Adab Al-Rafidain

Designing a Syllabus for Developing the Pragmatic Competence Among Iraqi ASD Children: A Focus on Humour

Dunia Ali Huseen iD
PHD/Department of English Language/ College of Arts /University of Mosul

Hussein Ali Ahmed iD
Prof. / College of Languages in Nawroz University

Marilize Pretorius iD
Prof. / University of Antwerp/ Belgium

Abstract

Humor is vital in social relationships. It serves as a medium for communication, mutual comprehension, and emotional connection. Children with Autism Spectrum Disorder(ASD) frequently have difficulties with humor owing to impairments associated with Theory of Mind, which is believed to hinder their pragmatic competence, hence complicating their ability to comprehend and engage with funny expressions. This study seeks to tackle this issue by employing a structured based teaching method that investigates the potential of humor as a means to promote Theory of Mind and, subsequently, improve pragmatic competence in Iraqi children with Autism Spectrum Disorder. The study aims to delineate three tiers of difficulty and capability in humor understanding within Autism Spectrum Disorder Level 1, specifically labeled as a, b, and c. An experimental quantitative procedure has been utilized with a pretest and two posttests. The results demonstrate that an audiovisual syllabus markedly improves Theory of Mind and pragmatic competence in children with Autism Spectrum Disorder. They also indicate that the knowledge of humor is not binary but may be classified into three sublevels **.**

تصميم منهج لتطوير الكفاءة البراغماتية للأطفال العراقيين المصابين باضطراب طيف التوحد: التركيز على الفكاهة

دنيا علي حسين*   حسين علي احمد**

المستخلص :

* استاذ / كلية اللغات / جامعة نوروز- مارليز بتريوس / جامعة أنتويرب
** طالبة دكتوراة/ قسم اللغة الانكليزية / كلية الاداب / جامعة الموصل

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تُعدّ الفكاهة أمراً مهماً في العلاقات الاجتماعية، حيث تعمل كوسيلة للتواصل، والفهم المتبادل، والارتباط العاطفي. غالباً ما يواجه الأطفال المصابون باضطراب طيف التوحد صعوبات في التعامل مع الفكاهة بسبب اضطرابات مرتبطة بنظرية العقل، التي يُعتقد أنها تعيق كفاءتهم البراغماتية، وبالتالي تعقيد قدرتهم على فهم واستخدام التعبيرات الفكاهية. تسعى هذه الدراسة إلى معالجة هذه المشكلة من خلال استخدام منهج تدريس منظم يستكشف إمكانات الفكاهة كوسيلة لتعزيز نظرية العقل، وبالتالي تحسين الكفاءة البراغماتية لدى الأطفال العراقيين المصابين باضطراب طيف التوحد.

تهدف الدراسة إلى توضيح ثلاثة مستويات من الصعوبة والقدرة على فهم الفكاهة ضمن مستوى 1 من اضطراب طيف التوحد، والتي تم تصنيفها بشكل محدد إلى الفئات أ، ب، وج.

اعتمد الجانب الكمي على تصميم تجريبي شمل ثمانية أنواع من الفكاهة، تضمن اختباراً تمهيدياً واختبارين. ولقد اجريت التقييمات على 44 طفلاً عراقياً تم تشخيص إصابتهم باضطراب طيف التوحد تتراوح أعمارهم بين 10 و12 عاماً. تظهر النتائج أن المنهج الدراسي السمعي البصري المصمم خصيصاً لتعليم الفكاهة يساهم بشكل كبير في تحسين نظرية العقل والكفاءة البراغماتية لدى الأطفال المصابين باضطراب طيف التوحد. كما تشير إلى أن معرفة الفكاهة ليست ثنائية بل يمكن تصنيفها إلى ثلاثة مستويات فرعية.

الكلمات المفتاحية: المنهج ، الكفاءة البراغماتية ، أطفال التوحد ، الفكاهة

Introduction

One of the common aspects of communication in the world is the use of humour. It can make you giggle, smile or even cause a smirk but what is essential is that the listener should understand the intention of humour otherwise it is just mere words. Thus, arriving at this intention, humour goes through a cognitive process of combining the incongruity with the resolution and background knowledge to understand the humorous expression.

In this study, the researchers' consideration is focused on Autism Spectrum Disorder level 2 Iraqi children who have a major problem of not understanding humour in daily interactions. Although these children can speak, read and write well, they have the problem of lacking imagination which is an essential element in understanding the intention of humour (Jobe and White, 2007, pp. 1480-1482).

Problem of the Study

It is clear from the previous lines that ASD level 1 individuals normally understand humour literally. This lack of understanding the non-literal intention of the humour expression usually leads to a negative impact in participating in social interactions. Hence, the ASD individual might consider the humorous expression as bullying and consequently might not even want to engage in a conversation anymore.

Unfortunately, in Iraq, ASD centre programs mainly focus on teaching everyday motor activities and how to respond to simple questions, with no sign of helping ASD level 1 understand humour expressions.

Aims of the Study

This research aims at:
1. Enhancing ASD pragmatic competence and upgrading ToM to order 2 through a structured TEACCH syllabus,
2. Proving that level 1 has three sublevels of understanding a, b and c.
3. Testing if ASD children can understand eight types of humour expressions, namely jokes, riddles, sarcasm, irony, dark humour, teasing, puns and memes that are used in everyday interactions.

Research Questions
1. Does the display of the structured TEACCH syllabus lead to enhancing pragmatic competence and upgrading ToM order from 1 to 2 among individuals with ASD .
2. Are there any sublevels within ASD level 1 that are represented as a, b, and c?
3. Do ASD children equally understand all eight types of humor ?

Research Hypotheses
The hypotheses fall into two parts. Part One, covers the tests wherein the results paves the way to the research questions and aims.
Part One :
1.There is no statistically a significant difference between the experimental and control groups on the pretest.
2.There is no statistically significant difference between the experimental and control groups on the first posttest
3.There is no statistically significant difference between the experimental and control on the second posttest.
Part Two:
4.Exposure to the structured TEACCH syllabus leads to the enhancing of pragmatic competence and upgrading Theory of Mind order from one to two among individuals with ASD.
5.There are sublevels within ASD level that are presented as a, b and c.
6. ASD children have different levels of understanding the eight types of humor.

Procedure of the Study
The study is a quantitative part consisted two groups, the experimental and control groups which were given a pretest, and two posttest. The control group were taught the traditional way through repeating the humour expressions with no details while the experimental group were taught by using a visual application based upon a structured TEACCH syllabus**.**

Historical Overview on Autism
The word autism was presented by Eugen Bleuler (1908) as a condition of detachment seen in individuals with schizophrenia. In (1943) the term was sparked again by Leo Kanner who conducted a study on eleven children and found out common impairment symptoms such as mood changes, repetitive movements, distress when hearing loud sounds, etc. (Feinstein, 2012).
Later on Hans Asperger (1944) studied a group of male children who were noticed to have social impairment, repetitive behaviors yet were good at speaking like normal peers. These children were known as Asperger's Syndrome which is an acute form of autism (Wolff, 2013, p. 209-210).
According to Aksoy (2018), Cummings (2023) and most importantly World Health Organization (2023), ASD is majorly divided into three levels of severity.
LEVEL 1: They are individuals who are good in speaking, reading and writing but have problems with understanding non-literal language, e.g. types of humour. In other words, they have difficulty in understanding the intention of non-literal language. With some help many ASD can overcome this difficulty.
LEVEL 2: They are individuals who need support because they have a typical social behavior. They need help to read and write and also in motor activities. Some ASD's are non-verbal.

LEVEL 3: They need lots of help because they cannot depend on themselves. They have severe deficits in cognition and in doing motor activities. They are mainly non-verbal.

Definition of Theory of Mind

One of the deficits of lack of imagination by ASD individuals is due to the Theory of Mind. Dennett (1989, p.2-4), Meltzoff (1999, pp.257-258), Baron-Cohen (1995, p. 174-176) and Westra and Carruthers (2018, pp.2-3) view "ToM as being able to infer the full range of Mental states (beliefs, desires, intentions, imagination, emotions, etc.) that cause action. In other words, having a ToM means being able to reflect on the contents of one's own and others minds. Thus, difficulty in understanding other minds is a core cognitive feature of autism spectrum conditions. Therefore, ASD individuals have impairments in their theory of mind abilities, thus leading to difficulties in social interactions and communication."

Autism Spectrum Disorder in Iraq

According to recent studies, the current situation for autistic children in Iraq forms 75 out of every 1000 children (Al-Timimi et al., 2024). These ASD children have received little to no attention by the government. For instance, no handouts or sessions on early symptoms of ASD have been given to newlyweds, no use of technology in government centres has been found and no centres specialized for homing severe cases of ASD whether for children or adults are found. As a result, parents carry all the burden with no support (Salim, 2022, Al-Taiee, 2023 and Salem, 2023).

The researchers have noticed that whether an ASD child goes to a private or public institute or school, they have a crucial problem of not understanding humour expressions. They simply consider it as offensive and as such they have rage and panic attacks. Consequently, there should be an accessible device to help them merge into society.

What is Humour?

There have been many and varied definitions of humour. For instance, Wu et al. (2016, pp.139-141) and Brownell & Gardner, (1988, pp.17-19) view humor as" an advanced cognitive skill unique to humans, requiring the ability to understand and appreciate fuzziness within a humorous context".

Additionally, Hadiati (2018, pp.1-2) emphasizes that "humor is influenced significantly by cultural background, determining what is considered funny". Martin and Ford (2018) define humour as a mental cognitive concept which depends on interpreting and used in everyday interaction.

Types of Humour

There are many types of humour depending on the scholars point of view some believe that there are two others reach to fifty types.The researchers, however, will not take all these types, but have adapted six types, namely jokes, riddles, puns, teasing, irony and sarcasm proposed by Wagner and Urios-Aparisi (2011) and added Taecharungroi and Nueangjamnong (2012) two types, namely memes and dark humour .

Humour with Autism Spectrum Disorder Individuals

Individuals with ASD cognitive impairment have difficulty in appreciating and producing humour expressions. This is because humour depends on the implicit intention and mutual background

knowledge. Therefore, not being able to read through these lines will lead to pragmatic failure (Wu, et al, 2014, p.1386).

Does this mean that ASDs do not laugh?

Sroufe and Wunsch (1972 cited in Hoicka, 2014) believe that the cognitive ability for normal children to understand humour starts at age 3-7. As the children get older their sense to understand the incongruity resolution develops .The story is quite different for ASD children; thus the mechanisms of processing are not the same because of the lack of TOM which may cause negative responses like crying or aggressiveness or feeling puzzled for the ASD child (Aykan and Nalcaci, 2018).
The question posed here is: What do we need to understand humour so as to upgrade ToM? The answer is pragmatic competence.

The Teachability of Pragmatic Competence to Autism Spectrum Disorder

Scholars like Kasper (1997) Bardovi-Harlig (2001) and Rose (2005) have presented two important concepts. The first is that in general the core of pragmatic competence is" the ability to use language effectively in social contexts". The second concept is that pragmatic competence can be taught, i.e. "pragmatic competence is considered teachable, particularly in second language acquisition". Thus, they agree upon the belief that pragmatic competence comes naturally for native speakers while for non-native speakers, pragmatic competence must be taught. This brings us to an important question: Since pragmatic competence can be taught to second language learners can this apply to ASD individuals too?

Teaching pragmatic competence to ASD individuals presents unique challenges, but research indicates that it is possible with targeted interventions. Paul and Sutherland (2005), Kasari et al. (2012) and Adams et al. (2012) highlight that social communication deficits are core characteristics of ASD, making pragmatic competence particularly difficult to acquire naturally. As such, competence can be taught to ASD individuals. Then, How do specialists teach pragmatic competence? The answer to this is through repetition and visual aids.

Epistemic Vigilance

In general, Relevance Theory describes the process of choosing a reasonable stimulus from more than one stimulus. Now what is the case of processing humour?

According to a study by Sperber et al.'s theory of "Epistemic Vigilance" (2010) information goes through filtering of credibility and reliability to avoid default of cognitive processing. Thus, when someone says a humour expression, understanding the intention requires shared knowledge by both parties. Therefore, those who learn a second language have default in the process of understanding humour. Thus, default is also found in ASD individuals when they do not understand humour due to a lack of TOM and a lack of understanding social cues and shared knowledge.

Finally, in an interesting study with ASD individuals, Happé (1991) stated that there are two sublevels within ASD level 1. This means the ASD individual either understands humour or does not understand at all. The researchers have considered this interesting view and wanted to prove that within level 1 there are three sublevels a, b and c. The question is: If we are after the sublevels within ASD, how can we signify them? The answer is Cruz's (2012) three patterns of epistemic vigilance.

A. Sophisticated optimism: This level involves a listener who actively engages in complex inferential processes to extract richer meanings from the message. Listeners go beyond surface-level interpretations and explore implied meanings, intentions, and contextual nuances.

B. Cautious optimism: This involves a listener who considers multiple interpretations and evaluates the relevance of each. They are careful not to jump to conclusions and weigh various possibilities before settling on an interpretation.

C. Naïve optimism: This occurs when a listener takes the most straightforward route to interpret a message without making complex inferences. Listeners assume that the speaker is providing information that is immediately relevant and do not invest extra cognitive effort in searching for deeper meanings.

Treatment and Education of Autistic and Related Communication Handicapped Children Approach (TEACCH)

The TEACCH approach is a holistic and structured program designed to support individuals with ASD throughout their lives. Developed in the early 1970s by Eric Schopler and colleagues at the University of North Carolina, TEACCH is grounded in the understanding that individuals with autism have unique strengths and challenges that require specialized educational and therapeutic strategies (Mesibov et al., 2004). To implement the TEACCH approach effectively, several specific METHODS, as suggested by Kliemann (2014) are used:

1. Structured Teaching involves breaking information into chunks so as to be easier to comprehend.
2. Visual support involves using a visual dynamic form to make learning easier and fun.
3. Repetition is one of the best strategies used in teaching especially with ASD individuals. Thus, with repetition the chances of recalling by ASD individuals becomes higher.

Thus to sum up, a structured TEACCH teaching based on breaking humour into components and using visual support with clear explanation and repetition can be beneficial for ASD individuals who struggle to understand abstract concepts like humor with the aid of the trainers and families.

The Model Adopted

The idea of finding an appropriate model to adopt in the current study was not an easy task. Although there are many cognitive theories and models they are not mainly directed to ASD individuals who have pragmatic impairment. As such, the researcher decided to form an eclectic model based on Cruz Epistemic Vigilance (2010) and TEACCH as an instrument for our reasoning. The eclectic model sheds light on the process of what happens when a humour expression is represented in steps 1 to 4.

Step 1 refers to the process of listening /decoding new information which is the humour expression.

Step 2 is the effect of this humour expression which is the interpretation. To elaborate more, the interpretation is the outcome of the pragmatic competence (Illocutionary and sociolinguistics) Through this pragmatic competence, the brain then chooses three stimuli, namely **a, b** or **c.** The chosen stimuli which the person thinks is most suitable will lead to the interpretation of the humour expression.

a is the sophisticated optimism, i.e., completely understands the interpretation of the humorous expression. **b** is the cautious optimism, ie, shows partial understanding and **c** is the naïve optimism, i.e. literal understanding "does not understand the humour at all". For a normal individual, the stimulus chosen is **b** or **c** because their understanding leads to normal reaction which is a laughter or smile. However, sometimes normal individuals' stimuli lead to choosing **c** but this does not mean they are ASD simply because they understand other types of humour but had difficulty in comprehending one.

As for ASD individuals, the suspected answer is normally **c**, naïve optimism. The reason for choosing **c**, is that two sides interfere in understanding the intention of the humour expression. The first is the lack of social cues in understanding and the second is the lack of ToM 2, i.e., lack of imagination

which altogether lead to the lack of pragmatics competence Thus, both lead to misunderstanding the humorous expression. Therefore, there is a failure of interpreting the humorous expression which normally leads to detached feelings such as crying, anger or being puzzled.

Step 3 is the need of enhancing the pragmatic competence and upgrading ToM order 1 to order 2. This is done through a structured TEACCH syllabus and repetition.

Step 4 is the result of learning new information, enhancing the pragmatic competence and upgrading ToM order 1 to 2 and having the capability of recalling the information.

However, this is only established with the experimental group. As for the controlled group a traditional method is used, i.e. the teacher writes or shows a humour expression and asks the children to repeat many times.

The Design Description of the Proposed Syllabus

The syllabus consists of eight types of humour used in everyday situations. As such, the syllabus is divided into eight units. As already referred to, the researchers have taken into consideration age appropriateness, as a result, some types of humour have been discarded.

In each type of humour, a definition is given with key words (if presented) that would help the child identify if the utterance is humorous. Following a structured TEACCH method, the humorous expressions are divided into smaller chunks to help understand the utterance and then clarify where the turning point of the humour arises. In other words, showing where the incongruity resolution is. An important issue to highlight is that not all humour expressions have incongruity resolution; however, the expressions have nevertheless been divided into two parts so as to help the child understand better, e.g.

اكو فرد واحد غبي بالرياضيات گام يطير أوراق گلولة ليش ؟ گال حتى افهمها وهي طايرة

Translation: There was a stupid person in mathematics who was flying papers. They asked him why are you doing this? He said to understand mathematics while it flies

Key words: اكو فرد واحد غبي

Translation: There was a stupid person

Beginning: اكو فرد واحد غبي بالرياضيات گام يطير أوراق گلولة ليش

Translation: There was a stupid person in mathematics who was flying papers. They asked him why are you doing this?

Turning point: گال حتى افهمها وهي طايرة

Translation: He said to understand mathematics while it flies

After this, more humour expressions are presented. The ASD children along with the teacher; in our case, one of the researchers, will detect the key words (if presented) that indicate humour and divide it to show the difference of the main line and the twisting point. In these exercises, five humorous expressions are presented with the choice of three options which will reflect their level of understanding a, b or c.

Thirty-two zoom meetings for four months were required to cover the material. Each humour expression needed two zooms a week. The time for each zoom was an hour or less, especially when the researcher/teacher noticed that children began to get tired. The zooms started in January and ended in July. The researcher/teacher was responsible for teaching both the experimental and control groups. The experimental group had the zooms on Wednesdays and Fridays at 6 pm while the control group had the zooms on Thursdays and Saturdays at 6 pm.

Population and Sampling

In the current study, ASD levels 1, 2 and 3 are the population of the ASD community while the selected sampling is only level 1 ASD children. The ASD individuals who participated in this study were a selected group of children who were level 1 ASD. The children were aged 10-12 .The reason for choosing this age is because it is a critical age for ASD level 1 to start to learn what humour is.

The study took place during the year 2023-2024 .The majority of ASD children chosen for the study lived in Mosul city and four children lived in Erbil city (from Arabic-speaking families).The number of participants was 44. There were 22 in the experimental group and 22 in the control group. In addition, there were 16 males and 6 females in the experimental group. As for the control group, there were 14 males and 8 females.

Experimental Research Design: Pre- Post tests

According to Tareq (2023, p. 89), experimental research is" a kind of study that rigidly follows a scientific research design. It involves testing or attempting to prove a hypothesis by way of experimentation. As such, it uses one or more independent variables, manipulates them and then uses them on one or more dependent variables".

Test Construction

The test is normally constructed to evaluate the material, and in our case, the syllabus. The researcher had conducted a syllabus with eight types of humour. In each type five examples were given. The ASD children were asked to tick, according to their understanding, which example explains the humour expression. The explanations of a humour expression are presented as (**a, b** or **c**).

"If the child chose (**a**), it means they understood the humour and its explanations",

"If the child chose (**b**), it means they knew the expression was humorous but did not get it".

"If the child choses (**c**), it means they did not understand the humour expression and chose the literal meaning".

Both groups took a pre- test and two posttests. The reason for two posttests was because ASDs learn by repetition and the researcher wanted to see if after 4 months, the ASD would show some progress in understanding humour. It is also very important to mention that in each test the humour expressions were not repeated. The total number of items for each test was 16.

Results and Discussion

Hypothesis 1 was attended to explore the difference between the EG and the CG's performance on the pretest.

Table 1. Results of the comparison between the scores of experimental and control groups on the pretest.

	Group	N	Mean	Std. Deviation	T _ cal.	T _ tab.	Sig.
N= number	E	22	2.6364	2.03646	0.025	2.019 (0.05) (42)	No. Sig.
	C	22	2.6545	2.75123			

er, m= mean, sd=standard deviation, T-cal=T-calculated, T-tab=T-tabulated, sig. =level of significance.

It is clear from Table (1) that the calculated –T value (0.025) at (0.05) level of significance is lower than the tabulated T value (2.109) under (42) degree of freedom. The results indicate that there is no significant difference between the two groups, i.e. the two groups were equivalent before conducting the test. As such the related null hypothesis has been accepted.

Hypothesis 2 was set to look into the difference between the EG and CG's performance on the first posttest .

Table 2. Results of the comparison between the scores of experimental and control groups on the first posttest.

Group	N	Mean	Std. Deviation	T _ cal.	T _ tab.	Sig.
E	22	16.7727	8.06481	7.197	2.019 (0.05)(42)	E
C	22	3.8636	2.39634			

N= number, m= mean, sd=standard deviation, T-cal=T-calculated, T-tab=T-tabulated, sig. = level of significance

It is obvious from Table (2) that the calculated –T value (7.197) at (0.05) level of significance is higher than the tabulated T value (2.019) under (42) degree of freedom. This means that there is a statistically significant difference between the performance of the EG and CG groups on the first posttest. Thus, the null hypothesis 2 is rejected.

Hypothesis 3 intended to validate the difference between the EG and CG's performance on the second posttest.

 Table 3. Results of the comparison between the scores of experimental and control groups on the second posttest.

Group	N	Mean	Std. Deviation	T _ cal.	T _ tab.	Sig.
E	22	77.9091	7.16412	36.604	2.019 (0.05)(42)	E
C	22	12.4545	4.36138			

N= number, m= mean, sd=standard deviation, T-cal=T-calculated, T-tab=T-tabulated, sig. =level of significance

It is evident from Table (3) that the calculated –T value (36.604) at (0.05) level of significance is higher than the tabulated T value (2.019) under (42) degree of freedom. This means that there is a statistically significant difference between the EG and the CG performance on the second posttest. As such, the null hypothesis 3 is rejected.

Hypothesis 4 was formulated to examine individuals with ASD's exposure to the structured TEACCH syllabus via visual application, as means to, enhance pragmatic competence and upgrade ToM order from 1 to 2 so as to be integrated into the society when exposed to humorous expressions. The results of all the tests highlighted an increase in the understanding of humorous expressions from the first to the last test due to the enhancement of the pragmatic competence to acknowledge the nonliteral meaning of the eight humour expressions, then in turn leads to the upgrading ToM order from not understanding the intention

of the humorous expression to understanding it, i.e. progressing from order 1 to 2. This means that the hypothesis which assumed that exposure to the structured TEACCH syllabus would lead to enhancing pragmatic competence and upgrading ToM order from 1 to 2 among individuals with ASD was accepted.

Hypothesis 5 assumed the existence of identifiable sublevels within ASD level 1 represented as a, b, and c levels since the aim of this study is to establish the levels a, b and c of difficulty and ability in humour comprehension within level 1 for ASD children, looking through the final results of the second posttest between the EG and the CG, b was the most chosen item for the EG.
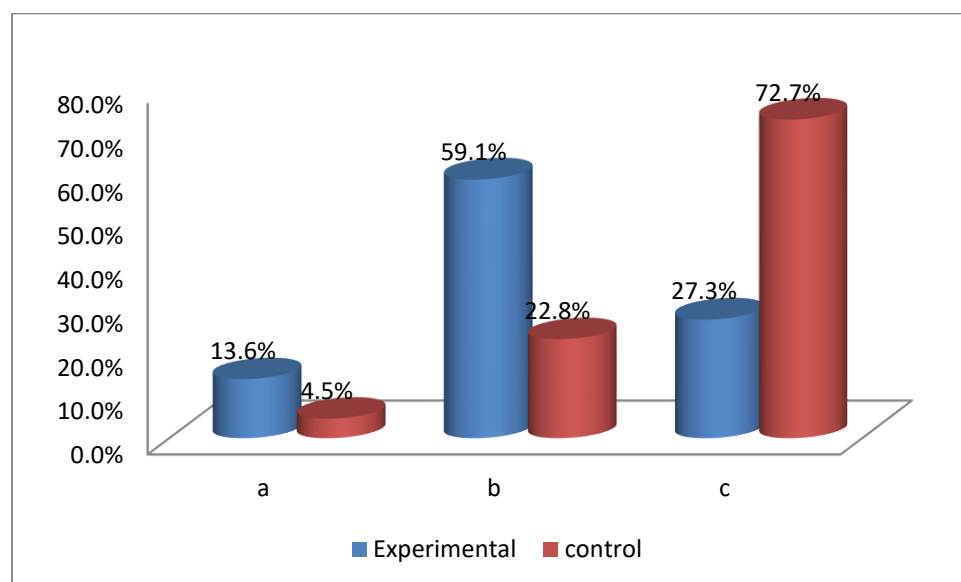

*Figure 1. The final results of the second posttest between the EG and the CG concerning the sublevels **a, b** and **c**.*

Hypothesis 6 assumed that individuals with ASD understand the eight types of humor equally. On reviewing the results of the retrieve test, not all types were equally understood by the participants with ASD. This was due to the nature of humour expressions which ranged from easy to difficult. In our case, the easiest one was the memes because the characters here are usually cartoon characters or instagram celebrities. On the contrary, the most difficult one was dark humour because the ASD child could not comprehend that illness, death or other sad events could be humorous. As such, hypothesis 6 which reads that individuals with ASD had varied levels of understanding the eight types of humour was accepted.
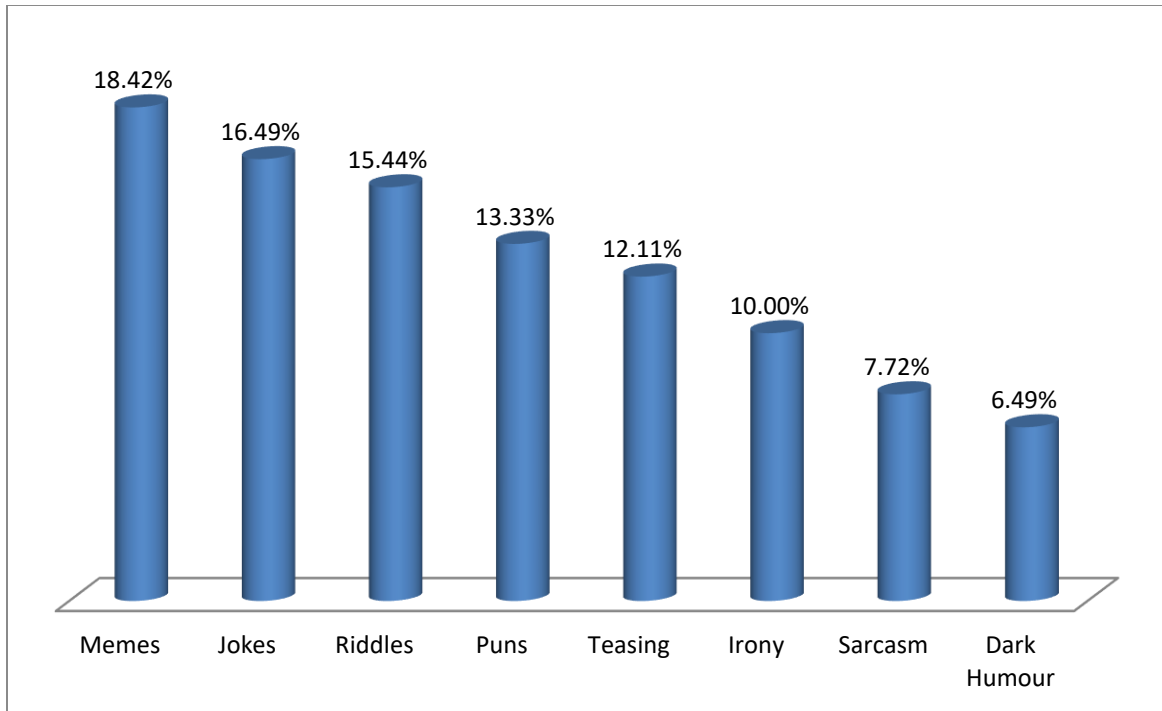
Figure 2. *The percentages of the experimental group 's understanding of the eight types of humour from the highest to the lowest.*

Conclusions

In view of the research design, questions and hypotheses, the current research has come out with the following conclusions.

1. The implementation of the designed syllabus has proved to be successful in enhancing the ASDs' competence and upgrading ToM order from 1 to 2. The main reason behind this success is the effectiveness of using an audiovisual syllabus.

2. The utilization of the interview as a data collection tool has pointed out that Iraq centres need to take inconsideration not only the young children who lack motor activities but the adolescents who lack pragmatic competence and need to adjust themselves with normal peers in schools.

3. The saying that" practice makes perfect" can be applied to the importance of the role of repetition for ASD children in learning humour. However, with technology, repetition will be much more productive as we have noticed in this study.

4. The proof that understanding humour is not a two way option, either you understand or not is valid since there is an interphase which shows partial understanding. Thus, level 1 ASD has been divided into three sublevels a, b and c, i.e. level a understands that the utterance is humour and comprehend the meaning completely, level b understands that the expression is humour but does not comprehend the meaning, level c does not even recognize that the expression is humorous at all.

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