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Syntactic chameleons: Are there individual differences in syntactic mimicry and its possible prosocial effects?

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ABSTRACT

This study investigated whether syntactic mimicry leads to prosocial effects and whether any such effects are modulated by personality traits. Participants and a confederate of the experimenters took turns describing simple scenes. Target scenes could be described using either a prepositional object or a double object dative structure and we tested whether the participants mimicked the structure used by the confederate (Experiments 1A and 2A), whether mimicry of the participant's sentence structure (Experiments 1B and 2B) made the participant act in a more prosocial manner, and whether any such effects vary with Big Five traits. Participants displayed significant syntactic mimicry, which was additionally negatively related to levels of Extraversion. Syntactic mimicry did not lead to more prosocial behavior, as gauged by the time spent on an extra task (Experiment 1B). This conclusion was confirmed in Experiment 2B, which used a slight adaptation of the task that prevented a ceiling effect. However, a positive relation between prosocial behavior and levels of Conscientiousness was observed in the mimicry condition, which appeared to invert in the non-mimicry condition. We discuss several potential reasons for the absence of prosocial effects of syntactic mimicry and provide suggestions for future research.

1. Introduction

Although verbal mimicry appears to be a well-established and stable phenomenon in research and in daily life (Bock, 1986; Chartrand & Van Baaren, 2009; Hartsuiker & Kolk, 1998a, 1998b; Hartsuiker & Westenberg, 2000; Levelt & Kelter, 1982), a relatively unbeaten path is one on how individual differences modulate this behavior. Nonetheless, it could be valuable to understand which traits are associated with the mimicry of others' language in order to gain insight into the underlying motives that drive verbal mimicry behavior. Not only is it relevant to know how verbal mimicry is affected by individual differences, also with respect to the consequences of *being* mimicked research could benefit from a more thorough understanding of the role of individual differences. That is, being mimicked verbally increases one's prosociality and helpful behavior (Jacob & Guéguen, 2013; Kulesza, Dolinski, Huisman, & Majewski, 2013; Van Baaren, Holland, Steenaert, & Van Knippenberg, 2003). It could therefore be relevant to gain insight both into which individuals are prone to display verbal mimicry towards other people, and into which individuals are most susceptible to show an increase in prosocial behavior after being mimicked. The current study's goals are therefore to systematically assess if and which Big Five personality traits are associated with active mimicry by individuals themselves, and how they might regulate any prosocial effects of being mimicked verbally.

1.1. Syntactic mimicry

Verbal mimicry can be described as the alignment of one's language use towards that of the conversation partner. Studies have for example demonstrated that individuals are likely to adapt their accent towards that of their interlocutor (Coupland, 1984), that they tend to align their speech rate towards the other's speech rate (Jungers & Hupp, 2009), and that they prefer to refer to ambiguously named objects with the same word as their conversation partner does (Brennan & Clark, 1996). However, also higher-level linguistic properties such as syntax can be subject to mimicry, which is the focus of the current study. One of the first studies on syntactic mimicry demonstrated that individuals can be primed by a syntactic structure they produced previously (Bock, 1986). Priming through the repetition of a sentence read aloud by the experimenter led to an increase in the likelihood of using that same syntactic structure on a consequent picture description. Comparable effects were found in a study with dative and transitive sentence primes

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in Dutch (Hartsuiker & Kolk, 1998b). Since Bock's introduction of the syntactic mimicry paradigm numerous similar studies in this area of research have been conducted; a recent meta-analysis found a robust effect of syntactic priming across 69 published studies (Mahowald, James, Futrell, & Gibson, 2016).

Branigan, Pickering, and Cleland (2000) made an innovation to this often-applied picture description paradigm by including a confederate in the experimental session. Such a dialogue game yielded similar results as those found by Bock among others: participants were more likely to use the syntactic structure the confederate had previously primed them with than the alternative option. Other findings pointed to the apparent strength of syntactic priming effects by emphasizing its longevity: even with as many as six filler items between prime and target syntactic mimicry effects could still be observed (Hartsuiker, Bernolet, Schoonbaert, Speybroeck, & Vanderelst, 2008). The strength of syntactic priming effects is also supported by the presence of similar effects in Broca's aphasics (Hartsuiker & Kolk, 1998a; Saffran & Martin, 1997; Verreyt et al., 2013), amnesiacs (Ferreira, Bock, Wilson, & Cohen, 2008; Heyselaar, Segaert, Walvoort, Kessels, & Hagoort, 2016), individuals speaking in their second language (Hartsuiker, Beerts, Loncke, Desmet, & Bernolet, 2016; Schoonbaert, Hartsuiker, & Pickering, 2007), and signers of American Sign Language (ASL; Hall, Ferreira, & Mayberry, 2015).

Syntactic priming effects are thought to arise from both ongoing implicit learning in language processing systems (e.g., Chang, Dell, Bock, & Griffin, 2000) and relatively short-lived explicit memory processes (e.g., Pickering & Branigan, 1998). That is, there is emerging consensus that implicit learning mechanisms may be responsible for basic priming effects (Kutta, Kaschak, Porcellini, & Jones, 2017), which for example also explains how syntactic priming can persist over longer time lags (Bernolet, Collina, & Hartsuiker, 2016; Bock & Griffin, 2000). Explicit memory processes, on the other hand, may be responsible for the amplification of structural priming effects by facilitating the retrieval of the prime sentence's structure in subsequent utterances (Jackson & Ruf, 2017; Kutta et al., 2017). Empirical evidence has been reported for this idea, suggesting that syntactic priming mechanisms should be integrated in a broad multi-factorial (Bernolet et al., 2016) or two-mechanism account of structural priming (Kutta et al., 2017; Reitter, Keller, & Moore, 2011).

1.2. Individual differences in verbal mimicry

Research suggests that the magnitude of verbal mimicry varies largely between (and within) individuals (Fine, Jaeger, Farmer, & Qian, 2013; Kidd, 2012), but there has been relatively little discussion on what could be the underlying source of this variability (Yu, Abrego-Collier, & Sonderegger, 2013). Recently, however, there has been a rise of interest in the role of individual differences in verbal mimicry and language use more generally (Kidd, Donnelly, & Christiansen, 2018), and several studies focused specifically on how Big Five personality traits may affect verbal mimicry (e.g., Kurzius, 2015; Yu et al., 2013). The Big Five model (Costa & McCrae, 1992) is a commonly used framework which consists of the five main personality traits of Extraversion, Neuroticism, Agreeableness, Openness, and Conscientiousness. These five factors do not show overlap in content and capture the main differences between individuals' personalities adequately (Costa & McCrae, 1992).

Yu et al. (2013), for example, found that individuals scoring high on the trait of Openness tended to assimilate their voice onset time (i.e., the time that passes between the release of a plosive and the beginning of vocal fold vibration) more towards that of a narrator than did individuals scoring low on Openness. Yu and his colleagues argued that this effect might be induced by the level of engagement that goes together with the trait of Openness. Apart from Openness, no effects of Big Five personality traits on phonetic mimicry were found.

Similarly, Kurzius (2015) found higher levels of speech rate adaptation in individuals scoring high on Openness, and in individuals scoring higher on Extraversion. Kurzius argued that this might be explainable by Extraversion's relatedness to the trait of affiliation on the interpersonal circumplex (for more information see Kurzius, 2015; Wiggins & Pincus, 1994). The finding of Extraversion being related to speech rate mimicry contrasts with a previous study by Gill, Harrison, and Oberlander (2004), who expected to observe a positive relation between levels of Extraversion and mimicry of active and passive sentences, but did not find such an effect. Rather, they observed an interesting curvilinear effect of Neuroticism on verbal mimicry: a high Neuroticism and a low Neuroticism group both displayed significantly less syntactic mimicry than a mid-Neuroticism group did. Neuroticism's association with withdrawal behaviors might explain the lower level of mimicry in the high Neuroticism group, whereas a disinterest in monitoring their own and the conversation partner's verbal behavior might be responsible for the lower level of mimicry in the low Neuroticism group (Gill et al., 2004).

Understanding how personality traits are related to syntactic mimicry may enhance our understanding of syntactic mimicry mechanisms and, more specifically, the (interpersonal) motives that underlie this behavior. For example, previous studies have suggested that individuals' need for affiliation may be associated with verbal mimicry (e.g., Chartrand & Bargh, 1999; Van Baaren et al., 2003). As affiliation is related to both Extraversion and Agreeableness, Kurzius' (2015) study discussed above hypothesized that both these traits would be involved in mimicry of speech rate. However, as only Extraversion (and unexpectedly also Openness) appeared to be related to speech rate mimicry, Kurzius suggested that affiliation may not be the only factor enhancing mimicry (for a more in depth discussion, see Kurzius, 2015). Such findings suggest that a crucial first step in order to gain a more profound understanding of the underlying reasons for syntactic mimicry is to explore this with a broad and comprehensive model of personality traits, such as the Big Five.

On the other hand, although the studies described above seem to suggest that personality traits may moderate certain types of verbal mimicry (such as mimicry of speech rate), one could also argue that in general, theoretical accounts on syntactic mimicry do a reasonable job in explaining the main elements of syntactic priming, and these do *not* allow for effects of personality or individual differences. Indeed, syntactic mimicry is usually described from a uniquely cognitive perspective, in which there is no place for possible moderating effects of personality traits or social variables. Therefore, as evidence on the existence of personality effects on verbal mimicry seems to be scarce, and mechanisms of syntactic priming as those described above do not make room for the effects of personality traits, in the present study we examine possible effects of personality traits on syntactic priming in an exploratory way.

Due to sparseness of studies our review was extended to studies targeting interindividual differences in mimicry of *paraverbal* aspects (e.g., speech rate, voice onset time) as well, but it is uncertain whether these findings can be generalized to the verbal domain (e.g., syntax, lexical choice). Whereas paraverbal mimicry involves speech behavior (i.e., *how* something is said), verbal mimicry entails the linguistic choices individuals make (i.e., *what* is said). Mimicry of paraverbal properties may therefore involve different mechanisms than those of syntactic mimicry described above. A difference between verbal and paraverbal mimicry processes may also explain the discrepancy between Kurzius' (2015) and Gill et al.'s (2004) findings.

1.3. Functions and consequences of verbal mimicry

Turning to the function of mimicry behavior, mimicry might be understandable from an evolutionary and biological perspective. The tendency to mimic others can be understood in terms of the need to belong and the desire to be included in a social group (Baumeister & Leary, 1995), which can be regarded as an altered expression of an