The existence of ambiguous sounds in addition to their perceptual reinterpretation could result in sound change. The perceptual reinterpretation could be due to some factors such as the existence of different cognitive processing styles across individuals (Ullman 2004; Yu 2010; Mielke, Nielsen, & Magloughlin 2013). Yu (2010), for example, found a significant correlation between the ways individuals normalize for context induced variation and their cognitive processing styles as measured by the Autism Spectrum Quotient (AQ). Differences in cognitive processing style have been associated with individuals having different degrees of autism or autistic traits. The Weak Central Coherence (WCC), as one of the theories of autism, state that people with autism show detailed focused processing whereas general people mainly exhibit higher level processing at the expense of details (Happé 1999; Happé & Frith 2006). Mottron, Dawson, Soulières, Hubert, & Burack (2006) also found that individuals with autism have higher auditory and perceptual abilities.

The present study was designed to explore the extent of individuals' sensitivity to different degrees of residual gestures as a function of cognitive processing styles. An earlier study, without considering cognitive functioning as a variable, showed that listeners in general population are sensitive to the residual gestures present in the phonetic signal (Falahati & Bertini 2015). The primary research question in the current study is whether individuals with high AQ scores show different sensitivity to the residual gestures after the simplification[1] of consonant clusters from individuals with low AQ scores. We hypothesized that participants with a high AQ score will show more sensitivity in perceiving the residual gestures left after the "deletion" of a consonant, while the other participants with low AQ score will be less sensitive.

A discrimination task was used in the experiment using the software Praat. Thirty Persian native speakers, eighteen male and twelve female aged 19-43, listened to 69 stimuli with four repetitions (total of 276 tokens) in a quiet room located at Amirkabir University of Technology in Tehran, with the exception of twelve participants who participated at the Raahe Noo Clinic using equipment brought from Amirkabir University of Technology. Stimuli were presented through headphones. The two target categories used as stimuli, taken from Falahati (2013), were composed of Persian two-word phrases containing consonant clusters with coronal stops as $C_2$ in the coda of the first word followed by another word which also starts with a consonant, therefore creating three consonants in a row in an intervocalic environment (i.e., $onset\_V_1C_1C_2\#C3V2\_coda$). The two target categories were similar auditorily and primarily coded as simplified by three independent raters; however, they were different from each other as to the degree/amount of alveolar residual gestures after the simplification of the cluster. The first target category had zero coronal gestures while the second category had partial residual gestures (see Figure 1). In order to avoid phonemic restoration and top down lexical effects (e.g., Saberi & Perrot 1999; Warren 1999; Kashino 2006), the onset of the first word and the coda of the second word (in bold below) were excised resulting in nonwords. For example, the onset and coda of the phrase [**h**æft#b**ɒr**] "seven times" were removed resulting in [æft#bɒ]. In addition to the two target categories, a control category was added to the stimuli. The stimuli in the control were used as the baseline since they did not have any underlying coda coronal stop. The participants were asked to listen very carefully and decide as quickly as possible whether it is likely that there has been the same or different degree of [t] at the end of the first parts of the two sub-tokens in each token. For each token, the participants were asked to use the mouse and press either the "same" or "different" which appeared inside a rectangle on a computer monitor. The stimuli were shuffled and participants had the chance to take breaks after listening to each 50 tokens. A number of practice trials preceded the actual experiment. After the discrimination task, participants took the Autism-Spectrum Quotient questionnaire (Baron-Cohen, Wheelwright, Skinner, Martin & Clubley 2001, Persian version) which is a scale for identifying the degree to which any individual adult of normal IQ may have traits associated with autism spectrum condition based on a Likert scale (Yu 2010).

As for the analysis, participants were divided into high (*n* =16) and low (*n* =14) AQ groups based on their AQ scores. The response type and reaction time collected in the discrimination task are the dependent variables in this study. The general results show that the mean total of response type (i.e., number of correct responses) in the high AQ group is 148.50 (SD = 20.85) which is greater than the low AQ group 144.21 (SD = 22.46). As for the reaction time, the mean in the high AQ group is 2.78 (SD = 0.293), while it is 2.69 (SD = 0.349) for the low AQ group. A multivariate analysis of variance (MANOVA) was conducted to test the hypothesis of the study. This test did not show a significant difference between high and low AQ groups, Pillai's trace = 0.319. This result could be due to different factors. The difficulty level of the discrimination task in addition to the distribution of participants could be two potential reasons for the lack of significant difference between the two groups. Suggestions are made for the further investigation of the role of individuals' differences in their phonetic sensitivity and perception.

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[1] The term "simplification" is used in this study in its perceptual sense, to describe what happens when coronal consonants are perceived to be deleted, regardless of whether there is residual articulatory evidence.
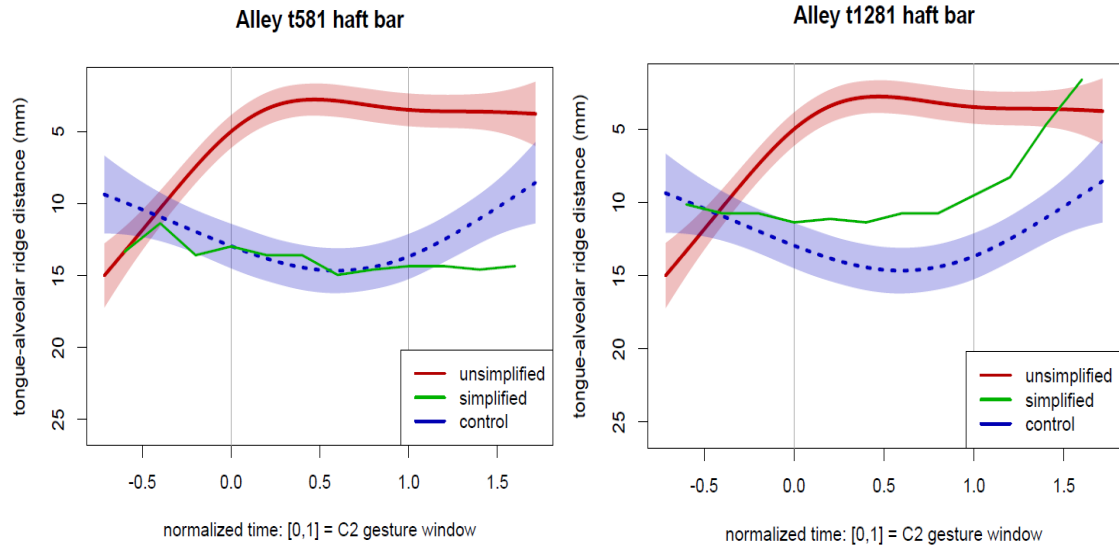
**Figure 1:** Comparisons of tongue-alveolar ridge distance for two sets of simplified tokens: Left: zero; Right: partial/reduced.

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