

INNER SPEECH AS A MEDIATOR OF SELF-AWARENESS, SELF-CONSCIOUSNESS, AND SELF-KNOWLEDGE: AN HYPOTHESIS

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Abstract — Little is known with regard to the precise cognitive tools the self uses in acquiring and processing information about itself. In this article, we underline the possibility that inner speech might just represent one such cognitive process. Duval and Wicklund's theory of self-awareness and the self-consciousness, and self-knowledge body of work that was inspired by it are reviewed, and the suggestion is put forward that inner speech parallels the state of self-awareness, is more frequently used among highly self-conscious persons, and represents an effective, if not indispensable, tool involved in the formation of the self-concept. The possibility is also raised that the extent to which one uses inner speech could partially explain individual differences in self-consciousness and self-knowledge. A selective review of the private and inner speech literature is presented, and some possible ways of testing the hypothesis by using pre-existing techniques are proposed in the hope of stimulating empirical investigations. Some implications are outlined in conclusion.

The unique capacity of the self to reflect upon itself, named *self-awareness*, has always puzzled philosophers and psychologists alike. Just *how*, through what cognitive processes, do we have access to the content of our current subjective experiences? What goes on at a cognitive level when we try to understand ourselves? In other words, how does the self acquire information about itself, and form a coherent picture of what it is, by organizing this information into a *self-concept*? These are undoubtedly among the most intriguing questions in psychology.

The study of self-awareness was traditionally confined to phenomenological approaches until operationalizations of this concept were developed (Rimé & LeBon, 1984). Duval and Wicklund's proposition (1972) that a *state of self-awareness* could be induced and thus manipulated using devices like mirrors and cameras, set the departure point to a new and important research strategy; self-recognition in the mirror has been repeatedly used to map the existence of a self-concept in primates and children (see Gallup & Suarez, 1986); a scale measuring the disposition to focus inward (*self-consciousness*) has been developed by Fenigstein, Scheier, and Buss (1975); and numerous self-description forms have helped us to gather information on the knowledge people have of themselves

Acknowledgements—The authors wish to thank I. Turcotte for her many helpful insights, and P. Joshi and F. Tournier for their comments on earlier drafts of this paper.

(see l'Ecuyer, 1978), and how it is organized in memory (see Kihlstrom, Cantor, Albright, Chew, Klein, & Niedenthal, 1988).

These operationalizations of self-awareness, self-consciousness, and self-knowledge have enabled us to learn a lot about the effects and consequences of self-directed attention, the ontogenesis of the self-concept, and the content and organization of self-information. Still, little is known with regard to the precise cognitive tools the self uses in processing information about itself. In this paper, it will be suggested that *inner speech* is arguably one of the most important cognitive processes involved in the acquisition of information about the self—that a reasonable, if not obvious, answer to the question “How does the self acquire information about itself and form a coherent picture of what it is” is by talking to itself about itself.

Although the cogency of this hypothesis is self-evident, it has never received proper attention; moreover, it has never been tested empirically. In what follows, an attempt will be made to show that the idea of inner speech serving a mediational function in self-awareness, self-consciousness, and self-knowledge, is highly consistent with some of the most influential work in these respective areas, and that the extent to which one uses inner speech for introspection could also partially explain individual differences in self-consciousness and self-knowledge. Some possible ways of testing the hypothesis by using pre-existing techniques will be proposed in the hope of stimulating empirical investigations, and some philosophical and clinical implications will be outlined in conclusion.

DUVAL AND WICKLUND'S THEORY OF SELF-AWARENESS

Inspired by Mead's original ideas (1934), Duval and Wicklund (1972; see also Wicklund, 1975, 1978; Wicklund & Golwitzer, 1987) postulated that attention could be directed either externally toward the environment or internally toward the self. In this second condition, the individual becomes the object of its own attention, and can consequently observe his or her own characteristics: He or she is in a *state of self-awareness*. Attention in this state is likely to focus on any aspect of the self that happens to be most salient at the time.

Although Duval and Wicklund's theory is well known, we think a rather detailed review is in order here. The theory assumes that people maintain standards of values for various behaviors or self-dimensions. Consequently, the initial reaction to self-focus should be *self-evaluation*, where a comparison is made between the actual self-aspect observed and an ideal representation of that same self-aspect. Since it is postulated that a discrepancy will be detected on almost any current behavior, trait, or attitude being examined, *self-criticism* (the admission of the discrepancy) will motivate the avoidance of the state of self-awareness because of the negative affect linked to it. If avoidance is impossible, an effort will be made to reduce the intraself discrepancy by either modifying the target self-aspect or by changing the ideal itself. It is clear that *positive* discrepancies can exist (especially after a success experience), in which case a person will actually seek the state of self-awareness; but such a state of affairs is postulated to be uncommon.

The antecedents of change in the proportion of time spent in a state of self-

awareness are simple: Stimuli that remind the person of his or her object status will increase self-observation, while all other stimuli will tend to draw attention outward. Typical stimulators of self-focus are other people (provided they attend to us), physical arousal, mirrors, cameras, or tape recordings of the person's voice. (It is important to understand that a mirror, for example, does more than direct attention toward one's face, for as soon as the face, or any other reflection of the self, receives attention, attention will then shift to whatever self-related dimension is most salient.)

Consequently, in Duval and Wicklund's perspective, whether attention is directed inward or outward is completely determined: "It is the environment we should inspect if we want to know something about the frequency and duration of someone's objective self-awareness" (Duval & Wicklund, 1972, p. 223). Beside aleatory exposures to (or anticipation of) self-focusing stimuli in one's environment, the general level of activity of an individual is important in that respect. For example, to be passionately fond of a particular hobby to the point of investing one's entire energy in it is likely to draw attention consistently away from the self; on the other hand, being chronically inactive might just do the opposite. In addition, if a person's surroundings make it problematic for him or her to discriminate himself or herself from his or her immediate environment, it then becomes difficult for him or her to focus on himself or herself as an object. This determinant has been called *disindividuation* (Wicklund, 1975).

Fenigstein et al. (1975) rightly pointed out that "some people constantly think about themselves, scrutinize their behavior, and mull over their thoughts—to the point of obsessiveness. At the other extreme are persons whose absence of self-consciousness is so complete that they have no understanding of either their own motives or of how they appear to others" (p. 522). This consistent tendency of persons to direct attention inward or outward (*self-consciousness*) has been viewed by Rimé and LeBon (1984) as being dependent upon past experiences marked by more or less frequent exposure to self-focusing stimuli. It could also be suggested that the spontaneous motivation to avoid self-inspection, especially among persons having many self-discrepancies, might be a significant factor here.

Needless to say, Duval and Wicklund's proposition that self-focus could be experimentally manipulated, and the construction of a scale measuring dispositions to be self-attentive (Fenigstein et al., 1975), stimulated a considerable body of empirical work. The validity of self-focus manipulations has been demonstrated many times (see Carver & Scheier, 1978; Davis & Brock, 1975; Geller & Shaver 1976); factor analysis on the Self-Consciousness Scale (SCS) revealed the existence of three relatively pure subscales: *Private* self-consciousness (the disposition to be aware of the covert and hidden aspects of the self), *public* self-consciousness (a tendency to be aware of the publicly displayed aspects of the self), and *social anxiety* (see Carver & Glass, 1976; Turner, Scheier, Carver, & Ickes, 1978, for validation details). Differences in dispositional self-consciousness have been found to lead to the same behavioral effects caused by manipulations of self-attention in a large amount of researches, thus adding credibility to the self-attention construct overall (Carver & Scheier, 1981).

To propose here a comprehensive review of experimental and correlational works in the self-awareness area would clearly be beyond our goal (reviews can be found in Carver, 1979, and Wicklund, 1975). For the present purpose, only prominent examples will be given, related to the main *effects* associated with the state of self-awareness.

The most fruitful vein of work in the self-awareness literature has definitely been that of self-evaluation; as a general rule, results have been consistent with Duval and Wicklund's predictions. For example, subjects with salient self-related discrepancies (an induced attitude-behavior inconsistency) will show a reluctance to sit before a mirror, whereas subjects in accordance with their attitudes will evidence a seeking-out of self-focus states (Greenberg & Musham, 1981). A high level of self-attention will lead to the seeking-out of concrete information that will facilitate a more abstract comparison between a person's own behavior (or performance) and a salient behavioral standard. This means that subjects having to reproduce drawings (the standard) will look more frequently at the originals (the seeking of concrete information relevant to the comparison) when in front of a mirror (Scheier & Carver, 1983, experiment 1). Children will transgress a standard, for example, the experimenter's instructions to take only one candy on Halloween, less (Beaman, Klentz, Diener, & Svanum, 1979), and college students will cheat on an "intelligence test" less (Diener & Wallbau, 1976) when in front of a mirror. (For more examples, see Brockner & Wallbau, 1981; Carver, 1975; Carver, Antoni, & Scheier 1985; Gibbons & Wicklund, 1976.)

The effects of self-awareness are not limited to self-evaluation (Carver, 1979). Being attentive to the content of our immediate subjective experience—or to any other salient self-aspect—puts us in the position to perceive these raw, or *perceptual* data, to use Carver and Scheier's (1981) terminology, more acutely. Take emotions as a case in point: In a state of self-awareness, affects will be perceived more vividly and felt more intensely. For example, subjects highly disposed to private self-consciousness will react more aggressively to anger provocation than subjects low on private self-consciousness (Scheier, 1976). Male subjects exposed to their reflection in a mirror will reliably make more favorable ratings of slides of nude women, or will evaluate an induced mood as being more intense, than subjects with less self-focus (Scheier & Carver, 1977, experiments 1 and 3). Snake phobics will withdraw earlier in a sequence approach of the feared stimulus when in a state of self-awareness (Scheier, Carver, & Gibbons, 1981, experiment 1), and self-focused psychiatric patients will feel depression more intensely than control patients (Gibbons, Smith, Ingram, Pearle, Brehm, & Schroeder, 1985).

The same principle applies to internal physiological states as well. In the presence of a self-attention-enhancing manipulation, subjects who will be given a placebo with the anticipation of symptoms of arousal will report experiencing significantly *less* symptoms than controls (Gibbons, Carver, Scheier, & Hormuth, 1979). High private self-conscious subjects who will be given experimental instructions to gauge the intensity of solutions of peppermint extract (when these solutions are actually either stronger or weaker) will be significantly less misled by the experimenter's remarks as to the concentrations of the solutions,

than subjects lower in private self-consciousness (Scheier, Carver, & Gibbons, 1979, experiment 2).

In a different context, Fenigstein (1979) has shown that when people become more aware of the self during social interactions, there is an increased responsiveness to the evaluations of others, especially in the case of unpleasant feedback. Thus, high public self-conscious female subjects rejected by a group will react stronger to the rejection (i.e., will judge the group as less attractive and cooperative, and will be less willing to affiliate with it) than low public self-conscious subjects (experiment 1).

In most, if not all these representative experiments, we would suggest that *inner speech was present as a mediator of situational or dispositional self-awareness*. But before getting to this precise point, let us expose the main idea that motivates this statement.

INNER SPEECH AS A MEDIATOR OF SELF-AWARENESS AND SELF-CONSCIOUSNESS

It is tempting to see our current conscious awareness not only as being *dependent upon*, but also as being almost *synonymous* with our "inner voice." In other words, one might argue that inner speech is the agent when the self is seen as such. Here, however, it is the self *as an object* that will be of concern, where inner speech will be taken as a cognitive tool for introspection (in an information processing frame of reference), that is, as a cognitive process involved in the acquisition of self-information.

In Duval and Wicklund's terminology (1972), the state of self-awareness consists essentially in "becoming the object of our own attention;" expressions such as "to *examine, evaluate, or focus upon oneself,*" "to *introspect,*" or "to *scrutinize one's behavior,*" can repeatedly be found in the self-awareness literature.* Moreover, if one looks at the items of the Self-Consciousness Scale, propositions like "I'm always trying to *figure myself out,*" "I *reflect* about myself a lot," "I'm *aware* of the way my mind works when I work through a problem," and "I usually *worry* about making a good impression" will be found. But what do all these expressions really mean? What cognitive operations do they represent? Is to be "self-attentive" a *prerequisite* activity to the unfolding of numerous internal operations, or is it *sufficient* for the acquisition of self-information?

It is our contention that these expressions often mean in fact "to *talk to oneself about oneself,*" and that the notion of "self-directed attention," as convenient as it may be, nevertheless embodies in all likelihood diverse cognitive processes whose abundance is in fact the measure of our ignorance. In our view, inner speech represents such a cognitive process (*imagery* might also be another important "self-representational" process—see Morin & Everett, in press, Morin & DeBlois, 1989, Rollins, 1989). To be sure, identifying, interpreting, classifying, integrat-

*Other typical expressions are: "To *think* about oneself," to *recognize* one's attributes," "to be *cognizant* of an intra-self discrepancy," "to *attend* to a self-trait," "to *rate* oneself on a self-dimension," "to *mull over* one's thoughts," "to *find* shortcomings within the self," "to *judge* the correctness of a self-aspect," "to *self-blame,*" "to *self-criticize,*" etc.

ing, and retrieving self-information must be mediated by something more than one's attention.

Consequently, we would propose that more often than otherwise, inner speech *parallels* the state of self-awareness and is more frequently used for introspection purposes among highly self-conscious persons. The cogency of this hypothesis is self-evident, yet to our knowledge it has never been mentioned before.* Maybe this is so precisely because it is so obvious.

Buss (1980) distinguishes between an early "sensory" self and an advanced "cognitive" self. The sensory self, based on double stimulation, body boundaries, and mirror image self-recognition, is said to be shared by human infants, some primates, and of course adult humans; the advanced self, based on self-esteem, covertness of thoughts and images, and the awareness of other's perspectives, requires more sophisticated cognitions and social awareness that develop later in childhood. On the basis of the hypothesis put forward here, we would say that inner speech is probably one of the most important cognitive processes needed in the development of the cognitive self.

Experiments have been reviewed earlier, and it was suggested that inner speech was likely to be present whenever a situational or dispositional state of self-awareness was manipulated. Let us now illustrate this point. In the Diener and Wallbau (1976) experiment, for example, college students having the opportunity to cheat on a test might very well have been saying to themselves when in front of a mirror: "Maybe I could look at the answers—the experimenter left the correction sheet on the table. But then, this would be cheating. And I think I should not cheat, for this would be unfair to the experimenter—it could slant his or her data." In the Scheier et al. experiment (1981), self-aware snake-phobic subjects might have been telling themselves: "My God! This snake is repulsive and I have to *touch* it! I feel *horrified*! No way, I can't!" In the experiment by Gibbons et al. (1979), the subjects' subjective experience when in front of a mirror might have read: "I don't feel anything! This drug is not very effective!" Again in the Fenigstein experiment (1979), self-attentive subjects sitting in a room with a group that ignores them could have been saying to themselves: "What's wrong with them? What's wrong with *me*? Do I look strange, or what? I hate this situation."

We specified that inner speech was only likely to be present whenever a situational or dispositional state of self-awareness was manipulated, because we expect it not to be useful as an introspection tool in some clear cases. Consider, for example, the anxious student who is giving a speech in front of the whole

*Not in these terms, at least. See Boesch (1975), Jaynes (1976), Harré (1984), Ojemann (1986), Schutz (1967/1932) or Vendler (1972) among others, for different accounts of the role of language in self-awareness.

Buss (1980) considers covert speech as an aspect (i.e., as a *component*) of private self-consciousness, whereas we see it more as a cognitive process allowing us to have access to the content of the private self. Sokolov (1972) notes that "The elements of inner speech are found in all our conscious perceptions, actions, and emotional experiences, where they manifest themselves as verbal sets, instructions to oneself, or as verbal interpretation of sensations and perceptions. This renders inner speech a rather important and universal mechanism in human consciousness and psychic activity" (p. 1).

class, and who “feels” his or her face turning red: He or she can definitely be aware of his or her nervousity showing without having to talk to himself or herself about it. Yet, even though many public self-aspects (like physical features, gestures, postural and motor characteristics, mannerisms, etc.) and some private ones (e.g., bodily states) need not be verbalized in order to be “seen,” it must be acknowledged that most private self-aspects like beliefs, attitudes, personality traits, or personal virtues, can hardly be brought to consciousness without self-verbalizations. There are some instances of self-evaluation (take self-blame with remorse as a rather compelling case) where we would say that inner speech is involved beyond any doubt.

The foregoing raises the question of whether inner speech is the same when one focuses his or her attention on observable (public) aspects of oneself, as contrasted with nonobservable (private) aspects of the self. The answer is very simple and should be found on the level of inner speech *content*: In the first case, one will talk to himself or herself about public self-aspects, and in the second one, about private self-aspects.

In all the previous examples, a state of self-awareness was experimentally manipulated. But in *self-consciousness*, the apparition of a state of self-awareness is not stimuli-dependent since it is said to be a personal *disposition*. Then just *how* is it created? What can account, besides what has been said to this effect earlier (p. 339), for individual differences in self-consciousness? Buss (1980) proposes that four different components of a developmental trend toward covertness exist. As children grow older, the expression of affects is inhibited, ambitions are not disclosed, some play becomes wholly fantasy, and some speech becomes entirely covert. “Each of us is aware of feelings, ambitions, fantasies, and private speech that are unobservable to others. Such private self-consciousness would seem to originate in the development of advanced cognitions and the trend toward covertness” (p. 222). He goes on with the suggestion that children with a history of frequent illness are likely to attend more closely to internal body stimuli and, as a result, have a relatively higher level of private self-consciousness. Introversions would appear to be another influence on private self-consciousness, as well as richness of imagery and covert speech, which is likely to be intensified in imaginative children who are socially isolated.

In terms of determinants of individual differences in self-consciousness, it would certainly be risky to suggest here that inner speech in itself could *provoke* a state of self-awareness (i.e., affect its frequency), for it is ultimately impossible to know if people often talk to themselves about themselves because they are prone to be self-attentive, or if they are often self-attentive because they have a natural propensity to talk to themselves about themselves. But the possibility nevertheless exists that inner speech could at least sustain a state of self-awareness (i.e., affect its longevity) when avoidance is tempting. After all, we probably all had this experience of feeling uncomfortable with ourselves for unknown reasons (or to feel the need to settle one’s emotions), and have the urge to “take a walk” and talk to ourselves about our feelings and emotions. Typical in these self-conversations are verbalizations like “How is it I feel like this? In fact, *how* do I feel? It’s like a mixture of (emotion *x*) and (emotion *y*) . . . I don’t like to feel that

way, yet I should try to understand it in order to cope with it" (sustaining the state of self-awareness despite the negative affects linked to it). "Certainly the fact that (a particular event) happened to me this afternoon doesn't help. But why do I feel (z, a compound of emotion x and y)? Maybe it's because of . . .," etc.

So, maybe the extent to which one frequently uses inner speech could explain in part a person's consistent tendency to direct attention inward.

INNER SPEECH AS A MEDIATOR OF SELF-KNOWLEDGE

So far, the main effects associated with the state of self-awareness and the potential function of inner speech as a mediator of that state, have been discussed. The focus of this analysis now will be the long-term consequences of the state under study, among which the most important is certainly the substantial acquisition of self-information, that is, *self-knowledge*.

It is certainly reasonable to assume that a link can be drawn between self-consciousness and self-knowledge (Buss, 1980): A highly self-conscious person will find himself or herself in a better position to translate and organize much perceptual self-information available to his or her attention at a given moment into *conceptual* self-information (Carver & Scheier, 1981; see Kihlstrom et al., 1988; and Kihlstrom & Cantor, 1984; for a more detailed analysis of the notion of "conceptual" self-information; also see Markus, 1983; and McGuire & McGuire, 1988, on the content and organization of self-information). That is, this kind of person will associate any newly acquired perceptual self-information to other data of the same type (gained through repeated self-observations), and will categorize these data into *self-schematas* (this term has been introduced by Markus, 1977, 1983). These self-schematas—which constitute for the individual a synthetic and convenient representation of *what he or she is* on this or that self-dimension—will facilitate (and even determine) subsequent identification, interpretation, and integration of new perceptual self-information. In this process, links will also be established between diverse self-schemata, all of this resulting in the acquisition of a more global picture of what this individual is, i.e., in the formation of a *self-concept* (L'Ecuyer, 1978). This concept one forms of himself or herself, when not too distorted or biased, can be equated with self-knowledge.

It is not surprising in that perspective that highly self-conscious people will describe themselves in more detail, using more self-descriptive adjectives, than low self-conscious people (Turner, 1976, 1978b); moreover, private self-consciousness has been found to be positively related to speed of deciding on the applicability to oneself of undesirable trait labels (Turner, 1978c). Presumably this is so because persons high in private self-consciousness have thought a lot about what they are like (Carver & Scheier, 1981). Subjects being chronically attentive to public aspects of themselves will give a faster evaluation of their physical characteristics when compared with low publicly self-conscious subjects, and will be judged by others as being more attractive, presumably because they are more concerned and careful about the way they present themselves (Turner, Gilliland, & Klein, 1981).

Since being frequently in a state of self-awareness is likely to result in the acquisition of more self-information, highly self-conscious people will know better how and what they really are. Consequently, the validity of personality measures as predictors of actual behavior (self-report validity) will be greater among such subjects (Pryor, Gibbons, Wicklund, Fazio, & Hood, 1977; Scheier, Buss, & Buss, 1978; Turner, 1978a). Assessments of various aspects of the self, including attitudes, cognitions, and affective and somatic states, usually will be more accurate when made by a respondent whose attention is self-directed. Self-awareness will promote accuracy by focusing the respondent's attention more carefully on those aspects of the self made relevant by the instrument, and by increasing the person's motivation to report accurately on those self-dimensions (Gibbons, 1983).

Here again, the reasoning used to defend the idea of inner speech serving a mediational function in self-awareness and self-consciousness can be evoked: It appears unlikely that to be "self-attentive" is sufficient for the acquisition of self-information—numerous internal operations are probably implicated in the "translation" (i.e., the interpretation, classification, and integration) of perceptual self-data into conceptual self-knowledge stored as self-schematas in memory. Again, our contention is that inner speech represents an effective, if not indispensable, tool involved in the formation of the self-concept. To "*encode, store, abstract, or retrieve* self-information"—frequent expressions used in the (self-) information processing literature—are arguably equivalents to "*to talk to oneself about oneself.*" In addition, we would propose that conceptual self-knowledge is semantic knowledge acquired through self-verbalizations.

An example might be helpful. Consider all these occasions when we "catch" (i.e., observe) ourselves emitting a given behavior or thinking in a given pattern that is surprising to us. Spontaneously we reflect on these raw data and tend to associate and integrate them with already acquired information about ourselves: "What did I just do? This is not the first time I have done that. It seems that each time I find myself in that kind of situation, I act in this very same fashion. It must be that in this precise sphere of my personality, I am (trait adjective)." Thus is abstracted conceptual self-information from perceptual data. Of course, one could go much further than the example suggests. Frequently in these typical (verbal) self-analyses, links are created between existing self-schematas, and more global inferences are made about one's general personality, attributes, attitudes, values, behavior, and so on. We postulate that inner speech, obviously, is actively used throughout this self-concept formation.

Now, it is clear that inner speech is far from representing the unique means of acquiring self-information. It might be welcome here to distinguish at least two possible *sources* of self-information: The social world and the self. Mead (1934) convincingly argued that the social milieu allows the individual gradually to form an idea of what he is like by being confronted by different ways of thinking, feeling, and acting (i.e., by taking others' point of view, a process that renders his or her own characteristics more salient). Cooley (1902) proposed that the primary information we have about ourselves is represented in terms of reflected appraisals we get from other people (where others represent "mirrors"

for us). Thus, and by extension, repeated confrontations with alien cultures, or frequent and objective remarks emitted by significant others about ourselves (and/or profound exchanges with such people about the way they perceive us) are substantial sources of self-information. In all these cases, we can evoke what we would like to call *inter-personal modes* of acquisition of self-information. The physical environment can also be conceived of as a source of self-information: Mirrors, cameras, or any other (self-) reflecting devices, besides being self-focusing stimuli, give the individual access to many public self-aspects, as perceived by others and otherwise inaccessible.

When in a state of self-awareness, however, the individual becomes his or her own source of information. He or she can learn things about himself or herself through divers *intra-personal modes* of acquisition of self-information, all involving self-directed attention, and among which can be found inner speech and, possibly, mental self-imagery. (Incidentally, it is tempting to suggest that these modes of introspection reproduce *internally* the social phenomena of examining one's self from another point of view and of learning what one is from the direct feedback one has from others. See Morin & DeBlois, 1989.)

In the light of this distinction, it appears that to "self-focus" (and to talk to oneself about oneself, probably one of many intra-personal modes of self-observation) is not a unique source of self-knowledge. It must be an important one, however, for personal dispositions to be self-aware can be correlated with individual differences in self-knowledge (Turner, 1976, 1978b). Moreover, if one sees the development and elaboration of the self-concept as being not only dependent upon the acquisition of self-information, but also as implying an organization of this information into a coherent whole, the role of cognitive processes can be best appreciated. Self-talk, it seems to us, is particularly well suited to performing such an organizational work on self-information coming from the social environment. Having suggested earlier that individual differences in the use of inner speech for introspection purposes could in part explain personal dispositions to be self-attentive, it is only logical to propose now that personal dispositions to talk to oneself about oneself might be determinant of individual differences in self-knowledge. In more empirical terms, this would mean that people having a rich and elaborated self-concept are people that frequently talk to themselves about themselves.

So far, the expression "to talk to oneself *about oneself*" has been particularly favored given the postulated function that has been ascribed to this activity in self-observation. Of course, people talk to themselves about a lot of things and for many different motives—an aspect of the problem we shall review now.

PRIVATE AND INNER SPEECH

Anyone interested in the "private speech" area finds himself or herself confronted with confusing definitional difficulties when reviewing the literature (Zivin, 1979). As just mentioned, it must be understood from the start that the activity of talking to oneself (in silence: *inner* speech; out loud: *private* speech) serves many functions, and that its study has been influenced by the particular

functions ascribed to it by authors in accordance with their personal theoretical assumptions.

For example, Piaget (1926/1923) used "egocentric speech" in his writings, referring by this expression to children's overt self-verbalizations emitted in social situations without any preoccupation with being understood or with trying to adapt their discourse for others. To Piaget, these self-verbalizations were "egocentric" in that they reflected the general incapacity of young children to differentiate their own perspective from that of others. This type of speech did not serve any positive function, but rather, represented a manifestation of children's cognitive immaturity. Consequently, Piaget postulated that it would disappear with the development of relativistic thought (self-awareness). Vygotsky (1962/1934) also used the expression "egocentric speech," but in a very different way. He agreed with Piaget that children's verbal behavior was unadapted in social situations, but conceived private speech as serving a positive function, that of *cognitive self-guidance*. In Vygotsky's perspective, egocentric speech did not really reflect an incapacity to communicate (the child communicates with himself or herself): Rather, it showed the error made by children in talking to themselves out loud (for self-regulatory purposes) in social situations. Seen as such, private speech was postulated by Vygotsky not to disappear with the cognitive and social development of children, but to go underground and persist.

Of course, the problem is much more complex (see Zivin, 1979, for an extensive discussion on these topics), and has been exposed here only to show that theoreticians, by viewing inner and private speech in many different perspectives, did not study the same phenomenon, nor did they define and name it in the same way. There is no need here to go into details; suffice to say that Piaget's and Vygotsky's ideas prompted many empirical investigations, the self-regulatory function of inner speech receiving most attention in research through the study of overt self-verbalizations of children (see Zivin, 1979, for a review, or Harris, 1986 for a more recent example). Other studies of private speech have notably investigated spontaneous speech manifestations (Klein, 1964), the age curve of speech decline (Kohlberg, Yaeger, & Hjertholm, 1968; Rubin, 1979), its function in role-taking abilities (Flavell, Botkin, Fry, Wright, & Jarvis, 1968), the ontogenetic origins of verbal self-control (Bem, 1967; Luria, 1959, 1961), and its use in changing behavior and thinking styles (Meichenbaum, 1973, 1976, 1977, 1984, 1985).

Vygotsky (1962/1934) and Mead (1934), among others, recognized that inner speech might be of importance to self-awareness.* To our knowledge, however,

*Mead proposed that talking to oneself could give rise to a fictional dialogue where verbalization of an objective, and thus different point of view about ourselves could be possible. The child can only see himself or herself from the perspective of another, and he or she can at first only take this perspective on himself or herself by describing his or her activity to the other and so calling out in himself or herself the implicit response of another to his or her description (Kohlberg et al., 1968). In this perspective, one function of private speech in early childhood would be to make young speakers aware of their own actions and of their own separate existences (Rubin, 1979).

There is a clear difference between Mead's hypothesis and ours: He saw in private speech a means for children to become the object of their own attention by taking other's perspective, whereas we understand it to be a cognitive tool used by adults for self-observation purposes.

the potential function of inner speech as a mediator of self-awareness, self-consciousness, and self-knowledge has never been subject to empirical exploration, at least for two reasons. First, as noted earlier, the idea in itself is so evident that we suspect it has been taken for granted. Second, difficulties surrounding experimental considerations might be discouraging at first glance. We will review some of the existing operationalizations of inner speech in order to propose experimental strategies to overcome this second apparent obstacle.

Children's *private* speech is the ultimate objective manifestation of inner speech, and this is why it has been extensively recorded (mainly with hidden microphones) in most existing researches on self-regulation. Typical tasks employed have been jigsaw puzzles. Almost every investigator has used his own units and categories system of private speech, but it is common (and imperative) to differentiate *social* speech from *private* speech (when an experimenter is present), and *task-relevant* speech from *task-irrelevant* speech (when a task is involved) (see Meichenbaum & Goodman, 1979, for details). Many other categories have also been used, among which those of Kohlberg et al. (1968) where one can find *description and labeling of ongoing and or immediately past activity*, *questions asked and answered by self*, *verbalization of ongoing cognitive activity*, and *expletive* (expression of feeling about the task, success, failure or frustration, and/or positive or negative evaluation). These categories, obviously, are of interest in the present perspective.

Covert self-verbalizations of adults—inner speech—have also been successfully studied in subjects performing mental operations (e.g., mental arithmetic, reading to oneself and listening to speech, mental reproduction, and recollection of verbal and graphic-visual material, etc.) by Sokolov (1972), with the use of electromyographic devices recording the electrical activity of the speech musculature as an objective indicator of hidden speech processes. In that respect, micromovements of the tongue have proven to be a good indicator of inner speech. Of course, only the *incidence* of inner speech can be measured with this technique, leaving its content unknown.

Other techniques assessing inner speech include: (1) (following performance) questionnaires, thought listing, videotapes reconstruction, and interviews; (2) (during performance) the "think aloud" and "thought sampling" procedures; (3) (preceding performance) interviews and questionnaires (for details, see Kendall & Hollon, 1981, and Meichenbaum & Butler, 1979). Although some self-statements inventories have been developed to assess different types of cognitions (Kendall & Hollon, 1981), no scale measuring personal dispositions to talk to oneself *about oneself* seems to exist.

Now, some interesting experiments could be done with these operationalizations. If inner speech represents an important mediator of self-awareness, self-consciousness, and self-knowledge, we would predict:

1. (a) That inner speech should be present more often than otherwise whenever a state of self-awareness is created;

(b) that cognitive and behavioral effects associated with the state of self-awareness, or produced by the activity to talk to oneself about oneself, should be identical.

2. That the activity of talking to oneself about oneself, more than any other cognitive activity, should permit a more rapid, acute and effective acquisition of perceptual and/or conceptual self-information, and should be a determinant in the formation of a rich self-concept.

Here are a few examples of what this would mean in more experimental terms.

SOME POSSIBLE WAYS TO TEST THE HYPOTHESIS

First, using techniques developed in the private speech paradigm, we would predict a more important incidence of "introspective" self-verbalizations (i.e., Kohlberg et al.'s, 1986, categories) with children placed in front of a mirror (or using any other self-focusing stimuli) compared with controls, provided the subjects' subjective experience is rich enough and that the experimenter knows and/or controls what precise aspect of the subjective experience is salient at the moment of the self-focus manipulation. This means that subjects should be playing with toys or working on a stimulating task in order to elicit private events to which their attention could be drawn. A good example would be to reproduce Scheier et al.'s (1981) experiment with children and snakes, in which microphones were used to assess the subjects' heart beats.

Now, it must be acknowledged that a potential problem exists with this approach using children, namely, that a state of self-awareness could not be created in children aged nine years or below (Beaman et al., 1979). In the only experiment involving a manipulation of children's state of self-awareness, Beaman and his colleagues were unable to observe behavioral consequences of self-evaluation (i.e., to respect the instruction *not* to take more than one candy on Halloween) with this age group when confronted with a mirror. Morin (1989) tested the idea that the notion of standards might not yet be developed with children aged nine years or below, and that a state of self-awareness could nevertheless be created with these subjects by seeking other self-awareness effects in children, like a more vivid perception of emotions. Scheier and Carver's experiment (1977) with nude slides was repeated with subjects aged seven years, this time using pretty or funny pictures. The attempt failed, which means that this particular research avenue might just not be the most promising one. Still, some other experimentations using private speech could be conceived.

For example, one could create a self-description task adapted for children, consisting of pictures (i.e., cartoons) representing diverse self-aspects; subjects would be asked to select the images reflecting what they are. To the extent to which a substantial emission of private speech in the laboratory represents an already existing tendency to talk to oneself frequently in natural settings, and that this tendency helps (even in children) the acquisition of self-schemas, we would predict a more rapid selection of more self-traits in soliloquist children. Moreover, such subjects should probably have a more realistic vision of themselves if one compares the images they select with those selected by someone who knows them well—their parents for instance. Another possibility could be to provide children with puzzles, for example, and to record their

behavior (thereby recording their *strategy* as well, if any) and private speech. The reported and real strategies could then be compared, where we would predict these to be identical with subjects having been attentive to themselves (and arguably, having verbalized their actions) while solving the puzzle.

Some conceptual replications of experiments involving the manipulation of self-awareness could also be conducted with adults, using Sokolov's technique. In that case, of course, subjects would have to believe that the apparatus records physiological responses to emotions, for example. One could also record spontaneous inner speech manifestations with either low or high private self-conscious subjects. Another idea would be to take the propensity of individuals to report in detail the content of a given subjective experience as an indication of their level of self-focus during the unfolding of a particular event (created by the experimenter), and correlate this measure with the spontaneous incidence of inner speech recorded during that event. Our prediction is that subjects having manifested substantial inner speech in that context would obtain scores comparable to those of subjects having been put in front of a mirror. Again, it must be noted that any experiment assessing inner speech with Sokolov's technique can only explore its incidence, and that no causal link can be drawn between the activity of talking to oneself about oneself and self-awareness.

The creation of a scale measuring personal dispositions to talk to oneself about oneself would represent a major step in the right direction. By using such an operationalization, one could: (1) correlate it with the SCS, or with self-concept measures like the "Who Are You?" (L'Ecuyer, 1978); (2) measure the incidence of self-talk in members of disindividualizing groups (like the army); (3) select subjects on their tendency to talk to themselves about themselves instead of their score on the SCS, and try to replicate behavioral effects caused by manipulations of self-attention.

The "think aloud" technique could also prove itself useful. As a pretest, subjects could be instructed to verbalize their covert speech out loud in two conditions: In front of a mirror and in an empty room. Special care should be taken for the instructions so that subjects would not be encouraged to verbalize for the sake of it when in fact they don't have anything to say to themselves. Moreover, one could diminish the likelihood of having subjects' attention directed to what they think because of the instructions (thus creating a state of self-awareness in both conditions), by pretending the experiment is about, say, the latency between spontaneous self-verbalizations in relation to age and sex (a bogus apparatus would be installed in the experimental room to that effect). In this way, subjects would not feel observed, knowing that what they are saying to themselves is not recorded or heard; in addition, their self-verbalizations would probably be more spontaneous and private. These would in fact be recorded, and the experimenter would of course have to inform subjects that they had been deceived, and that the unheard content of the tape could be erased if they wish so. The predictions would be that subjects in a state of self-awareness should produce significantly more introspective self-statements (like "I feel ridiculous being alone and talking to myself aloud in this empty room") on a total number of self-statements (as "how long do I have to stay here?"). In the event

that such a pretest is successful, replications of experiments like Gibbons et al.'s (1979) (the administration of a placebo) could be done in the same conditions, where we would expect self-verbalizations like "I don't feel anything! This drug is not very effective!" to be observed more frequently in the self-awareness condition.

Finally, the most convincing manipulation would certainly be to teach low self-conscious subjects to talk to themselves about themselves and to observe the impact of such training on their self-consciousness and self-knowledge. The administration of a scale measuring subject's disposition to introspective self-talk before and after the training would be imperative. Subjects would be asked to keep a log in which questions about the self (i.e., "how did I feel today?," "what were my objectives today—did I meet them?," etc.) would have to be answered daily in the log, thereby making subjects use, practice, and, hopefully, develop their inner speech. As a complement to this procedure, the experimenter would meet each subject regularly to check the log and to encourage introspective self-talk at least three times a day. The experimenter should serve as a model by giving examples out loud of what it means to talk to oneself about oneself. Subjects' scores on the "Who Are You?" for example, and/or on a task that is typically best done by highly self-conscious persons, could be compared before and after the training, with the prevision of a significant increase post-training. Needless to say, this type of training, if successful, would have much to recommend to it in a clinical setting (more on that later).

We leave it to the reader's ingenuity to find other ways to test the hypothesis.

CONCLUSION

In 1972, Duval and Wicklund published *A Theory of Objective Self Awareness*, a book that was to give birth to a very important research strategy on self-awareness and self-consciousness. Some authors were quick in pin-pointing the implications of Duval and Wicklund's theory for self-knowledge. Before and during these years, another impressive body of research was well alive—that of private and inner speech.

These two wefts of research are still very prolific today, yet each one persists in ignoring the existence of the other—a surprising state of affairs if one considers the potential function of inner speech as a mediator of self-awareness, self-consciousness, and self-knowledge. It is this potential function of inner speech that we examined in the present article, where it was proposed that fusing the two research approaches just mentioned might represent a promising way of exploring the validity of this hypothesis.

One might ask at this point what would be the pertinence of deploying efforts to test this hypothesis. Well, we believe that it holds important theoretical as well as more clinical implications, among which the following.

Philosophers have raised many perplexing questions related to the role of human language in the emergence of Mind. Churchland (1983), for example, asked in a provocative paper "What is it about self-consciousness such that

it requires linguistic representations, and what is it about language such that it brings about the special capacity for self-consciousness? What are the empirical grounds for supposing animals are deprived of this capacity?" (p. 88). We hope the present article represents an attempt to answer such questions (see especially p. 343), and motivates us to bring the hypothesis on empirical grounds.

A highly controversial debate in the "Mind-Brain problem" perspective that surely would gain a lot from being confronted with experimental evidences is that of the organization of consciousness in the normal and commissurotomed (i.e., divided) brain. Does removing for therapeutic reasons the neural track connecting the two hemispheres of the brain leave the patient with one "self-conscious mind" in the left-speaking-hemisphere, or does it divide that mind in two parts now restricted to each hemisphere? Popper and Eccles (1977) would argue for the first possibility, Gazzaniga and LeDoux (1978) for the second, and Puccetti (1973, 1977, in press) would go as far as to pretend that each of us is in fact two people in one brain, the commissurotomed patient only showing in a more patent way a normal state of affairs. In the light of the potential role of inner speech in self-awareness, we would rather support the first interpretation of commissurotomy, the right hemisphere being deprived of linguistic abilities (Morin & Everett, 1987).

In a more clinical frame of reference, a straightforward suggestion that directly stems from the hypothesis exposed here is the idea of heightening self-awareness and promoting self-consciousness as well as self-knowledge through the appropriate use of inner speech. Even though compulsive self-consciousness can arguably lead to negative psychological states [for example: to an exacerbated depressive symptomatology when self-focus is unusually high (Pyszczynsky & Greenberg, 1987), and to social anxiety when public self-consciousness is high (Buss, 1980)], few clinicians would hold that low self-consciousness is a desirable trait, and that high self-consciousness is bad for you. In fact, most psychologists would probably consider a high disposition to self-observation as healthy. Techniques like those of Meichenbaum (see Meichenbaum, 1984, and p. 351 of this paper) could be developed to teach people how and when to talk to themselves about themselves, so as to encourage self-observation and thus self-knowledge. When unrealistic cognitions are at the core of client's problems, introspective self-talk could be learned to identify and change maladaptive self-talk.

This proposition gets even more interesting when one considers the crucial role self-awareness plays in *self-regulation*. Psychologists have recognized long ago that self-awareness represents a prerequisite to self-regulation (see Diener, 1980, or Mikulas, 1986, among many others): You cannot change a given behavior in a desired direction if you are oblivious to the way you act and if you don't even know how you should behave. Indeed, Scheier and Carver (1988; also see Carver, 1979; and Carver & Scheier, 1981, 1982) have recently articulated a model of self-regulation where self-focus is taken as a means for individuals to compare their current states with their standards or goals and to conform to them.* In this context, expanding people's disposition to self-focus by

encouraging them to talk to themselves about themselves should help them to self-regulate by the same token.

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*Note that Scheier and Carver's model of (long-term cognitive and behavioral) self-regulation is a very good candidate for the same kind of treatment we applied to Duval and Wicklund's theory of self-awareness: Self-regulation is likely to be mediated by inner speech, as Meichenbaum and others have demonstrated for short-term behavioral self-regulation. Such a treatment would require an entire article devoted to it.

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