Atypical verbal communication pattern according to others’ attention in children with Williams syndrome

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1. Introduction

Williams syndrome (WS) is a rare genetic neurodevelopmental disorder. It is caused by a microdeletion of chromosome 7q11.23 (Ewart et al., 1993). The phenotype of WS has been characterized by relatively strong language abilities and weak visuospatial cognition (Bellugi, Lichtenberger, Jones, Lai, & St. George, 2000; Mervis, Morris, Bertrand, & Robinson, 1999; Udwin, Yule, & Martin, 1987). However, recent studies showed that language abilities of individuals with WS are not as advanced as previously claimed. For example, their receptive grammatical ability is no better than their overall mental age (see Brock, 2007, for a review).

Furthermore, some clinical research reported that children with WS faced a lot of problems in daily communication. Udwin et al. (1987) asked the parents and/or teachers of children with WS about their children's difficulties. They reported that the problems faced by their children included chattering incessantly at a superficial level and speaking in an old-fashioned manner. Moreover, Laws and Bishop (2004) used communication checklists for parents, and revealed that children with WS showed difficulties especially in the inappropriate initiation of conversation and the use of stereotyped conversation. Philofsky, Fidler, and Hepburn (2007) used the same checklists for parents, and compared the outcome of children with WS with that of children with Autism Spectrum Disorders, who are known to have deficits in social and communicative skills. They found that the extent of difficulties in the inappropriate initiation of conversation and the use of context was not different between children with WS and those with Autism Spectrum Disorders. These reports implied that children with WS have deficits in pragmatic language abilities. Pragmatic abilities are broadly defined as the abilities to use
language in a social context for the purpose of communication. Specifically, pragmatic abilities include turn-taking, politeness (to speak in a polite manner), communicating according to others’ state (communicating while taking account of others’ attention, belief, etc.) and so on (Clark, 2004).

While clinical investigations have reported converging evidence in the pragmatic deficits in WS, previous studies using experiments or semi-structured conversations on this topic have presented rather mixed evidence. Several studies demonstrated that individuals with WS performed relatively well in communication tasks. Jones et al. (2000) conducted a semi-structured interview with adolescents and adults with WS. Participants were questioned about their family, activities, and interests, and then received follow-up questions in line with natural conversational flow. They revealed that individuals with WS used expressions—such as descriptions of affective states and emphatic markers—to elaborate their stories more frequently than those with Down syndrome and developmental age-matched typically developing (TD) controls. In the same paper, Jones et al. (2000) investigated narratives of children with WS. Children were asked to tell a story to the experimenter after seeing a wordless picture book. They revealed that children with WS used exclamatory phrases such as sound effects or character speech, which seemed to function to renew and maintain audience attention, more frequently than chronological age-matched TD children. Furthermore, Reilly, Losh, Bellugi, and Wulfeck (2004) found the same result in children with WS.

Pointing is thought to have several prototypical pragmatic functions, which are found in human conversation (Bates, Camaioni, & Volterra, 1975; Tomasello, Carpenter, & Liszkowski, 2007). The relatively late emergence of pointing for individuals with WS supports the view that their difficulty in pragmatic abilities might appear during early verbal communication.

In the present study, we investigated one of the pragmatic abilities, that is, communicating according to others’ state, which was assumed to be impaired in children with WS on the basis of the previous studies. Specifically, we examined whether children with WS in comparison to TD children could modify their communication according to when they were attended to or not attended to in a situation where they needed to share something with the experimenter.

We expected that TD children would think that the experimenter did not know when and how they achieved the tasks when they were not attended to whereas they would think that he knew it to some extent when they were attended to. Therefore, we predicted that TD children would verbalize more when they were not attended to than attended to in order to share what they did with the experimenter. In contrast, children with WS were hypothesized as having difficulty in communicating according to the experimenter’s state. Thus, we predicted that, unlike TD children, children with WS would not verbalize more when they were not attended to than attended to. In other words, we predicted that they would not verbalize appropriately according to the experimenter’s attention.

2. Method

2.1. Participants

Diagnosis of all the children with WS was made by a clinical geneticist and confirmed by the fluorescence in situ hybridization (FISH) test for the deletion of the elastin gene. TD children were recruited using a database of parents who had...
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