Children’s Acquisition of Passive Constructions in Najdi Arabic

Засвоєння дітьми пасивних конструкцій в арабській мові Наджді

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ABSTRACT

Purpose. The current study investigates the comprehension of passive sentences in Najdi Arabic-speaking children. We examine and address previously observed factors affecting children’s passive acquisition with unambiguous passive morphology, thus providing a more reliable picture of the unresolved issue of children’s passive acquisition.

Methods. Using a truth value sentence judgment task, we assessed children’s accuracy across all the experimental conditions, including age (3–5 years), verb types (actional verbs and non-actional verbs), and passive types (verbal passive and adjectival passive).

Results. For all age groups, our results reveal a high level of accuracy with no significant effect of verbal/adjectival passive type or actional/nonactional verb type. These findings provide compelling evidence that Arabic children have early knowledge of passive morphosyntax, emerging around the age of 3.

Conclusions. We concluded that unique passive morphology contributes to the early acquisition of passives in Arabic; the absence of morphological ambiguity of passives with other constructions provides a perfect setting for early passive mastery.

Key words: language acquisition, passive comprehension, morphosyntax knowledge, Arabic passive, passive morphology, child, semantic.

Introduction

The acquisition of passive construction has received considerable attention both empirically and theoretically. It has been studied extensively in many languages in production (for English, Bidgood et al., 2020, for Sesotho, Demuth, 1989; Demuth et al., 2010; for Italian, Volpato et al., 2015, among many others) and comprehension (for Portuguese, Agostinho, 2020, for Sesotho, Demuth et al., 2010; for Catalan, Gavarró & Parramon, 2017, for Italian, Volpato et al., 2015, among many others). Extensive research on passive acquisition has initiated a lively debate about the relative age of passive acquisition with conflicting findings making the case unsettled yet. A considerable number of cross-linguistic studies (e.g., Agostinho, 2020; Maratsos et al., 1985; Volpato et al., 2015) suggest that passive acquisition is not complete until the age of six. Alongside this overwhelming delay, however, are a few languages for which early passive acquisition has been found, including: Japanese (Alexiadou & Ilić, 2023), English (Crain et al., 2009; O’Brien et al., 2006), and Sesotho (Demuth et al., 2010).
Findings on passive acquisition have been affected by various factors including, the verb type (actional vs. nonactional) and passive type (verbal vs. adjectival). It has been found that children acquire actional and adjectival passives earlier than nonactional passives and verbal passives. One reason for this discrepancy is that children initially analyze passive participles as adjectives because adjectival and verbal passives are homophones in some languages such as English (Borer & Wexler, 1987).

In English, a short passive sentence can be either adjectival or verbal (as in 1a). Verbal passive allows eventive interpretation, i.e., an action takes place (as in 1b), while adjectival passive allows a stative interpretation, i.e., an action was done at a certain time point, resulting in a state of being. Thus, a short passive sentence results in the ambiguity between these interpretations. When the by-phrase is added to the sentence, only eventive interpretation is possible and the sentence is unambiguously verbal.

1) 
   a. The letter was written. (The state/event of the letter being written)
   b. The letter was written by Sami. (The event of the letter having been written by Sami)

In contrast to English, Arabic passives do not have such homophony, so the investigation of Arabic passive sentences will provide a clearer account of children’s comprehension of the passive and will avoid the ambiguity problem affecting the results of the major concern at hand. The current study aims to provide a comprehensive empirical investigation of passive acquisition in Najdi Arabic (NA) and to explore the factors that may affect the acquisition of passives. Given that NA passive morphology is unambiguous (Alexiadou & Ilić, 2023; Demuth et al., 2010), we predict that NA-speaking children will master passive constructions at an early age without any significant effect of the verb type (actional vs. nonactional) and the passive type (verbal vs. adjectival).

The paper is structured as follows. Section 2 gives a brief overview of Arabic morphology and passivity. Section 3 surveys some influential studies and theories about passive acquisition. Section 4 presents the experiment we used to measure the level of accuracy in the absence of structural ambiguity. Section 5 presents the major findings of the experiment. Section 6 discusses the implications of the findings.
Finally, section 7 concludes the paper and identifies potential avenues for future research.

### Arabic Morphology and Passivity

Arabic is a Semitic language that adopts root-and-pattern morphology (Danks, 2011; McCarthy, 2021; Ryding, 2005; Wright, 1975). The root consists of a set of consonant phonemes that has a conceptual meaning (e.g., \( f-r-b \) ‘to drink’). Arabic grammarians use the consonantal root \( f-s-l \) ‘to do’ as a model root to describe the various patterns of the word. This root functions as a variable that can be replaced by any consonants in the pattern (e.g., \( fa\text{ṣ}l-a \) ‘he did’, \( ya-\text{ṣ}l-u \) ‘he is doing’, \( fu\text{ṣ}l-a \) ‘it was done’. The pattern, on the other hand, is a combination of a consonantal root and vowels, in addition to affixes. The consonantal root and pattern interact together to establish the word’s meaning and create new words in Arabic (e.g., \( f\text{ra}b-a \) ‘He drank’, \( ya-f\text{ra}b-u \) ‘He is drinking’, \( f\text{ur}ib-a \) ‘It was drunk’).

There are two major ways to express passivity in Arabic: (a) verbal passive which describes an event, and (b) adjectival passive which describes a resultant state of the object after performing the action (Danks, 2011; Ryding, 2005; Wright, 1967). Passive verb formation in NA, like all Arabic verbs, takes place within the context of root-and-pattern morphology. A verbal passive is formed by changing the internal vocalic of the basic verbal root \( f-s-l \) (as in 2b). An adjectival passive is passivized by attaching the prefix -\( in \) to the verb (as in 2c). NA, therefore, exhibits a distinct and clear morphology for verbal and adjectival passives (Alkhudair & Aljutaily, 2022; Ingham, 1994).

\[
\begin{align*}
\text{a. } fit\hat{a}h & \quad Ahmed & el-bab & \quad \text{(Active)} \\
\text{opened-3SM-\text{ACT}} & \quad Ahmed & \text{the-door} & \quad \text{‘Ahmed opened the door’} \\

\text{b. } fie\hat{\imath} & \quad el-bab & \quad \text{the-door} & \quad \text{(Verbal passive)} \\
\text{opened-3SM-\text{PASS}} & \quad \text{the-door} & \quad \text{‘The door was opened’} \\

\text{c. } \hat{\imath}nf\hat{e}\hat{\imath}ah & \quad el-bab & \quad \text{the-door} & \quad \text{(Adjectival passive)} \\
\text{opened-3SM-\text{PASS}} & \quad \text{the-door} & \quad \text{‘The door was opened’}
\end{align*}
\]
From a morphosyntactic standpoint, verbal passive morphology implies an implicit external agentive argument*. This unpronounced argument is assumed to be pro, which is syntactically active. Adjectival passive morphology, by contrast, does not imply an external agentive argument and, thus, pro is not syntactically projected. The internal argument in both verbal and adjectival passive constructions is moved from its base-generating position to the matrix subject position, in contrast to English adjectival constructions where the internal argument is not promoted (e.g., Wasow, 1977; Williams, 1980). Thus, passive structures in Arabic are nonetheless syntactically unambiguous (Fassi Fehri, 2012; Jarrah, 2023; Shormani, 2017).

**Previous Studies**

The acquisition of passives has received considerable attention. It was of particular interest in much research due to its syntactic complexity and the varying patterns of acquisition. In the following sub-sections, we present empirical data for and against the late acquisition of passive sentences. Then, we review some of the influential theoretical proposals on children’s passive acquisition. Finally, we summarize this section and outline the current gap in the literature.

**Late Mastery of Passive Constructions**

One of the most notable findings about passive acquisition comes from a 1978 study by Horgan, who examined children’s production of short and long passives by using a picture description task (as illustrated in 1a and 1b, respectively). Horgan found that English-speaking children performed significantly better on short passives than long passives. Children showed good competence of short passives (60%) at the age of four, whereas long passives are still problematic at the age of six (only 10%). Horgan, therefore, concluded that early passives in English-speaking children tend to have stative readings and verbal passives are fully acquired after the age of six. The discrepancy between the acquisition of short and long (verbal) passives was later tested in English (e.g., Borer & Wexler, 1987; Gorden & Chafetz, 1990; Hirsch & Wexler, 2006) and in several languages (e.g., Agostinho, 2020, for

* Arabic does not allow the external argument of the active verb to be overtly lexicalized (Shormani 2017).
While findings from Horgan (1978) suggested late acquisition of verbal passives, later studies found passive acquisition more complicated and has a divergent acquisition age. Maratsos et al. (1985) set out a study to determine whether semantic factors affect the comprehension of passives. They tested English-speaking children in two comprehension tasks containing actional verbs (verbs that describe concrete actions, as in 3a) and nonactional verbs (verbs that describe states, emotions, or experience, as in 3b) to determine whether the verb semantics affect their performance.

3)

a. Superman was held by Batman.
b. Goofy was liked by Donald. (Adopted from Maratsos et al., 1985: 3)

The findings suggested that children’s early comprehension is restricted to actional passives. Four-year children performed significantly better at actional passives compared to nonactional passives. However, children performed poorly at nonactional passives until 9–11 years. Maratsos et al. (1985) suggested that children’s early grammar is constrained to verbs with high "semantic transitivity" (Hopper & Thompson, 1980). This concept refers to the gradient semantic properties of an event (from highest to lowest). Actional verb (3a) is higher in transitivity than nonactional verb (3b), because the latter does not have properties such as affectedness, intentionality, or change of state. The asymmetry between actional and nonactional passives has been widely replicated in English (Bidgood et al., 2020; Gorden & Chafetz, 1990; Hirsch & Wexler, 2006; Orfitelli, 2012; Paolazzi et al., 2021; Sudhalter & Braine, 1985) and in other languages investigating children’s passive acquisition (e.g., Agostinho, 2020, for Portuguese; Gavarró & Parramon, 2017, for Catalan; Koutamanis, 2015, for Dutch; Oliva & Wexler, 2018, for Spanish; Perovic et al., 2012, for Serbian; Safari & Mehrpour, 2015, for Persian; Volpato et al., 2015, for Italian).

Nguyen and Pearl’s (2021) recent meta-analysis also evoke semantic factors to explain away the predicated-based asymmetry of actional and nonactional passives on passive acquisition. They link lexical-semantic
features of the verbs to children’s passive comprehension to identify which of the several lexical-semantic characteristics of nonactional predicates cause difficulties for children. To this end, they annotated the verbs examined in the acquisition literature using a set of descriptive semantic categories (e.g., affected, actional, volitional, stative, and thematic-role relations). This resulted in a set of five lexical-semantic profiles for the verbs studied in the literature. Furthermore, they identified the acquisition age of each verb tested in the literature to estimate the acquisition age of their lexical-semantic profiles as shown in Table 1.

Table 1
A List of Lexical-Semantic Features, as well as Examples of Verbs with (+) and without (-) that Feature, and their Predicted Acquisition Age (Adopted and modified from Nguyen & Pearl, 2021: 11)

<table>
<thead>
<tr>
<th>Profile</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actional</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Stative</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Volitional</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Affected</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Object-Experiencer</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Subject-Experiencer</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Agent-Patient</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Example</td>
<td>fix</td>
<td>frighten</td>
<td>find</td>
<td>forget</td>
<td>believe</td>
</tr>
<tr>
<td>Predicted Acquisition Age</td>
<td>3yrs</td>
<td>3–4yrs</td>
<td>4–5yrs</td>
<td>4–5yrs</td>
<td>5yrs</td>
</tr>
</tbody>
</table>

Nguyen and Pearl’s (2021) meta-analysis revealed a strong correlation between the lexical-semantic profile of verbs and their age of acquisition for passive constructions. The findings also revealed that not all non-actional verbs pose the same level of difficulty for children’s passive acquisition. Passives with non-actional verbs in Profiles 2 and 3 are acquired earlier than those in Profiles 4 and 5. Accordingly, they hypothesize that the lexical-semantic properties of verbs can predict their acquisition age and, more broadly, the relative ordering of their acquisition compared to other verbs. Their prediction was born out in their truth value judgment task in which children comprehend passive verbs with earlier lexical-semantic profiles (Profiles 1, 2, and 3) more easily than passive verbs with later profiles (Profiles 4 and 5). Nguyen and Pearl conclude that the lexical-semantic features of the verbs are critical in determining children’s mastery of passive constructions.
Early Mastery of Passive Constructions

Further investigations on the acquisition of passives in English challenge the view that passive sentences are difficult for children to produce and comprehend. Crain and Fodor (1993) and Crain et al. (2009) suggested that verbal passives are pragmatically marked structures that are only appropriate in certain discourse settings. Children can produce by-phrases successfully when they are promoted to differentiate between one or more plausible alternatives. Crain et al. (2009) successfully elicited verbal passives from English-speaking children as young as three using this technique. Similarly, O’Brien et al. (2006) observed that when the pragmatic felicity conditions are met in the task, 4-year-old children are capable of comprehending all passive constructions, including nonactional passives.

Further suggestive evidence in favor of early passive acquisition comes from numerous non-Indo-European languages where passives are frequently used in children’s input (e.g., Alcock et al., 2012, for Kiswahili & Kigirama; Allen & Crago, 1996, for Inuktikut; Demuth, 1989; Demuth et al., 2010, for Sesotho; Pye & Poz, 1988, for Mayan K’iche; Suzman, 1987, for Zulu). Early production of passive sentences has been attested among speakers of Sesotho. Sesotho is a Bantu language in which adjectival and verbal passives are morphologically different. Demuth (1989) reported spontaneous production speech of short and long passives starting around the age of three in Sesotho. By the same age, Demuth et al. (2010) found that Sesotho children do not only produce passives, but they also comprehend short and long passives based on actional and nonactional verbs. Interestingly, Demuth et al. found that Sesotho children can easily apply the passive formation to novel verbs that they have never encountered before. Thus, providing robust evidence of early acquisition in Sesotho. Demuth et al. suggested that the uniqueness of passive morphology and the frequent use of passives in Sesotho facilitate the early acquisition of passives.

More recent evidence has also reported early production of passive constructions in children acquiring Japanese. Unlike in English, Japanese lacks the structural ambiguity of passive constructions and devotes a unique passive morpheme realized as -(r)are. Alexiadou and Ilić (2023) extracted the passive utterances containing the passive morpheme -(r)are from the CHILDES database (MacWhinney 2000). The corpus study consists of two longitudinal data sets of two children acquiring...
Japanese (age range: 0;5–6;1). The findings showed that the overt realization of passive morphology is present in children’s spontaneous production from an early age. The total number of passive utterances was 393, accounting for 1.10% of all utterances (N = 35666). The findings further showed a discrepancy between long passives and short passives, with long passives being significantly less frequent (N = 117, 0.32%) than short passives (N = 276, 0.77%). The frequency of both long and short passives continued to increase in the age range 3;4–4;2. Accordingly, Alexiadou and Ilić conclude that passive constructions are acquired early in Japanese, and the presence of overt passive morphology in Japanese aids early acquisition. However, this study did not consider the predicate-based asymmetry of actional and nonactional passives. Considerable evidence found that nonactional passives emerge late in language development (e.g., Agostinho, 2020; Hirsch & Wexler, 2006; Maratsos et al., 1985).

### Previous Account of Children’s Acquisition of Passives

Numerous accounts have been proposed to explain children’s delayed acquisition of passives. These accounts can be divided into two main types: (a) input-based accounts and (b) syntactic-based accounts.

The input-based accounts posit that passive acquisition is input-contingent. Demuth’s (1989) seminal work for Sesotho, later followed by Allen and Crago (1996) for Inuktitut, proposes that the age at which premature children acquire passive structures is dependent on the rate of passives in their input. In Sesotho and Inuktitut, passive constructions are commonly used in child-directed speech, which may stimulate early passive acquisition. Along similar lines, Gordon and Chafetz (1990) report that passive utterances of any type in English are used infrequently in parental speech (only 0.4%) and that nonactional passives are less frequent than actional passives. It is thus the low frequency that causes delayed passive acquisition.

The syntactic-based accounts, on the other hand, propose that passive acquisition is not input-contingent. These accounts have in common that a syntactic deficit in children’s language underlies their delayed passive acquisition. They, however, diverge in their analyses on which syntactic process poses a problem for premature children.

The seminal syntactic-based account was Borer and Wexler (1987), who propose that children lack the ability to form argument
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A-chains, which are genetically determined to be available in child grammar around the age of 5–6 years. Prior to this age, children misanalyze verbal passive as adjectival (or resultative), which do not involve A-chains*. According to Borer and Wexler (1987), actional verbs are more semantically compatible with the adjectival interpretations. This reason may explain children’s better performance on actional and adjectival passives as opposed to nonactional and verbal passives (see also, Hirsch & Wexler, 2006; Wexler, 2004, for similar arguments).

Hyams and Snyder (2005), Orfitelli (2012), and Snyder and Hyams (2015) argue that children do not lack the ability to form A-chains, rather they are delayed in acquiring only those nonactional passives which involve argument intervention. Their proposals are based on Collins’s (2005) approach to English passives in which the external argument represents an intervening argument for the movement of the internal argument. More specifically, they claim that children cannot smuggle and then raise the experiencer internal argument over the intervening external argument.

Aravind and Koring (2022) instead propose that not all nonactional passives are problematic for children’s passive acquisition. In light of Nguyen and Pearl’s (2021) meta-analysis, Aravind and Koring (2022) observed that the subject-experiencer feature sets apart the earliest-acquired lexical-semantic profiles from the latest-acquired profiles. They argue that the children’s difficulties stem from the syntax of experiencers and that as a result, children initially assign an unaccusative syntax to subject-experiencer structures, which renders them unpassable**.

Summary of Children’s Acquisition of Passives

Conflicting results have been found in previous works on the acquisition of passive. On the one hand, children were late in developing adult comprehension of certain passive structures such as nonactional and verbal passives (e.g., Horgan, 1978; Maratsos et al., 1985). Children’s difficulties in passive structures prompted numerous accounts to explain

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* Borer and Wexler (1987) adhered to early approaches to adjectival passives in which the subject is often viewed as base-generated rather than moved from the object position (e.g., Wasow 1977; Williams 1980).

** Subject-experiencer constructions and unaccusative structures differ in their syntactic realizations; the experiencer in the former is projected as an external argument, whereas the latter is generated internally (Aravind & Koring 2022).
the apparent delay such as the lexical-semantic profile hypothesis proposed by Nguyen and Pearl (2021). Counterevidence, however, has reported early mastery of passive constructions starting around the age of three. It has been demonstrated that the high frequency in the input, the passive’s unique morphology, and the pragmatic felicity of the test administration may aid the early acquisition of passive constructions (e.g., Alexiadou & Ilić, 2023; Crain et al., 2009; Demuth et al., 2010). Given such variations, further experimental studies with unambiguous passive morphology, such as Arabic, are needed to better understand the challenges faced by the children. This paper attempts to address the current gap in passive acquisition. The main aims of this paper are twofold: the first is to investigate the comprehension of passive sentences in NA, and the second is to examine the effect of verb class (i.e., actional vs. nonactional) and passive type (i.e., verbal vs. adjectival) on children’s acquisition.

Methodology

Participants
A total of 51 normally developing monolingual NA children (25 boys and 26 girls) participated in this study. All the participants were native speakers of NA, a dialect spoken in central regions of Saudi Arabia. The children were divided into three groups according to their age as shown in Table 2. The age span was chosen because passive acquisition varied cross-linguistically, emerging around the ages of 3–5 (e.g., Alexiadou & Ilić, 2023; Nguyen & Pearl, 2021). Children were recruited in two preschools in Buraydah city. After the study was conducted children were excluded from further analyses if they showed yes or no biases. In addition to children, a control group consisting of ten NA-speaking adults ranging in age from 20–30 years were examined to compare their performance with child participants. To comply with ethical principles, children’s parents and adult participants signed consent forms.

Materials
The study employed a truth value sentence judgment task (TVJT) in which the child judged the sentences uttered by the puppet (Crain & Thornton, 1998). A total of 12 experimental sentences were used in
the study. Given that NA does not allow long passives, all of the passive sentences were short passives, lacking an overt external argument. The stimuli sentences were divided into 4 (short) verbal passives, 4 adjectival passives, and 4 actives. The battery included 6 actional and 6 subject-experiencer nonactional verbs presented in matched and mismatched contexts. The match contexts accurately described the scenario, whereas the mismatch contexts inaccurately described what happened. True and false targets were randomly presented, to ensure that each child comprehended the sentence. Table 3 lists all the experimental conditions for each sentence. Each test sentence was preceded by a unique scenario that contained the target answer. Two additional active sentences were used for training purposes.

Table 2
Participant Details

<table>
<thead>
<tr>
<th>Group</th>
<th>Age Range</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3;0–3;11</td>
<td>16</td>
</tr>
<tr>
<td>2</td>
<td>4;0–4;11</td>
<td>17</td>
</tr>
<tr>
<td>3</td>
<td>5;0–5;11</td>
<td>17</td>
</tr>
<tr>
<td>4 (Control Group)</td>
<td>20–30</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 3
Test Items by Condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>Match Test Item</th>
<th>Mismatch Test Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>/ʔakɑl ʔɑlɑsɑd alyazalah/</td>
<td>/sarag ahsʔan alKasʔi:r/</td>
</tr>
<tr>
<td></td>
<td>‘The lion ate the deer’</td>
<td>‘The horse stole the juice’</td>
</tr>
<tr>
<td></td>
<td>/sɑmɑʕ aldʒɑmal sʔu:t albasah/</td>
<td>/ʃa:f Ahmed asi:baq/</td>
</tr>
<tr>
<td></td>
<td>‘The camel heard the cat’s sound’</td>
<td>‘Ahmed saw the race’</td>
</tr>
<tr>
<td>Verbal</td>
<td>/wkl alxɑru:f/</td>
<td>/hhegat asmikkah /</td>
</tr>
<tr>
<td></td>
<td>‘The sheep was eaten’</td>
<td>‘The fish was chased’</td>
</tr>
<tr>
<td></td>
<td>/ʃemmat albiːtzaː:/</td>
<td>/fhemat tʔrigat alkkahː/</td>
</tr>
<tr>
<td></td>
<td>‘The pizza was smelled’</td>
<td>‘The cake recipe was understood’</td>
</tr>
<tr>
<td>Adjectival</td>
<td>/ʔɪndʒelad aħmar/</td>
<td>/ʔɪnseraɡat alkuːrah/</td>
</tr>
<tr>
<td></td>
<td>‘The donkey was hit’</td>
<td>‘The ball was stolen’</td>
</tr>
<tr>
<td></td>
<td>/ʔɪnsɪmʕat ɑlɡɑsˁɑh/</td>
<td>/inʃɑːf alflem/</td>
</tr>
<tr>
<td></td>
<td>‘The story was heard’</td>
<td>‘The movie was watched’</td>
</tr>
</tbody>
</table>

Procedure
A TVJT was used to assess children’s comprehension of passive sentences (Crain & Thornton, 1998). The child in this task viewed...
a series of stories acted out using toy animals and dolls. The characters in the stories were introduced before the test administration. Following each story, the puppet commented about the story, and the child indicated whether the puppet’s remark was true or false and why. The child rewarded the puppet for its true statements and reminded it for its false statements. The child rewarded the puppet by giving it two games and reminded it by giving it one game. Each child was examined individually for 20–30 minutes. The session was audio-recorded to review children’s responses. A sample for a verbal-actional passive sentence is given in (4).

4) Experimenter 1: Khaled raḥ lalbuḥairah wa astayrab lmma faf batʿah hamra wa smikkah biḥa! gal wow! wdi axōhum ibːtna, bs mḥtar axaḍ albatʿah aw asmikkah? xal alḥag asmikkah. la! ableḥag albatʿah ʕalafānh abtʿaʔ? min asmikkah. laḥag Khaled albatʿah bs hadżat albatʿah wa tʾah Khaled wa dzlisat albatʿah tāʾḥak ʕaliːh. Khaled: jaliti leḥagat asmikkah aḥsan!
‘Khaled went to the lake and was surprised when he saw a red duck and a white fish! Khaled said: “Wow! I wish I could take them to my home, but I am confused, should I take the duck or the fish? I will chase the fish. No! I will chase the duck because it is slower than the fish”. Then, Khaled chased the duck, but the duck ran away. After that, Khaled fell and the duck was laughing. “I wish that I chased the fish instead!” Khaled said’.

Experimenter 2: Koko ɡlli wʃ sʾar balgasʿah? ‘Koko [the puppet’s name], tell me what happened in this story?’
Puppet: ʕaraft min ali leḥag! lḥegat asmikkah ‘I know which one was chased! The fish was chased’.
Child: xaṭʿaa! ‘Wrong!’

We attempted to control the pragmatic context in the stories that properly motivate the use of passives. The child in (4) is promoted to distinguish between the actual target character (the duck) and the additional potential character (the fish) and then judge the test sentence. Moreover, children’s justifications for their responses allow us to determine whether their responses are motivated for the right reason.

The adult participants (control group) were given a printed version of the stories and accompanying experimental sentences. They were
instructed to read the stories and assign whether the sentences were true or false.

**Data Analyses**

Children’s responses were statistically analyzed using descriptive statistics and a logistic regression model. Main descriptive statistics were calculated for all children’s responses to measure the level of accuracy of their comprehension of passive constructions. The logistic regression model was then applied to determine the significance of age, verb types, and passive types on children’s passive accuracy.

**Results**

All children had reached near-ceiling levels (99% and 97% for actional and nonactional verbs, respectively) in comprehending active sentences and provided justifications for their answers. Only one child in the first age group was excluded from data analysis due to inattention and a yes bias. Moreover, the control group performed at ceiling levels (100%) in all conditions. This step was taken to guarantee that the participants included in this study understood the experimental task. In the following sections, we examine children’s overall accuracy in TVJT and then compare the three experimental conditions.

**Level of Accuracy for NA-speaking Children in Comprehending Passive Constructions**

We start by reporting the overall accuracy across the experimental conditions for all age groups. In Table 4, we present the number and percentage of correct responses, and the mean values for all verb types (actional verbs and non-actional verbs) and passive types (verbal passive and adjectival passive).

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>Verbal Passive</th>
<th>Adjectival Passive</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actional</td>
<td>Non-actional</td>
<td>Actional</td>
</tr>
<tr>
<td></td>
<td>81%</td>
<td>75%</td>
<td>81%</td>
</tr>
</tbody>
</table>
As Table 4 shows, even in the youngest age groups tested, all NA children perform at above chance levels, with mean values of 77% and 87% for three-year and four-year children, respectively. Table 4 also shows that five-year NA children perform at the ceiling in all the experimental conditions (100%).

**Determinants of Level of Accuracy for NA-speaking Children in Comprehending Passive Constructions**

We analyzed children’s responses using a logistic regression model to determine the factors that significantly affect children’s accuracy in the TVJT. The factors that are nominated to have a significant effect on children’s comprehension of passive constructions are: children’s age, verb type, and passive types. Table 5 presents the findings of the logistic regression model.

**Table 5**

*Results of the Logistic Regression Model*

<table>
<thead>
<tr>
<th></th>
<th>Coef.</th>
<th>Std. err.</th>
<th>z</th>
<th>p</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-.506</td>
<td>.467</td>
<td>-1.08</td>
<td>0.279</td>
<td>-1.421</td>
</tr>
<tr>
<td>Age</td>
<td>1.356</td>
<td>.259</td>
<td>5.22</td>
<td>0.000</td>
<td>.846</td>
</tr>
<tr>
<td>Verb types</td>
<td>.662</td>
<td>.339</td>
<td>1.95</td>
<td>0.051</td>
<td>-.003</td>
</tr>
<tr>
<td>Passive types</td>
<td>-.109</td>
<td>.331</td>
<td>-0.33</td>
<td>0.741</td>
<td>-.759</td>
</tr>
</tbody>
</table>

*Note: Coef. = Coefficient, Std. err. = Standard error, CI = Confidence interval*

Considering the whole group of children, no significant effect is found for verb types ($z = 1.95, p = 0.051$) and passive types ($z = -0.33, p = 0.741$). A statistically significant effect is found with children’s age ($z = 5.22, p = 0.000$). Therefore, we ran logistic regression models separately for each age group to examine the effect of verb types and passive types on children’s passive comprehension. The findings
further reveal no significant effect of the passive types (G1: \( z = -0.21, p = 0.832 \), G2: \( z = -0.26, p = 0.793 \)) and verb types (G1: \( z = 1.05, p = 0.293 \), G2: \( z = 1.76, p = 0.078 \)) on children’s passive accuracy.

**Discussion**

The present study investigated the comprehension of passive sentences by NA children and whether the special morphological characteristics of Arabic passives can help us identify the potential causes of children’s difficulties, if any, in passive acquisition.

Our experimental data provide evidence in favor of the early acquisition of passive sentences. In particular, high accuracy was observed in children’s comprehension of passives; the mean percentage of accurate responses was (88%) for all age groups. Most of the children in this study provided accurate justifications for their answers which demonstrated an understanding of the TVJT scenarios and few children produced passive sentences as shown in (5).

\[ 5 \]

a. laa! ?mseragat a-fukalat'ah.  
no stolen-3sgf-pass the-chocolate  
‘No! The chocolate was stolen.’

b. xatˁaa! lheğat el-batˁah  
wrong chased-3sgf-pass the-duck  
‘False! The duck was chased.’

We attribute the high accuracy observed in children’s performance to the unique morphological properties of passive voice in Arabic. Passive sentences in NA have two main features: (a) they construct passive sentences morphologically rather than periphrastically by using auxiliaries, and (b) they employ special verbal affixes for verbal and adjectival passives, which eliminates the interpretation ambiguity of passive types. We propose that the presence of such features may contribute to early passive acquisition. Findings from previous studies suggest that our proposal is born out. Children appear to acquire passive constructions quite early in languages that form passive structures morphologically and exhibit a unique dedicated passive morphology (e.g., Alcock et al., 2012, for Kiswahili & Kigiriana; Alexiadou & Ilić, 2023, for Japanese; Allen & Crago, 1996, for Inuktitut;
Demuth et al., 2010, for Sesotho; Pye & Poz, 1988, for Mayan K’iche; Suzman, 1987, for Zulu), whereas they are significantly delayed in languages that build passive sentences periphrastically and do not exhibit a transparent passive morphology (e.g., Gavarró & Parramon, 2017, for Catalan; Hirsch & Wexler, 2006, for English; Oliva & Wexler, 2018, for Spanish; Volpato et al., 2015, for Italian).

This finding is unexpected under previous theoretical accounts which were developed to explain children’s difficulties. Specifically, this finding casts further doubt on syntactic-based accounts (e.g., Aravind & Koring, 2022; Borer & Wexler, 1987; Orfitelli, 2012; Snyder & Hyams, 2015), which claim that children’s early grammar suffers from deficit, as early mastery argues against such a line of reasoning. This finding also argues against input-based accounts (e.g., Allen & Crago, 1996; Demuth, 1989; Gordon & Chafetz, 1990), which claim that the scarcity of passives in parental input delays the acquisition of passive constructions since passives are used infrequently in NA.

Another major sticking point concerns the acquisition of verbal and adjectival passives. Our data do not support the asymmetry found in other languages (e.g., Agostinho, 2020, for Portuguese; Gavarró & Parramon, 2017, for Catalan; Hirsch & Wexler, 2006, for English; Oliva & Wexler, 2018, for Spanish; Safari & Mehrpour, 2015, for Persian; Volpato et al., 2015, for Italian). In particular, we do not find verbal passives to be more inherently difficult than adjectival passives, replicating O’Brien et al. (2006) and Crain et al.’s (2009) results on English and Demuth et al. (2010) on Sesotho, among many others. This finding also contrasts previous proposals (e.g., Borer & Wexler, 1987; Hirsch & Wexler, 2006; Wexler, 2004) which claim that children’s early passives are adjectival (or resultative). These theoretical proposals were developed based on English data, in which verbal passives are homophones with adjectival passives. In Arabic, verbal passives do not interact with adjectival passives and such ambiguity does not arise.

As for the discrepancy between actional and nonactional passive acquisition, our results replicate the findings observed in other languages (e.g., Agostinho, 2020, for Portuguese; Gavarró & Parramon, 2017, for Catalan; Koutamanis, 2015, for Dutch; Maratsos et al., 1985; Oliva & Wexler, 2018, for Spanish; Paolazzi et al., 2021, for English; Perovic et al., 2012, for Serbian; Safari & Mehrpour, 2015, for Persian; Volpato et al., 2015, for Italian). In particular, we found NA children...
are more accurate in their comprehension of actional passives than nonactional passives. Although children performed better on actional verbs compared to nonactional ones, even 3-year-olds in this study performed effectively above chance on nonactional verbs (higher than 70%). The verb type contrast observed across the first two youngest groups was indeed statistically insignificant. This finding is unexpected in light of the results in previous studies (e.g., Maratsos et al., 1985) which found that children’s difficulties with nonactional passives persist well until the age of 9–10.

The above chance comprehension of nonactional verbs by 3-year-old NA children does not mirror Nguyen and Pearl’s (2021) lexical-semantic profile hypothesis, which predicts that verbs in the later profiles (Profile 5) will be acquired at the age of five.

It also argues against syntactic-based hypotheses (e.g., Aravind & Koring, 2022; Borer & Wexler, 1987; Orfitelli, 2012; Snyder & Hyams, 2015). We instead propose that the slightly lesser accuracy of NA children with nonactional verbs (compared to actional verbs) reflects an experimental artifact (See also Demuth et al., 2010; Volpato et al., 2015, for similar arguments). It is impossible to act out mental activities (e.g., understand) with dolls in the TVJT, unlike physical activities (e.g., chase).

Finally, our results suggest that NA children are more accurate in actives (99% and 97% for actional and nonactional verbs, respectively) than passives (88%) independent of the verb type and passive type. This accords with earlier observations (e.g., Maratsos et al., 1985; Meng & Bader, 2021; Paolazzi et al., 2021), which consistently reported passives to be more errorful than actives.

Taken together, the high accuracy in passive comprehension leads us to the conclusion that Arabic children have knowledge of passives from the very early stages of language acquisition. This finding seems to be constituent with our prediction that NA-speaking children will acquire passive constructions quite early and this is independent of any complexity involved (i.e., verb type and passive type).

**Conclusion**

The current paper addresses the question of comprehension of passive for NA children and whether passive acquisition is early or late.
Divergent findings in other languages makes it essential to consider factors including the method approach of TVTJ and the interpretation of passive morphology. We adopted TVTJ as it has been shown to be essential to obtain clearer findings. We also chose Arabic as its morphology does not have a homophony and thus ambiguous interpretation that affects answering the question at hand should not intervene.

Our findings show that syntactic knowledge of passive constructions is attested early in Arabic children’s language, starting around the age of three. The high overall accuracy of children in comprehending passive sentences (88%) in NA strengthens our conclusion. For all age groups, we found no significant effect of the passive type or the verb type, thus further support that passive sentences are fully acquired from an early age.

This work makes various contributions. It is the first experimental study that examines the acquisition of passives in NA. It also provides insights into passive acquisition cross-linguistically as it shows that the uniqueness of passive morphology supports the early acquisition of passives, as also reported in Japanese, Sesotho, and German (e.g., Alexiadou & Ilić, 2023; Demuth et al., 2010; Grillo et al., 2018; respectively). Furthermore, the findings of this study challenge theoretical proposals that claim that children’s early grammar is deficit and that passive constructions are acquired late (e.g., Aravind & Koring, 2022; Borer & Wexler, 1987; Orfitelli, 2012; Snyder & Hyams, 2015).

We believe that the current findings are of importance to empirical and theoretical works on passive. While replicating this study on a larger pool will further validate our results, the findings of this study still shed a new light to the unsettled issue of passive acquisition.

Acknowledgments. We are grateful to the audience of the 36th Annual Symposium on Arabic Linguistics for providing outstanding feedback and suggestions on an early version of this. We would also like to thank all the participants who took part in this work for their time.

Abbreviations

ACT = Active, F = feminine, M = masculine, NA = Najdi Arabic, PASS = passive, 3SG = third person singular, TVJT = truth-value sentence judgment task.
ADHERENCE TO ETHICAL STANDARDS

**Ethics Declarations.** The current study was conducted according to the guidelines of the Declaration of Helsinki (1964) and approved by the Committee of Research Ethics in the Deanship of Scientific Research at Qassim University, ethical approval #23-27-14. Informed consent was obtained from each adult participant and the legal guardian of each child participant, and all research data was anonymized.

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

**Data Availability Statement.** All data generated or analyzed during this study are included in this article and its supplementary files.

**Author Contributions.** Bayan Albedaiwi and Yasser Albaty contributed to the study’s conception and design. All authors contributed to material preparation, data collection, and analysis. All authors contributed to the first draft of the manuscript, proofreading, and copyediting. All authors commented on previous versions of the manuscript, and all authors reviewed and approved the final version of the manuscript.

**Consent for Publication.** The authors approve of this submission and, conditional upon the decision made by the editorial board from the peer-review process, consent to the publication of the current work. The work has not been, nor has it been submitted to other journals in consideration for publication.

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АНАТОНЯ
Мета. Дослідження присвячене вивченню розуміння пасивних речень дітьми, які розмовляють арабською мовою на діалекті Наджі. Вивчалися раніше виявлені фактори, що впливають на засвоєння дітьми пасивних речень з однозначною пасивною морфологією, таким чином надаючи більш достовірну картину невирішеного питання засвоєння дітьми пасивних речень.
Методи. Використовуючи завдання на визначення істинності речень, ми оцінювали точність дітей у всіх експериментальних умовах, включаючи вік (3–5 років), типи дієслів (дієприкметники та недієприкметники) та типи пасивів (дієслівний пасив та дієприкметниковий пасив).
Результати. Для всіх вікових груп наші результати демонструють високий рівень точності речень без значущого впливу дієслівного/прикметникового пасивного типу або дієслівного/недієслівного типу. Ці результати є переконливим доказом того, що арабські діти мають ранні знання про пасивний морфосинтаксис, які з’являються приблизно у віці 3-х років.
Висновки. Унікальна пасивна морфологія сприяє ранньому засвоєнню пасивів в арабській мові; відсутність морфологічної неоднозначності пасивів з іншими конструкціями забезпечує ідеальне середовище для раннього оволодіння пасивом.
Ключові слова: засвоєння мови, розуміння пасиву, знання морфосинтаксису, арабський пасив, пасивна морфологія, дитина, семантика.