualism, music in early childhood education and relations between language development and music activities

### 2.1 Bilingualism.

According to classical definition **bilingualism** [from Latin *bi-* two, *lingua-* language] is the ability to know two natural languages and alternating using of two language systems subject to conditions of communication.

Bilingualism is at least as common (may be even more) as monolingualism and kinds of bilingualism are probably present in every country in the world. Besides of that amount of bilinguals has tendency to increasing and become the usual norm of modern Europe.

The processes of globalization now in progress can only increase the extent and character of bi-/multilingualism, as people the world over continue to recognize the advantage of adding a world language to their verbal repertoires. One must conclude that, far from being exceptional, as many lay people believe, bilingualism/multilingualism – which, of course, goes hand-in-hand with multiculturalism in many cases – is currently the rule throughout the world and will become increasingly so in the future. Perhaps not surprisingly, research on bilingualism, whether theory-driven or practically oriented, has grown dramatically in quantity, quality, and breadth in recent years.

Bilingualism became one of the most important phenomena in intercultural communication defined as “communication between peoples representing different cultures”.

B.Rogoff considers human development as a cultural process, where humans as biological species are defined in terms of cultural participation. She tells that we are prepared by both our cultural and biological heritage to use language and other cultural tools and to learn from each other. "Using such means as language and literacy, we can collectively remember events that we have not personally experienced-becoming involved vicariously in other people's experience over many generations" (Rogoff, 2003, p.3 ).

One of the main aims of research on bilingualism, whether descriptive, theoretical or experimental, is to develop models of how the bilingual's languages are acquired, represented, and processed.

## **2.2. Types of childhood bilingualism.**

It is possible that as many or more children worldwide grow up to become bilinguals as monolinguals, and possibly more become bilinguals than monolinguals (Tucker, 1998). Some children become bilinguals almost effortlessly from birth. Others learn a language in school or later as adults. An initial distinction is between **simultaneous** and **sequential** childhood bilingualism.

Simultaneous childhood bilingualism refers to a child acquiring two languages at the same time from birth, sometimes called infant bilingualism, bilingual acquisition and bilingual first language acquisition. Sequential bilingualism is distinct from simultaneous bilingualism in that one language is introduced after the other language has become somewhat established, e.g., after the age of 3.0. Sequential bilingual children typically speak their first language (L1) language at home with both parents, and their second language (L2) outside of home (nursery, elementary school, community e.t.c).

For some simultaneous and sequential bilingual children, one of their two languages is a minority language, meaning it is not widely spoken outside the home, and has

little or no cultural, political or educational status in the broader society. For simultaneous bilinguals this means that the parent who speaks that language is the primary and sometimes solitary source of that language, a situation referred to as ‘family bilingualism’ (Lanza 1997). Sequential bilinguals with a minority L1 are often children from immigrant families where both or one of parents speak the L1 at home, and the child learns the majority societal language in the community.

There are no exact boundaries between simultaneous and sequential bilingualism, although the age of acquisition is likely to be influential.

Nursery and kindergarten education can enable a child to acquire a second language without formal instruction in that language (Baker & Jones, 1998; Thompson, 2000). In the pre-school education context, language development may be supported through sessions that emphasize understanding and meaning rather than attention to language form. Such early bilingual education did not lead to native language loss. In contrast, second language classes for children and adults usually foster bilingualism through direct instruction. This leads to a distinction between informal language acquisition and more formal language learning (Krashen, 1985). However, the boundary between acquisition and learning is not distinct (e.g. informal language acquisition can occur in a second language class). There is a movement towards making second language acquisition more naturalistic in an educational setting, developing communicative competence in a less formal way. Thus, the distinction between naturally becoming bilingual and being taught to become bilingual has imprecise borders.

### **2.3. Simultaneous language acquisition.**

Unlike sequential bilinguals, simultaneous bilinguals are exposed to two languages as infants and toddlers, thus, they receive this dual input before they are old enough to explicitly or consciously understand that their input comes from two linguistic sources. For this reason, researchers have asked whether these children forge an initial

unitary linguistic system that later must be differentiated into two systems (Genesee 1989; Leopold 1949; Volterra and Taeschner 1978). Currently, researchers have shifted from the ‘one system or two?’ question to more nuanced questions about degrees of contact and separation between the two developing languages of these children (e.g., see contributions in Döpke 2000).

There are broad categories of early childhood bilingualism based on the language or languages spoken by the parents to the children and the language of the community (Harding-Esch & Riley, 2003; Romaine, 1995; Piller, 2001).

## **2.4. Categories of early childhood bilingualism.**

### **2.4.1. One person - one language.**

The parents have different languages, one of which is often the dominant language of the community. The parents each speak their own language to the child from birth, but tend to speak one language to each other. (Example: mother speaks Russian; father speaks Norwegian; the community language is Norwegian) This has often been suggested as a successful strategy. However, it tends to imply incorrectly that it is only the family that influences language acquisition. Community influences are also important (e.g. pre-school, extended family, mass media). A particular example is when children are raised in multilingual cities and the diverse language experience may add much variation to this strategy.

### **2.4.2. Home language is different from outside the home.**

What is central is that the child acquires one language at home and a different language outside the home. Example: both mother and father speak Russian; the community language is Norwegian. Both parents will use the same language at home,

and the child will acquire another language formally or informally outside the home. One parent may be using their second language.

### **2.4.3. Mixed language.**

The parents speak both languages to their children, frequently using both languages with the child. Codeswitching and codemixing is acceptable at home and the neighborhood. The child will typically codeswitch with other bilinguals but not with monolinguals. However, some domains (e.g. school) may expect separation of language code. The community may have a dominant language or not. Example: mother and father speak Russian and Norwegian; the community language is Russian and Norwegian.

### **2.4.4. Delayed introduction of the second language.**

Where the neighbourhood, community and school language is a higher status and dominant language, parents may delay exposure to that dominant language. For example, parents may exclusively speak Russian at home until the child is two or three years of age, then add Norwegian. The tactic is to ensure a strong foundation in a heritage language before the dominant language outside the home becomes pervasive.

Another central issue in bilingual language acquisition research has been how bilinguals compare to their monolingual age-peers in their learning patterns and linguistic achievements in each language. Bilingual children have to acquire two linguistic systems in the same amount of time that monolinguals acquire one. Moreover, they seldom receive equal amounts of input in both languages, and often one language is more proficient or “dominant” than the other. Therefore, it is possible that bilinguals acquire their languages at different rates than monolinguals.

## **2.5. Language achievement and measuring of bilingualism**

The measurement of bilingualism is a vexed issue because the object of measurement is not well-defined and because the potential purposes of the measurement can be manifold. First of all, there is an abundance of terms that reflect the attempt to characterise different levels of bilingualism, such as ideal vs. partial bilingualism and coordinate vs. compound bilingualism (Weinreich 1953), incipient bilingualism (Diebold 1964), receptive bilingualism and semibilingualism (Hockett 1958). Some of these terms refer to conditions of bilingualism that are external to the bilingual individual or the bilingual speech community, while other terms are based on the assumption that there are differences in the representation of the two languages in the speaker's mind. Overall, there is no consensus on what constitutes bilingualism and how bilingual competence is represented.

For the purpose of measurement the notion "language" would need to be considered at the phonological, lexical, semantic, morphological, syntactic, discourse and interactional level in a manner that is typologically plausible. At present, there is no generally accepted theory of language that integrates all of these aspects and that can readily be served for a given set of two languages. The field of language testing has been keenly aware of this deficit and has developed indirect and yet global approaches to the measurement of linguistic abilities such as proficiency rating scales (e.g. Bachman 1990, Brindley 1998). Apart from the issue of construct validity and reliability of rating scales, any reliance on rating scales in the measurement of bilingualism raises the question whether language proficiency measured in this way does represent the speaker's linguistic competence. In other words, one of the key issues in the measurement of language is whether proficiency relates to linguistic competence in a systematic way. On the other hand, accuracy-based measures of proficiency provide only a partial and eclectic snapshot of the speaker's linguistic ability.

The measurement of language and bilingual ability has in the past ranged from tests that are aimed at maximum scope, such as rating scales, to discrete point tests aiming at maximum precision. Examples of the latter category include the Peabody Picture Vocabulary Test (Dunn 1959) which focuses on receptive vocabulary, Reynell's syntactic complexity test (Reynell 1969) or varieties of the c-test (Oller 1979). Although these tests were originally designed to measure monolingual competence, some researchers nevertheless advocate utilizing those tests for the assessment of bilingual competence (cf. Hamers and Blanc 2000).

## **2.6. Music in early childhood education.**

All children are born with some degree of music ability. A major challenge that confronts Early Childhood Education music educators and researchers alike is to determine the relative importance of (a) a child's innate music aptitude, (b) the music environments that contextualize the child's life, and (c) the roles of indirect and direct instruction in music in the early years. This discussion briefly addresses each of these issues from theoretical, empirical, and applied perspectives. It is widely understood that a child's music aptitude has an ideal chance for optimal development if parents, caregivers, and teachers provide a varied and rich music environment for a child early in life (Brand, 1982, 1985, 1986; Gordon, 1990; Pond, 1981; Simons, 1986). In fact, some researchers have hypothesized that children can suffer severe music developmental delays when music is not a frequent part of their home and school environments. Beyond enhancing the development of a child's music abilities, Doxey and Wright (1990) also reported significant positive relationships between music and mathematics abilities in their study of music cognition and general intelligence. Subsequent research conducted over the past decade has also reported findings of enhanced cognitive development and spatial-temporal reasoning as the result of rich, stimulating preschool music activities (Rauscher et al., 1997; Shaw, 1999). The research evidence strongly suggests that an enriched music environment—a

combination of quality, quantity, and a variety of music experiences—in the first several years of a child’s life can impact strongly on a child’s success in and enjoyment of music, as well as in other areas of cognitive development.

## **2.7. Music acquisition and language acquisition.**

Although music is not a language, it is acquired in a manner and context similar to those in which language is learned (Gouzouasis & Taggart, 1995). The mechanisms that a young child uses to produce sounds are the same for both music and language. The throat, mouth, nose, lungs, and diaphragm are used in a variety of ways to produce meaningful music and linguistic sounds. For both music and language, sounds may vary in loudness, pitch, duration, and stress. When sound (or, technically, *phones*) in the form of vowels and consonants (*segmentals*), is organized into morphemes—the smallest meaning-based unit in language—the sound is expressed as a linguistic medium (Jakobson, 1968). Similarly, when sound in the form of pitches and durations is organized into tonal and rhythm patterns, it may be considered a music medium (Gouzouasis, 1987). Young children are encouraged to produce linguistic sounds from the time they enter our world through what psycholinguists have described as *motherese*, a reciprocal and contingent interaction between parent and infant (Broen, 1972; Cross, 1977; Newport, Gleitman, & Gletman, 1977; Phillips, 1970; Snow, 1977).

Studies of language acquisition also show a close relationship between children's musical and linguistic development. The prosodic characteristics of adult-infant communication can be analyzed musically. Research has revealed that adult speech directed at babies has an elevated pitch and an amplified range of basic frequencies, with a tendency toward high frequencies, as well as a slow rhythm, clear enunciation, and pauses that separate phrases (Rondal, 1990, p. 188). Thus, melodic contours can easily be identified in adult speech directed at babies. These contours facilitate communication with babies, enabling them to understand adults' messages, respond to

them in different ways, and gradually acquire language. The rhythm of these contours plays an important role in enabling language discrimination and deciphering the message directed to the child (Ramus, Nespore, & Mehler, 2000). Melodic contours are used intuitively and spontaneously, thus establishing a musical communicative code that precedes the development of language as such; this enables the infant to become familiar with elements of sound, both melodic and rhythmic. It has therefore been proposed that adult language directed at babies may serve as a natural source of early musical stimulation (Papouseck, 1996). This view gives rise to one possible explanation of the relative ease with which young children discriminate pitch intervals and rhythms in controlled situations.

The above information is not intended as an exhaustive exploration of the close link between musical and linguistic development; rather, it represents some of the evidence that music activities help children's linguistic development and supports the use of such activities in schools' educational programs in order to stimulate various aspects of children's language. For example, educational programs that include singing songs have resulted in increased expressive abilities (Hoskins, 1988), and programs that encourage children to write songs have been used to reduce difficulties with reading and writing (Gfeller, 1987). Other programs have achieved rapid, accurate reading (Lamb & Gregory, 1993) and have even used music in preschool classes to develop children's auditory language discrimination skills and improve their articulation and pronunciation (Gan & Chong, 1998). Dyslexic children have also experienced considerable improvement in phonological and spelling skills (Overy, 2000).

The data obtained in these and other similar studies suggests a parallelism and/or similarity in the codification and organization of musical and verbal stimuli. The studies also imply, based on this finding, that the processing of musical and linguistic stimuli may involve the same cerebral functions and/or take place in the same regions of the cerebral cortex.

One of the main theoretical concepts of the study is developing vocabulary of the bilingual children in Norway (Norwegian context). The development depends on different factors. One of them is using different kinds of music activities during music lessons for learning Russian. So in this study I'm going to focus on extension of vocabulary through music lessons.

## **2.8. Linguistic development and music activities.**

The process of language development begins long before children utter their first conventionally formed utterances. In fact, words represent only one of the many communicative resources that are involved. As a result, the major theoretical perspectives in the field include not only a focus on the development of language itself but also a more multimodal view of communication that couches the child's developing language in a complex of representational resources.

In fact, the rate at which different children develop language can differ by a year or even more. Vocabulary development speeds up dramatically and by about two years of age, the child possesses a vocabulary of over 200 words, correctly ordered in 95 percent of utterances (Pinker, 1994). Through age 6, the average child's vocabulary increases by as many as ten words per day; additionally, children continue to develop morphosyntactic knowledge even beyond the age of eight (Chomsky, 1969).

Music educators have offered evidence that music lessons develop students' potential in many areas, especially auditory improvement, psychomotor coordination, memory development, expressive abilities, and critical thinking (Frega, 1977). The songs of children in particular are considered as providing children with fluency of oral expression and good diction, as well as helping them learn to form phrases, to use words correctly and to understand their meaning, and even to enjoy the poetic quality of children's rhymes (Aquino, 1991).

These and other considerations from the field of education denote the positive influence of music activities on different areas of child development, especially those related to language. This has given rise to research projects that examine the relationship between music and language from several different angles.

Language development is enhanced at both the receptive and expressive levels as young children listen to the teacher talk about ongoing music activities and then appropriate some of that language to use as they describe their own activities.

One element of children's linguistic development that has been favored by participation in music activities is that of vocabulary. Studies showed that those children who attended music classes at school performed better on the WISC vocabulary scale than those children who did not attend such classes (Galicia, 1997; Galicia & Pavyn, 2001). Children with developmental delays who participated in singing songs improved their vocabulary significantly, as measured by the Peabody Vocabulary Test (Hoskins, 1988). Also, young children who received vocabulary instruction in a second language, along with songs and rhythmic discrimination activities, incorporated more words into their receptive and active vocabularies (Gan & Chong, 1998; Schunk, 1999; Overy, 2000).

Music activities also provide an opportunity for teachers and children to exchange “information-bearing” language as they describe observations, formulate plans, ask questions, and offer explanations. Information bearing language differs from the use of language for behaviour management and social exchanges that typically occur in the early childhood classroom and it helps children develop the speaking and listening skills they will need once they enter a formal academic setting.

The early music activities, therefore, should provide young children with opportunities to explore, play, and engage with a wide variety of music activities — as composers, improvisers, listeners, movers and dancers, soloists and group members—that build on their early and continuing informal encounters with music. They should be encouraged to create musical narratives that provide evidence to the

teacher/caregiver of emergent musical understanding that can then be deepened and developed through further musical engagement. They should be encouraged to engage consciously with a wide range of musical styles and genres as they build the vocabulary that will underpin their future development. The underlying pedagogical philosophy is for the teacher (or caregiver in non-school contexts) to act as co-music-maker, guide, facilitator and enabler to the richness of musical cultures.

Teacher's talk is also especially critical to providing young children with opportunities to hear and use "challenging vocabulary" or "rare words" that extend beyond basic "school readiness" language such as colour term rehearsal (Dickenson, 2001, p. 238). Teachers can enhance children's engagement in higher-order thinking by incorporating into their interactions a wide range of interesting words that children can then contextualize in their play. In this way, and by providing interactions that extend across several turns, teachers of four- and five-year-olds can provide conversational space for the development of a range of oral language and print uses that will occur in the kindergarten. Children's long-term language growth is also impacted by the total number of words and variety of words used with peers in free play, although free play must be appropriately balanced with more structured activity. Children who, as four-year-olds, have interacted with teachers who reduce the amount of their own talk in favour of lengthening the children's contribution to the conversation also show better kindergarten performance (Dickenson, 2001).

All along the way, language development includes children's engagement in the multimodal discourses that comprise their lives at home and in school. Young communicators do not simply reproduce convention. Teachers can enhance and respond to children's communicative development by creating environments, or sets of contexts, where children can practice questioning, arguing, remembering, and imagining through the orchestration of self-selected combinations of multiple modes—including oral and written language. This enhances language development by linking it to a complex of motivated signs that reflects children's interests as individuals interacting with others (Kress, 1997). Such a multimodal view becomes

especially crucial to the integration of verbal, visual, and actional resources in classroom discourse that can no longer be seen as language-centred.

## **Chapter 3. Methodology.**

In this chapter the following topics are considered: design, instrument, target population and sampling, data collection, validity and reliability, applicability of vocabulary test in Spanish for Russian speaking children, and ethical considerations.

### **3.1 Design.**

The study is designed as a case study. "A case study, especially one that is qualitatively directed, is a well-adapted method with which to understand and interpret observations of pedagogical phenomena and courses of events" (Merriam, 1994, p.43). Research that concentrates on discovery, insight, and understanding of how people see the world provides, says Merriam, opportunities for development in the educational sector. This author also states that research can be seen as a means of understanding, informing and improving one's own praxis in applied like education, medicine and social work. "The case study method is furthermore appropriated when the purpose of an evaluation is to create a better understanding of the dynamics that underlie a programme" (Merriam, 1994,p.44). The analysis unit or case can be comprised of an individual, a programme, an institution, a group, and event or a concept" (Merriam, 1994,p.58). A case-study researcher is thus seldom only a participant or an observer, but rather a researching participant who takes part in a social situation though only participates to some extent to be able to function in the researcher role (Merriam, 1994).

Experiment is chosen as the main method with a pre-test measuring, experimental treatment and then a post-test measuring. The one-group pre-test–post-test qualifies as an experimental design and involves three steps (Gall, Gall&Borg, 2003):

- 1) Administration of a pre-test measuring the dependent variable;

2) Implementation of the experimental treatment (independent variable) for participants;

3) Administration of a post test that measures dependent variable again

The research design is suitable for two reasons: there are some studies done in Norway and Scandinavian countries in the field of studying child's bilingualism and some works which study influence of musical therapy to developing children's language abilities, but I have found very few specifically for bilingualism and musical activities. This makes the experiment appropriate. Secondly the research is aiming at determination of influence of music lessons to developing of vocabulary of bilingual children in mixed communicative environment in Norway.

The one-group pre-test–post-test design is especially appropriate when it is required to change a characteristic that is very stable or resistant to change. The one-group pre-test–post-test design is most justified when extraneous factors can be estimated with a high degree of certainty, or can safely be assumed to be minimal or nonexistent. (Gall, Gall&Borg, 2003, p.389).

It is worth to note that my study task can be characterized as qualitative research rather than quantitative.

According to Gall, Gall&Borg, one of the main characteristics of qualitative research is its focus on the intensive study of specific instances, that is cases, of phenomenon. In our case that phenomenon is language development of bilingual children. However study has also features of descriptive, casual-comparative research design which peculiar to quantitative design. Vocabulary test was used as a quantitative procedure in the study with the help of which I estimated children's development.

## **3.2 Instrument**

For achievement test showing the extent of vocabulary acquisition I used a test called “Test de Vocabulario en Imágenes (TEVI-R)” based on Peabody Picture Vocabulary Test- Revised (PPVT-R).

PPVT-R was designed as a measure of receptive language vocabulary for standard American English and has replaced the original Peabody Picture Vocabulary Test.

The following features of the test were retained in this edition: (1) individual administration; (2) two forms; (3) clear, drawings of high interest and broad appeal; (4) wide-range use; (5) quick administration; (6) untimed administration (to test power rather than speed); (7) no reading required of subject; (8) no oral or written response required; (9) objective, rapid scoring; (10) norm-referenced interpretation; (11) items administered only over subject's critical range; and (12) no extensive specialized preparation needed by the examiner.

Because the TEVI-R has alternate forms, it is useful in experimentation involving pre-testing and post-testing. The wide range of difficulty reduces the possibility of floor or ceiling effects, important in longitudinal studies. And because it is not time-consuming to administer and score, it provides a useful description of subjects in many scientific studies where it is not efficient or necessary to provide more precise data.

### **3.3. Age range and target population.**

The TEVI-R test designed for Spanish-speaking and bilingual (Spanish-English) test takers from 2 to 19 years old who can see and hear reasonably and understand the tested language to some degree. Because it requires no reading or writing and is easy

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to administer, the TEVI-R is useful in assessing older toddlers and preschool children and is fair to persons with written-language problems and disabilities such as autism, withdrawn personalities, psychotic symptoms, severe cerebral palsy, and moderate visual disabilities.

### **3.4. Test materials.**

1. The test TEVI-R includes 116 items, each consisting of four full-color pictures to assess the receptive vocabulary. Each item has four simple illustrations in a multiple-choice format. Items were selected through item analysis for their universality.

The following 19 categories (listed in alphabetical order) were established to assure some degree of balance in the selection process: (1) actions (verbs) ; (2) animals, including their parts and items closely associated with them, such as hive and saddle; (3) buildings, including their parts; (4) clothing, including accessories; (5) descriptors (adjectives and adverbs); (6) foods (but not produce — see number 14 below); (7) household and yard fixtures, furniture, and parts; (8) household utensils, containers, and cleaning items; (9) human body parts; (10) human workers and other role players; (11) human and humanoid forms, such as statue, totem, bust, couple, people, crowd, idol; (12) mathematical terms (shapes, money, etc.); (13) plants and their parts; (14) produce (fruits, vegetables, nuts, grain); (15) school and office supplies and equipment; (16) tools, machinery, and scientific apparatus, and their parts; (17) toys, musical instruments, and recreational items; (18) vehicles and other means of transportation, and their parts; and (19) weather, outdoor scenes and objects, and geographical items.

2. Manual providing examiner the foundation of test using and interpreting of results.

3. A separate Individual Test Record paper. The record lists the stimulus words to be used to give the key to the correct choices. Space is provided for recording the

subject's responses, raw score, and certain derived scores with their errors of measurement, and also for recording additional information about the subject.

### **3.5. Description of the test.**

The test was given in quiet room away from people and comfortable conditions for the test taker. The room temperature was comfortable, and ventilation and lighting adequate. To avoid being disturbed by someone from outside of the room, a "TESTING — DO NOT DISTURB" sign was placed on the door.

In the test, the examiner orally presents a given vocabulary item (stimulus word) with a set of pictures and the test taker is asked to select the picture that best represents the word's meaning. Responses were registered in special printed form.

Testing requires only 10 to 20 minutes, because the subject must answer only about 35 to 45 items of suitable difficulty. Items that are far too easy or hard are not administered.

#### **3.5.1. Starting Points**

The difficulty level of the test items ranges from easy for 2-year-olds to 19. It would serve no useful purpose to administer extremely easy or extremely hard items to a child, and would probably invalidate the results. Therefore, only those items within, or close to, the child's critical range are given. The critical range is defined as those items that provide maximum discrimination among individuals of similar ability. The lower limit of this range is called the basal item; the upper limit, the ceiling item. The examiner administers the items until the child's "basal" and "ceiling" are found. The basal is the highest set of eight consecutive correct responses and the ceiling is the lowest set of eight consecutive responses containing six errors. Starting points are

provided to help the examiner begin the test slightly below the basal to assure early successes for most subjects and thus help motivate children to work hard.

The starting points were derived so that the middle 50 percent of any age group will obtain a basal without having to work backward, or to respond to too many easy items.

### **3.5.2. Basal and ceiling rules.**

The basal and ceiling rules given here must be followed under all circumstances:

Basal: Highest 8 consecutive correct responses

Ceiling: Lowest 8 consecutive responses containing 6 errors

From the starting point, examiner work forward until the child makes the first error. If 8 or more consecutive correct responses have been made, a basal has been established. In this case, simply continue to test forward until the child makes 6 errors in 8 consecutive items. We are counting the last item presented as the ceiling item. Because each starting point was chosen so that most persons in that age group will obtain a basal without working backward, the basal will usually be reached by this method.

A slightly more complicated situation arises when the subject has not made 8 consecutive correct responses prior to the first error. If this happens, we drop back as soon as the first error is made to the word below the starting point, administer it, and continue working backward consecutively, as necessary, until a total of 8 consecutive correct responses have been made. Responses above the starting point, as well as below, are to be counted for the purpose of establishing this basal. After the basal has been established, we test forward again from the point of the first error, and continue until the subject reaches a ceiling (6 errors in 8 consecutive responses).

### **3.5.3. Calculating raw score.**

The total raw score is the number of correct responses over the critical range. All items below the basal are counted as correct, and all items above the ceiling are counted as incorrect. The subject's raw score is obtained by subtracting the number of errors over the critical range from the number of the ceiling item.

### **3.5.4. Converting raw score to derived scores.**

In a norm-referenced test such as the TEVI-R, raw scores become meaningful only when converted to derived scores, which allow comparison of individual performance with that of one or more well-defined reference groups.

Other terms for derived scores are standardized scores, or normed scores, abbreviated to norms. The TEVI-R was standardized on age reference groups. By means of age norms, an individual's score can be compared with a large group of persons of the same chronological age upon whom the TEVI-R was standardized.

Tables for converting raw scores to age norms are in manual. Data is used to convert raw scores to standard score equivalents according to child's age.

## **3.6. Participants.**

Participants of test met the following criteria:

- children 4-5 years old, who are living in mixed communicative environment in Oslo.

- they are going to Russian Sunday Pre-School once in week.
- these children have at least one of parents with Russian as native language.

All of them are going to Norwegian kindergartens, so they are constantly under influence of two communicative environments: on the one hand kindergartens and surrounding society and the family on the other hand. It is important to emphasize that the first environment is dominated with respect to the second. Permanently they have contacts with Norwegian language, culture, leading in kindergarten, communicating with peers and talking Norwegian to one of the parents. They have not enough opportunities to speak Russian much, so they learn language in a passive way.

In the Russian Sunday pre-school, where I have been working during the last year, we are interested to motivate them to speak Russian actively. At music lessons I'm using different methods and kinds of activities such as songs, movement to music, playing activities, musical riddles, using musical instruments (metallofons, tambourines, maracas, rattles, and bells), listening to music and discussing music.

Participants of the experiment were selected from one place - Russian Sunday Pre-School (Full name is The First School of Additional Education of Russian Language for Children in Oslo).

Totally 16 children participated in the experiment. At the moment of pre-test all children were 4 years and older.

### **3.7. Implementation of music activities**

The results obtained from the mentioned above research and programs seem to encourage the implementation of music activities in order to promote children's linguistic development, especially native-language vocabulary. The researches show a correlation between (1) music activities in general and language development, and (2) differentiation processes of both musical and linguistic elements. In light of these

findings, it could be inferred that music activities that stimulate auditory memory and rhythmic, melodic, and harmonic discrimination would favor children's linguistic development. The goal of this study, therefore, was to identify whether children's vocabulary development is influenced by practicing music activities that stimulate auditory memory and rhythmic, melodic, and harmonic improvements.

Based on this goal, an educational program was designed around music activities that would promote children's vocabulary development using songs and activities such as repeating rhythmic patterns; remembering sequences of sound; discriminating timbres, rhythms, and melodic lines. According to some researchers (Chan, Ho, & Cheung, 1998; Anvari, Trainor, Woodside, & Levy, 2002), activities designed to achieve these objectives are associated with linguistic processes, and especially with vocabulary acquisition.

Totally 10 sessions lasting about 30 minutes each were held. The activities were carried out during the music lessons with all the children in the class. The program was thus implemented in a natural setting. Each session had a topic that was developed through various music activities that emphasized repeating rhythmical patterns and remembering sound sequences. These activities were chosen because they were considered likely to promote language development. They were also designed to promote various kinds of associations with visual stimuli and motor actions.

Here is one of the thematic lessons called “Magic forest”

Objective	Activity	Description	Materials	Time
<p>Presence and absence of sound.</p> <p>Motor expression.</p> <p>Alternation in playing and singing high and low registers.</p> <p>Stimulating productive speech.</p>	Entry	Children are sitting in a circle, ringing hand bells and singing song “Din-don” and inviting everybody to trip to the “Magic forest”.	<p>Musical instruments:</p> <p>Hand bells.</p>	3 min
<p>Motor expression.</p> <p>Repeating and remembering names of children.</p> <p>Stimulating receptive speech.</p>	Greeting song: “Children, music and me”	Children with musical accompaniment are playing musical instruments. Each child’s name is being pronounced and child responded with its musical instrument.	<p>Musical instruments:</p> <p>maraca, tambourine, rattle</p>	5 min

<p>Grammatical integration.</p> <p>Motor expression.</p> <p>Remembering short phrases.</p> <p>Stimulating productive speech.</p>	<p>Rhyme: “Two centipedes” (finger exercises)</p>	<p>Children move their hands and fingers according to the rhyme and repeat the rhyme.</p>	<p>Illustrations</p>	<p>4 min.</p>
<p>Motor expression.</p> <p>Body movements.</p> <p>Attention.</p> <p>Creative thinking.</p> <p>Stimulating productive speech.</p>	<p>Game: “Sleeping bear cub”.</p>	<p>While music playing children are coming up bear house and singing song trying to wake him up. The bear wake up and sing in response and after that try to catch one of children. The first caught would be the next bear in the following stage.</p>	<p>Background music.</p> <p>Bear mask.</p>	<p>6 min.</p>
<p>Motor expression.</p> <p>Body movements</p> <p>Memorizing words, phrases.</p> <p>Stimulating productive speech.</p>	<p>Song: “The little Christmas tree”</p>	<p>Children sing and go around the tree, decorate it and at the end playing metallophones</p>	<p>Musical instruments: metallophone.</p> <p>Christmas tree, decorations.</p>	<p>6 min.</p>

Sequential auditory and visual memory.  Repeating sequence of activities.  Motor expression.  Attention.  Stimulating receptive speech.	Music movements: “Ducklings”	Children in music accompaniment imitate movements of different animals and birds: ducklings, kittens, doves.	Phonogram with words.	5 min.
Motor expression.  Stimulating receptive speech.	Exit with song: “The bus”.	Children living the “forest” in the bus.  During the song, the children hold hands in twos or threes, “get in the bus,” and leave the classroom  They act out motions of bus.	Phonogram with words	2

### 3.8. Data processing

The statistical analysis of data was done by means of Statistical package for Social Sciences (SPSS) computer program.

### **3.9. Reliability**

The scores obtained from a psychometric instruments such as the TEVI-R or PPVT-R provide only an estimate of the person's true score, or ability, in the trait or attribute being measured. The true score is never known, because some degree of measurement error is always present in the obtained score. Measurement errors occur because all human behaviour varies from time to time, and because all psychometric measuring devices are imprecise to some degree. The standard error of measurement is the statistic used to take into account the effects of error in the interpretation of individual test scores.

The reliability (or consistency) with which the test measures performance of an individual across different sets of items on different forms, or in repeated testing with the same form must be considered by those interpreting test results.

Internal consistency reliability coefficients are derived by administering one form of the test to a group of persons, and then comparing their performance on different parts of the test, usually odd versus even items. This is known as the split-half procedure. These reliability coefficients reflect measurement error resulting from characteristics of the particular sample of items used in the test. Since internal consistency reliability coefficients are obtained from a single test session, they do not reflect measurement error caused by fluctuations in performance of the individual from one occasion to another.

### **3.10. Validity.**

Validity is defined as the degree to which a test measures what it claims to measure. But validity is inferred, not measured. As the APA Standards for Educational and Psychological Tests (American Psychological Association, 1974) points out, questions of validity reduce to the following two: (1) What can be inferred about what is directly being measured by the test, in this case receptive vocabulary; and (2) What

can be inferred about other, related, behaviour, in this case scholastic aptitude and children's achievement?

Many terms have been used to describe the various types of validity. The types considered here are content validity and construct (including internal consistency) validity.

Content validity was based on the fact that all used stimulus words' meanings could be depicted by a picture. This list of words was assumed to represent the content universe for receptive vocabulary, with the restriction that words which could not be illustrated were omitted.

As long as the picture vocabulary test is seen as a measure of receptive vocabulary, its rational validity rests on its content validity. However, when an inference is made that the test measures scholastic aptitude, arguments must be based on construct validity. Evidence to support this inference may be found in the literature. Early in the 20th century, Binet and Simon (1916,p.145) wrote: "One of the best tests upon which to form a judgement [about the intelligence of individuals] is to ask them to designate in a picture the object which one names for them. The test is so much the more to be recommended because it has, for the normal child, the great attraction of curiosity. There is also a great advantage in asking him to point out the objects corresponding to the words which are said to him, rather than to make him name the objects which he himself sees, because of the defects of pronunciation which often prevent him from being understood"

For the 1916 Stanford revision of the Binet-Simon Intelligence Scale, Terman (1916, p. 230) pointed out "The vocabulary test... has a higher value than any three other tests on the scale. Our statistics show that in a large majority of cases the vocabulary test alone will give us an intelligence quotient within 10 per cent of that secured by the entire scale"

For the Wechsler Intelligence Scale for Children-Revised, Wechsler found the vocabulary subtest scores correlated more highly with Full Scale IQ scores than any

other subtest (Wechsler, 1974, p. 47). Many studies investigating the measurement of intelligence have shown that vocabulary is the best single type of test for predicting school success (Dale & Reichert, 1957).

I realize that the process of measuring receptive vocabulary by picture selection, as in the case of the TTEVI-R or PPVT-R, is not equivalent to defining words orally, as in the case of the Stanford-Binet and Wechsler scales. The test measures receptive language, while the Stanford-Binet and Wechsler scales measure expressive language as well. Nevertheless, both tap the subject's comprehension of the spoken word — it is primarily the modes of expression which vary.

Internal consistency is also evidence of construct validity, because the degree of homogeneity of test items indicates how well those items will measure the trait sampled by the test. For the test, internal consistency (or test item) validity was established as the individual stimulus words (test items) were selected.

The fundamental rule for including items was that for each successive age group the percentage of subjects responding correctly to the item must increase gradually. This criterion was fulfilled. The gradual increase in mean raw scores by age is being shown.

External validity is the extent to where the findings of an experiment can be applied to individuals and settings beyond there that were studied.

However, the result of my research can not be generalized to any other individuals and settings because the number of participants was not big enough.

Also the sampling procedure was conducted. The children who attended the lessons and participated in research were not a random sample of the population. The random assignment of children to experimental groups is required in a pure experiment is ethically suspected.

The test materials (both PPVT and TEVI-R) were not originally designed for Russian speaking population and Norwegian society. So it raises some issues in applicability of vocabulary test that need to be considered in details.

### **3.11. Cultural bias in language assessment test.**

There are some technical factors that can influence the validity of tests adapted for use in other languages and cultures. If a researcher knows that he or she will be using a test in a different language or culture, it is advantageous to take this into account at the outset of the test development process. Failure to do so can introduce problems later in the adaptation process that will reduce the validity of the adapted test.

One of main problems in adapting (translating) language assessment tests such as using test for Spanish speaking population for Russian children is that a translated word, although expressing identical concepts, may be of a different degree of difficulty in the Russian than in the Spanish language. Also the problem can be that a concept or word may not be present in the new culture; the translation, then is accomplished by replacing the intended concept with one which is judged to be similar, this judgment being subject to debate. Another problem is that a word may possess a single meaning in one culture but possess multiple meanings in the other.

Choice of item formats, stimulus material for the test, vocabulary, sentence structure, and other aspects that might be difficult to translate well can all be taken into account in preparing the test specifications. Such preventive actions can minimize later problems. For example, questions about money might be eliminated because currencies are different around the world and equivalent adaptations may be difficult to produce. Also, reading passages about country-specific topics that would be unfamiliar in many cultures could be rejected in favor of common things and activities that would have similar meaning across many language and cultural groups.

However in my case content of pictures used in testing procedure (at least for our intending participants of 4-5 years old) does not contain items which can be

considered to be suitable only for Spanish speaking population and specific for Spanish cultural context. Almost all children managed easily to distinguish for example “boat” from “ship”, “asparagus” from “pea pod” and some other things which I considered to be difficult for them.

### **3.12. Problems comparing bilinguals and monolinguals.**

Current practices for assessment of language in bilinguals frequently involve the use of tests that are translated from one language to the target language and/or tests designed for and normed on monolinguals. Adapting a test from one language to another may mean that items are organized by order of the original language’s difficulty, rather than reflecting the developmental order of the target language.

Bilingual children generally fall into the category of *circumstantial bilinguals*. That is, their circumstances (often a Russian-speaking home and a Norwegian-speaking or bilingual pre-school) require them to use two languages. These different environments typically require different language content. The home environment likely promotes discussions of common family activities, such as cooking or trips to the store, while more academic topics, such as colors, numbers, and shapes, are highlighted in the school environment. Bilingual children thus develop different vocabulary content for each language. From a testing perspective, this can result in underestimation of concept knowledge.

For example, Sattler and Altes (1984) examined typically developing three- to six-year-old bilingual Latino children's scores on the Peabody Picture Vocabulary Test-Revised and the McCarthy Perceptual Performance Scale. They found that the PPVT-R, whether administered in English or Spanish, yielded scores far below those of the norms, while all of the children were estimated to have normal intelligence based on their McCarthy scores.

A number of studies in the area of vocabulary acquisition illustrate that in early development, bilinguals learn unique words across their two languages, rather than learning two words (one in each language) for each concept. Pearson, Fernandez, and Oller (1992) found that young bilinguals (8 to 30 months) often produced words for different concepts in each language, with few concepts labeled in both languages. Similarly Pena, Bedore, and Zlatic found that in a category generation task, bilingual children (ages 4 to 6 years) produced more unique words across Spanish and English than overlapping words.

When monolinguals and bilinguals are compared on measures of vocabulary, differences become more apparent. Pearson, Fernandez, and Oller (1993) used the Spanish and English versions of the MacArthur Communicative Development Inventory (1989) to estimate bilingual toddler's vocabularies. They found that when compared to monolingual norms in either language, their scores were low. However, when they compared the total number of unique words they produced across the two languages, their scores were more comparable to the monolingual norms.

In the study I used “Test de Vocabulario en Imágenes (TEVI-R)” test which was normed on monolingual Spanish speakers. Administration of vocabulary test in only one language, even the “dominant” Russian would have led to an underestimation of vocabulary knowledge.

### **3.13. Ethical considerations.**

Ethical issues need to be discussed and taken into account. Ethical considerations are important through the whole process of human research especially in researches involving children.

In my case I deal with 4-5 years old children who are too young to understand the aims and procedures of research and to make an informed decision about participation. So parental consents about voluntary participation were secured and

they were informed about the purposes of the study and all the procedures to be employed.

Parents also were informed about their right to withdraw at any time from continued participation in process.

Individual testing was done in no stressing psychological conditions for the child and took very little time (about 10-15 min).

Each parent got assurance that personal information gathered as part of the research project will remain private and confidential.

NSD (Norwegian Social Science Data Services) was informed about the research.

## **Chapter 4. Data presentation and analysis.**

The purpose of study is to investigate the level of language development of the Russian speaking children and influence of music lessons to that. The main goal of the chapter is to show how data was collected and analyzed. Assessment of language development was done by measuring of vocabulary by means of TEVI-R test.

Respondents were 16 children who have at least one Russian speaking parent and are going to Russian Sunday Pre-School where I work as a teacher.

### **4.1. Main concepts and terms.**

In total 16 children participated in the study. 10 of children live in Russian-Norwegian families and 6 in families where both parents speak Russian.

A bar chart displays the count for each distinct score as a separate bar, allowing comparing scores visually.

A histogram also has bars, but they are plotted along an equal interval scale. The height of each bar is the count of scores falling within the interval. A histogram shows the shape, center, and spread of the distribution. A normal curve superimposed on a histogram helps to judge whether the data is normally distributed.

Mean is a measure of central tendency. The arithmetic average, the sum divided by the number of cases.

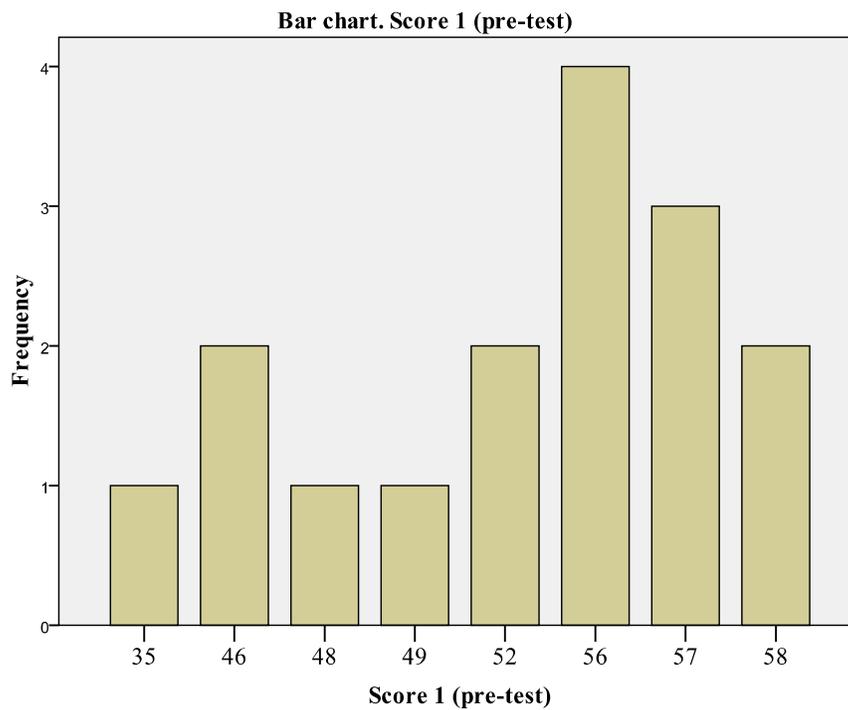
Median is the value above and below which half of the cases fall, the 50th percentile. The median is a measure of central tendency not sensitive to outlying values (unlike the mean, which can be affected by a few extremely high or low values).

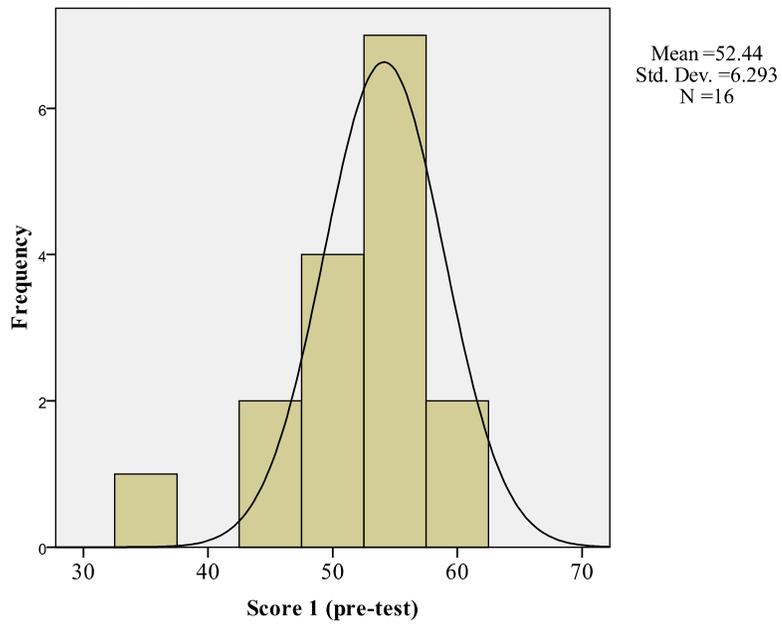
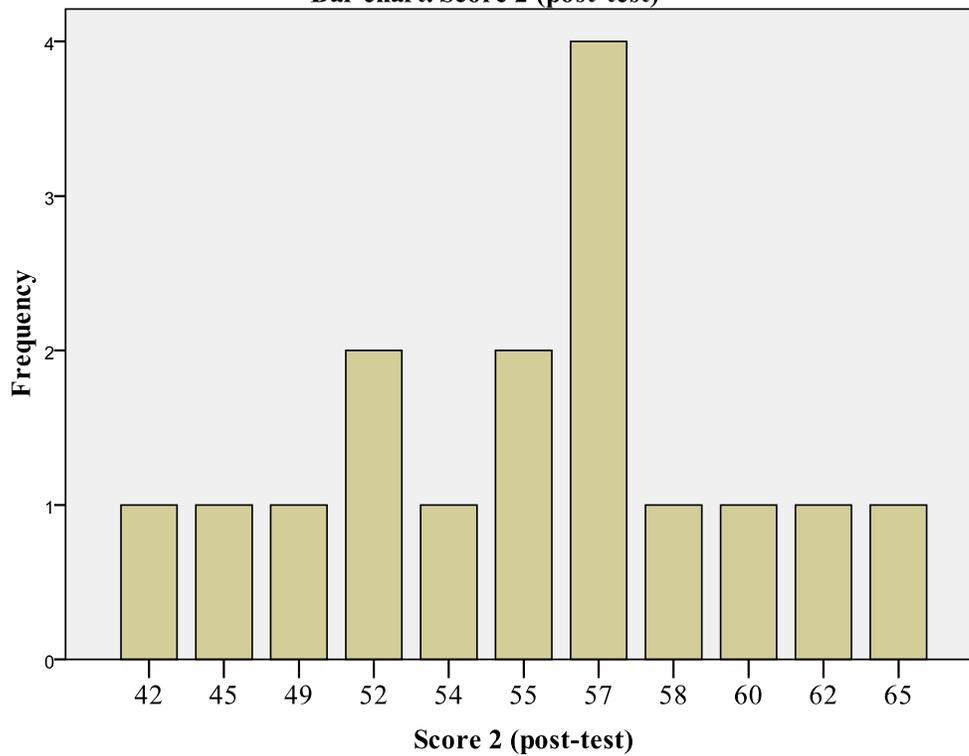
Mode is the most frequently occurring value.

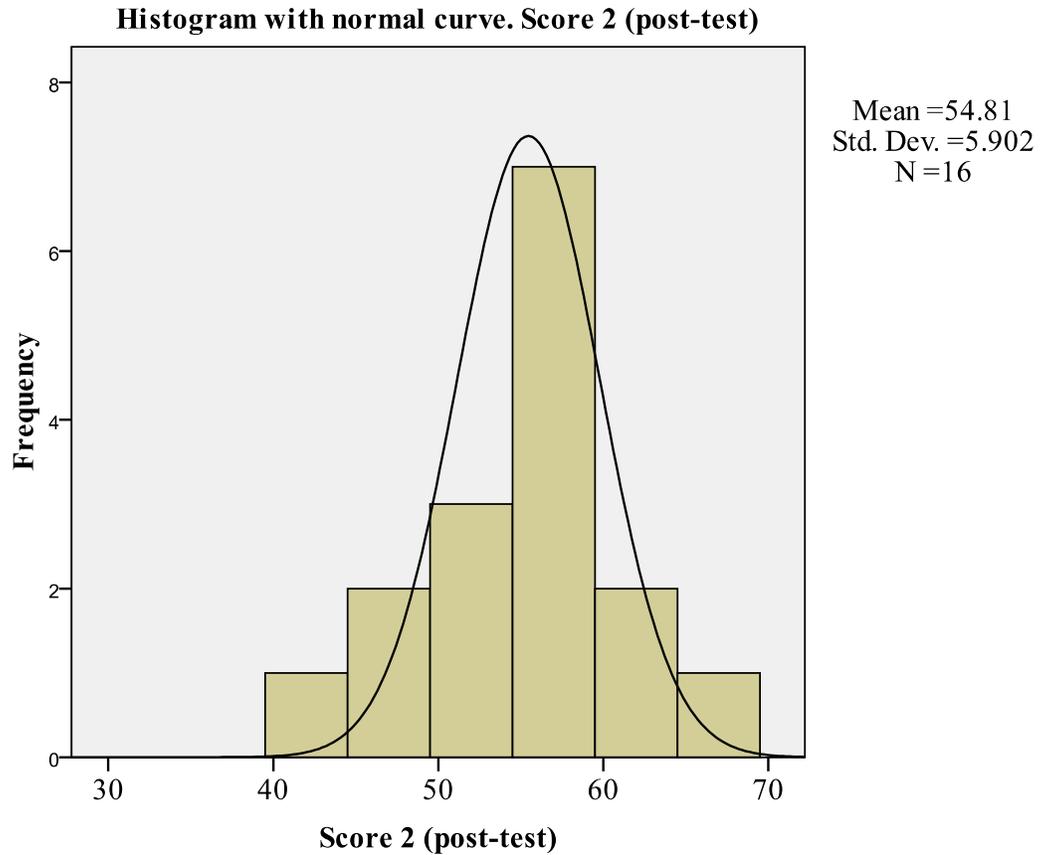
Standard deviation is a measure of dispersion around the mean and shows how much the values vary from one another. In a normal distribution, 68% of cases fall within one standard deviation of the mean and 95% of cases fall within two standard deviations.

## 4.2. Vocabulary test's result presentation

Here are test's results presentations in graphical forms.



**Histogram with normal curve. Score 1 (pre-test)****Bar chart. Score 2 (post-test)**



### Case Processing Summary

Russian speaking parents	Score 1 (pre-test)	Score 2 (post-test)
One N	10	10
Mean	54.80	55.90
Median	56.00	56.00
Std. Deviation	3.765	5.405

	Minimum	46	45
	Maximum	58	65
	Range	12	20
Both	N	6	6
	Mean	48.50	53.00
	Median	48.50	54.50
	Std. Deviation	7.969	6.753
	Minimum	35	42
	Maximum	57	60
	Range	22	18
Total	N	16	16
	Mean	52.44	54.81
	Median	56.00	56.00
	Std. Deviation	6.293	5.902
	Minimum	35	42
	Maximum	58	65
	Range	23	23

### 4.3. Data analysis.

As mentioned in Chapter 3 Methodology my experimental design is the "pre-test-post-test" design. A study of this type consists of two measurements (vocabulary scores in tests), taken on the same participant (bilingual child) one before and one

after the introduction of a stimulus (music lessons and activities). The basic idea is the following: If the music lessons had no effect on language development, the average difference between the scores is equal to 0 and the null hypothesis holds. On the other hand, if the lessons did have an effect (intended or unintended!), the average difference is not 0 and the null hypothesis is rejected. So null hypothesis is no effects on language development for specific period of lessons can be obtained. And alternative hypothesis is that they can influence on vocabulary.

As we can see from distribution charts distribution of testing scores can be considered as normal (Gaussian) and that allows using statistical methods like T tests that assume a normal distribution.

The Paired-Samples T Test procedure is used to test the hypothesis of no difference between two variables (vocabulary scores in pre-test and post-test). Paired-Samples T intended to determine whether there is a statistically significant difference between the pre- and post-test vocabulary scores. The data consist of two measurements taken on the same child.

The standard error of the mean (SEM) quantifies how accurately we know the true mean of the scores. It takes into account both the value of the standard deviation (SD) and the sample size (number of children, N) and calculated by dividing the SD by the square root of N. With large samples (say greater than ten), we can use these rules:

1. The 67% confidence interval extends approximately one SEM in each direction from the mean.
2. The 95% confidence interval extends approximately two SEMs from the mean in each direction

The Descriptive table displays the mean, sample size, standard deviation, and standard error for both tests.

**Paired Samples descriptive statistics.**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Score 2 (post-test)	54.81	16	5.902	1.475
Score 1 (pre-test)	52.44	16	6.293	1.573

Here we can see that average score of the second test is increased by 2.37 points.

The standard deviations for pre- and post- tests reveal that scores were more variable in the first measurement.

Next, we examine the correlation between the scores pair and its significance.

The correlation between two variables reflects the degree to which the variables are related. Pearson correlation ranges from +1 to -1. A correlation of +1 means that there is a perfect positive linear relationship between variables.

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 Score 2 (post-test) & Score 1 (pre-test)	16	0.580	0.018

From table we can see that there is a strong positive Pearson correlation (0.580). And the correlation is statistically significant. Children who did well on the pre-test also did well on the post-test.

Finally, we see the results of the Paired Samples T Test.

Under "Paired Differences" we see the descriptive statistics for the difference between the two variables.

### Paired Samples Test

		Paired Differences				
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference	
					Lower	Upper
Pair 1	Score 2 (post-test) - Score 1 (pre-test)	2.375	5.596	1.399	-0.607	5.357

The Mean column in the table displays the average difference between first and the second measurements.

The Std. Deviation column displays the standard deviation of the average difference score.

The Std. Error Mean column provides an index of the variability one can expect in repeated random samples of 16 children similar to the ones in this study.

The 95% Confidence Interval of the Difference provides an estimate of the boundaries between which the true mean difference lies in 95% of all possible random samples of 16 children similar to the ones participating in this study.

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Then to the right of the Paired Differences, we see the T statistic, degrees of freedom, and significance.

T	df	Sig. (2-tailed)
1.698	15	.110

The T statistic is obtained by dividing the mean difference by its standard error. It is a measure of how extreme a statistical estimate is. We have an indication that the hypothesized value is reasonable when the t-statistic is close to zero.

We have 15 degrees of freedom

Our significance is 0.110

If the significance value is less than .05, there is a significant difference.

If the significance value is greater than .05 then there is no significant difference.

Here, we see that there is no significant difference between the means of the two variables. So difference between pre- and post-test scores is not statistically significant.

## **Chapter 5. Discussion and suggestions.**

### **5.1. Overview.**

This chapter regards the analysis of data found in the study. But it will not limit to that. Here I also consider correlation between practice and theory and the last part of chapter moves toward the theoretical level. The chapter consists of 4 parts in addition to this overview part.

The second part regards the research question – “What is a Russian language development level of bilingual children attending the Russian Sunday pre-school in Oslo?”

The third part’s research questions – “What is change and variance (if any) between the first and the second language’s assessments? Is there music lessons influence on language level of children?”

The forth part “Conclusions and suggestion” intends to connect theory and practice. This chapter and the thesis will end with some conclusions about Russian language development in bilingual children of 4-5 years old.

### **5.2. Language level of Russian speaking children in vocabulary test.**

In the chapter 4 I presented scores obtained after assessments for language level. As I expected the estimation level was not high and in range [“average low” to “normal”]. The most part of children got scores lower than “normal” level which considered being range from 55 to 64. One of interesting things was the fact that children which

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have one Russian speaking parent got scores greater than children with both Russian speaking parents. In the first test median of scores (Md=56) was greater 15% and mean (Me=54.80) was greater 13% for children with one Russian speaking parent in comparison to children with both Russian speaking parents (Md=48.50, Me=48.50). However the second test shows less difference in scores values. Means and medians for children with one Russian speaking parent were Md=56.00 and Me =55.90. And for Md=54.50 and Me=53.00 for children having both Russian speaking parents. As we can see values are a little higher for the first group of children.

### **5.3. Variance between the first and the second language's assessments.**

It is worth to note that my study task can be characterized as qualitative research rather than quantitative. The main purpose was not to estimate “exactly” Russian language development level for children but find (if there are any) differences between first (pre-test) and the second (post-test) vocabulary estimations.

As we can see from tables we had stable increasing in scores and there is a strong positive Pearson correlation (0.580) between pre-test and post-test .

However when we are doing Paired Samples Test for comparing differences in scores we see that the difference of values is not statistically significant (0.110). That means my null hypothesis of music lessons had no effect on vocabulary was not rejected. And proposal of influence of music lessons on vocabulary was not approved. These data show that the music activities did not affect the vocabulary development of the children in our sample. That is not strange or unexpected result because of very limited interval of time (2 months) between tests. And due to lack of time it is very hard to expect a big change in vocabulary development in such period for children 4-5 years old.

## 5.4. Conclusions and suggestion

The present study must be viewed in light of its limitations and of the need for additional research.

Firstly, the findings result from a sample of small amount of 16 children attending Russian Sunday Pre-School once in week should not be generalized.

Secondly, one research limitation that is difficult to resolve is that the children who attend Russian Sunday Pre-School and get one of forms of bilingual education tend to be self-selecting or at least their parents are self selecting. That is, the children who attend bilingual education are not a random sample of the population, but rather a group that may be more enthusiastic about becoming bilingual, biliterate and multicultural. The random assignment of children to experimental groups that is required in a pure experiment is ethically suspected. Therefore, there is a chance of an immediate sampling bias towards finding success in bilingual education.

Thirdly, time interval between tests was just 2 months which is too small for expecting a noticeable change in vocabulary.

However despite of lack of time I can state the fact that music lessons did quite good for improving Russian language level for bilingual children. As I can suppose from obtained results where children with one Russian speaking parent (in all cases that parent was mother) showed better performance the bilingual model one parent - one language stimulates the parent speaks with child in Russian more intensively.

However the study in that area is out of scope of this research and for making conclusion commonly we need more detailed investigation with special questionnaire for parents.

The evidence shows that vocabulary can be acquired implicitly in contexts of daily conversation due to cognitive processes such as verbal memory. If those who received

musical instruction at an early age have greater verbal memory, it could be expected that they would also have a greater vocabulary.

Learning rhythms and songs makes learning language easy and fun. Rhythms and songs provide opportunities for hearing how words sound the same and different. Singing is often better than taped music because you can go at your child's pace, change the words, practice taking turns and filling in words. Music activities usually involve listening and talking about what is happening, an important activity for language development. They usually involve a lot of repetition, which helps a child to learn. Music is a great way to encourage language development. Singing songs with a child enables us to introduce new words, encourage turn taking, practice sounds, learn rhyming words, and model clear speech. Many children learn better when they get to "act out" the song or match actions to sounds and rhythm.

Besides sound sequences, the children also systematically discriminate rhythms and melodies. These activities may have strengthened the children's skills at identifying, recounting, omitting, and adding syllables and phonemes in oral language, skills that are considered part of phonological awareness. These skills are also known to be involved, not only in vocabulary acquisition processes, but also in early reading skills. Also, based on the evidence of the significant correlations of phonological awareness with melody and timbre discrimination and with receptive vocabulary, it can be inferred that melody and timbre discrimination activities help to stimulate receptive vocabulary development.

The results of this study point toward this conclusion.

It is also worth to note that some of the music activities associated auditory stimuli with visual stimuli and motor activities. This finding leads to the interpretation that the words to which the children were potentially exposed during songs, explanations of the songs, and other activities, were immersed in meaningful contexts and accompanied by contextual clues. The children are thus actively involved, which allows the words to be introduced in a meaningful context. An exposition to these

associations and context clues may explain the increase in the vocabulary scores for the children. Consistent with this inference is the suggestion that the variables that influence children's vocabulary development and learning of new words are age, connections between unfamiliar words and their context, use of contextual clues, and type of words involved. They point out that when children learn to use contextual clues, they have a greater comprehension of language and are thus able to infer the meanings of new words. Based on this finding, it could be speculated that the children involved in music activities in some way had more experiences of using contextual clues and thus learned more words than the children who did not have any music activities.

Finally, future research of a basic and applied nature is also suggested. Basic research could analyze how the inclusion of music activities in classroom curricula affects children's verbal memory and phonological awareness. In applied research, it would be interesting to replicate the study and analyze whether productive vocabulary was increased, since this study only examined receptive vocabulary.

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# Appendices

## Appendix 1. Letter of Introduction from the University of Oslo



UNIVERSITY  
OF OSLO

**Department of Special Needs Education**

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Your ref:  
Our ref: 15/08 ST/db  
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Date: June 4, 2008

Telephone: + 47 22 85 80 59  
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**FACULTY OF EDUCATION**

**TO WHOM IT MAY CONCERN:**

This is to certify that **YARIKOVA, Oxana Alexandrova**, date of birth 27.05.1979, is a full-time student pursuing a course of study at the Department of Special Needs Education at the University of Oslo, Norway, leading to the degree of Master of Philosophy in Special Needs Education (M. Phil. SNE).

This is a continuous two-year programme run on the "sandwich" principle, which involves periods of study and field work/research. The student has concluded the initial study period and will be working on the collection of data and the writing of a thesis during the autumn semester 2008. The period of study will be completed at the end of May 2009.

The main responsibility for supervising the research, developmental work and thesis remains with the Department of Special Needs Education, University of Oslo, Norway. However, we would kindly request that the relevant authorities give the student the access required to the schools and educational establishments necessary in order to undertake field work and research. We would also be most grateful for any assistance that is afforded to the student which enables her to carry out this work, particularly the use of facilities such as access to telephone, fax, e-mail, computer services and libraries at the various educational establishments.

Yours sincerely

Ass. Professor Steinar Theie  
Academic Head of International Master's Programme  
Department of Special Needs Education

## Appendix 2. Letter from Norwegian Social Science Data Services

Norsk samfunnsvitenskapelig datatjeneste AS  
NORWEGIAN SOCIAL SCIENCE DATA SERVICES



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Vår dato: 22.08.2008

Vår ref: 19550 / 2 / KH

Deres dato:

Deres ref:

### TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 01.07.2008. All nødvendig informasjon om prosjektet forelå i sin helhet 20.08.2008. Meldingen gjelder prosjektet:

19550

*Influence of Music Lessons to the Vocabulary of Bilingual Children Living In Mixed Communicative Environment In Oslo, Norway.*

Behandlingsansvarlig

Universitetet i Oslo, ved institusjonens øverste leder

Daglig ansvarlig

Ivar Morken

Student

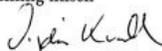
Oxana Yarikova

Etter gjennomgang av opplysninger gitt i meldeskjemaet og øvrig dokumentasjon, finner vi at prosjektet ikke medfører meldeplikt eller konsesjonsplikt etter personopplysningslovens §§ 31 og 33.

Dersom prosjektopplegget endres i forhold til de opplysninger som ligger til grunn for vår vurdering, skal prosjektet meldes på nytt. Endringsmeldinger gis via et eget skjema, [http://www.nsd.uib.no/personvern/forsk\\_stud/skjema.html](http://www.nsd.uib.no/personvern/forsk_stud/skjema.html).

Vedlagt følger vår begrunnelse for hvorfor prosjektet ikke er meldepliktig. Prosjektet kan settes i gang.

Vennlig hilsen

  
Vigdis Namtvedt Kvalheim

  
Kjersti Håvardstun

Kontaktperson: Kjersti Håvardstun tlf: 55 58 29 53

Vedlegg: Prosjektvurdering

Kopi: Oxana Yarikova, Fauchalds gate 2/202, 0365 OSLO

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## Personvernombudet for forskning



### Prosjektvurdering - Kommentar

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19550

Ombudet kan ikke se at den behandling som foretas omfattes av meldeplikten da det verken registreres direkte eller indirekte personidentifiserbare opplysninger. Ombudet forstår det slik at verken navn på personer eller skoler/klasser vil kunne kobles til testene, jf. opplysninger gitt i meldeskjema. All den tid datamaterialet foreligger i anonym form vil behandlingen ikke være omfattet av meldeplikten.

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