

# *Language Experience, Dialect Use and their Effect on Language Comprehension*

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## Abstract

This study focuses on dialect and its impact on language comprehension. Specifically, we investigate the Central/Western Pennsylvania dialect and how dialect use influences language comprehension of the “needs” construction, as in “The car needs washed,” instead of “The car needs to be washed.” The “needs” construction is spoken in Central/Western Pennsylvania, as well as other states in the Midwest, like Illinois, Missouri, and Iowa. The present study found that regardless of familiarity with the “needs” construction, people had difficulty reading the “needs” construction, but that the people unfamiliar with the “needs” construction adapted to the novel construction rapidly, whereas those already familiar with the “needs” construction did not. The results of this study have important implications for research showing that prior linguistic experience influences the difficulty of real-time language comprehension (e.g., Kaschak & Glenberg, 2004; Fine et al., 2013,) and highlights why dialect use should be considered when dealing with language comprehension.

## **Introduction**

People are able to adapt to different grammatical and lexical changes over time when thrown into a new language environment. There are many different linguistic environments, even in the same state, in which people speak differently from county to county. When a person moves to a new area with a different dialect, how well does he or she adapt? Language comprehension and experience go hand and hand. Exposure to different dialects is a type of language experience that may influence language comprehension. Dialect and non-standard forms of language vary over time and place. Exposure to different dialects and non-standard forms shapes the way a person may think about language and what sounds standard to them. Therefore, an important question to ask is how do dialectal differences affect the comprehension of standard American English or any other dialect?

There are varying dialectal regions in the state of Pennsylvania, with Eastern Pennsylvania commonly classified as a separate dialect region from Central and Western Pennsylvania (Murray, Frazer, & Simon, 1996). One grammatical construction that is widespread in the Central/Western portion of Pennsylvania is the “needs” construction. For example, a person from Central Pennsylvania may say, *The carpet needs vacuumed before the guests arrive*, instead of saying *The carpet needs to be vacuumed before the guests arrive*. Does this person realize that he or she is saying something that is considered ungrammatical by speakers outside of his or her dialectal region? This study will address a person’s experience

with the Central Pennsylvania dialect and its impact on the comprehension of Standard American English.

### *Language Comprehension of Novel/ Less Frequent Constructions*

Prior linguistic experience can have an impact on the relative difficulty of comprehending different syntactic structures. Wells, Christiansen, Race, Acheson, and MacDonald (2009) conducted a study to investigate how people comprehend subject relative clause sentences, example (1) below, compared to object relative clause sentences, example (2) below. In subject relative clauses, the subject of the main sentence is the grammatical subject in the relative clause. In object relative clauses, the subject of the main sentence is the direct object in the relative clause. Subject relative clauses are easier to comprehend than object relatives because they are similar to common simple transitive sentences, as in example (3) below, and they are more common in English overall.

1. Subject relative clause: The reporter that attacked the senator admitted the error.
2. Object relative clause: The reporter that the senator attacked admitted the error.
3. Simple Transitive Sentence: I rode the bicycle up the hill.

Wells et al. (2009) predicted that structures that share word order similarities with common simple transitive sentences, and are more frequent overall in the language, like subject relative clauses, would benefit less from additional experience than structures that do not share word order similarities with common simple transitive sentences and are less frequent overall in the language, like object relative clauses. Increased experience with object relative clauses would allow for better comprehension of this less-frequent syntactic structure. This is indeed what Wells et al. found, leading them to conclude that language experience with certain relative clauses shapes the way comprehenders adapt to linguistic input.

Working memory can also influence syntactic processing. According to Long and Prat (2008), there are different working memory limitations which, may influence the ability of a person to comprehend language. In the distributional-learning model, knowledge and practice influences language comprehension. Reading span differences have an impact on how people process syntactic ambiguities, like the main-verb/reduced relative ambiguity, *The salad tossed for the party looked delicious*. At the point readers encounter the main verb (e.g., *tossed*), these sentence types can be open to more than one interpretation. Low-span readers' limited knowledge about the sentence ambiguity hindered them from processing the ambiguity at a faster rate. At the same time, Long and Prat show that repeated exposure to these structures can minimize processing differences between high-span readers and low-span readers. More exposure to a novel or less frequent syntactic construction allows for greater comprehension no matter the working memory capacity of the individual, highlighting that language comprehension of syntactic structures also depends on the characteristics of the reader and the complexity of the sentence structure.

Language experience, input, and comprehension eventually can influence language production. The production of a certain utterance gives insight into how an utterance was comprehended by the speaker. MacDonald (2013) emphasizes the Production-Distribution-

Comprehension (PDC) approach in learning how language is processed with regard to word order choices and ease of language planning, thereby proposing a close connection between the choices speakers make in language production and how different structures are comprehended in real time. MacDonald found that the linguistic signals which, unfold over time, always have ambiguity, namely vagueness of meaning in language. To mitigate these ambiguities, comprehenders tend to take what they have learned from various inputs, past experience and implicit utterance choices to understand what needs to be processed. Dialect is a form of language production that can have varying linguistic ambiguities which, a comprehender has to take into account when planning utterances, encountering new dialectal variants, and comprehending linguistic input.

### *Language Adaptation to Novel/Less Frequent Constructions*

New environments offer new linguistic forms of language. Comprehenders may develop expectations about these new environments based on their previous linguistic experience. Fine, Jaeger, Farmer, and Qian (2013) hypothesized that comprehenders will implicitly learn a new or less-frequent syntactic structure when exposure to this structure is increased in the linguistic environment, leading to reduced processing costs. Comprehenders are able to adapt to syntactic constructions through implicit learning of the expectations in a new linguistic environment. Fine et al. (2013) found that comprehenders continuously adapt their syntactic expectations to the statistics of novel linguistic environments, and that the resulting environment-specific expectations can overturn expectations based on previous experience. With various complex linguistic environments, comprehenders adapt to these environments over time throughout their lifespan.

Structural facilitation is the increased preference for the grammatical structure of a recently encountered sentence. In a study by Luka and Barsalou (2005), participants first read a series of unrelated ungrammatical sentences presented individually (reading task). Afterwards, the participants rated sentences (rating task) which, were structurally similar to the ungrammatical sentences they had been exposed to in the reading task as more grammatically acceptable. Luka and Barsalou hypothesized this was based on prior exposure to the novel ungrammatical sentences in the reading task. Structural facilitation is a type of implicit learning. Exposure to a novel construction helps an individual to grammatically accept similar syntactic structures in the future, even when they are actually ungrammatical or only marginally grammatical. Language adaption in the context of non-standard dialects may work the same way, in the sense that a novel dialect becomes more acceptable as exposure to that dialect increases.

### *Priming: Insights into Adaptation*

Similar to the above notion Luka and Barsalou (2005) proposed that exposure to a new syntactic construction leads to grammatical acceptability over time, Kaschak, Loney and Borreggine (2006) found that recent experience with a particular syntactic construction affects the strength of structural priming. Structural priming occurs when a speaker repeats the same syntactic constructions that he or she has recently heard or produced. The degree of language experience with a particular construction modulates the amount of subsequent priming. Connecting this notion to the research question of how dialectal differences impacts language

processing, an individual that has a particular dialect may produce different syntactic constructions more often than others because of his or her language experience.

Speakers can adapt to new constructions in an unfamiliar dialect using implicit learning and prior knowledge. Using the “needs” construction, Fraundorf and Jaeger (2016) studied how this unfamiliar syntactic structure is processed and generalized across different speakers. Implicit learning, specifically learning complex information without awareness of what is being learned, plays a critical role in the comprehension of unfamiliar syntactic constructions. Readers unfamiliar with the Central/Western Pennsylvania and Ohio dialect quickly adapted to the “needs” construction and implicitly learned to process this construction to the point that their reading time patterns on the construction, as a whole, were similar to readers who are familiar with the construction. Linguistic variability is also a factor in how speakers adapt to unfamiliar syntactic constructions. Even speakers of the same language may say things differently from each other. Fraundorf and Jaeger show that through implicit learning and adaptation of linguistic variability, a native speaker of English can rapidly adapt to a new dialect that is different from his or her own.

The comprehension of a novel construction may lead to changes in how people process familiar syntactic structures, which a comprehender already knows. In a study by Kaschak and Glenberg (2004), English native speakers in Wisconsin encountered the “needs” construction and they adapted to new linguistic input rapidly, similar to the participants in Fraundorf and Jaeger’s study (2016). The participants read the “needs” sentence, example (4) below, and a modifier sentence, example (5) below. The opening sequence of the two sentences, example (6) below, is the ambiguous portion of the sentence, which initially lead to misinterpretation of the “needs” construction. Any native speaker of English can read the ambiguous portion of the sentence and come up with his or her own completion. However, Kaschak and Glenberg (2004) found that readers, who were trained on the “needs” construction, read the modifier construction faster in a second phase of the reading task than participants, who trained on the standard version of this construction. Adaptation to the “needs” construction essentially facilitated the processing of the modifier construction. Therefore, adaptation of novel constructions with similar syntactic ambiguities leads to greater comprehension of even previously known language syntactic constructions.

4. The meal needs cooked.
5. The meal needs cooked vegetables to make it complete.
6. The meal needs cooked...

### *Origin of Needs Construction*

Where exactly did the “needs” construction originate? According to Murray, Frazer, and Simon (1996), the “needs” construction was brought to the New World by the Scotch-Irish in the 17<sup>th</sup> and 18<sup>th</sup> centuries. It is mainly spoken in the Midland portion of the U.S. and is recognized by speakers outside of Central/Western Pennsylvania and Ohio. Through surveys conducted by Murray et al., between 1984 and 1988, participants from the states of Indiana, Illinois, Missouri, Iowa, Kansas, South Dakota and Nebraska report recognizing and even using the “needs” construction. It is also known that even though people may recognize the construction in these

areas, users and non-users of the construction co-exist in the same dialectal areas. In a study conducted by Bloomquist (2009), African-Americans in the rural and urban Lower Susquehanna Valley (LSV) area were tested to see if they had used, heard, or never used the “needs” construction before. Bloomquist (2009) found that African-Americans from both the urban and rural LSV area had equal familiarity with the “needs” construction, as compared to European-Americans from the urban and rural LSV area. Despite the African-American communities’ decreased interaction with European-Americans, they still showed increased rates of familiarity with the “needs” construction.

According to Murray et al. (1996), speakers who have grown up speaking the “needs” construction are often oblivious that they even say it. Users of the construction often incorporate it into their language so unconsciously that speakers will actually deny using the “needs” construction, then turn around and use it only moments later without realizing they have done so. Murray et al. also mentioned that teachers, who accept the construction as standard, may teach their students the construction as standard as well.

### *Present Study*

In the present study, I will investigate how dialect, as a measure of language experience, affects how people comprehend sentences in real-time. Through collecting data from native English speakers, who grew up in Pennsylvania or Ohio, and comparing them to native English speakers from surrounding states, we can examine how language dialect and experience impacts language comprehension of the “needs” construction. This research has important implications for our understanding of syntactic adaptation, structural priming and language comprehension more generally. Thus, the present study addressed the following research questions:

- Do people who are used to the “needs” construction think that it is grammatically correct?
- Can dialect experience influence an individual’s expectations during real-time language comprehension?

## **Method**

### *Participants*

Participants in this study stem from previously recorded data from the spring of 2016 and the summer of 2016. All participants were recruited from the student population or surrounding university community at a large university in the northeastern United States. Participants received either course credit or nominal compensation for their participation. Twenty-nine males and sixty-nine females participated in the study. The mean age of the participants was 19 years old. The age range of the participants was between 18-57 years old. One participant was a native of Ohio. Twenty-eight participants were natives of Central/Western Pennsylvania. Thirty-three participants were natives of Eastern Pennsylvania. Thirty-six participants were natives of other surrounding states, such as Maryland, Virginia, New York and New Jersey. As described in greater detail below, half of the participants received the “needs” training, and half of the participants received the standard training.

## Materials

Phase 1 (Training) of the experiment consisted of thirty-five sentences. The experiment had ten “needs” sentences, example (7) below, or ten standard sentences, example (8) below, and fifteen filler sentences, example (9) below. Phase 2 of the experiment consisted of fifty sentences. Ten sentences represented modifier sentences, such as *The ceramic tile needs washed stickers to be put on it*. There were 10 needs sentences or standard sentences, examples (7) or (8) below. The last thirty were filler sentences, example (9) below. The participants received the same types of sentences, either “needs” or standard sentences, from Phase 1 (Training) to Phase 2. (See Appendix A for a complete list of experimental items).

7. “Needs” construction: Florida oranges need peeled before they can be eaten.
8. Standard construction: Florida oranges need to be peeled before they can be eaten.
9. Filler items: The girl played with the doll while her brother played with the truck.

At the end of each sentence, participants answered a yes/no comprehension question, such as “*Are the oranges from Florida?*”

## Procedure

Upon arrival, participants signed a consent form. Next, they completed a language history questionnaire asking about years of formal education, language proficiency in their native language and any foreign languages, and where they grew up. In the self-paced reading task, participants read sentences word for word on the computer. The sentences appeared in a series of dashes, and as the participants pressed the space bar, the first word of the sentence appeared. Each time the participant pressed the space bar, the next word in the sentence appeared and the prior word disappeared. After each sentence, a yes/no comprehension question appeared and participants pressed the appropriate key, Y or N, on the keyboard.

There were two different conditions of the study, one in which participants encountered only the “needs” construction, and one in which participants encountered only the standard construction. In the Training portion (Phase 1) of the experiment, there was one “needs” sentence or one standard sentence, depending on which training condition participants were assigned to, followed by two filler sentences. During Phase 2, sentences were presented in a pseudorandomized order, with no sentences with the same condition presented in a row.

After the self-paced reading task, the participants completed a task that measured their working memory. In this working memory task, the participants memorized English words on the screen as they simultaneously solved mathematical equations. The participants first saw a simple math equation on the screen with an answer, and they had to decide whether the answer provided was correct or incorrect using two keys on the keyboard labeled Y or N. Then a word appeared on the screen for 1250 milliseconds. The equations and words appeared in sets of two to six pairs, with a word after each equation. The word RECALL appeared on the screen after each set, at which point the participants had to type as many of the English words as they could remember and press the escape (ESC) key when they finished. The participants were not allowed to type the last word in the set first during the recall portion of the experiment.

Following the working memory task, participants completed an acceptability judgment task. In the acceptability judgement task, the participants were given a series of sentences, the same sentences as the self-paced reading task, and judged how acceptable the sentences sounded on a 7-point scale (1= “totally natural”; 7=“totally unnatural”).

Lastly, the participants completed two surveys about their attitudes regarding different English dialects in general. In the first survey, the participants answered questions about their attitudes towards their own way of speaking and whether they had an accent. Participants answered questions about traveling to a different dialectal area, and if they adapted to their new linguistic environment by changing their accent or dialect. The survey also asked if others would notice the participant’s own accent or dialect, and whether anyone ever made explicit comments and judgements about their speech. Next, participants answered questions about how difficult it is to understand other dialects, or if they think certain dialects sound more appealing than others. Finally, the participants judged the grammatical acceptability, and indicated how often they hear or use sentences like *The car needs washed* and other unrelated dialectal constructions (e.g., *The grocery store only sells organic produce anymore*). In the second debriefing survey, the participants answered questions about the difficulty level of the tasks, and whether they had any difficulties with the tasks overall. Next, the participants answered questions about the first task, the self-paced reading task. Participants answered questions about what sentences sounded unusual or unexpected, and whether they had any difficulties understanding some of the sentences. The survey also asked participants to judge whether the sentences in the self-paced reading task became more complex or easy as the task moved forward.

## **Data and Analysis**

### *Participant inclusion and exclusion*

Half of the participants completed the study with the “needs” condition while the other half of the participants completed the study with the standard condition. Based on the answers participants provided on the surveys at the end of each task about their familiarity with the “needs” construction, participants were split into four groups based on their previous language experience (significant prior experience with the “needs” construction vs. limited prior experience with the “needs” construction) and the training condition that they received (“needs” condition vs. standard condition). This resulted in 19 participants in “needs” condition with prior experience, 21 participants in “needs” condition without prior experience, 15 participants in standard condition with prior experience, and 21 participants in standard condition without prior experience.

### *Acceptability Task*

Although participants completed the self-paced reading task first, here we report the acceptability results to address the first research question concerning the grammatical acceptability of the “needs” construction among participants, who have prior experience with the “needs” construction. The training condition (“needs” condition vs. standard condition) is not the focus in the data because there was no interaction between what training condition the participants received and the prior experience they had with the “needs” construction.

Table 1. Mean Ratings of “Needs” and Standard Sentences for acceptability task (standard deviations in parentheses)

| Dialect                  | Need Rating | Standard Rating |
|--------------------------|-------------|-----------------|
| Exp. ( <i>N</i> = 34)    | 2.46 (1.59) | 2.09 (1.43)     |
| No exp. ( <i>N</i> = 39) | 4.88 (1.43) | 2.03 (1.30)     |
| Total ( <i>N</i> = 73)   | 3.75 (1.93) | 2.06 (1.35)     |

A repeated-measures ANOVA showed that there was a main effect of sentence type ( $F(1,71) = 62.31, p < .001$ , partial  $\eta^2 = .467$ ) because the “needs” sentences were rated less grammatically acceptable than the standard sentences overall. There was a main effect of experience ( $F(1,71) = 19.58, p < .001$ , partial  $\eta^2 = .216$ ) because participants without prior experience with the “needs” construction rated sentences less grammatical overall. There was significant interaction between sentence type and experience ( $F(1,71) = 37.13, p < .001$ , partial  $\eta^2 = 0.343$ ) because participants with experience with the “needs” construction rated the “needs” sentences differently than the participants without prior experience with the “needs” construction, while both participants with and without experience with the “needs” construction rated the standard sentences about the same.

#### *Self-Paced Reading Task*

Reading times were recorded for each word in the sentence. Reading times for all five main regions of interest were analyzed, including the word prior to *needs* (e.g., *oranges*), *needs*, the past participle (e.g., *peeled*), and the two words after the participle (e.g., *before*; *they*). Reading times less than 150 milliseconds and greater than 1500 milliseconds were excluded from the analysis. Reading times were analyzed using repeated measure ANOVAs with time (phase 1 vs. phase 2) as a within-subject variable and task condition (“needs” condition vs. standard condition) and experience with the “needs” construction (experience vs. no experience) as between-subjects variables. The descriptive results are presented in Table 2.

Table 2. Mean reading times (*ms*) for self-paced reading task (standard deviations in parentheses)

| Condition; Experience                     | <i>oranges</i> | <i>need</i> | <i>peeled</i> | <i>before</i> | <i>they</i> |
|---|----------------|-------------|---------------|---------------|-------------|
| <b>Ph. 1</b> Needs; Exp. ( <i>N</i> = 19) | 407 (104)      | 411 (101)   | 429 (98)      | 438 (120)     | 389 (86)    |
| Needs; No exp. ( <i>N</i> = 21)           | 361 (118)      | 361 (92)    | 390 (158)     | 499 (161)     | 398 (135)   |
| Standard; Exp. ( <i>N</i> = 15)           | 402 (153)      | 388 (110)   | 399 (190)     | 381 (107)     | 362 (101)   |
| Standard; No exp. ( <i>N</i> = 21)        | 388 (105)      | 386 (84)    | 370 (83)      | 371 (65)      | 364 (63)    |
| <b>Ph. 2</b> Needs; Exp. ( <i>N</i> = 19) | 390 (94)       | 373 (79)    | 379 (87)      | 406 (86)      | 343 (54)    |
| Needs; No exp. ( <i>N</i> = 21)           | 340 (111)      | 341 (105)   | 350 (104)     | 373 (116)     | 349 (90)    |
| Standard; Exp. ( <i>N</i> = 15)           | 342 (109)      | 372 (120)   | 330 (128)     | 367 (134)     | 311 (72)    |
| Standard; No exp. ( <i>N</i> = 21)        | 359 (125)      | 347 (82)    | 338 (104)     | 323 (76)      | 316 (68)    |



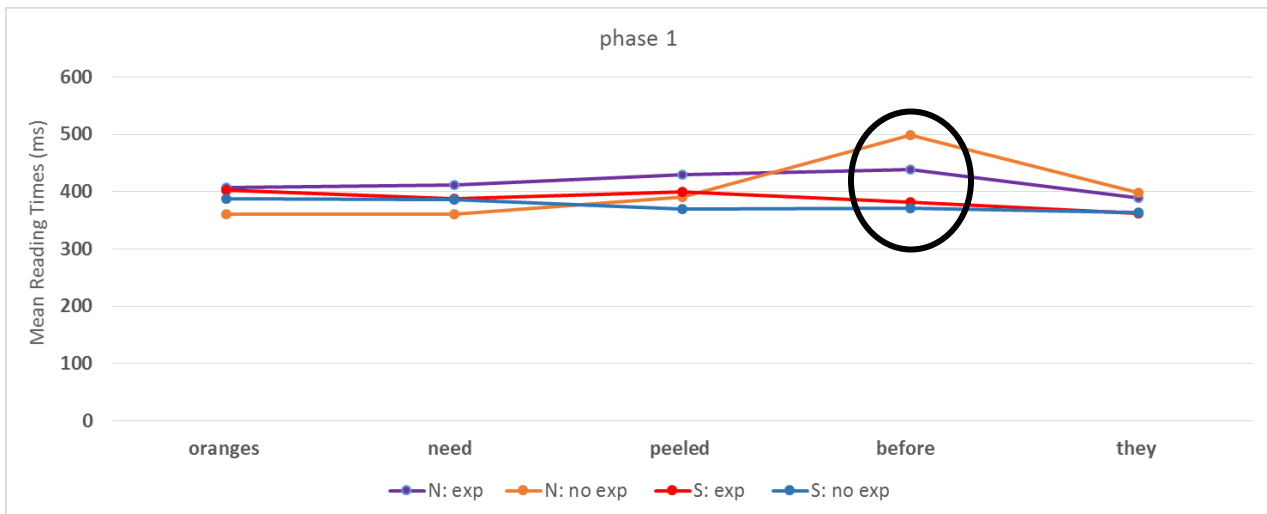
Note: *N*=number of participants; Needs, needs condition; Standard, standard condition; exp. experience with needs construction; no exp. no experience with needs construction.

The results of the ANOVA on the word prior to *needs* (e.g., *oranges*) showed that there was a main effect of time ( $F(1, 72) = 9.18, p = .003, \text{partial } \eta^2 = .113$ ) because in phase 1, reading times were faster than the reading times in phase 2. There were no other significant effects or interactions (task condition:  $F(1, 72) = 0.01, p = .928, \text{partial } \eta^2 = .000$ ; experience:  $F(1, 72) = 0.91, p = .343, \text{partial } \eta^2 = .013$ ; time x task condition:  $F(1, 72) = 1.51, p = .221, \text{partial } \eta^2 = .021$ ; all other interactions  $F < 1$ ).

The results of the ANOVA on the word *need* showed that there was a main effect of time ( $F(1,72) = 11.53, p = .001, \text{partial } \eta^2 = .138$ ) because reading times in phase 2 were faster than the reading times in phase 1. There were no other significant effects or interactions (task condition: ( $F(1,72) = .01, p = .926, \text{partial } \eta^2 = .000$ ); experience: ( $F(1,72) = 1.71, p = .196, \text{partial } \eta^2 = .023$ ); time x task condition x experience: ( $F(1,72) = 1.43, p = .236, \text{partial } \eta^2 = .019$ ); all other interactions  $F < 1$ ).

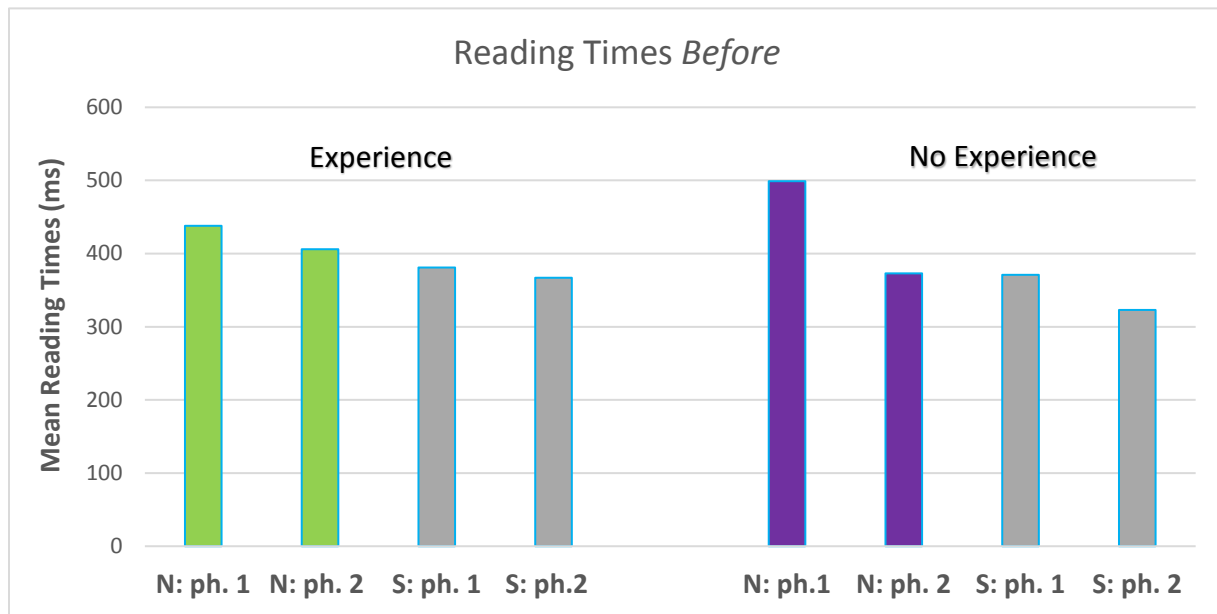
The results of the ANOVA on the past participle (e.g., *peeled*) showed there was a main effect of time ( $F(1,72) = 21.21, p = <.001, \text{partial } \eta^2 = .228$ ) because reading times were faster in phase 2 than the reading times in phase 1. There were no other significant effects or interactions (task condition: ( $F(1,72) = 1.17, p = .284, \text{partial } \eta^2 = .016$ ); time x experience:( $F(1,72) = 1.26, p = .266, \text{partial } \eta^2 = .017$ ); all other interactions  $F < 1$ ).

Figure 1. Mean Reading Times on Phase 1 for each word in the sentence.



Note: N:exp, “Needs” Condition/Experience; N:no exp, “Needs” Condition/No Experience; S:exp, Standard Condition/Experience; S:no exp, Standard Condition/No Experience.

Figure 2. Reading Times from Phase 1 to Phase 2 on the Word after the Past Participle (e.g. *before*)



Note: N: ph.1, “Needs” Condition/Phase 1; N: ph.2, “Needs” Condition/ Phase 2; S: ph.1, Standard Condition/Phase 1; S: ph.2, Standard Condition/Phase 2.

The results of the ANOVA on the word first after the participle, (e.g., *before*) showed that there was a main effect of time ( $F(1,72) = 17.73, p < .001$ , partial  $\eta^2 = .198$ ) because reading times were faster in phase 2 than the reading times in phase 1. There was a significant effect on task condition ( $F(1,72) = 5.61, p = .021$ , partial  $\eta^2 = .072$ ) because participants with “needs” condition exhibited longer reading times than participants in the standard condition (see Figure 1). There was a marginally significant time x experience interaction ( $F(1,72) = 3.58, p = .062$ , partial  $\eta^2 = .047$ ) because participants with prior experience with the “needs” construction exhibited similar reading times in phase 1 ( $M = 438$  ms) and phase 2 ( $M = 406$  ms), while participants with no prior experience exhibited faster reading times in phase 2 ( $M = 373$  ms) than in phase 1 ( $M = 499$ ms) (see Figure 2). There were no other significant effects or interactions (time x task condition: ( $F(1,72) = 1.33, p = .253$ , partial  $\eta^2 = .018$ ; all other interactions  $F < 1$ ).

The results of the ANOVA on the second word after the participle, (e.g., *they*) showed that there was a main effect of time ( $F(1,72) = 31.37, p < .001$ , partial  $\eta^2 = .303$ ) because reading times were faster in phase 2 than the reading times in phase 1. There were no other significant effects or interactions (task condition: ( $F(1,72) = 2.87, p = .094$ , partial  $\eta^2 = .001$ ; all other interactions  $F < 1$ ).

## General Discussion

The present study investigated whether people familiar with the “needs” construction viewed the “needs” construction as grammatically correct and whether dialect experience

influences an individual's expectations during real-time language comprehension. The following is a summary of the major results of the acceptability task, the self-paced reading task, and the debriefing survey:

- When rating “needs” sentences and standard sentences, participants, who had experience with the “needs” construction, rated the “needs” construction as more grammatically acceptable than the participants, who did not have experience with the “needs” construction. The participants rated standard sentences as grammatically acceptable, regardless of whether they had prior experience with the “needs” construction or not.
- Reading times on all words, from Phase 1 of the self-paced reading task to Phase 2 of the self-paced reading task, decreased overall for all participants.
- There were no differences in reading times for the word prior to *need* (e.g. *oranges*), the word *need*, and the past participle (e.g., *peeled*) as a function of training condition or experience.
- At the word immediately after the past participle (e.g. *before*), there was a significant effect on task condition because participants with “needs” training condition exhibited longer reading times than participants in the standard training condition. The results of the study revealed marginally significant interaction on time and experience because the participants with experience with the needs construction and received the needs condition have similar mean reading times from Phase 1 to Phase 2, while participants without experience with the needs construction and received needs condition have faster mean reading times from Phase 1 to Phase 2.

When looking at the results of the study, the acceptability task results revealed that standard sentences, which are more common in American English, were rated as more grammatically acceptable than the “needs” sentences, which are less common in American English overall. People with prior experience with the “needs” construction rated the “needs” construction as more grammatically acceptable while people without prior experience with the “needs” construction rated the “needs” construction as less grammatically acceptable. These findings do not parallel the previous findings of how increased exposure to an unfamiliar syntactic construction leads to increase grammatical acceptability of that unfamiliar syntactic construction (Luka & Barsalou, 2005) because participants, who were unfamiliar with the “needs” construction, even when exposed to the construction, did not rate the “needs” construction with increased grammatical acceptability over time when exposed to the construction.

The self-paced reading task revealed no reading time differences prior to the disambiguating region of the sentence. Prior to encountering the novel portion of the sentence, there were no differences between the groups of participants. Therefore, participants across the four groups of the study did not vary greatly in reading times or reading speed more generally, prior to encountering the disambiguating region of the sentence.

For the past participle (e.g. *peeled*) and the word after the past participle (e.g. *before*), it was predicted that participants with experience with the “needs” construction would be faster at reading these words than participants without experience with the “needs” construction. It was

also predicted that participants with the “needs” training condition would take longer to read “needs” sentences than participants, who read standard sentences. The present study revealed that the predictions were accurate pertaining to the “needs” or standard condition: Participants, who had the “needs” training condition, had slower reading times for the word after the past participle (e.g. *before*) than participants in the standard training condition. These findings are similar to previous studies, which have shown that syntactic constructions that are less common in a language, such as the “needs” construction, are more difficult to comprehend than syntactic constructions that are more common in a language (e.g., Wells et al., 2009). The results of the self-paced reading task, even though not significant, revealed that participants, who did not have experience with the “needs” construction and received the “needs” training condition, had faster reading times, from phase 1 to phase 2 of the experiment. These findings confirm previous studies’ findings of rapid adaptation to novel or less-frequent syntactic constructions over time (Fine et al., 2013; Fraundorf & Jaeger, 2016 Kaschak & Glenberg, 2004; Wells et al., 2009).

The present study does not support the predictions about participants with prior experience with the “needs” construction having faster reading times because the results showed that participants, in the “needs” training condition, exhibited longer reading times on the word after the participle (e.g. *before*) than participants, who had the standard training condition, regardless of whether they had prior experience with the “needs” construction or not. This suggests that prior experience with a certain syntactic construction does not always lead to greater facilitation when processing that construction during language comprehension (cf. Kaschak & Glenberg, 2004).

The present study revealed a marginal interaction between experience and time at the word after the past participle (e.g., *before*). Participants who had prior experience with the “needs” construction, especially those in the “needs” training condition, did not exhibit faster reading times from phase 1 to phase 2 on the word after the past participle (e.g. *before*), while participants who did not have experience with the “needs” construction had faster reading times on this word in phase 2 as compared to phase 1. The participants with prior experience with the “needs” construction do not adapt as well to the “needs” construction when reading these sentences in real-time. We hypothesize that participants, who have prior experience with the “needs” construction, know that the construction is non-standard, so they have a harder time reading sentences containing this construction, hence the slower reading times on the word after the past participle (e.g. *before*). This is explained because they use this construction only in oral speech and do not encounter it in writing. Therefore, reading the “needs” construction on the computer is novel for participants with experience with the “needs” construction. The survey results show that thirteen participants, who had experience with the “needs” construction, rated the “needs” construction as non-standard and only acceptable to use in informal contexts. Reading is a more formal way of communication than oral speech. Over time, participants, who had prior experience with the “needs” construction, did not read the sentences faster because they knew it was not an appropriate context for this construction. Therefore, the participants with prior experience with the “needs” construction did not adapt as well as the participants without prior experience with the “needs” construction.

## **Limitations and Future Directions**

Even though the results from the present study parallel many of the findings from previous research, there were still limitations and future directions that need to be addressed. The present study had fewer participants than other previous studies. In the future, additional data should be collected in order to have greater statistical power to detect what are often subtle differences in reading times, to more accurately capture how language experience and dialect use can impact real-time reading comprehension. Another factor to expand on is other non-standard or dialectal constructions. Would the results reported here be similar for other syntactic constructions said in the same regions of Central/Western Pennsylvania and Ohio? Will a main effect on dialect and real-time reading comprehension occur if there is more time to experiment with the participants? Furthermore, would foreign language experience affect real-time language comprehension on American English? Finding concrete answers to these questions would provide further insight into language experience and its effect on reading comprehension.

## **Conclusion**

The present study investigated the links between language experience with the “needs” construction and grammatical acceptability and how dialect experience influences an individual’s expectations during real-time language comprehension. Results of the present study showed that experience with the “needs” construction led to greater grammatical acceptability of the “needs” construction. The results of the present study also revealed that dialect had less influence on language comprehension, as measured by reading times in the self-paced reading task. We can have difficulty with reading a syntactic construction that we have prior experience with. With these results, we gain additional knowledge about the comprehension of novel or less frequent constructions and adaptation of constructions due to experience with language (Fine et al., 2013; Fraundorf & Jaeger, 2016; Kaschak & Glenberg, 2004; Wells et al., 2009 ). Most individuals have their own dialect and idiolect that is unique to them. Communication is an important aspect of every individual’s life, and learning about how different dialects affect how we comprehend language and speak to one another is paramount for understanding conversation and communication more generally.

## Appendix A

For each “needs” sentence below (1), a standard sentence and comprehension question will follow. For filler sentences (2) and modifier sentences (3), a comprehension question will follow.

### “Needs” and Standard Sentences

- (1) a. The back window needs cleaned before our parents get here.  
*The back window needs to be cleaned before our parents get here.*  
***Is the back window dirty?***
- b. The white fence needs painted to keep the tenants happy.  
*The white fence needs to be painted to keep the tenants happy.*  
***Are the walls white?***
- c. The old chair needs fixed so the guests can sit on it.  
*The old chair needs to be fixed so the guests can sit on it.*  
***Is the chair old?***
- d. The computer program needs debugged before I hand it in.  
*The computer program needs to be debugged before I hand it in.*  
***Is the computer program broken?***
- e. Florida oranges need peeled before they can be eaten.  
*Florida oranges need to be peeled before they can be eaten.*  
***Are the oranges from Florida?***
- f. The large pumpkin needs carved before it can be put on display.  
*The large pumpkin needs to be carved before it can be put on display.*  
***Is the pumpkin small?***
- g. Small potatoes need boiled before they can be used in the soup.  
*Small potatoes need to be boiled before they can be used in the soup.*  
***Are the potatoes for the salad?***
- h. The term paper needs revised before tomorrow morning.  
*The term paper needs to be revised before tomorrow morning.*  
***Is the paper already finished?***
- i. The cotton pants need ironed before you wear them.  
*The cotton pants need to be ironed before you wear them.*  
***Are the pants made of wool?***
- j. The light bulb needs changed since it just burned out.  
*The light bulb needs to be changed since it just burned out.*  
***Is the light bulb still working?***

*Filler Sentences*

- (2) a. The man must charge his iPad first before he can play the game.  
***Is the iPad currently charged?***
- b. The kids wanted to stay up late to watch the horror movie.  
***Were the kids already asleep?***
- c. The athlete must run ten miles in order to finish the race.  
***Is the race five miles long?***
- d. The little baby must stand up first before she can learn to walk.  
***Can the baby already walk?***
- e. The obese woman may have to exercise more in order to lose weight.  
***Is the woman overweight?***
- f. The student has to do his homework so that he does not fail the course.  
***Is the homework required?***
- g. The teachers should go to all of the meetings in order to get all of the information.  
***Is information presented at the meetings?***
- h. We might have to stay in today due to the flood warning.  
***Is there a flood warning?***
- i. The girl drinks juice whenever she gets thirsty.  
***Does the girl drink water?***
- j. The teacher buys more colored pencils because the old ones were broken.  
***Are the new colored pencils broken?***
- k. The pupil erases the board because the teacher asked him to.  
***Does the teacher erase the board?***
- l. Sally goes to the movies with her brother while the friends all go to the park.  
***Do the friends go to the movies?***
- m. The water went down the drain because the plug was pulled out.  
***Did the water go down the drain?***
- n. The man jumped on the trampoline while the woman waited her turn.  
***Did the man take his turn first?***
- o. The girl played with the doll while her brother played with the truck.  
***Was the girl playing with a doll?***
- p. The janitor grabbed a mop because he spilled water in the basement.  
***Did the janitor spill water?***
- q. The boy is doing math homework while his sister glances at the newspaper.  
***Is the boy looking at the newspaper?***

- r. The children are playing on the playground behind the school.  
***Are the children in front of the school?***
- s. The girls are selling cookies at a booth right next to the supermarket.  
***Are the girls selling candy?***
- t. The sisters are brushing their teeth because it is almost time for bed.  
***Is it almost time for bed?***
- u. Mary was flying her kite in the park when she heard thunder and ran inside.  
***Was there thunder?***
- v. The boy is eating supper with his family in front of the television.  
***Is the boy eating with his family?***
- w. The new clothes were bought by my mother.  
***Did the daughter buy the clothes?***
- x. The glass cup was blown over by the wind during a storm.  
***Was the cup made of plastic?***
- y. The test was graded by the teaching assistant because the instructor was sick.  
***Was the teaching assistant sick?***
- z. The children were picked up by their neighbor because their father was still at work.  
***Was the neighbor still at work?***
- aa. The letter was composed by Natalie during her time away from home.  
***Did Natalie spend time away from home?***
- bb. This medicine is recommended by the doctor to cure many illnesses.  
***Did the doctor make a recommendation?***
- cc. The truck was damaged by a deer that accidentally ran onto the highway.  
***Did the deer damage the truck?***
- dd. The apartment lease was signed by the student before he moved in.  
***Did the student sign a lease?***
- ee. The race car driver should not drive on the back roads because he might get lost.  
***Would the driver get lost on the main roads?***
- ff. It may be faster to travel by airplane to London.  
***Is it fastest to travel by boat?***
- gg. Fred might go to the concert so that he can have fun.  
***Is Fred considering going to a concert?***
- hh. The couple wanted to dance at their wedding for the entire night.  
***Did the couple want to dance?***
- ii. The girl picks up all of her toys because her mother told her to.  
***Did the father tell the girl to do something?***



jj. The teacher has some free time now since her meeting was canceled.

***Does the teacher have a meeting now?***

kk. The struggling author scribbles down all of his ideas in his journal every day.

***Does the author have a journal?***

ll. The young boy feeds his cat every morning before school.

***Does the boy have a cat?***

mm. The kittens are playing with the ball of yarn in the corner by the sofa.

***Are the kittens in the middle of the room?***

nn. The man is working on his newest novel while sitting at a café.

***Is the man working at home?***

oo. The horses are galloping along the grass to the barn.

***Are the horses heading towards the barn?***

pp. The package was delivered by the mailman last Monday afternoon.

***Did the package arrive on Tuesday?***

qq. The delicious brunch on Sunday was made by my grandmother.

***Was the brunch on Saturday?***

rr. The broken laptop screen was replaced by the technician with an advanced degree.

***Was the laptop broken?***

ss. The clown was hit by a cake during the circus performance.

***Was the clown in the circus performance?***

### *Modifier Sentences*

(3) a. The antique car needs washed hubcaps so that it will be in top condition for the parade.

***Will the antique car be in a parade?***

b. The patio needs covered tables in case it rains.

***Is there a chance it will rain?***

c. The legal file needs completed documents before it can be closed.

***Can the case be closed before the documents are complete?***

d. The tuxedo jackets need folded handkerchiefs in the front pocket so that they look more formal.

***Should the handkerchiefs go in the front pockets?***

e. The apple pie needs baked walnuts to be placed on its crust.

***Is the pie made out of apples?***

f. The chicken needs roasted garlic so that it is spicy enough.

***Is the chicken already spicy?***

g. The new screws need tightened bolts to keep them in place.

***Are the screws old?***

- h. The meal needs cooked vegetables to make it more balanced.  
*Are the vegetables part of the meal?*
- i. The white wine needs refrigerated grapes to complement it.  
*Is the wine red?*
- j. The auto workers need paid vacation to be included in their next contract.  
*Are the workers demanding pain vacation?*
- k. The beautiful picture needs trimmed edges to hold it in the frame.  
*Does the picture belong in a frame?*
- l. The pork chops need glazed pineapples according to the recipe.  
*Does the recipe call for apples?*
- m. The bottle needs recycled content in order to be labelled as environmentally friendly.  
*Are bottles without recycled content environmentally friendly?*
- n. The kitchen needs scrubbed floors in order to pass the health inspection.  
*Is the kitchen already clean?*
- o. The lawyer's brief needs written statements so that it sounds more official.  
*Will the brief sound official without written statements?*
- p. The air conditioner needs rebuilt gears to be installed.  
*Should rebuilt gears be installed in the air conditioner?*
- q. The restaurant needs lighted candles to improve the romantic ambience.  
*Is there already sufficient ambience in the restaurant?*
- r. The living room needs decorated walls so that it does not appear old and shabby.  
*Is the living room old and shabby?*
- s. The gigantic telescope needs repaired lenses in order to function properly.  
*Is the telescope currently functioning properly?*
- t. The literary magazine needs edited poems before it can be printed.  
*Has the literary magazine already been printed?*

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