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## Joyce's *Ulysses* and Woolf's *Jacob's Room* as the Phenomenology of Reasoning: Intentions and Control as Emergent of Language and Social Interaction

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Three groups of researchers propose three respective models of cognitive processes. The first group (Kruglanski, Erb, Pierro, Mannetti, & Chun, this issue) argues that a single inferential type of processing encompasses all possible judgments. The second group (Deutsch & Strack, this issue) divides processes into rational and impulsive. Presumably, qualitative differences between a reasoning, impulse control system and an impulsive system require this separation. The third author (Sherman, this issue) recognizes that attempts to count processing modes are not likely to succeed. However, these scholars see advantages in separating four types of processes that explain decisions. These four processes account for responses in certain sensitive domains. For example, a police officer who needs to decide whether to shoot a person of color may confront racial stereotypes, the need to reduce stereotyping, and the need to self-defend.

Commentary authors in this issue of *Psychological Inquiry* face several challenges. One is to contribute to the debate that motivates this issue. We first review the scope, precision, and heuristic value of the models. We then discuss the models' assumption about reflection and control. We identify a need to investigate the ecological validity of the presence of intention and control in two types of data. Comparing the use of intentionality and control words in literary texts with intention reports in psychological studies suggests dramatic differences in the frequency of intention references. We propose that intentionality requires a translation from random, sequential contents in the stream of consciousness into a more coherent narrative in the first person. The mechanism for the translation is prob-

ably syntactic parsing. Some preliminary data and potential directions of this view are discussed.

### Scope and Precision of the Models

Our colleagues' contributions have much to offer to the field of social psychology. The unimodel relies on a simple implicational molecule that underlies all human judgments. Thus, in principle, this simple-process model may have the broadest applicability (persuasion, stereotyping, attributions). However, to predict specific outcomes, the unimodel relies on five parameters. For example, the application of stereotypes should depend on the ease or difficulty of extracting the stereotypical information (task characteristics). It may also depend on whether the person sees the stereotype as relevant or irrelevant (subjective relevance), has high or low cognitive ability to process information (cognitive resources), has high or low motivation to think about the information (nondirectional motivation), and is motivated to avoid stereotypic judgments (directional motivation). Clearly the simplicity of the single-process model decreases with these five parameters. Nonetheless, using those parameters in combination with one process is still simpler than using the same parameters in combination with two qualitatively different processes (see, e.g., Petty & Cacioppo, 1986).

In contrast to the unimodel, the Reflective-Impulsive Model links different outcomes to different processes. This conceptualization describes a system of reflection, intention, and propositional thought that is governed by logic and verification of truth (see also

Freud's, 1923/1961, reality principle). Further, this model assumes a separate though interacting system governed by reward and approach/avoidance tendencies. This system is guided by what Freud termed *pleasure principle* and lacks either logic or ability to assess the truth value of an object or situation.

The Reflective-Impulsive Model incorporates the unimodel's if-then molecules under the reflective system. In doing this, Deutsch and Strack's (this issue) model is not concerned with the detailed predictions made by the unimodel. However, like Freud's (1923/1961) Ego and Id, the reflective and the impulsive systems have the potential to explain conflicts between "desire" and "reason." Desires emerge when reasoning stops. As a result, people succumb to temptations and are unable to fully control their impulses.

Finally, the Quad Model applies to the Implicit Association Test (IAT) and attempts to control one's responses. In the stereotyping example, Sherman's (this issue) model assumes two automatic processes, namely, association activation (e.g., of an automatic stereotype) and guessing. It also assumes two controlled processes, namely, discriminability (e.g., ability to discriminate types of stimuli) and bias control (e.g., control of the influence of the stereotype). The model further assumes six possible sequences resulting from the combination of these four processes (see Figure 1 in Sherman, this issue). Thus, when a person sees a Black face, six outcomes are possible. For instance, a person may show a stereotypical response because of the activation of the stereotype, discrimination of Black and White faces, and failure to overcome the bias. As shown by this example, the model offers great precision in this area. Its scope is presently limited to the use of the IAT and related measurement procedures. Nonetheless, it could easily be extended as further research develops.

### Heuristic Value of the Models

The three models in this issue clarify prior findings and predict new ones. Thus, they have high heuristic value. Kruglanski and his colleagues (this issue), for example, state that both automatic and controlled processes obey if-then rules. Further, they argue, previously reported qualitative differences between processes fade when one equalizes task demands. For example, in dual-processing persuasion research, the message arguments are typically lengthier and more complex than a cue such as the identity of the communicator. However, keeping the complexity of both types of information constant eliminates the differential influence of ability and motivation to think about the information. Both short arguments and short source cues have more impact when ability and motivation are low. Correspondingly, both long arguments and long source

descriptions have more impact when ability and motivation are high. In this sense, the unimodel reinterprets prior findings and opens the door to important new observations.

The Reflective-Impulsive Model has the advantage of using cognitive and neuroscience concepts to integrate prior findings in the areas of implicit measures, automaticity, and self-regulation. More important, this model specifies interactions between impulsive and reflective systems and makes unique predictions for these interactions. A good example comes from self-regulation. According to Deutsch and Strack (this issue), feelings are related to the impulsive system, whereas knowledge is related to the reflective system. When a person is tempted to eat high-fat foods, feelings create the urge to eat. In contrast, knowing that these foods are unhealthy may yield inhibited eating. That is, incompatible behavioral schemata will be activated in the situations that require self-regulation. Resolving the conflict in favor of the reflective system requires cognitive resources.

In a related vein, the Quad Model explains the results of compatible and incompatible trials of IAT (see Sherman, this issue) and makes new predictions for data previously obtained by Lambert et al. (2003). In a race IAT, for example, a compatible response (Black/bad and White/good) depends on automatic association (retrieving racial stereotypes) and discriminability (distinguishing Black and White faces). In contrast, incompatible responses (Black/good and White/bad) reflect the ability to overcome the bias created by the automatic associations. Using these principles, Sherman reanalyzed data reported by Lambert et al. In these data, public situations were shown to increase rather than reduce stereotyping. Using the Quad Model, Sherman attributes this effect to decreases in the ability to discriminate group cues. However, he also shows that the public setting had produced parallel attempts to overcome the stereotype bias. In fact, considering both antagonistic effects explained the experimental outcomes better than including only discriminability. These examples were used to demonstrate the heuristic value of the model.

### The Hidden Assumptions of the Models: Division Between Desire and Reasoning and the Concepts of Intentionality and Control

Social psychological models have often partitioned processes into (a) desire, impulse, or irrationality and (b) reasoning, inferences, or rationality. This dualism may underlie all existing dual models. In addition, the distinction remains in the recently proposed Quad Model because half of the Quad's processes fall on the more reflective side and the other half on the impulsive side.

If one recognizes two systems—one reflective and the other impulsive—then the unimodel would be part of the reflective system. It describes all processes as the application of if–then inferences that consume cognitive resources (for similar arguments, see Fishbein & Middlestadt, 1997). However, the model does not take a clear stand on this issue. One could argue that an attractive stimulus is the premise for an immediate approach tendency even when no inference is involved.

In any case, a commonly held social psychological assumption is that people engage in highly controlled reasoning that is governed by formal logic and verbal propositions. For instance, people may spontaneously discriminate against members of minority groups. However, they manage to control these tendencies when they set their mind to it. Similarly, the emphasis on automatic processes has researchers perplexed at the fact that previously known reasoned processes can be accomplished automatically. In other words, this surprise may be due to the premise that reasoning and intentionality were default. Therefore, it is surprising that lack of reasoning and intentionality are also common.

In this commentary, we argue that the frequency of algorithmic, controlled reasoning and first-person intention are empirical questions. In agreement with all models presented here, people may be unable to exert any control over their cognitive processes whatsoever. Or they may be able to do so only when certain conditions are met. Thus the ecological validity of intentional and controlled cognitive processes is an issue. We analyze some relevant data from both literary and real-life sources as a preliminary approach to this problem. Then we propose some preliminary hypotheses about how reasoning unfolds.

### **Speculating About the Ecological Validity of Reasoning as It Is Often Characterized (Controlled, Intentional, Propositional, Organized)**

The division between associative and propositional processes (see Deustch & Strack, this issue) raises interesting questions about the phenomenology of reasoning and intention. Does reasoning have the characteristics we often ascribe to it? Is it controlled and intentional?

**Stream of consciousness.** If certain processes are performed in a conscious, intentional fashion, an analysis of spontaneous conscious thoughts should reveal traces of controlled, reasoned processes. For example, if intentionality and controllability are properties of conscious processes, one should find that these contents include references to “goals,” “trying,” and “intention.” Whether these contents are part of spontaneous thought, however, is not clear. On one hand, the

spontaneous stream of thought may include images, random recollections in verbal forms, assessments of the future, and feelings. Moreover, it may not contain any references to intentionality, effort, or even the first person. On the other hand, spontaneous mental contents may be frequently tidy and propositional. If so, these contents should have the coherence, logic, and syntactic structure that are supposed to characterize intentional and controllable thought processes (see Bargh, 1994; Deustch & Strack, this issue). They may also include actual references to intentionality and processing effort.

To test these possibilities, we analyzed literary stream of consciousness data. First, we took Joyce’s (1922) *Ulysses*. In this novel, Joyce achieved one of the most extreme usages of the stream of consciousness technique. This method, first used by Édouard Dujardin (1888), consists of presenting the thoughts and feelings of a character as they occur, without editing. Like automatic writing, it produces a continuous, flowing series of images and ideas running through the mind of the character without the writer making a translation of these contents into propositional form. (The technique likely inspired the term *stream of consciousness*, introduced by William James in 1890. Nonetheless, his introspection method was different.)

We believe that the stream of consciousness technique may be useful to verify the subjective experience of controlled processing. Granted, one cannot introspect and correctly determine the source of an idea (Nisbett & Wilson, 1977). However, one can certainly enumerate the images and thoughts present at a particular time as they occur. Consider the following section from *Ulysses* (Joyce, 1922):

that was a relief wherever you be let your wind go free who knows if that pork chop I took with my cup of tea after was quite good with the heat I couldnt smell anything off it Im sure that queerlooking man in the porkbutchers is a great rogue I hope that lamp is not smoking fill my nose up with smuts better than having him leaving the gas on all night I couldnt rest easy in my bed in Gibraltar even getting up to see why am I so damned nervous about that though I like it in the winter its more company O Lord it was rotten cold too that winter when I was only about ten was I yes I had the big doll with all the funny clothes dressing her up and undressing that icy wind skeeting across from those mountains the something Nevada sierra nevada standing at the fire with the little bit of a short shift I had up to heat myself I loved dancing about in it then make a race back into bed Im sure that fellow opposite used to be there the whole time watching with the lights out in the summer and I in my skin hopping around I used to love myself then stripped at the washstand dabbing and creaming only when it came to the chamber performance I put out the light too so then there were 2 of us goodbye to my

sleep for this night anyhow I hope hes not going to get in with those medicals leading him astray to imagine hes young again coming in at 4 in the morning it must be if not more still he had the manners not to wake me what do they find to gabber about all night squandering money and getting drunker and drunker couldnt they drink water then he starts giving us his orders for eggs and tea and Findon haddy and hot buttered toast I suppose well have him sitting up like the king of the country pumping the wrong end of the spoon up and down in his egg wherever he learned that from. (pp. 660–661).

One way of determining how much thought is experienced as controlled is to count the number of instances in which words like *try*, *tried*, *intend*, or *goal* appear in *Ulysses*. We performed these calculations with 267,198 words of Joyce’s text. The results were astounding. *Try/tried* appeared only four times, half the times figuratively and always in reference to another person or as a statement from another person (as shown in italics here). For example, Joyce wrote

I am *trying* to work up influence with the department. Now I’m going to try publicity. I am surrounded by difficulties, by ... intrigues by ... backstairs influence by ... . (statement made by character to the protagonist; p. 32)

History, Stephen said, is a nightmare from which I am *trying* to awake. (figurative sense; p. 34)

Couldn’t sink if you *tried*: so thick with salt. (figurative sense; p. 66)

He *tried* his hardest to recollect for the moment whether he had lost as well he might have or left because in that contingency it was not a pleasant look-out, very much the reverse in fact. He was altogether too fagged out to institute a thorough search though he tried to recollect. About biscuits he dimly remembered. Who now exactly gave them he wondered or where was or did he buy. However in another pocket he came across what he surmised in the dark were pennies, erroneously however, as it turned out. (description of the behavior of another character; p. 529)

A similar conclusion arises from quantifying the use of the words *intend/t* and *attempt*, which appeared two times each. Joyce never used either of these terms to describe the conscious experience of the first person. Instead, the terms appeared as follows:

He looked down *intently* into a stone crypt. Some animal. Wait.

There he goes. (description of the behavior of another character; p. 108)

Do you intend to pay it back? (question posed by another character; p. 183)

He will see in them grotesque *attempts* of nature to foretell or to repeat himself. (figurative sense; p. 190)

All a kind of *attempt* to talk. Unpleasant when it stops because you never know exac. Organ in Gardiner street. Old Glynn fifty quid a year. Queer up there in the cockloft, alone, with stops and locks and keys. (figurative sense; p. 283)

Last, the word *goal* appeared seven times in *Ulysses*. In four of these seven times, the term referred to the “goal of a ball game.” The other three instances were as follows:

H. E. L. Y’S filed before him, tallwhitehatted, past Tangier lane, plodding towards their *goal*. (descriptions of movement by others; p. 219)

The door! It is open? Ha! They are out, tumultuously, off for a minute’s race, all bravely legging it, Burke’s of Denzille and Holles their ulterior *goal*. Dixon follows giving them sharp language but raps out an oath, he too, and on. (descriptions of movement by others; p. 409)

Ceylon (with spicegardens supplying tea to Thomas Kernan, agent for Pulbrook, Robertson and Co, 2 Mincing Lane, London, E. C., 5 Dame street, Dublin), Jerusalem, the holy city (with mosque of Omar and gate of Damascus, *goal* of aspiration) (figurative sense; p. 628)

Briefly, these analyses show absence of words associated with intentionality and control in the thought of the protagonist of *Ulysses*. Given a sample size of one, however, we decided to extend our analysis to another writer who was also skilled at representing the stream of consciousness: Virginia Woolf. It is interesting that, out of 55,094 words in *Jacob’s Room* (Woolf, 1922/2004), only 8 had the root *inten\**. These analyses confirmed the conclusion from *Ulysses*. Of these 8 occasions, 4 were used to describe another person, 3 were actual statements from a third person, and 1 was figurative. None of these instances was part of a stream of consciousness. Instead, the streams of consciousness would read as follows:

True, there’s no harm in crying for one’s husband, and the tombstone, though plain, was a solid piece of work, and on summer’s days when the widow brought her boys to stand there one felt kindly towards her. Hats were raised higher than usual; wives tugged their husbands’ arms. Seabrook lay six foot beneath, dead these many years; enclosed in three shells; the crevices sealed with lead, so that, had earth and wood been glass, doubtless his very face lay visible beneath, the

face of a young man whiskered, shapely, who had gone out duck-shooting and refused to change his boots. (p. 7)

“Merchant of this city,” the tombstone said; though why Betty Flanders had chosen so to call him when, as many still remembered, he had only sat behind an office window for three months, and before that had broken horses, ridden to hounds, farmed a few fields, and run a little wild— well, she had to call him something. An example for the boys. (p. 7)

Had he, then, been nothing? An unanswerable question, since even if it weren't the habit of the undertaker to close the eyes, the light so soon goes out of them. At first, part of herself; now one of a company, he had merged in the grass, the sloping hillside, the thousand white stones, some slanting, others upright, the decayed wreaths, the crosses of green tin, the narrow yellow paths, and the lilacs that drooped in April, with a scent like that of an invalid's bedroom, over the churchyard wall. Seabrook was now all that; and when, with her skirt hitched up, feeding the chickens, she heard the bell for service or funeral, that was Seabrook's voice—the voice of the dead. (p. 7)

Of course, this coding is preliminary and does not exhaust linguistic references to intentionality. Therefore, future analyses should consider other words with similar connotations (e.g., *vow*, *will*, etc.). If replicated with finer methods, these findings may illuminate the subjective experience of thought.

**Data from intention scales.** Contrary to an analysis of literary streams of consciousness, survey and experimental data contain abundant evidence of intentionality and control. For example, researchers can reliably assess people's intentions about a variety of topics and irrespective of educational level. For example, Patry and Pelletier (2001) asked a group of Canadian college students about their intentions to report an alien abduction. Reporting an alien abduction was a rather new behavior, because only 2% of the sample reported being abducted by aliens in the past. Moreover, the behavior was so specific that participants were unlikely to have thought about it in the past. It is interesting, however, that 49% of the sample intended to report an abduction to the authorities should it occur.

In a different domain, Durantini, Glasman, Albarracín, Earl, and Gunnoe (2006) asked a sample of community participants from Florida to report their intentions to use condoms in different situations. In this sample of participants, 76% was female, 66% was African American, 71% of the same had completed high school, and 53% had annual incomes of less than \$10,000. Among other things, these participants answered the following questions:

1. How likely is it that you and your main (occasional) partner will use a condom the next time you have vaginal sex?
2. How likely is it that, for the next 6 months, you and your main partner will use a condom every time you have vaginal sex?
3. How strong are your intentions to use condoms with your main partner in the next 6 months?
4. How motivated are you to use condoms with your main partner in the next 6 months?

It is interesting that, for condom use with the main partner, these items correlated between .71 and .91 (Cronbach's  $\alpha = .94$ ). Similarly, for condom use with occasional partners, these items correlated .64 to .93 (Cronbach's  $\alpha = .93$ ). This highly consistent report also revealed a high frequency of intentions. Thirty-three percent of the sample intended to use condoms the next time they had sex with main partners. Moreover, 84% of the sample intended to use condoms the next time they had sex with occasional partners.

**Differences between stream of consciousness and intention-scale data.** Clearly there are differences in the frequency of “intentions” in stream of consciousness data relative to the use of intention scales. These differences are graphically depicted in Figure 1. As seen, the word *intention* appeared less than 0.001% of the times in the literary stream of consciousness data. In contrast, people can easily report their intentions in response to intention scales. In addition, these scales reveal high frequency of intentions to perform different behaviors in the future.

One potential conclusion of the stark contrast in Figure 1 might be that intentionality is illusory (see Dennett, 1991, 1996; Kant, 1781/1990; Skinner, 1948, 1953; Wegner, 2005). However, intentions are very good predictors of future behavior. For example, meta-analyses of condom use prediction have revealed average intention-behavior correlations ranging from .44 to .56 (Albarracín, Johnson, Fishbein, & Muellerleile, 2001; Sheeran & Orbell, 1998). These strong correlations suggest that intentions have very real effects on people's behaviors and their environment.

The next potential conclusion is that intentions are crystallized when we communicate with other people. Thus, both explicit and implicit social communication can prompt the formation of intentions based on cultural theories about how people operate (see also Malle, 2004). At a more basic level, intentionality may be a translation. That is, the deep structure of language may spontaneously derive a narrative based on the random sequential contents of the stream of consciousness. We elaborate on some of these aspects next.

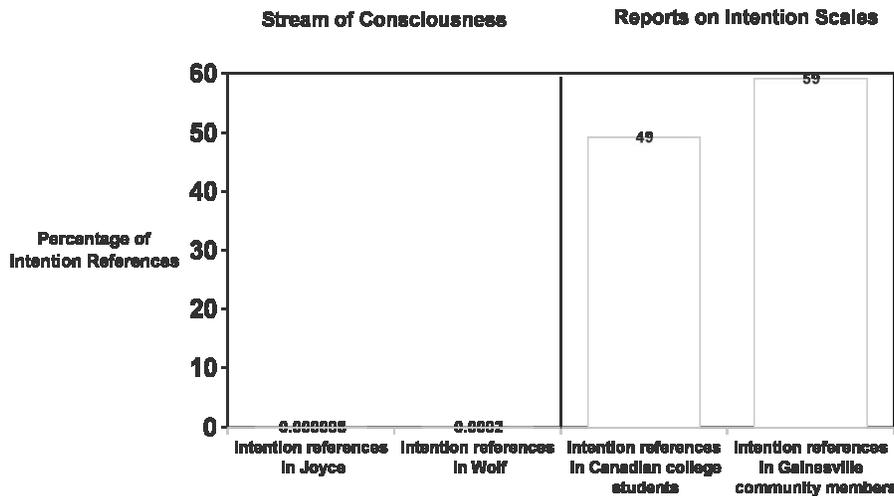


Figure 1. Literary and questionnaire references to intentionality.

**If the Stream of Consciousness Is Not “Reasoned,” How Do We Reason? Intentions and Control as Emergent of Social Communication**

An interesting question is what triggers the translation of events in one’s stream of consciousness into first-person intentions and reasoning. Responses to this question are probably multifaceted. In this commentary, however, we focus on the role of communicating with other people.

**Social communication.** The effects of communicating with other people can be seen through an example. Figure 2 has the stream of consciousness of one of these authors while writing this commentary. The top part of the figure presents the sequence of ideas, percepts, and images flowing over a period of a few seconds. To best represent the nature of this stream of consciousness, we use words and icons, including a sound icon to represent auditory perceptions.

The bottom part of the figure contains the thinker’s account of the stream of consciousness for readers. As seen from that account, the material now adopts a first-person perspective, and there is a reference to intentionality (“trying”). The differences suggest that the communication attempt yields propositional structures in the first person as well as references to intentionality.

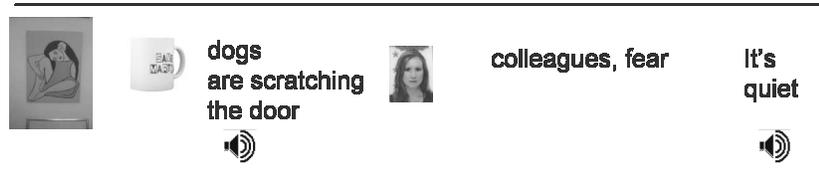
Of course, as a one-person experiment with a nonnaïve participant, the results in Figure 2 may be unimpressive. Nonetheless, future work with similar methodologies may be useful to capture the subjective experience of cognitive processes. It may be possible to compare the outcomes of those methods with actual reports to others. Alternatively, one may compare the raw description of these experiences with a description when one simply thinks of reporting one’s thought. Moreover, one could vary the person with which par-

ticipants communicate or simply remind participants of different characters in their life (e.g., thought priming). Based on our conceptualization, the characteristics of the audience should be important in the propositional structure of these thoughts. In Western cultures, audiences may heighten first-person, intentional language. As a result, the audience may facilitate carrying out personal intentions and acquiring control over personal future events.

**Linguistic aspects.** Thought may become truly verbal and propositional when we communicate to others. Undoubtedly, then, people possess a capacity to translate sequentially flowing material into linguistic propositions. These propositions may facilitate self-talk as well as communication with others. The way in which this happens, however, is worth investigating empirically.

One possible hypothesis is that linguistic propositions emerge when relatively random material in the stream of consciousness is ordered in a way syntactically compatible with a given proposition. To test this possibility, Noguchi, Albarracín, and Fischler (2005) performed a preliminary experiment investigating the formation of implicit intentions. They reasoned that people could form intentions on the basis of the mere succession of certain words and context. In this study, participants engaged in a word-detection task after participating in a prisoner’s dilemma game. The word-detection task was introduced as an unrelated task while participants waited for the scores of the game. In this task, participants were instructed to press a key when words began with certain letters (e.g., *A* or *N*). In a series of trials, two words composed the experimental manipulation. The manipulated words were five synonyms of *act* or five synonyms of *nice*. In one condition, participants were exposed to the words *act* (or, e.g., *play*) and *nice* (or, e.g., *fair*) in this sequence. In

## Stream of Consciousness Sample



## Edition for Social Communication

I was *trying* to represent a stream of consciousness graphically... I thought I could show a painting and then looked for one. Saw a funny picture from when Martha Stewart was in prison and thought I could include it too. Then I thought that I got images of people in the lab in my mind, so selected a picture of Casey. I thought she would be surprised, Then I feared that my colleagues would laugh at me with this example. I was focused on the computer screen and the house was quite. I thought I could have a picture of the room to represent that.

Figure 2. Sample of free association and social account of the thoughts.

the other condition, participants were exposed to the same words, but *nice* preceded *act*.

After the word-detection manipulation, participants played another prisoner's dilemma game. The prediction was that the implicit proposition *act–nice* might motivate participants to cooperate because the order suggests an instruction. In contrast, the implicit proposition *nice–act* could be perceived as a compliment. As a result, *nice–act* may suggest that participants had already been nice. In turn, this assessment may reduce the perceived need to be nicer on a future game. Supporting these expectations, the *act–nice* sequence increased cooperativeness from the first to the second game. Correspondingly, the *nice–act* sequence decreased cooperativeness from the first to the second game.

Briefly, then, reasoning may be governed by similar mechanisms. People may possess a deep syntactic structure (Chomsky, 1959) with which to process random material. As a result, when the order of verbal and nonverbal stimuli matches a meaningful syntactic proposition, they can easily translate those stimuli into a linguistically meaningful unit.

**Language, meta-cognition, and reasoning.** According to Vygotsky's (1975) theory of cognitive development, a linguistic system is at the root of all higher cognitive functions. First, language frees the child to rearrange outside stimuli in various ways and to delay the solution of a problem. Problem solving is first possible through "egocentric speech" (the child talks to himself or herself). Later, around the age of 5, egocentric speech is replaced by inner speech (reflections). Once egocentric speech has become internalized, the child is able to focus consciously on cognitive processes such as memory. As a result, the child can exercise greater conscious control over cognitive processes (Vygotsky, 1986).

Reasoning and metacognition are both equally linked to language. For instance, archeological evidence confirms that hominids had to the ability to use environmental materials as tools as early as 5 million years ago (Jurmain, Nelson, Kilgore, & Trevathan, 2000). Nonetheless, the *creation* of tools was possible after the development of language in *Homo sapiens*, which took place approximately 2½ million years ago (Jurmain et al., 2000). This tool development has long been considered the first evidence of reasoning in human history (Jurmain et al., 2000).

Relevant to the hypothesis in this commentary, among nonhuman primates, those species that live in groups (e.g., chimpanzees and gorillas) are both faster and better to learn vocabulary than those that generally live in isolation (e.g., orangutans; Jurmain et al., 2000). This evidence supports a relation between social interaction and linguistic capability. Even in humans, there is evidence that social interaction promotes linguistic capability, reasoning, and metacognition. For instance, if one does not interact with other humans early in one's childhood, then one may never be able to convert ideas into linguistic propositions or engage in metacognition.

Important evidence about the relation between language and metacognition comes from observations of foundlings or feral children. These children, by definition, have limited or no social interaction through at least early and middle childhood (Curtiss, 1977; Shattuck, 1980; Singh & Zingg, 1942). Reports of interactions with these children indicate that they are never able to learn more than a few words, let alone a grammatical or syntactic structure (Curtiss, 1977; Shattuck, 1980; Singh & Zingg, 1942). In addition, there are no reported cases in which feral children were capable of learning even simple arithmetic, let alone complex metacognitive processes or first-person intentional thought (see, e.g., Curtiss, 1977; Shattuck, 1980; Singh & Zingg, 1942).

### **Applied Implications of Intentionality's Dependence on Social Communication**

Catalysts of first-person, intentional thought compose the presence of other people and a familiar language. To be important for social psychologists, however, these ideas should have implications for socially relevant phenomena. We speculate on three possible phenomena that may be understood with this framework.

#### **Journaling as a Way of Achieving Control**

Mental health professionals have long recognized the benefits of writing about one's problems (see, e.g., Proff, 1975). Putting one's problems in perspective allows one to rationally examine the problem and come to a viable solution. Without this essential process, one may experience subsequently negative cognitive, affective, and behavioral outcomes. Indeed, empirical tests of this hypothesis suggest that journaling can have positive mental (Greenberg & Stone, 1992; Murray & Segal, 1994; Rimé, 1995), physiological (Dominguez et al., 1995; Hughes, Uhlmann, & Pennebaker, 1994; Pennebaker, Keicolt-Glaser, & Glaser, 1988), and behavioral (Cameron & Nicholls, 1998; Francis & Pennebaker, 1992; Spera, Buhrfeind, & Pennebaker, 1994) effects.

It is interesting that the processes underlying the efficacy of journaling have been elusive (Pennebaker, 1997; Pennebaker & Francis, 1996; Pennebaker, Mayne, & Francis, 1997). Three linguistic factors appear to predict improved health outcomes. They entail the use of positive emotion words, the use of negative emotion words, and increased usage of both causal and insight words (Pennebaker et al., 1997). In addition, greater cognitive processing during journal writing facilitates awareness of positive outcomes. Focusing on positive outcomes may in turn decrease the severity of mental health symptoms (Ullrich & Lutgendorf, 2002). In terms of our previous observations, translating one's experiences into meaningful syntax via journaling assumes the explicit use of the first person and greater attributions of intention and control. These processes may then improve actual control over one's life and subsequently facilitate positive mental health outcomes.

#### **Bilingualism**

If propositional, intentional thought depends on social communication, migration to places with a different language may provoke negative consequences. For example, the incorporation of a new language may lead to perceived and actual loss of control over one's be-

havior, because one is partially prevented from using one's previous code. This observation implies that migrants who learn the language of the new area may experience more difficulties than migrants who do not.

Incidental evidence supporting the effects of a new language on mental functioning comes from a study conducted in Canada. Ali (2002) compared immigrants who learned to speak either French or English or both with those who learned neither. Findings indicated that those who learned either or both English or French suffered negative health outcomes, including alcohol dependence and depression (Ali, 2002). In addition, being surrounded by ethnically and linguistically similar groups promoted mental health among the new immigrants (Ali, 2002; Beiser & Edwards, 1994; Burnam, Hough, Karno, Escobar, & Telles, 1987).

The finding that giving up one's syntactic code can lead to negative consequences is not limited to Canadian immigrants. Indeed, these findings are replicated across populations of Mexican immigrants moving to the United States. For example, immigrants with higher levels of acculturation (i.e., speaking both English and Spanish, living outside immigrant communities) experience more negative mental health outcomes, including phobia, alcohol abuse or dependence, drug use or dependence, and antisocial personality (Burnam et al., 1987). Recently, Guilamo-Ramos, Jaccard, Pena, and Goldberg (2005) found that among recent immigrants, youths from English-speaking homes were more likely than those from Spanish-speaking homes to engage in sexual-risk behavior. Again, these types of data are likely to reflect many factors. Among other things, however, youths who communicate using one linguistic system at home and another outside of the home may be more likely to engage in risky behavior because of the linguistic effects on reasoning and control. Thus, although acculturation may facilitate career and educational achievement (Ali, 2002), losing one's native linguistic community may have detrimental effects on well-being.

Of course, these negative effects should last only as long as migrants are unused to or uncomfortable with the new syntax. Once the new language is mastered, the detrimental effects of code switching should decline. Indeed, research with fluent bilinguals indicates that relative to monolinguals, bilinguals have greater mental flexibility (Cook, 1997), higher metalinguistic skills (Ben-Zeev, 1977; Cook, 1997), better selective attention (Bialystok, 1993), greater creativity (Cook, 1997), improved analogical reasoning (Cook, 1997), and a more diversified set of mental abilities (Cook, 1997). These studies are intriguing for analyzing the relation between propositional thought and social communication.

## Effects of Isolation on Cognitive Tasks

If social interaction facilitates linguistic translations into intentional, first-person language, then a dearth of interpersonal relationships should impede these processes. Indeed, a search of the relevant literature indicates that isolation has a number of deleterious health outcomes, including appetite and sleep disturbances, anxiety, panic, rage, loss of control, paranoia, hallucinations, and self-mutilation (Haney, 2003; Jackson, 1983; Porporino, 1986; Rundle, 1973; Scott, 1969; Slater, 1986). These problems exist in different contexts and across a variety of populations including prisoners (Haney, 2003), the mentally ill (Fisher, 1994), the elderly (Chappell & Badger, 1989), and those in isolated environments such as Antarctica or space (Harrison, Clearwater, & McKay, 1989). Moreover, some of these effects can be induced in the lab in otherwise healthy college students by simply signaling that one is socially rejected (Twenge, Catanese, & Baumeister, 2003).

Related to the hypotheses in this commentary, isolation has especially negative consequences for complex cognitive and linguistic ability. For instance, people who are not selected as members of a group have been shown to write fewer words during a thought-listing task (Twenge et al., 2003). Also, rejected individuals are slower to detect words in a word recognition task (Twenge et al., 2003). Indeed, even the belief that one may be alone later in life can decrease performance on intelligence measures (Baumeister, Twenge, & Nuss, 2002). Of these measures, effortful logic and reasoning are impaired the most. Simple cognitive tasks like encoding of information, however, do not seem to suffer (Baumeister et al., 2002).

The effects of social rejection are likely complex. However, these findings support the hypothesis that a social group serves as an explicit and implicit listener to otherwise relatively haphazard, nebulous thoughts. Some of these effects may be automatically facilitated by the presence of others. Consequently, the lack of a group may decrease the ability to translate the contents of one's stream of consciousness into intentional, first-person language. The language and translation involved in social reasoning are worth studying in the future.

### Note

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