Journal of Early Childhood Care and Education
Vol. 6, Issue 2, 2022, 1–26
ISSN: 2616-7557 Print/2616-7567 online

Autism and Scaffolding Language Learning: A Case Study of Two Children with Autism

Huma Batool[*]
Aimun Noor[**]
Rabbia Noreen[***]

Abstract

Autism is a neuro developmental disorder, that is associated with social and interactive abnormalities and with other language impairments. Language learning is related to the embodiment and acquisition of the linguistic concepts depends on the socio-physical experiences. Studies have also approved that assisted or scaffolding learning can also help in language learning and acquisition. The present research studied the role of scaffolding learning in autistic children. The level of the lexical concepts of autistic children was observed in pre and post experiment. Children were taught the concept of birthday party event with the help of video and pictures. The results showed significant improvement in the acquisition of the concept of nouns; however, they were lagging in acquiring the concept of verbs related to the event of birthday party. It is assumed that visual experience helped the children in acquiring the nouns but no experience of performing the action can be the reason for the poor acquisition of verbs. It is also deduced that scaffolding learning and embodiment can be helpful for autistic children in language learning.

Keywords: *autism, language learning, lexical concepts, scaffolding learning, embodiment*

[*] Assistant Professor Department of English, Air University Islamabad.
Email: hbcognistics@gmail.com
[**] Lecturer English, F.G College of Home Economics and Management Sciences, F-11/1, Islamabad
Email: aimunkhan@gamil.com
[***] Lecturer English, F.G College of Home Economics and Management Sciences, F-11/1, Islamabad
Email: rabbianoor27@gamil.com

Introduction

Autism Spectrum Disorder, a neurodevelopmental disorder, is characterized by abnormalities in communication, language and social interactions. It also involves abnormalities in stereotypical patterns of interests, behaviors and activities, with an onset usually before the child reaches his/her third year (American Psychiatric Association, 2013; American Psychiatric Association, 2022; World Health Organization, 1992). Although the abnormalities in interests and the stereotypical behaviors can emerge somewhat later, these symptoms continue throughout their lives. In terms of behavior, they are unable to maintain an eye contact and often neglect the eyes of their conversational partner; as a result, they lose important cues for interpreting social interaction. Whereas in case of communication, autistic children display disorders in both verbal and non-verbal communication along with a deficit in understanding and producing non-requestive pointing (Klin et al., 2002). It is difficult for them to focus and pay attention therefore they have difficulty in interacting and understanding others. This attention deficit can be one of the reasons for their troubled communication and interaction with people.

The deficit in the communication skills result in impaired social and linguistic functioning of individuals with disorders such as autism; this group of deficits affect their academic accomplishment and the overall quality of their lives (Garfin & Lord, 1986; Prizant et al., 2003; Anderson et al., 2007; NRC, 2001). Language learning in autistic children can be improved by providing specialized remedial experiences and systematic interventional programs (Sigman & McGovern, 2005). It can be done by providing them with a suitable learning environment, efficient learning strategies and effective methods of teaching. Scaffolding learning is a helpful method to enhance the abilities of such children. In past few years different studies were conducted to help autistic children in language learning.

Literature Review

The individuals with language challenges require help in order to develop their communication skills and move ahead in the society. One of the studies by Simões et al. (2018) also took the initiative for autistic children to become a respectable and active member of the society. For this purpose, they trained ASD children to participate in outdoor activities such as taking public transport using gaming and conceptual learning. After 1 to 3 training sessions their performance was compared and assessed in 1 control session. The findings showed an incredible performance with significant increase in knowledge and learning. It showed highest success rates in gaming application and learning. It has significantly reduced anxiety for social setting, developed potential for technology and provided

them sense of independence. Therefore, it is important to help children with communicative disorders, from an early age, to develop different social, academic and cognitive skills (National Research Council, 2001).

Zajic et al. (2019) examined the literacy learning in children with language challenges. Literacy learning is a learning of language using human senses e.g. aural language through ear, reading using eyes, oral language by mouth and written language through tools. For this purpose, they compared the performance of two children with different disabilities – ASD (autism spectrum disorder) & OWL LD (oral and written language learning disability) – for computerized instruction before their entry into a high school. They devised an assessment battery where pretests and posttests were conducted to compare the performance results. Initially, both children demonstrated different social behaviors and impaired social cognition. They also showed similar responses for some computerized instructions but different responses for others. In narrative writing, Child with OWL LD produced more words while keyboarding but showed poor response in personal narrative in computerized instructions. Child with ASD produced more text while writing personal narrative on the demand, with the help of prompts. He also applied some of the already-learned strategies for composing, but the former did not. One of the limitations posed by the study is that it offered limited sample and findings cannot be generalized. Although findings support varied differences in both children but thorough assessment of relevant skills can help academicians and educationists for designing interventions to tailor individuals' learning needs and requirements.

Delay in language development and impaired speech are one of the major symptoms of autism. A lot of research has been conducted related to language development and learning in autistic children. Most of the studies reveal that language development follows the same order in autistic children as followed in normal children with same developmental stages but with a delay (Hickok et al., 2015, pp. 884). The toddlers and preschoolers with autism understood fewer words than typically developing children of the same age range. When matched with typically developing children, "autistic children's receptive vocabularies contain the same relative proportion of words from different grammatical categories (e.g., nouns, verbs etc.) and the same relative proportion of words from various semantic categories" (Charman et al., 2003). These studies highlight that delay in language learning of autistic children is more related to language development rather than their chronological age (Tager & Flusberg, 1994).

Shulman and Guberman (2007) studied the acquisition of verb meanings by using syntactic cues in children with autism, special language impairment (SLI) and typical language development (TLD). It was comparative study of its kind where comparison in performance was observed to draw suitable inferences. The findings suggested that children

with autism and TLD were able to learn novel word meanings when provided linguistic cues, however, children with SLI faced difficulties in doing so. Classroom environment seems to provide a conducive environment for the remedial programs, since children spend more time in their schools (Wilson, 2013). Horvath et al. (2018) conducted a study with preschoolers with autism to see if they can learn meanings of new words by looking at the linguistic context without being provided a visual aid particularly the meanings of verbs. They found that these students can attend to novel verbs without visual or social contextual aid and can subsequently assign meanings to them as well. Very recently Hernandez (2021) examined the use of prompt and assisted learning in autistic children during the time period of COVID-19. She observed that during pandemic parents have helped in the language learning of their autistic children by providing variety of prompts. These prompts vary from verbal and physical to conceptual cues while considering their needs and requirements. It has eventually resulted in positive learning outcomes. She noticed that these learning sessions have also displayed a strong sense of communication, motivation, support and awareness between parents and child. Her study findings highlight that assisted language learning along with guidance and resources at home is suitable for autistic children.

Language use and learning is also associated with embodiment. Embodiment is the socio-physical experience of the individual. The seven senses (sight, auditory, gustatory, haptic, smell, proprioception and vestibular) combine to form the physical experience and the nature of that physical experience eventually determines how the world is construed or determined by an individual. Earlier the meaning of language was based on disembodied view; however, research in cognitive linguistics bring forth the 'learning though experience' view for language. Research in cognitive linguistics and neuroscience emphasizes on the role of brain and body in constructing meanings, concepts and thoughts as meaning depends on the sensory, motor and effective processes (Johnson, 2018). Embodied standpoints on concepts stress that cognition is grounded and is shaped by the physical world which means that our concepts are built by the physical constraints of our bodies (Scorolli, 2014). Thus, our language, thoughts and concepts are constructed by our physical experience of the environment and these experiences are subjective and unique for individuals. For instance, the concept of noun is related to the sense of sight as it involves a physical object that can be seen and thus can be understood with the experience of seeing it. Thus, visual experience helps in acquiring the concepts of nouns. The concept of verb is related with the proprioceptive sense as it is associated with action and can be understood better by performing the action to have its firsthand experience. A study by Hartley et al. (2019) on use of visual aids, investigated the relationship

between picture comprehension and language development. For this purpose, they examined performance on language development and picture comprehension tasks of ASD children of preschool age. In comprehension task, children were shown 8 common and familiar 3-D objects and their line drawings to identify. For development task, they were asked to create a representative drawing of unfamiliar objects. The results suggested statistically equivalent performance for both language and picture comprehension and development. These findings emphasize on the point that visual aids can help in diminishing language deficits by improving their expressive and comprehension skills

Another study conducted by Sidhu et al. (2014) explored the effect of embodiment on lexical and semantic processing of verbs. Three different experiments were conducted using relative embodiment and imageability, action picture naming and syntactic classification. The results of that study suggested that relative embodiment was a very important characteristic of verb meanings and gave better results as compared to the others. Now researchers have also specifically investigated the role of sensory-perceptual and socio-physical experiences in language learning. Vigliocco et al. (2018) reviewed on abstract vocabulary learning for autistic children between 5 to 12 years. The ASD children did not show abnormal performance for abstract learning through emotional boosting. The research study provided strong support for the notion that abstract vocabulary words can be learned by emotionally boosting technique. The emotional associations with abstract words can easily be experienced and learned by such children. Their study in this regard also showed positive role of emotional experiences in vocabulary learning. However, they argued that it cannot be treated as only and primary means of acquiring abstract vocabulary.

A lot of work has been conducted on language learning and acquisition in autistic children. Studies are conducted related to acquisition of vocabulary or lexical concepts using different methods and techniques but there is still lack of a study that focuses on learning of both nouns and verbs together. Also no considerable research has been found to see the acquisition of lexical concepts in autistic children using scaffolds. Therefore, a comprehensive study is needed to examine the effects of scaffolding learning on the autistic children for their conceptual learning and understanding of lexical concepts.

The focus of the present study was the acquisition of concepts and learning of lexical items particularly verbs and nouns in autistic children. It examines the level and improvement in acquisition of concepts related to a birthday party event after being taught by visual scaffolds as learning aids. It has also examined the improvements on levels such as the sequence of events and behavior (body language and cooperation) of the children.

Through this, it tries to study how autistic children can be helped in language learning through the technique of scaffolding. Another objective of this study was also to investigate the relationship of embodiment with acquisition of concepts. Through this, it inspected the importance of sensory-perceptual and socio-physical experiences for the development of concepts related to objects and actions in which they participate. It was to answer how the acquisition of different lexical concepts is affected by the embodied experience of an individual. Moreover, most of the research is conducted from the perspective of psycho and neurolinguistics and no considerable work has been done from the perspective of cognitive linguistics. The present study also tries to cover these areas.

To meet the objectives, the study conducted a learning experiment on two autistic children related to event of birthday party. The children were provided with visual aids in the form of pictures and video along with the explanation from the teacher to have their constant attention. The experiment is repeated for two weeks and their progress was recorded throughout the sessions. The level and improvement in acquisition of their lexical concepts was then observed in pre and post experiment. The experimental procedure adopted for the study is stated in the methodology section as under

Research Methodology

Research design

The present study utilized case study approach and conducted experiment on autistic participants to examine their acquisition of lexical concepts and language learning using the technique of scaffolding.

Participants

In this study, two children with minor and severe autism were taken as research participants. Their ages range from 9 to 13 years approximately. Each of them met the autism diagnostic criteria according to the autistic diagnostic research center in Pakistan. The severity level of the children was also matched prior to experimentation. The participants were school going children who were receiving bilingual instructions in one of autism institute to enhance and develop their linguistic skills They were given structured instructions in two languages i.e. English and Urdu. The linguistic profile of girl and boy was matched according to their conceptual, functional and linguistic level.

Experimental measures

This research has utilized qualitative paradigm where learning experimentation was done through checklist observation, videography and unstructured individual elicitation. The experiment employed the use of videotapes for the birthday event as visual teaching input. The research study followed pre and post observation and elicitations for qualitative analysis.

Segmentation of birthday party event

The segmentation of the event was done in a sequential manner (Naqvi, 2017). It was done in such a way that every segment consisted of an action in a sequence such as first action was bringing the cake from the market followed by second action of decoration and so on. In every segment the related lexical concepts (nouns and verbs) were taught. For example, in first action of bringing the cake, the related object (nouns) is cake, related place (noun) is market and related action (verb) is bringing the cake.

Table 1
Segmentation of birthday party event adapted from Naqvi (2017)

Event Schema: ***Sequence***	***Event Schema:*** ***Action / Object / Place*** ***Core slotfillers***	***Event Schema:*** ***Action / Object / Place*** ***Optional slotfillers***
Schema of sequence: 1st action	Action – bringing the cake Object – cake	Cream cake / chocolate cake
Schema of sequence: 2nd action	Action – decorating place with balloons Object – balloons	-------
Schema of sequence: 3rd action	Action – putting candles on the cake Object – candles	-------
Schema of sequence: 4th action	Action – blowing the candles Object – candles	-------
Schema of sequence: 5th action	Action – cutting the cake Object – cake; knife	-------
Schema of sequence: 6th action	Action – eating the cake	Action – eating samosas, etc.
Schema of sequence: 7th action	Action – receiving gifts Object – gift	-------

Experiment procedure

The experimental task for the research study is divided into a three weeks session. Whereupon,

1. In the first session, the researchers made pre-experiment observation to examine the conceptual state of the participants. The elicitation meetings were conducted with the help of autistic assistant in their one to one conversation with participants about birthday event. In their meeting they were asked about whether they have experienced any birthday event. Their discourses were then recorded and transcribed for analytical purposes. At this stage, their discourse highlight that the concept of birthday was rarely found in autistic children as their embodied experiences with such events was rarely reported. Hence, it was concluded that participants carry least potential event information about birthday event. In order to teach this concept, animated video related to birthday event was selected where lexical concepts were sequentially presented in videography.
2. In the second session, an actual experiment was conducted with participants. They were shown birthday videotapes for approximately 3 minutes each day. Before starting the video, each participant was warmed up by the examiners to boost their interest using certain teaching techniques such as boosters and hedges.
3. After that, an animated video was then shown to each participant individually. It included lexical auditory and visual cues presented on large screen. Afterwards, visuals taken as prompt from the same video were taught in their one to one meeting with the researchers. In this regard, appropriate directions were given to the participants with the help of assistant. These meeting were then recorded as their behavioral responses for further analysis.
4. In the last week session, post experiment observations about the participants were made to check their lexical acquisition. In this session, participant's conceptual comprehension was examined individually through elicitation. The participants were posed with different questions while providing few linguistic cues this time. Again, their discourses were recorded for analytical purposes.

Theoretical Framework

Vygotsky's *Zone of Proximal Development (ZPD)* refers to the gap between actual and the potential development (Vygotsky, 1962). Actual development is the individual's development without the assistance of others, whereas, potential development is the individual's development with the assistance of another individual. Thus, when an individual's actual development is guided

by more competent partner, he or she is more likely to reach their potential development (Silalahi, 2019). Vygotsky also gave the phrase 'scaffolding'. Scaffolding refers to a variety of instructional techniques that are used to help and move students progressively towards better understanding and, eventually, a greater independence in the learning process. Teachers provide the student's temporary support and aid that help them reach higher levels of comprehension and skill acquisition that they would not be able to achieve without assistance. Scaffolding is considered to be an essential element of effective teaching (Irshad et al., 2021).

Scaffolding can be a very effective technique in language learning. Scaffolding has been applied in second language learning and is quite effective as it provides the learners more exposure to the language. Rivera (2010) suggests that teachers who provide high quality instruction in the form of scaffolding enhance a second language learner's ability to learn the language. Her findings show that adding culturally relevant materials, background knowledge and relatable content are essential in the process of literacy acquisition. Scaffolding learning can be helpful in teaching the children with autism. The researchers assume that if autistic children are provided a suitable friendly environment, relevant material and relevant interesting activities, their language learning abilities can be enhanced. Thus, language learning process can be improved and increased by implementing the techniques of scaffolding learning for autistic children. Bean (2010) observed that attention is one of the reasons for ineffective language learning in autistic children and this can be helped with scaffolding by devising different strategies. Wilcock (2014) observed that scaffold learning in the classroom increased the role of student as an active participant in the learning process. Her results established that the improvement in vocabulary knowledge of student was directly related to use of the visual scaffold as intervention. Thus, if autistic children are provided with relevant material and interesting activities, teachers can be able to grab their attention and hence increase their active participation in the process of language learning which would eventually be beneficial for the children. The present study also focuses on the use of visual scaffold for the language learning in autistic children.

Results

Descriptive analyses

Conversations of the two kids with autism were analyzed to see their level of acquisition of lexical concepts. Their level of lexical concept before the elicitation and after the elicitation regarding the concept of event of birthday was analyzed.

Table 2

Pre and Post-experiment discourse analysis of Wn's discourse (adapted from Naqvi, 2017)

Participant: Wn	**Pre-experiment observations**			**Post-experiment observations**	
Birthday Event sequence schema	**Action/ place /objects Core fillers**	**Pre-elicited Concept of objects/nouns**	**Pre-elicited Concept of verbs/nouns**	**Noun acquisition**	**Verb acquisition**
1st action	**Action**: bringing the cake **Object**: Cake	Cake = used as prompt Participant talked about optional fillers such as biscuits pizza.	Missing	Object: cake	Action: bringing the cake *Urdu: ly kr ana (to bring)*
2nd action	**Action**: decorating the place with balloons **Objects**: balloons	Balloons= prompt no clear understanding	Missing	Object: missing	Missing
3rd action	**Action**: putting candles on the cake **Objects**: candles	Candles= prompt Participant picked the clue but no comprehensive concept	Missing	Object: candles	Action: putting on candles *Urdu: oper lgana (to put on)*
4th action	**Action**: Blowing the candles **Objects**: candles	Missing	Missing	Object: candles	Action: blowing of the candles Missing
5th action	**Action**: cutting the cake **Objects**: cake, knife	Missing	Missing	Object: cake only	Action: cutting of the cake *Urdu: cut krty han (to cut)*
6th action	**Action**: eating the cake / making others to eat the cake **Objects**: parents, friends	Missing	Missing	Object: parents	Action: making others to eat cake *Urdu: khilaty han* (to make others eat)
7th action	**Action**: receiving gifts **Objects**: gifts	Missing	Missing	Objects: Gifts	Action: receiving *Urdu: milty hain* (to receive)

Table 3
Pre and post-experiment discourse analysis of Ah's discourse (adapted from Naqvi, 2017)

Participant: Ah	**Pre-experiment observations**			**Post-experiment observations**	
Birthday Event sequence schema	**Action/ place /objects Core fillers**	**Pre-elicited Concept of objects/nouns**	**Pre-elicited Concept of verbs/nouns**	**Noun acquisition**	**Verb acquisition**
1st action	**Action**: bringing the cake **Object**: Cake	Missing	Missing	Objects: Cake	Action: bringing the cake *Urdu: baba ly kr aty han*
2nd action	**Action**: decorating the place with balloons **Objects**: balloons	Missing	Missing	Missing	Missing
3rd action	**Action**: putting candles on the cake **Object**: candles	Missing	Missing	Objects: Candles	Action: putting on the candles *Urdu: candles lgana*
4rth action	**Action**: Blowing the candles **Object**: candles	Missing	Missing	Object: candles	Action: blowing on the candles *Urdu: phoonk marna*
5th action	**Action**: cutting the cake **Objects**: cake, knife	Missing	Missing	Object: cake only	Action: cutting the cake *Urdu: cake katna*
6th action	**Action**: eating the cake / making others to eat the cake **Objects**: parents, friends	Missing	Missing	Objects: parents Friends	Action: eating and making others to eat *Khaty han/ khilaty han*
7th action	**Action**: receiving gifts **Objects**: gifts	Missing	Missing	Object: gifts	Action: receiving of gifts *Urdu: milty han*

The results of both children before and after the experiment (Table 2 and Table 3) showed that there was considerable improvement in their lexical concepts using the technique of scaffolding learning. It was applied to teach them the concept of the event of birthday. As the major focus of the study was the acquisition of the concept of nouns and verbs, the data was analyzed accordingly.

In Table 2 above, the pre-experiment observations showcase that child 1 (Wn) has no clear understanding about the objects or actions related to birthday event. The nouns and verbs required to conceptualize birthday event were seen missing in elicitations before experiment. It is comprehended that it might because of her least experiences with the birthday event. The post-experiment discourse analysis shows that the child has acquired approximately all the required lexical concepts related to birthday with the help of prompts.

The Table 3 above shows that child 2 (Ah) has no pre-learned concept of birthday event therefore lexical concepts of noun and verbs related to the event are seen mostly missing. On the other hand, the post-experiment elicitation reveals that he has learned the related lexical concepts related to birthday event with slight use of prompts.

The first question investigated was to see the level of lexical concepts in autistic children before and after the technique of scaffolding learning is used. The level of noun and verb acquisition pre and post elicitation was checked, and similar kind of results were obtained for both the children with slight variations. The pre-elicitation observations showed that both the children did not have any concepts of verbs and nouns regarding the event of birthday party. After the elicitation for two weeks, the results showed considerable improvement in learning of lexical concepts. They clearly displayed development in concepts of objects and actions related to birthday event. Both the children learned the related nouns except that second child showed a little hesitation at one place and needed prompt repeatedly. The post-elicitation results also showed improvement in concepts of verbs however their learning was seen less than nouns in children discourses. Thus, they showed more improvement in acquiring nouns as compared to the verbs.

Next question considered was that if scaffolding learning could help autistic children in developing their lexical concepts for language learning and acquisition. The results of the experiment revealed that scaffolding learning can be helpful for autistic children in developing concepts related to language. The results demonstrated that both the children showed noticeable improvement and development in their lexical concepts related to the event. Their concepts related to the event were largely developed after the experiment which were completely missing prior to it.

Another question asked was to see the improvements on other levels as well such as sequence of the events and their general behavior. The results showed that although they have shown improvement in lexical items, they still do not have acquired the sequence of events as can be seen in table 3 and 4 respectively. They were not able to list the events in the sequence and could only answer when asked about it. Other than that, they still needed prompts from the teacher at few places especially when talking about the actions (verbs). Teacher has to hold their hands in order to grab their attention pre and post experiment. However, it was easier to do after the experiment and children were comfortable and more cooperating than the first time when they were asked about the event of birthday especially child 1. Child 2 was a little hesitant and needed more effort on part of the elder to talk to and get the desirable response, however, it was much improved than the first time.

Table 3

Comparative analysis of child 1 discourse

Experiment (event of birthday)	Concept of objects(nouns)	Concept of actions (verbs)	Sequence of events
Pre-elicitation	Missing	Missing	Missing
Post-elicitation	Present	Present (mostly)	Missing

These results show that child 1 has shown considerable development in acquisition of lexical concepts, however, the sequence of events is still missing.

Table 4

Comparative analysis of child 2 discourse

Experiment(event of birthday)	Concept of objects (nouns)	Concept of actions (verbs)	Sequence of events
Pre-elicitation	Missing	Missing	Missing
Post-elicitation	Present (mostly)	Present (mostly)	Missing

The given results have also showed similar observations as child, the child 2 has shown development in lexical acquisition, however, is still lacking on sequence of events.

Another question was related to the relation of embodiment with the acquisition of different lexical concepts. Results show that embodiment is important for acquiring linguistic concepts as both children were able to acquire the nouns (objects) as they had a visual experience. As they do not have any embodied experience of performing the action, they were not able to grasp the concept of verbs (actions). Overall, clear improvement is seen in both the children in acquisition of their lexical concepts (nouns and verbs) regarding the event of birthday party, after the application of scaffolding learning with help of audio-visual aid (video and pictures).

Discussion

The present study investigated the acquisition of lexical concepts (nouns and verbs) in autistic children. The major aim of the research was to compare the concepts of nouns and verbs in autistic children after introducing scaffolding learning (Vygotsky, 1962) and to see the improvement in these concepts after scaffold. Children were taught lexical concepts related to the event of birthday party. The pre-experiment knowledge of the children showed that both the kids have no concept of different lexical concepts related to birthday event. They had no concepts of nouns and verbs related to the particular event. It was assumed by the researchers that scaffolding learning can be helpful for autistic children to acquire different lexical concepts and therefore it was applied to the two children. The results of pre and post-elicitation data showed that there was a considerable improvement in the lexical concepts of both the children related to the birthday event, since scaffolding is s strategy that stimulates better learning among children (Irshad et el., 2021).

Pre-elicitation data suggested that both the children had no prior concept of the birthday event as they were not able to talk about the event and could not answer any question related to the event. They showed no response and remained silent. However, after the elicitation of the event through video and picture, they were able to talk about it with some prompts provided. Both the cases showed immense improvement related to the concepts of noun (objects) as they were able to name different objects such as cake, candles, balloons and gifts. However, they faced difficulty in talking about the concepts related to verbs (actions) and could not talk about the actions in the same way they talked about nouns. They needed constant prompts to utter the verbs and could only talk about them when asked a specific question. Child 1 performed better than child 2 given that her performance was better in the pre-elicitation stage as well. Thus, it is safe to say that both the children showed similar kind of development in the given time period. The concepts of verbs were not completely missing and this indicated that with further elicitations, the

children would be able to grasp these concepts completely as well. The findings are in line with Batool et al. (2021b), who highlighted the importance of teacher strategies to assist elicitations in children with autism.

Apart from studying the acquisition and development of lexical concepts, the study also looked into other factors such as the sequence of events and the body language and behavior of the children before and after the experiment. Pre-experimental data showed that the children had no idea of the sequence of the events as they had no knowledge of the birthday event. However, during the period of elicitation different objects and actions related to the birthday event were introduced to these autistic children in a sequential order through video and pictures. They were taught each concept in a specific order. However, they were not able to grasp the sequence of the events as suggested by the data. While talking about the event they did not follow any order but were randomly talking about different concepts both nouns and verbs. Therefore, even they were able to acquire the lexical concepts, they could not keep up with the sequence of events. Another important observation made during the study is related to their body language and cooperation. Difference was observed in the body language and cooperation level of the children before and after the experiment. Before the experiment, it was observed that the children were constantly looking down or outside and were making no eye contact with the elder. It was needed to constantly grab their attention by holding their hands and asking them to pay attention and look at the speaker. Previous research shows that attention is one of the reasons for autistic children to learn language as they cannot focus on one thing (Bean, 2010). The post experiment observation showed that even though it was important to constantly grab their attention by holding their hands and asking them for paying attention, it was comparatively less and easy to do. It shows that it is easy for autistic children to focus and show interest in the concepts they already know as compared to the novel concepts. Paying attention and developing interest in novel concepts is relatively difficult for autistic children. Apart from that, these children cooperated more post experiment talking about the birthday event and it can be attributed to the relationship and acquaintance developed between the child and the instructor. It can be suggested that with the people of acquaintance, the children are more confident and cooperative as compared to the strangers and therefore, a good relationship between the child and instructor can play an important role in language acquisition in autistic children.

This shows that scaffolding learning can be very beneficial for autistic children in acquiring and learning different concepts related to language. This is in accordance with the previous results which suggest that

instructions given in the form of scaffolding improves the ability of a learner to learn a second language (Rivera, 2010) and it also increases the active participation of the student (Wilcock, 2014).

Another important aspect observed in the study was the relationship of different lexical concepts with embodiment. The concept of nouns is related to objects and as they have a physical existence and can be seen with the eye, they are attributed with the sense of sight. The concept of verbs is related to actions and they cannot be seen but rather performed and therefore are attributed with the sense of proprioception. The results of the present study show that the children showed greater improvement in the development of concepts of nouns as compared to the verbs and these can be related to the embodiment. These results were in line with the findings of Batool et al. (2021a). While watching the videos and looking at the pictures vision was involved as children were looking at the objects such as cake, candles, balloons and gifts. Since nouns are related with the sense of sight, children were able to remember those objects as they had the experience of seeing them. Thus, they were able to acquire the concepts of noun through their embodied visual experience. Visual cueing can exert powerful impact on child's comprehension and expressive abilities as shown by the study of (Hartley et al., 2019). On the other hand, they were told about the actions such as cutting the cake or blowing the candles with the help of pictures and they had no personal experience of performing these actions. Since concept of verbs is related with proprioception and children did not have the embodied experience, they had difficulty in acquiring these concepts. It is suggested that after getting the embodied experience of these actions, the children probably be able to acquire the concepts of verbs as well just like the nouns. The embodied experience can also be helpful in remembering the sequence of events by the autistic children. Thus, embodiment plays an important role for autistic children in acquiring different linguistic concepts. This is in line with the findings of study of Vigliocco et al. (2018) where boosting of emotional experiences and socio-physical experiences with words or concepts can help in abstract vocabulary learning.

Therefore, it is observed that by applying the concept of scaffolding learning and keeping in mind the concept of embodiment, the lexical concepts of the autistic children can be developed. This study is also supporting the findings of Hernandez (2021) who strongly believes on assisted language learning for ASD children. Learning cues, prompts and guided sources can help in linguistic development even at home. Thus, scaffolding learning along with embodied experience can be really helpful for autistic children in language acquisition and learning (Bariant et al., 2022). Teachers, instructors, caretakers and families of autistic children

should apply these techniques to help these children in their language development and better communication and interaction.

Conclusion

Autism is a neurodevelopmental disorder characterized by abnormal social and interactive behavior accompanied by language impairment. It is also referred to as Autism spectrum disorder or ASD. Autistic children have difficulties in speech and language production and acquisition. Researches have suggested that scaffolding learning can be helpful in language learning and acquisition.

The present study has taken the same into account for autistic children to improve their concept of lexical items. Language learning and acquisition is also related to embodiment. Research in cognitive and neurolinguistics implies the role of brain and body in language acquisition and suggests that embodied experience is necessary for the acquisition and understanding of different concepts. The present study aimed to study the level of lexical concepts (nouns and verbs) related to the event of birthday party in autistic children pre and post the application of scaffolding learning. It also aimed to see other factors such as sequence of events and body language of those children. It also studied the relation of acquisition of these concepts with embodiment. The study is limited to two children due to time constraints.

Experiment was conducted where two autistic children were taught about the event of birthday event with the help of video and pictures. Their level of lexical items before and after the experiment was observed. The results suggested that there was a considerable improvement in their concepts related to the event of birthday. Both the children had acquired the concept of nouns related to the event, however, they were struggling with concepts of verbs and needed prompts and help of the instructor. They also failed to learn the sequence of event but there was a change in their body language and were more cooperative towards the instructor after the experiment. It was also observed that embodiment plays a role in learning different lexical concepts. Children had a visual experience and therefore were able to grasp the concept of nouns that is related to sense of sight. They were not able to learn the concept of verbs as it is related to proprioception and these children had no experience of performing these actions themselves. Previous research also emphasizes the role of embodied experience in learning the concept of verbs and their meanings (Sidhu, 2014). Therefore, it is concluded from the present study that scaffolding learning can be a very effective method for autistic children in language learning and acquisition. Previous researches related to scaffolding and language learning gives similar results (Rivera, 2010).

Keeping in view the role of embodiment along with scaffolding learning, instructors can help the autistic children with different language related problems by designing different interesting and productive activities and tasks for them.

Recommendations

Present study only focuses on the acquisition of nouns and verbs; however, this study can be extended to other linguistic items such as morphemes and other grammatic categories to see if scaffolding learning can be helpful for autistic children in this regard as well. Moreover, the focus of the present study is only autistic children, similar studies can be conducted with children facing other linguistic disorders as well.

Present study only provided a visual experience to the children and thus they were able to develop the concept of nouns but not the verbs. A study can be conducted to provide them with an experience of performing the actions to see their level of acquisition of the concept of verbs as well. In fact, the same experiment can be extended to include the experience of performing the actions to see the level of verb acquisition and sequence of events.

Also, the present study has been conducted on a smaller scale. Similar study can be conducted on a larger scale to include more participants.

References

American Psychiatric Association (2022). *Diagnostic and statistical manual of mental disorders,* 5th Ed., text rev. Washington, DC

American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders,* 5th Ed. Washington, DC.

Anderson, D., Lord, C., Risi, S., Dilavore, P., Shulman, C., Thurm, A., Welch, K. & Pickles, A. (2007). Patterns of growth in verbal abilities among children with autism spectrum disorder. *Journal of Consulting and Clinical Psychology*, 75(4), 594-604.

Bariant, T. N., Arifani, Y., Ma'ruf, N., & Setiawan, S. (2022). L2 ASD Learners' Scaffolding Development after Long Interaction with The Mobile Story-Sharing Application. *Language Related Research, 13*(3), 87-110.

Batool, H., Irshad, S., & Nisar, M. (2021a). Embodied Cognition in Morphosyntactic Processing and Severity. *Pakistan Journal of Languages and Translation Studies, IX*(1), 152-168.

Batool, H., Farrukh, T., & Irshad, S. (2021b). Politeness Strategies Performed by Teachers: A Case of Assisting Elicitation in Children with Autism. *Journal of Contemporary Teacher Education, 5*, 53–70

Bean, F., A. (2010). *Word learning children with autism spectrum disorders: The role of attention.* PhD (Doctor of Philosophy) thesis, University of Iowa, 2010. https://doi.org/10.17077/etd.6xhrdeik

Charman, T., Drew, A., Baird, C., & Baird, G. (2003). Measuring early language development in preschool children with autism spectrum disorder using the MacArthur Communicative Development Inventory (Infant Form). *Journal of Child Language*, 30, 213-236.

Garfin, D. & Lord, C. (1986). Communication as a social problem in autism. In Schopler, E. and Mesibov, G. (Eds.), *Social Behaviour In*

Autism (pp. 131- 151). New York: Plenum Press.

Hartley, C., Trainer, A., & Allen, M. L. (2019). Investigating the relationship between language and picture understanding in children with autism spectrum disorder. *Autism*, 23(1), 187-198. https://doi.org/10.1177/1362361317729613

Hernandez, S. (2021) Autism spectrum disorder and remote learning: Parents' perspectives on their child's learning at home. *UNLV Theses, Dissertations, Professional Papers, and Capstones*. 4246. https://digitalscholarship.unlv.edu/thesesdissertations/4246

Hickok, G. & Small, L. S. (2015). *Neurobiology of Language*. Academic Press.

Horvath, S., McDermott, E., Reilly, K. & Arunachalam, S. (2018). Acquisition of verb meaning from syntactic distribution in preschoolers with autism spectrum disorder. *Language, Speech and Hearing services in schools,* 49, 668-680. https://doi.org/10.1044/2018_LSHSS-STLT1-17-0126.

Irshad, S., Maan, M. F., Batool, H., & Hanif, A. (2021). Vygotsky's Zone of Proximal Development (ZPD): An Evaluative Tool for Language Learning and Social Development in Early Childhood Education. *Multicultural Education, 7*(6), 234-242. doi:10.5281/zenodo.4940172

Johnson, M. (2018). The Embodiment of Language: *The Oxford Handbook of 4E cognition*. DOI:

0.1093/oxfordhb/9780198735410.013.33

Klin , A., Jones, W., Schultz, R., Volkmar, F., & Cohen, D. (2002). Visual fixation patterns during viewing of naturalistic social situations as predictors of social competence in individuals with autism. *Archives of General Psychiatry,*59, 809 – 816 .

National Research Council (2001). *Educating Children with Autism*. Washington DC: The National Academies Press.

Naqvi, H. B. (2017). *Language and Conceptualization in Autism: A Study from the Perspective of Cognitive Semantics* (Doctoral Dissertation). NUML Islamabad, Pakistan.

Prizant, B., Wetherby, A., Rubin, E. & Laurent, A. (2003). The SCERTS model: A transactional, family-centred approach to enhancing communication and socioemotional abilities of children with autism spectrum disorder. *Infants and Young Children*, 14(4), 296-316.

Rivera, A. (2010). Scaffolding Support for Second Language Learners. *Education Masters* paper 110.

https://fisherpub.sjfc.edu/cgi/viewcontent.cgi?article=1109&context=education_ETD_masters

Scorolli, C. (2014). *Embodiment and language.* In L. Shapiro (Ed.), *Routledge handbooks in philosophy. The Routledge handbook of embodied cognition* (p.127–138). Routledge/Taylor & Francis Group. https://psycnet.apa.org/record/2014-19965-013

Sidhu, M. D., Kwan, R., Pexman, M. P., & Siakaluk, D. P. (2014). Effects of relative embodiment in lexical and semantic processing of verbs. *Acta Psychologica.* 149 (pp. 32-39). https://tarjomefa.com/wp-content/uploads/2017/08/7298-English-TarjomeFa.pdf

Sigman , M., & McGovern , C.W. (2005). Improvement in cognitive and language skills from preschool to adolescence in autism. *Journal of Autism and Developmental Disorders*, 35,15 –23.

Silalahi, R. M. (2019). Understanding Vygotsky's Zone of Proximal Development for LearninG. *POLYGLOT: Jurnal Ilmiah, 15*(2), 169 - 186. doi:dx.doi.org/10.19166/pji.v15i2.1544

Simões, M., Bernardes, M., Barros, F., & Castelo-Branco, M. (2018). Virtual travel training for autism spectrum disorder: Proof-of-Concept interventional study. *JMIR Serious Games*, 6(1). https://doi.org/10.2196/preprints.8428

Shulman, C. & Guberman, A. (2007). Acquisition of verb meaning through syntactic cues: A comparison of children with autism, children with specific language impairment (SLI) and children with typical language development (TLD). *Journal of child language.* 34, pp.411- 423. doi:10.1017/S0305000906007963

Tager-Flusberg , H. (2004). Strategies for conducting research on language in autism. *Journal of Autism and Developmental Disorders*, 34, 75 –80.

Vigliocco, G., Ponari, M., & Norbury, C. (2018). Learning and processing abstract words and concepts: Insights from typical and atypical development. *Topics in Cognitive Science*, 10(3), 533-549. https://doi.org/10.1111/tops.12347

Vygotsky, L.S. (1962). *Thought and Language*. Cambridge, MA: MIT Press.

Wilcock, G., M. (2014). *Development and implementation of visual scaffolds to support students with autism spectrum disorder in inclusive classrooms*. PhD (Doctor of Philosophy) thesis, Flinders University, Adelaide, Australia. https://flex.flinders.edu.au/file/63134a08-1f08-4fc2-8167-26f25c799fe5/1/ThesisWilcock2014.pdf

Wilson, K. (2013). Teaching social-communication skills to preschoolers with autism: Efficacy of video versus in vivo modelling in the classroom. *Journal of Autism and Developmental Disorders,* 43(8), 1819-1831.

World Health Organization (1992). *The ICD-I0: Classification of mental and behavioral disorders.* Geneva: World Health Organization.

Zajic, M. C., Dunn, M., & Berninger, V. W. (2019). Case studies comparing learning profiles and response to instruction in autism spectrum disorder and oral and written language learning disability at transition to high school. *Topics in Language Disorders*, 39(2), 128-154. https://doi.org/10.1097/tld.0000000000000180

Citation of this Article:

Batool, H., Noor, A., & Noreen, R. (2022). Autism and scaffolding language learning: A case study of two children with Austin. *Journal of Early Childhood Care and Education, 6*(2), 00-00.