



## Differences in self-talk frequency as a function of age, only-child, and imaginary childhood companion status

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### ABSTRACT

In three studies, we examined differences in the frequency with which people report talking to themselves. Using a standardized measure of self-talk frequency, the *Self-Talk Scale* (Brinthaupt, Hein, & Kramer, 2009), we collected information about college student participants' age, sex, and family configuration (i.e., only or sibling child), and whether they had an imaginary companion in childhood. In Study 1, significant differences in self-talk were found between different age groupings. In Study 2, children without siblings reported more self-talk than children with siblings. Finally, in Study 3, respondents who reported having an imaginary companion in childhood also reported significantly more self-talk than those who did not have an imaginary childhood companion. We discuss the self-regulatory and developmental implications of these results.

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### 1. Introduction

Researchers have examined the nature and functions of self-talk across a variety of domains. For example, psychologists have demonstrated that self-talk (in the form of either private or inner speech) serves important cognitive and self-regulatory functions for children and adults (Diaz & Berk, 1992; Luria, 1969; MacKay, 1992). Among the functions served by self-talk are the rehearsal of information, the internalization of rules, executive functioning, and self-guidance (e.g., Lee, 2011; Winsler, Fernyhough, & Montero, 2009). Mischel, Cantor, and Feldman (1996) discussed the self-control aspects of self-talk, including its role in inhibiting impulses and monitoring progress toward goals. Similarly, Carver and Scheier (1998) view self-talk as serving a "metamonitoring" role, providing individuals with information about their goal progress and influencing their emotional reactions and responses to behavioral deficits.

An extensive literature on self-talk also exists in the area of sport and exercise psychology (see Hardy, 2006; Hardy, Oliver, & Tod, 2008). In their review of nearly 50 studies, Tod, Hardy, and Oliver (2011) found that positive, instructional and motivational self-talk can improve performance on a wide variety of tasks. They also found no evidence that negative self-talk is associated with performance decrements in these domains.

Although its self-regulatory functions are well-documented, Leary (2004) took a markedly negative view of self-talk, noting that many unpleasant emotions are largely due to how and how often

people talk to themselves. A large research literature focuses on the role of negative self-talk in depression, anxiety, and other forms of dysfunction (Beck, 1976; Kendall, Howard, & Hays, 1989). For example, a tendency to use excessively positive self-talk is related to manic and narcissistic tendencies, whereas a tendency toward primarily negative self-talk is associated with depression and anxiety (Schwartz & Garamoni, 1989).

Despite much interest in the self-regulatory aspects of self-talk, little research has been conducted on the kinds of factors that might be associated with low or high frequency of self-talk. Heavey and Hurlburt (2008) found that self-talk is a frequent naturally occurring inner experience, with large differences across individuals. The development and initial validation of the *Self-Talk Scale* (STS; Brinthaupt et al., 2009) makes it possible to examine differences in self-talk frequency. In their STS development and validation work, Brinthaupt et al. showed that frequent self-talkers (a) tended to be inwardly self-focused, (b) showed obsessive-compulsive tendencies, (c) had higher levels of need for cognition, and (d) used more verbal compared to visual information processing.

Consistent with research supporting the self-regulatory aspects of self-talk, Brinthaupt et al. (2009) identified social-assessment, self-criticism, self-reinforcement, and self-management functions. The social-assessment function refers to self-talk related to a person's social interactions (e.g., replaying something said to another person or imagining how other people responded to things one said). The self-reinforcement function reflects self-talk that focuses on positive events (e.g., feeling proud of something one has done or when something good has happened). Self-criticism refers to self-talk regarding negative events (e.g., feeling discouraged about oneself or criticizing oneself for something one has said or done).

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Finally, the self-management function assesses general self-regulatory self-talk (e.g., giving oneself instructions or directions about what to do or say or needing to figure out what to do or say). Brinthaupt et al. found that individuals with higher levels of social-assessment and critical self-talk reported lower self-esteem and more frequent automatic negative self-statements. Alternatively, people with higher levels of self-reinforcing self-talk reported more positive self-esteem and more frequent automatic positive self-statements.

Despite these initial findings, other factors might be related to differences in self-talk frequency. In the present research, we examine some of these factors. In particular, it is possible that the frequency of self-talk might differ between younger and older adults. In addition, from a developmental perspective, a person's family structure (i.e., number of siblings) and other childhood experiences (i.e., having an imaginary childhood companion) might be associated with variations in the tendency to engage in self-talk.

## 2. General method

### 2.1. Overview

Each of the studies reported in this paper utilized a similar methodology. All participants were drawn from a psychology department data archive. It contains demographic and self-reported behavioral and attitudinal data collected from pretesting sessions conducted early each semester with General Psychology students. Brinthaupt and Pennington (2005) provide more details about the structure and operation of this archive.

### 2.2. Procedure

As part of the pretesting sessions, participants completed the STS (Brinthaupt et al., 2009), along with a wide variety of demographic items that changed from semester to semester. Participants completed the materials in groups of 15–30 students. The typical session lasted between 20 and 30 min. Students received course credit for their participation. No participant appears more than once in the studies reported in this paper.

### 2.3. Measures

The STS (Brinthaupt et al., 2009) consists of 16 items reflecting common situations when or where people might talk to themselves either silently or out loud. Respondents use the same frame for rating each item: "I talk to myself when..." Items are rated using a 5-point Likert format (1 = *never*, 5 = *very often*). There are four items for each of the four STS subtypes: (a) social assessment; (b) self-criticism; (c) self-reinforcement; and (d) self-management. Example items include "I want to replay something that I've said to another person" (social-assessment), "something good has happened to me" (self-reinforcement), "I feel ashamed of something I've done" (self-criticism), and "I want to remind myself of what I need to do" (self-management).

Subtype scores are calculated by summing the ratings of the four items within each category or subtype (range = 4–20). A total score (for overall self-talk) is calculated by summing the ratings of the 16 items (range = 16–80). Higher scores indicate higher levels of self-talk frequency. The STS shows good psychometric properties, with acceptable long-term stability ( $r = .69$  over a 3-month period), internal consistency (i.e., alpha coefficients for the four subtypes ranging between .79 and .89), and congruent validity (e.g., positively related to private self-consciousness,  $r = .37$ , and

verbally-oriented information processing strategies,  $r = .47$ ) (see Brinthaupt et al., 2009).

## 3. Study 1: age differences in self-talk frequency

With the publication of Luria's (1969) and Vygotsky's (1987) treatises on private speech, a great deal of research has examined its operation and functions in children. Developmental psychologists (Diaz & Berk, 1992; Piaget, 1924/1959; Winsler et al., 2009; Zivin, 1979) have been particularly interested in the tendency for children to externalize (and eventually internalize) conversations with themselves as an important regulatory function of normal development. Whereas the self-regulatory approach to inner and private speech has received good support in research on children (for reviews see Berk, 1992 & Winsler et al., 2009), self-talk in adulthood has received much less attention. Duncan and Tarulli (2009) summarized research on private speech (overt self-talk) based primarily on young adult college students. They documented that private speech is a relatively common phenomenon, at least under certain conditions (e.g., when participants work alone or are not aware of being recorded). Although this research is suggestive, there are no studies of age differences in self-talk frequency. In part, this is due to the lack of a standardized measure of self-talk frequency. The STS (Brinthaupt et al., 2009) allows age differences to be examined in a more systematic manner.

Using an adult sample, we expected that overall self-talk, as well as subtypes of self-talk (e.g., self-criticism, self-management), would increase with age. Research from a variety of areas supports this possibility. First, with increasing age, adults may be more likely to rely on self-talk for executive function purposes such as planning and goal-setting (Kray, Eber, & Karbach, 2008; Kray, Eber, & Lindenberger, 2004; MacKay, 1992). Second, lifestyle factors that could make self-talk more frequent, necessary, or useful (e.g., increases in life stressors or responsibilities; changes in work, relationship, or living status) may increase with age (Miller, 2010). Third, as they enter adulthood, individuals may become less self-conscious about or concerned with their self-talk and may be less likely to inhibit or ignore it than when they are younger (e.g., Steinberg & Monahan, 2007). Fourth, evidence suggests that from childhood to early adulthood, people use less private speech and more inner speech (Duncan & Tarulli, 2009; Winsler & Naglieri, 2003).

### 3.1. Participants

Participants were 380 (237 women, 143 men) undergraduate students. In terms of ethnicity, 68% were White, 18% were Black, and 14% were some other ethnicity (i.e., Hispanic, Asian-American, American Indian, or other). With regard to year in school, 65% were freshmen, 21% were sophomores, 8% were juniors, and 2% were seniors. In order to obtain a larger age range of participants, we selected nontraditional students (i.e., those over age 24) from several semesters of pretest data. Those participants were combined with the traditional age (i.e., 18–24 years) students from a single pretest session to create the final data set, which showed a mean age of 23.5 years ( $SD = 7.50$ ) and a range from 18 to 54 years. Thirty-seven percent of the sample was over age 24.

### 3.2. Results and discussion

Because the age data were skewed toward the 18- and 19-year-old participants taking the General Psychology course, we used the Spearman's  $\rho$  statistic to assess the relationship between age and self-talk frequency. This analysis showed that age was positively correlated with overall self-talk,  $r(378) = .265$ ,  $p < .001$ , self-critical self-talk,  $r(378) = .291$ ,  $p < .001$ , self-reinforcing self-talk,

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