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| **RESEARCH ARTICLE**

Do Autistics Need Human Interaction to Acquire Language? A Case Study from Morocco

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| **ABSTRACT**

This research paper explores the linguistic profile of a six-year old autistic boy who acquired the English language without receiving formal instruction. The study tries to shed light on the child's linguistic abilities in the light of Chomsky's innateness theory. This paper uses participant observations and informal questioning to collect data covertly in a naturalistic setting which is the school. The findings of the study revealed that school boy has a functional and communicative use of the English language, which exceeds basic knowledge. His early exposure to YouTube videos in English made him fully conversational, even verbose, contrary to his state when he is using the Moroccan dialect, a fact that implies that English might be his L1 language.

1. Introduction

Autism is a disability known to affect primarily social behavior and communication and is characterized by repetitive, invariant activities (Kadiri, 2022). Many authorities in the field define autism as a constellation of anomalies manifesting chiefly in language and speech usage and inflow. From across the autism spectrum, autistics can be talkative, minimally-speaking or completely non-speaking. This discrepancy in the linguistic performance by autistics invites an exploration of their various psycholinguistic profiles to understand how they acquire language, how they process it and how they use it.

This research paper attempts to shed light on the linguistic competency of a Moroccan autistic boy, aged six, who does not master his mother tongue, in this case, the Moroccan dialect known as "Darija", but became very fluent in English thanks to daily exposure to YouTube videos.

2. Review of literature

Language has always been somehow an elusive subject for most empirical researchers, as no one has been able, so far, to lay his hands on the reason why humans were the only species to use such a highly-sophisticated linguistic system with embedded structures. Many believe that the gift of language, which ushered in the cognitive revolution[1], was the factor that ensured the supremacy of Homo sapiens and brought about the downfall of Neanderthals[2]. Experts affirm that the latter must have had some kind of a narrow vocal language, while Homo sapiens used a limited number of sounds and signs to produce an infinite number of sentences, each with a distinct meaning (Harari, 2011). In other words, humans are considered to be the only species that can pair grammar and lexicon and are able to encode and decode sequences of sounds that are semantically meaningful.

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[1] Between 70,000 and 30,000 years ago.
[2] A extinct relative species of Homo sapiens

One discipline that took a genuine interest in analyzing language's processing and its underlying structure in the brain to shed light on language acquisition, comprehension and use is psycholinguistics. This field of study turns a spotlight on the infinite creative aspect of language, which differentiates it from other non-human communication systems using a finite set of rules and words.

Much of the theories making up the foundations of psycholinguistics were developed by philosopher and linguist Noam Chomsky. The prolific scholar believed that the brain is endowed with "computational" or data-processing characteristics that make it able to generate an inexhaustible list of expressions well-arranged and observe the relationship between sound and meaning (Chomsky, 2000).

Chomsky's theory of innateness or nativism shook the old premises of linguistics by claiming that language is encoded in the human genome and that every human being will learn by default the language spoken in his environment, even if the linguistic stimulus is scarce and not directed to the person concerned.

Another equally important theory that goes hand in hand with nativism is the concept of Universal Grammar (UG), which posits that all languages have common structural properties. According to Chomsky et al. (2019), all human children are capable and qualified to construct sentences that are compliant with the principles of Universal Grammar, which is analogous to the building blocks on which sits all human languages. These children do not regularly produce new expressions that disrupt UG's bases, even in languages other than the local one.

Many scholars were adamant that these psycholinguistic theories, though purely speculative, cannot apply to children with disabilities or developmental delays. Others believed the opposite and gave the example of deaf children using sign language with no linguistic input (Feldman et al. 1978). Even Chomsky, who asserted in his earlier works that the innateness theory is limited to typically-developing children, used in his argumentation data related to a person with a disability who was exposed to two invented languages: the first in conformity with the UG's principles and the second violates them, and succeeded in mastering the first because it was using structure-dependent rules (Smith & Tsimpli, 1995).

Though the fields of autism and psycholinguistics sound like poles apart, there is actually a point where the two domains converge, which is how the living organism, the human one in this case, gains access to the wide social network that uses language emission and reception to connect all its components, via internal biological and neural mechanisms, and grows inside of them the linguistic capacity before it matures into the final stage of speech.

The autistic sequence of language development and acquisition shares many similar aspects with the normal language learning trajectory and relies on the same innate apparatus that makes up the nativism theory.

For Mottron et al. (2021), the way autistic children learn a language outside the dynamic based on social exchanges provides valid proof for the existence of a human predisposition to detect complex embedded structures. According to the researchers, when it comes to language acquisition, the autistic mode of learning follows a slightly different pattern of exposure, assimilation, word storage and verbalization, and it uses its versatility to compensate for any minor dissimilarities with the regular mode of learning.

The authors asserted that exposure to the recursive nature of language enables autistic kids to unravel the thematic content as well as the semantic and syntactic rules and regularities behind the flow of information emanating from television, for instance.

In the same vein, Kissine (2020) affirmed that autism showcases a singular configuration in which linguistic competence is differentiated from communication, which invites rethinking "the a priori conceptual boundaries on language learnability." Kissine deconstructed the premises on which is built the constructivist hypothesis, which believes that language acquisition is inconceivable without "inter-subjective, communicative interaction" by providing the example of some autistic people who learnt to speak in completely non-interactive ways.

In a previous study, Kissine et al. (2019) reported the cases of five Tunisian autistic children who were able to learn classical, standard Arabic exclusively from exposure to TV and without any human interactive ways whatsoever. These kids used correct phonemes, case-marking, and complex negation forms that characterize Standard Arabic but are absent in the Tunisian vernacular.

3. Methodology:
The data collected for this research paper relied on two qualitative methods: participant observations and informal questioning. The case study was anonymized through the use of the pseudonym "B", and the related data was collected over a week, covertly, in a naturalistic, unstructured setting which is an elementary school, during recess.

An exploratory case study design was chosen to address an under-researched complex linguistic phenomenon which is the acquisition of language by autistics via unconventional, non-communicative and non-interactive means.

Because autism is still very stigmatized in Morocco, most parties concerned were reluctant to speak to a stranger holding a recorder to conduct a structured interview; this is why this research paper relies mainly on observations of the case study while abiding by the principles of anonymity and confidentiality.

A thick description of the case study or the setting was not provided to avoid deductive disclosure that breaches anonymity.

4. Findings:

4.1. Background

I met "B" while doing fieldwork and volunteering in an inclusive public elementary school. My research has always focused on non-speaking autism, but "B" was a very unusual case worth studying. I was told by some school aides that there is this autistic first grader who is always speaking in English with the staff. I told myself maybe this boy knew some shapes or colors in English, and because nobody speaks English at the school, they concluded that he had a mastery of the language.

I decided to approach him during recess to ask him a few questions in a conversational way and avoid questions with yes or no answers that would not yield a linguistic flow to analyze.

4.2. Dialogue and semantics

This is a short excerpt of our first dialogue:

Me: Hi, buddy, how are you?

"B": I am good.

Me: What are you doing?

"B": Just playing by myself.

Me: Are you having some fun?

"B": Yeah, a lot; I mean, yes.

Me: How do you find your new school?

"B": The school is pretty awesome.

At first, I asked my questions in "darija", which is the Moroccan dialect or vernacular spoken by a large majority of Moroccan society, with some exceptions depending on the geographical area or ethnicity. It is worth mentioning that classical, standard Arabic is spoken only at schools or in TV programs. Each Arab-speaking country has its own dialect, which is derived from classical Arabic and has some commonalities with it, but the differences usually outweigh them in such a way that some Arabic-derived dialects are unintelligible for many Arabs.

For "B", he seemed rather confused when I asked him my questions in "darija" and was looking for his words to answer me. He understood the questions but found it hard to verbalize the answers, and my presence as a stranger asking questions made the situation even harder for him. All this vanished when I switched to English and asked the same questions. His speech blockage disappeared, and he started answering easily.

This extract of the first dialogue shows that "B" was able to stay on topic, assimilate the questions, use grammatically correct sentences and pick words from his own verbal repertoire to formulate his answers. He also answered three wh-questions which are known to be open questions because they can generate a multitude of unpredictable answers and not just yes or no answers. "B"'s responses were consistent and reflective of his age, and he showed syntactic awareness through his organization of words to form sentences.

Besides "B"'s vocabulary and lexicon, he also showcased good semantic skills through his ability to understand the words stored in his brain and use them appropriately. The figurative aspect of semantics was not tested to see if "B" can differentiate between the literal meaning of words and the many shades and nuances language can have.

A more thorough analysis of "B"'s answers shows that he can use one of the basic sentence structures in English, which is subject-verb-adjective (I am good), with the ability to expand the sentences if needed. He also used the "ing" form in the verb (playing) to express an action that is underway and show its continuity at the time of speaking. Furthermore, he used ellipsis and intentionally omitted the subject (I) and the auxiliary verb (to be) in the sentence "just playing", which means that he is fully aware that the meaning remains unchanged and can be understood from the context even with the removal of some superfluous words.

Moreover, "B" seemed to differentiate between formal and informal speech. When he spontaneously answered my question with "yeah", then he automatically rectified it and said "yes".

In his last response, "B" used a basic sentence pattern of subject-verb-complement and introduced an adverb to modify the adjective "awesome". The sentence "B" used is syntactically correct as the adverb of degree "pretty" precedes the adjective, a fact that also shows an awareness of the word order in English.

4.3. Code switching and psycholinguistic markers
The following day, "B" was at the integration classroom, awaiting his school aide, who was late. All autistic kids and other students with disabilities should be accompanied by a school aide to have access to the regular, inclusive classroom. So, "B" was stuck that morning in the integration room with another non-speaking autistic student who was quite agitated.

It is known that autistics who do not speak make a lot of vocalizations called vocal stimming. Many believe that producing vocal input is self-soothing as it represents something predictable that can be controlled and helps drown out the annoying stimulus coming from the outside world. Vocalizations can range from humming and groaning to repeating random words from movies or ads.

The noise was really bothering "B" and triggering negative feelings that were obvious in our next brief exchange:

"B": Shut up, just shut up!

Me: Calm down; what is going on?

"B": This guy won't (the F word) shut up!

Me: I do not think this is an appropriate word to use here

"B": I swear all the time

Me: Well, you should not

"B": But he annoys me; I can't stand him

This extract reflects how "B" moved from the formal style in our last conversation to a more informal, slang-like language when he got frustrated. Many experts say that little children often swear when they are exploring language and experiencing new words to understand their meanings. However, "B"'s code switching between two registers of English was not random and was imposed by a new, unpleasant social situation.

In line with the informal language he was speaking, "B" used the word "won't" instead of "will not". The use of the form with the apostrophe, which is a contraction, demonstrates that "B" is aware of the context of the conversation, which is less formal and can easily adapt his speech to it.

Moreover, he used "s" in "annoys" when referring to the other boy. The third person singular in the simple present tense always ends with an "s", and it is an important psycholinguistic marker that can trick even native speakers, especially children. Yet, "B" spontaneously added the suffix "s" to the base form of the verb "annoy", thus proving a real mastery of English tenses.

4.4. Intraverbal skills
Intraverbal skills implicate basic conversational skills where children can explain, describe or discuss ideas without any visual or auditory hints or prompting. The next excerpt was taken from a dialogue with "B" during recess, as usual. "B" looked very sad and was sitting by himself in the playground, so I approached him to enquire after him:

Me: Hi, how are you?

"B": Fine

Me: You look sad, what is the matter?

"B": I do not like it here

Me: You do not like the school? Where do you want to go?

"B": To another school

Me: Where people can speak English

"B": Yes, not like here

Me: That would be the American School, but it is quite expensive

"B": I know (sigh).

This extract is very reflective of "B"'s thought process related to his imagination, preferences and wishes and might also include dreaming and hoping. A thought process is a cognitive mechanism involved in inner mental activities such as reasoning, problem solving and making judgments. In this regard, "B" was able to articulate the hope for an alternative situation when he grew dissatisfied with his current school. His brief responses mirror his mental state, which is marked by discontent and sadness.

The interplay between elements drawn from reality and from imagination and their incorporation in every day speech to express ideas in a creative way prove that "B" is conscious of the many usages of language to indicate not only concrete things but also things that are not perceptible in one's visual field.

5. Discussion

Many scholars and linguists have tried to uncover the genesis of language acquisition and discover how it developed and matured into its current state. In this regard, several theories emerged to shed light on this phenomenon. Constructionism, for instance, affirms that children are able to rebuild the linguistic system thanks to their growing socio-cognitive capacities and their burgeoning experience with ambient language usage (Behrens, 2021). A fundamental belief of constructionist theories is that language learning is driven by the need to communicate and that "intersubjective language use underpins the acquisition of the structural properties of the child's native tongue" (Kissine, 2021).

For its part, nativism advocates assert that language is not a social phenomenon and that humans have the ability to learn new languages thanks to the linguistic component responsible for recursion (Hauser et al., 2002). For them, focusing on the communicative functionality of language is a fruitless endeavor since communication encompasses the inner monologue that can range from thinking, imagination and problem-solving to memories and private thoughts (Fitch et al., 2005).

In this sense, the findings of this research paper are more in line with the nativist approach as the case study, who is an autistic boy aged six, succeeded axiomatically in learning a foreign language without any human interference or interaction as it was previously believed. His daily exposure to YouTube videos in English was enough to acquire a new language that was not spoken in his immediate surroundings. The autistic boy showed an acute awareness of semantics and pragmatics when engaging in a conversation in both familiar and formal contexts.

The findings corroborate with the thesis put forward by Kissine (2019) concerning autistic children's acquisition of classical Arabic in a non-interactive way. They also throw light on one of the conundrums of language and communication in relation to speaking autistics.

The findings are also in conformity with the theory of Mottron et al. (2021) regarding the ability of autistic kids to crack the code of the language which is spoken in their environment through the identification and detection of structural rules, the mapping of similar units, and the stabilization of the coupling between identical components leading to a generative code that produces syntactically correct sentences.

All the above-mentioned findings match the Chomskyan nativism or innateness hypothesis, which states that the faculty of language in the narrow sense comprises the bulk of the recursive structures that engender syntax generativity and competency, and allow its mapping to different interfaces.

6. Conclusion and limitations

The findings of this research paper are very significant in the sense that they provide insight to inform strategies used by speech therapists or pathologists working with speaking autistic children. Most of these experts base their therapies on behaviorism-related observable requirements such as eye contact, imitation, imaginative play and socialization, while the introduction of screens, apps and therapy videos like GemIIni[3] could be more beneficial for them. Videos teaching letter pronunciation and new expressive words outside the socio-communicative situation can be more engaging for speaking autistic kids than traditional speech therapy.

For the limitations of this research paper, the findings cannot be extrapolated by default to any autistic kid. Because a case study design was chosen to conduct this research, generalizability was not expected or targeted from the very beginning. Another model of qualitative generalizability, oriented towards the density, depth, and nuances of the human experience, can be applicable in this

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[3] The GemIIni program is a video modelling intervention that teaches autistic kids word identification and enhances their speech output.

regard, which is transferability, case-to-case transfer or case-to-case translation. This type of generalizability posits that a possible generalization to a similar case could be undertaken based on the principle of proximal similarity.

Conflicts of Interest: The authors declare no conflict of interest.
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