

# Free Will Implicates Inner Speech via Self-Regulation

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## Abstract

Free will typically refers to any form of significant control over one's actions. This definition is remarkably similar to that of self-regulation—the control of one's behavior, emotions, and thoughts in pursuit of long-term goals. Indeed, several scholars have proposed that the latter constitutes the psychological equivalent of the former. A large body of empirical work demonstrates that both covert (inner) and overt (private) forms of self-directed speech are causally associated with self-regulatory outcomes such as action planning, problem-solving, emotion regulation, attention, cognitive flexibility, working memory, and self-reflection. It thus seems logical to propose that free will too recruits self-directed speech. This argument is explored by reviewing the relevant literature pertaining to free will, self-regulation, and inner/private speech. More specifically, free will is defined and contrasted with self-regulation, whose definition ends up being remarkably similar. Examples of typical research on private and inner speech are presented and show a key involvement of self-directed speech in self-regulation. The notion that free will depends on inner speech is further explored based on Wiley's work (2009). One outstanding implication is that individual differences in self-directed speech use could be linked to different levels of free will. That is, people using inner/private speech more efficiently could exhibit freer will, and vice-versa.

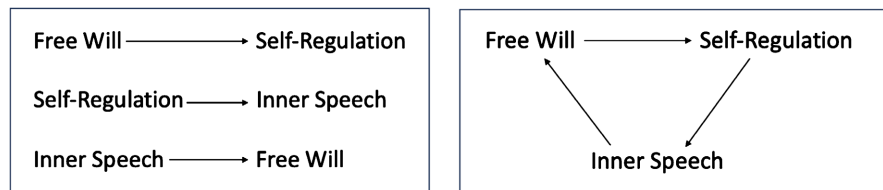
## Keywords

Free Will, Self-Regulation, Inner Speech, Private Speech, Self-Directed Speech, Individual Differences

## 1. Introduction

In this succinct review, I put forward what I hope represents a cogent hypothesis pertaining to the role played by inner speech in free will. It starts with the notion that the psychological equivalent of (or at least underlying mechanism for) free

will is self-regulation. A wide body of research shows that self-regulation entails inner speech, as well as its overt manifestation in children, private speech. That is, talking to oneself either silently or out loud when setting goals, planning, monitoring progress, problem-solving, delaying gratification, and resisting temptation increases performance. It thus follows that inner speech is importantly tied to free will—an idea barely alluded to in the relevant literature. The following simple diagrams illustrate the above reasoning (**Figure 1**):



**Figure 1.** Illustrations of suggested rationale.

In what follows, I address each of these three components of the proposal in more detail. I believe that the current topic is important because free will is very often seen as representing a mysterious faculty, but asking the simple question “What goes on in our head when attempting to control our actions?” and tentatively answering that we silently talk to ourselves makes free will much less enigmatic.

## 2. Free Will and Self-Regulation

The term “free will” usually designates any form of significant control over one’s actions (O’Connor & Christopher, 2022) and encompasses numerous synonyms such as volition, agency, self-determination, autonomy, intention, and self-control (Baer et al., 2008). No doubt, the notion of free will may be defined differently and uncovers many philosophical and theoretical issues such as: is free will an illusion (e.g., Libet et al., 1983) or: are some free will processes unconscious (e.g., Bonn, 2013)? Addressing such questions here would detract from the main goal of looking at free will from a uniquely psychological perspective focused on self-regulation.

Similarly, “free will” can be defined differently. **Table 1** offers representative alternative definitions of free will using online dictionaries such as Merriam-Webster, Cambridge, Oxford, and Collins. As can be appreciated, all proposed definitions are compatible with the one employed here: any form of significant control over one’s actions.

**Table 1.** Various free will definitions.

Power of acting without constraint of necessity or fate	Capacity to choose between different possible courses of action	Ability to decide what to do independently of any outside influence
Ability to act at one’s own discretion	Voluntary choice or decision	Ability to do otherwise

**Continued**

Freedom to make choices for oneself	Freedom to make choices not determined by prior causes or divine intervention	Control over one's choices
There being no external impediments to the agent doing what he wants to do	Responsiveness to reasons	etc.

Several theorists within the psychological literature agree with the notion that self-regulation constitutes the main psychological component of free will. To illustrate, [Bandura \(1986\)](#) is known for his reciprocal determinism model, where behavior both shapes and is influenced by personal factors and the social environment. Within personal factors, one finds self-regulation and self-efficacy. The former is explicitly associated with free will (see [Martin, 2004](#)) and is made up of three inter-related processes ([Feist et al., 2012](#)): self-observation (i.e., self-reflection), self-evaluation, and self-reaction (i.e., self-reinforcement/punishment).

Self-regulation is generally defined as "... the process by which people initiate, adjust, interrupt, terminate, or otherwise alter actions to promote attainment of personal goals, plans, or standards" ([Heatherton & Baumeister, 1996: p. 91](#)). It includes altering one's behavior and mood, selecting a response from various options (i.e., making choices), and filtering irrelevant information. In essence, self-regulation refers to the control of one's behavior, emotions, and thoughts in pursuit of long-term goals ([Baumeister & Vohs, 2003](#)). Clearly, this last definition is remarkably consistent with the one offered for free will, which, again, constitutes any form of significant control over one's actions.

[Baumeister \(2014\)](#) discusses ego depletion as representing a state of reduced willpower caused by prior exertion of self-control. Self-regulatory failure arguably occurs because of deficient standards, inadequate monitoring, or inadequate strength (under-regulation), or false assumptions or misdirected efforts (misregulation), usually linked to over-riding emotional responses ([Baumeister & Heatherton, 1996](#)). Examples of self-regulatory failures are eating disorders, substance abuse, and gambling. In everyday language, people often characterize such failures as *lack of free will*. Self-determination theory (e.g., [Ryan & Deci, 2006](#)) proposes that humans have three fundamental psychological needs, autonomy, competence, and relatedness, which promote growth and development. Autonomy refers to the feeling that one can choose and willingly endorse one's behavior—that one has free will.

### 3. Self-Regulation and Private/Inner Speech

Inner speech is defined as silent self-directed speech, or inner language in the absence of overt and audible articulation ([Langland-Hassan, 2021](#)). Private speech specifically means overt self-talk emitted by children—audible speech-for-self which will become fully internalized later on in development ([Kohlberg et al.,](#)

1968). Inner speech serves various important cognitive functions, such as self-reflection, memory, rehearsal and replay, task-switching, emotional expression, and thinking about others' mental states (e.g., Alderson-Day & Fernyhough, 2015; Clowes, 2007; Fernyhough & Borghi, 2023; Morin, 2018).

Entire books have been dedicated to the study of the relations between private speech and self-regulation (Diaz & Berk, 1992; Winsler, 2009; Zivin, 1979). They present varied evidence that private speech causally influences many self-regulatory outcomes (see below). Numerous published papers also offer evidence in this direction (e.g., Alarcón-Rubio et al., 2014; Aro et al., 2015; Bono & Bizri, 2014; Diaz et al., 1992; Frauenglass & Diaz, 1985; Krafft & Berk, 1998; Mulvihill et al., 2020), as well as evidence that inner speech plays a crucial role in executive functions associated with self-regulation (e.g., Fernyhough & Fradley, 2005; Guo & Dobkins, 2023).

Domains of self-regulation and executive functions enhanced by private speech include action planning, emotion regulation, attention, cognitive control and flexibility, working and long-term memory, categorization, self-reflection (e.g., self-monitoring, metacognition) (Fernyhough & Borghi, 2023), as well as problem-solving, inhibition, learning, Theory-of-Mind, communicative competence, motivation, and creativity. Several underlying mechanisms have been proposed to account for the beneficial effects of private speech, both in children and adults (see Guo & Dobkins, 2023). One suggested mechanism is that the use of private speech helps to focus attention on the task at hand, thus improving performance. Another possibility is that self-directed speech facilitates problem-solving via the formulation of a precise definition of, and effective approach to the problem, as well as maintenance of one's focus, progress evaluation, and strategy readjustment when needed (Kendall & Hollon, 1981).

Note that private and inner speech shall not be equated: after all, the former represents an immature version of the latter. However, given that several research results regarding private speech have been replicated with inner speech in adults (again, see below), a fair assumption is that both forms of self-directed speech basically serve the same functions.

Private speech is recorded in natural settings (e.g., in the classroom) or in more controlled environments in different situations (e.g., with others vs. alone). It is usually quantified by calculating the total number of raw utterances, the number of verbalizations per minute, or the ratio of social to private speech. Private speech units are then coded and organized into different categories. Representative categories include task-irrelevant private speech (e.g., wordplay, emotional release), task-relevant private speech (e.g., vocalizations about the task), and partly internalized private speech (e.g., inaudible muttering, whispers, silent lip movements). The frequency and content of private speech are then associated with behavior, measures of cognitive development, or task performance. Another frequently used approach is articulatory suppression, which consists of having participants repeat a word over and over, which hinders their ability to

emit self-talk.

Here are a few representative examples of studies in this research area. Performance of children on the Tower of London task (a measure of planning, a central part of self-regulation) is significantly lower when private speech is blocked using articulatory suppression (Lidstone et al., 2010). Participants are presented with colored disks stacked vertically in three possible positions (start state) and are instructed to move them one at a time until they match a given configuration (goal state). Also using articulatory suppression, Tullett and Inzlicht (2010) observed self-control deficits in adults on a “go/no-go” task, where participants had to respond by pressing a button when seeing a “go” signal, and not respond when seeing a “no-go” signal.

Self-instructional training procedures have been developed to stimulate inner speech use to effectively lower impulsive behavior in children when working on various tasks (Meichenbaum & Goodman, 1971; also see Meichenbaum, 1977). Training generally consists of having the child first observe a model performing a task talking aloud. The child then performs the same task while the model gives verbal instructions, followed by the participant performing the task while instructing himself or herself aloud, and then performing the task while whispering the instructions. The final step has the child performing the task covertly. One last example pertains to the observation that more private speech is produced when adult participants are working on a difficult task as opposed to an easy one (Duncan & Cheyne, 2001)—problem-solving also constitutes an important part of self-regulation.

The above illustrates the well-documented fact that self-directed speech (both inner and private) is associated with self-regulation, often causally so. The final part of my argument below is that, consequently, free will too recruits self-talk.

#### 4. Inner Speech and Free Will

Despite the intuitive idea that “An inner voice existing within each of us insists that our actions result from personal will, telling us that we consciously choose our actions and rationally guide ourselves through life” (Bonn, 2013: p. 1), very few philosophically inclined scholars formally proposed that inner speech could be in some way connected to free will. Most of the time, only cursory allusions are made (e.g., Corno, 2013; Ingvar, 1999; Mackay, 2014; Murphy & Brown, 2007; Porpora & Shumar, 2010).

One notable exception is a chapter by Wiley (2009) entitled “Inner Speech and Agency”. In Wiley’s view, the process of agency entails the mental construction of a foreseen action, the choosing of what action to carry out, and the emission of behavior needed to carry out the action. For example, one may say to oneself “I need to fix the sink”, “Should I do it myself or ask a plumber to fix it?”, and “Let’s grab my tools and fix it myself.” As just illustrated, Wiley sees inner speech as being implicated in all three stages of free will. More specifically, inner speech assists in defining, choosing, and enacting actions. Wiley further points

out that populations known for experiencing inner speech deficits (e.g., autistic individuals and people suffering from ADHD or traumatic brain injury) seem to struggle with agency.

As discussed in the first two parts of this paper, free will is basically synonymous with psychological self-regulation, and self-regulation importantly relies on inner and private speech; a logical consequence of this is that self-directed speech is implicated in free will, as suggested by Wiley.

## 5. Conclusion

Free will is often viewed as a rather mysterious faculty. Adler (1970) simply called it “creative power” without further elaboration, and humanists like Maslow (1962) and Rogers (1961) postulated that free will represents an intrinsic quality of human nature, without explaining how it physiologically or cognitively works. Of course, several more recent scientific advances, especially in cognitive neuroscience, have shed light on potential underlying mechanisms of free will (e.g., Lavazza, 2016), which are beyond the scope of this short review. The proposal put forward here is not incompatible with other existing views; rather, it is complementary and addresses an intuitive aspect of free will which is often neglected: what goes on in our head when we attempt to control our own actions? As suggested above by Bonn’s quote, I submit that very often we recruit our inner voice when implementing free will. This arguably makes free will much less mysterious. Given the central role played by inner speech in psychological functioning (e.g., Fernyhough & Borghi, 2023), adding free will to the list seems only natural.

One outstanding implication that derives from the proposed analysis is that individual differences in self-directed speech use could be associated with different levels of free will. There are several self-report scales that exist, which assess individual differences in the frequency of inner speech use for various functions. One such questionnaire, the Self-Talk Scale by Brinthaup and colleagues (2009), measures self-regulatory self-talk using a Likert scale from 1 = Never to 6 = Always. Participants are asked to endorse items such as “I talk to myself when I should have done something differently” or “I talk to myself when something good has happened to me.” There is a wide range of scores that participants can obtain on that measure, which reflect more or less frequent use of self-talk. I suggest that those who score on the high end exhibit increased free will compared to those who score low.

## Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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