Journal of Personality and Social Psychology
1992, Vol. 63, No. 5, 711-723

0022-3514/92/$3.00

Future-Event Schemas and Certainty About the Future: Automaticity in Depressives' Future-Event Predictions

Susan M. Andersen, Lisa A. Spielman, and John A. Bargh
New York University

The proposition was tested that depressives make predictions about the future based on a pessimistic *future-event schema.* Participants varying in depression predicted whether positive and negative events would happen to them (or to an average person) in the future by pressing yes or no at a computer terminal as quickly as possible, either under a concurrent attentional load or under no such load. As hypothesized, depressives predicted more negative events and fewer positive events than did mild depressives or nondepressives and showed greater *automaticity* in their predictions. That is, the attentional load did not increase depressives' response latencies for either negative or positive events, even though it did so reliably for both mildly depressed and nondepressed individuals. Depressives may thus possess a highly developed future-event schema that operates efficiently in enabling future-event predictions.

Hopeless expectations about the future represent a fundamental component of depression, at least according to cognitive theories of this disorder (e.g., Abramson, Seligman, & Teasdale, 1978; Beck, 1967). Learned helplessness theory, for example, is now conceptualized as a hopelessness model of depression (Abramson, Metalsky, & Alloy, 1989; Abramson et al., 1978). Beck's theory of depression, as well, holds that hopeless expectations about the future play an important role (Beck, 1967, 1976). Although central to cognitive theories, the hopelessness construct has received relatively little empirical attention beyond demonstrating that, as a psychometric instrument, it is associated with depression (Beck, Brown, Steer, Eidelson, & Riskind, 1987; Beck, Riskind, Brown, & Steer, 1988; Beck, Weissman, Lester, & Trexler, 1974; Minkoff, Bergman, Beck, & Beck, 1973; although see, e.g., Andersen, 1990; Rholes, Riskind, & Neville, 1985).

Predictive Certainty and Hopelessness

It has been suggested that hopelessness is best conceptualized as the point at which an individual begins to experience and treat dreaded events (or a single dreaded event) as inevitable rather than simply likely. When dreaded events seem certain to occur (Andersen & Lyon, 1987; Garber, Miller, & Abramson, 1980), they are treated as if they have already occurred and given a reality that is functionally equivalent to their having already transpired (Andersen, 1990; Beck, 1976; see also Johnson & Raye, 1981; Riskind, Rholes, Brannon, & Burdick, 1987). One is certain enough that one ceases to expend effort; one gives up.

By contrast, when events are not seen as inevitable, one may be able to retain some hope that things might transpire differently. In this case, efforts may even be renewed to stave off the dreaded events (see Taylor & Brown, 1988; Wortman & Brehm, 1975). The notion that loss of hope occurs when an individual makes the subjective judgment that dreaded events are inevitable is implicit in the concept of hopelessness. In this sense, hopelessness is best conceptualized as *depressive predictive certainty,* the point at which dreaded future events are treated as certain to occur or that desired future events are treated as certain not to occur (Andersen, 1990; Andersen & Lyon, 1987; Garber et al., 1980; Stotland, 1969).

Predictive Certainty and the Pessimistic Future-Event Schema

In this sense, the onset of depression can be viewed as a trajectory or course that begins with increasingly pessimistic predictions (e.g., Andersen, 1990; Pyszczynski, Holt, & Greenberg, 1987; Riskind et al., 1987) that are initially relatively *uncertain* in nature (see Garber et al., 1980; Wortman & Brehm, 1975). When people become depressed, by contrast, they clearly show depressive predictive *certainty* relative to those who are only mildly depressed (Andersen, 1990). Mild depressives, although pessimistic, lack this type of certainty in their future-event predictions; moreover, individuals who are not depressed at all ("normals") show no predictive certainty of any sort (not even about the occurrence of positive events). Depressive predictive certainty increases with depth of depression. Similarly,

Editor's Note. One of the authors of this article is an associate editor of the *Journal of Personality and Social Psychology: Attitudes and Social Cognition* section. Therefore, this article was subjected to a special review process to avoid any conflict of interest. Eliot Smith handled the article; he solicited the reviews and made the recommendation that the article be published. I am grateful to him for taking on this chore.

Portions of this article were presented at the Eastern Psychological Association's Annual Convention, Boston, April 1989, and at the World Congress of Cognitive Therapy, Toronto, Ontario, Canada, June 1992. We thank Irene Zombeck and Kathleen Gallagher for serving as experimenters in this research and four anonymous reviewers for insightful comments on a previous version of the article.

Lisa A. Spielman is now at the Payne Whitney Clinic, New York.

Correspondence concerning this article should be addressed to Susan M. Andersen, Department of Psychology, New York University, 6 Washington Place, 4th Floor, New York, New York 10003.

in terms of self-schematic thinking, there is considerable evidence for negative self-schematic thinking among depressives (e.g., Bargh & Tota, 1988; Segal, Hood, Shaw, & Higgins, 1988) and, by contrast, considerable evidence for a lack of such negative self-schematic thinking among mild depressives (e.g., Bargh & Tota, 1988; Kuiper & MacDonald, 1982; Kuiper, Olinger, MacDonald, & Shaw, 1985; see also MacDonald & Kuiper, 1984; MacDonald, Kuiper, & Olinger, 1985). Hence, differences between depressives and mild depressives in self-schematic thinking appear to co-occur with comparable differences in depressive predictive certainty.

These parallels are interesting because predictive certainty may also involve a form of schematicity. That is, it is conceivable that depressive predictive certainty results in part from the increasing tendency among mild depressives and depressives to think about the future and to do so in increasingly pessimistic ways—that is, to ruminate about possible positive and negative future outcomes, about the various unknowns, and about what might happen (e.g., Moretti & Shaw, 1989). This may constitute a kind of mental simulation or rehearsal (see also Taylor & Schneider, 1989) that is increasingly pessimistic and that leads to increased facility and ease in making future-event predictions, so that these predictions come to be made relatively automatically among people who are truly depressed, with minimal investment of cognitive effort.

Relative effortlessness or efficiency is one of several features thought to be associated with automaticity. Others include unintentionality, uncontrollability, and lack of awareness. Although the various features associated with automaticity do not covary together in an all-or-none sense, in that a given process could possess one or more, but not other, features of automaticity (Bargh, 1989; Logan, 1989; Logan & Cowan, 1984), the term *automaticity* can be used if the exact defining feature used is specified. In the present work, we concern ourselves with effortlessness or efficiency, that is, with the notion that the process requires little cognitive effort.

Our basic proposition is that, through experience and rehearsal, depressives may acquire a highly efficient knowledge structure or schema for predicting future events, one that operates relatively effortlessly. To the extent that processing efficiency or fluency exists in anticipating future events, this greater ease might be experienced by the individual as greater truth value, as something that feels unquestionably correct or certain, and is thus treated as such (Bargh, 1989; Jacoby & Kelley, 1987, 1990).

The notion that depressives make pessimistic predictions about future events and do so with certainty is consistent with the notion that they possess a well-elaborated *future-event schema,* containing beliefs about what the future will be like, whereas mildly depressed and nondepressed individuals do not. This is, in fact, suggested by Beck's (1967) conceptualization of the cognitive triad in depression. In Beck's (1967) model, there are three components to the depressive's system of negative beliefs that are theorized to lead to depressed mood and other affective and motivational concomitants of depression: A negative view of the self, of the world, and of the future (Beck, 1967, pp. 256–261). These are considered to be separate though interrelated patterns of belief that contribute to depressive symptoms. That is, the depressive's views of the future are not identical to his or her views of the self, nor do they simply spring from these self-constructs (see also Janoff-Bulman, 1989). Thoughts about the future are of independent relevance to depression, even though they clearly must take into account beliefs about the self and about the world as well (e.g., other people).

Beck's (1967) description of the cognitive phenomenology of depression is consistent with the present conceptualization of depressive predictive certainty, in that depressive expectations about the future involve an inability to conceive of any improvement in the current state of affairs. "If [the depressed person] regards himself as currently deprived, immobilized, or rejected, he visualizes a future in which he is continually deprived, immobilized, or rejected" (Beck, 1967, p. 260). In fact, "when [the depressive] awakens in the morning, he anticipates that every experience during the day will pose great difficulties. . . . When a suggestion is made to engage in an activity that he ordinarily enjoys when not depressed, he *automatically* [emphasis added] assumes he will not have a good time" (Beck, 1967; p. 260). Hence, depressives ought to make predictions that are considerably more pessimistic than are those made by normals (as has been shown, e.g., Andersen, 1990) and ought to make them more automatically.

Evidence for the Role of Predictive Certainty in Depression

The relevance of predictive certainty to depression has been demonstrated both experimentally and correlationally. An experimental study showed, for example, that when an individual gives up in relation to a dreaded future event, this leads to a sharp increase in depressive affect (Andersen & Lyon, 1987). In this work, *negative-outcome certainty* was defined as the belief that a dreaded event was 100% likely as compared with other increasingly high outcome likelihoods. More specifically, the perceived probability that an extremely aversive event would occur later in the experiment was manipulated among normal college students, who were told that the negative event was either 0%, 25%, 50%, 75%, or 100% likely (without their being able to exercise any control over this likelihood). The discontinuity hypothesis (pitting certainty against likelihood) was confirmed by precipitous increases in depressive affect in the 100% condition, significantly greater than in any other condition; furthermore, there was no linear increase in depressive affect across the manipulated probability conditions, only the discontinuous increase. Hence, anticipating a highly aversive event that is certain to occur can have a causal impact on depressive affect (Anderson & Lyon, 1987).

Of course, it is one thing to say that the certainty with which negative events are anticipated can cause depressive affect and another to show that depressed people actually experience such negative-outcome certainty. If negative-outcome certainty is important in depression in ways not reflected simply by continuous likelihood ratings (which have been termed *pessimism*), it should also be associated with depression independently of pessimism in samples in which all of these factors are allowed to vary freely. That is, people who make the judgment that dreaded events will definitely occur should have reached a kind of set point that is associated with depression in a manner not reflected by mere pessimism. A study examining this hypothe-

sis demonstrated that the relation between negative-outcome certainty and depressive affect, supported in experimental work (Andersen & Lyon, 1987), also holds as a correlational pattern among a random sample of college students (Andersen, 1990). That is, increases in depression (as assessed by the Beck Depression Inventory; BDI) are associated both with depressive pessimism (estimating that negative events are likely and that positive events are not) and with certainty in making these predictions. Moreover, depressive certainty is uniquely associated with depression, even when the simple perceived likelihood of the events are considered. These findings extend other work showing that depressed individuals often perceive negative events as likely and positive events as unlikely (Alloy & Ahrens, 1987; Hollon & Garber, 1980; Lobitz & Post, 1979; Pietromonaco & Markus, 1985; Pyszczynski et al., 1987; Riskind et al., 1987) and show that the certainty with which these predictions are made is uniquely associated with depression. Such certainty is less prevalent in mild depression.[1]

The Relevance of Automatic Processing of Self-Information Among Depressives

The concept of predictive certainty in depression dovetails nicely with the information-processing literature on depression. As indicated, this literature suggests that depressed individuals possess highly consolidated "depressive" self-schemata, that is, well-organized self-representations that are negatively toned compared with the self-schemata of nondepressives (Kuiper & Derry, 1981; Kuiper, MacDonald, & Derry, 1983). Evidence for such a depressive self-schema clearly exists among depressives (Bargh & Tota, 1988; Segal et al., 1988).

Most work on the information-processing consequences of depression derives from Beck's (1967, 1976) notion that a central characteristic of depression is automatic negative self-referential thought. Automatic thinking is seen as tied to the activation of negatively toned cognitive structures, typically negative self-schemata. When such structures are activated, automatic thoughts follow. If we define *automaticity* in terms of processing efficiency, depressives should show efficiency in processing negative information based on the negative self-schema (Bargh & Tota, 1988; Kuiper, Olinger, & MacDonald, 1988).

To test the hypothesis that depressed people process negative information about the self more automatically than do nondepressives, recent research has used a concurrent memory load paradigm (Bargh & Tota, 1988). The principle behind this paradigm is that attentional capacity is limited; only so much attentional capacity is available at any one time (e.g., Kahneman, 1973; Miller, 1956). For this reason, a task that is particularly capacity demanding ought to interfere with another cognitive task that is being done simultaneously to the extent that this latter task also requires cognitive capacity (Kantowitz, 1974; Logan, 1979). Such a capacity-demanding task should not interfere much with another task that requires little capacity. Hence, the less effort or attention required by a task (i.e., the more automated the task), the less it should be affected by constraints on the availability of attentional resources.

There is general agreement that efficiency-based automaticity should be measured using this kind of dual-task, concurrent memory-load paradigm. In such a paradigm, two tasks compete for one's attention, and the consequences for the effective performance of one of the two tasks are assessed (Logan, 1988). The procedure is based on the modal view of automaticity, which assumes a single, limited pool of attentional capacity that can be drained by a capacity-demanding task (see reviews by Johnson & Hasher, 1987; Logan, 1988; Posner & Snyder, 1975; Shiffrin & Schneider, 1977). Alternative conceptions (of both automaticity and the nature of processing capacity) do, of course, exist, some of which do not require processing-capacity assumptions (e.g., Logan, 1988). Nonetheless, the preferred method for assessing efficiency-based automaticity continues to be the dual-task paradigm; moreover, the modal view of automaticity continues to be the limited-resource view.

In the present study, we use a dual-task paradigm to study automaticity and assume a general limited pool of attentional capacity (as did Bargh & Tota, 1988). Two major objections have been raised in relation to this assumption. One is that attentional capacity is not a singular entity. Instead, multiple pools of resources exist so that no single pool can be drained by a given attentional load manipulation (e.g., Navon & Gopher, 1979; Wickens, 1984). This criticism has been directed at claims of automaticity based on a lack of interference from a second task (in a dual-task paradigm) when there is no way of knowing that both tasks share the same pool of resources (Navon & Gopher, 1979, p. 250). This objection, however, cannot be made, when, as in the present study, two or more groups of subjects perform the same two tasks, and the prediction is that one group will show interference and another will not. Under these conditions, the dual-task paradigm is on firm ground with respect to the single-resource assumption.

The second objection to the single-resource view is that automaticity may not be due to an ever more efficient use of cognitive capacity but instead to the accrual, with frequency and consistency of experience in a domain, of specific event instances in memory, as proposed by the instance theory of automaticity (Logan, 1988). Even in this model, however, less interference by a concurrent load task (i.e., dual-task interference) is predicted when components of the relevant task are automatized (Logan, 1988, p. 513). It offers a different explanation for why automatic processes show less interference from a concurrent task than do nonautomatic ones, but this lesser interference is nonetheless the exact phenomenon for which instance theory attempts to account. In short, conclusions can be drawn about automaticity from dual-task paradigms when they assess

[1] In this research, *pessimism* was operationalized as the subjects' average likelihood rating of a series of negative future events on a scale ranging from −5 to +5, minus their average likelihood rating of a series of positive events. *Depressive predictive certainty* was operationalized as the number of +5s endorsed on the same scale for the negative events plus the number of −5s endorsed for the positive events. It was assumed that "if subjects treated the other 10 points of the 11-point scale differently from the predicted endpoint of the scale, by circling the predicted endpoint even after having had the opportunity to express uncertainty by choosing any other point on the scale, this reflects a decision in the favor of certainty. The issue is that depressed people may feel and act as if the event were certain, which circling any endpoint implies." (Andersen, 1990, p. 210). Simple likelihood or confidence ratings do not adequately index the certainty construct; they measure pessimism.

differences in automaticity between groups of people (e.g., depressed and nondepressed) that are performing the same tasks (as in Bargh & Tota, 1988).

Using such a paradigm, researchers examining self-judgment among depressives recently asked both depressed and nondepressed subjects to judge the descriptiveness of a series of positive and negative trait adjectives—in relation to themselves or in relation to another person (Bargh & Tota, 1988). Half of these subjects also performed a concurrent memory load task while making these judgments by holding random sets of digits in memory. The load condition clearly increased depressives' response latencies in making self-judgments about negative traits less than nondepressives' latencies in self-judging the same traits and less than their own latencies in self-judging positive traits.

Hence, for depressed people, deciding whether negative traits are self-descriptive, on seeing them, is a relatively automatic task, whereas making these same decisions about positive traits is not. Negative self-constructs show greater automaticity among depressives than among nondepressives and greater automaticity than do positive self-constructs. Interestingly, in the case of positive traits and nondepressives, the findings were literally reversed. The load manipulation interfered less with nondepressives' self-judgments about positive traits than with those of depressives and less than with their own judgments about negative traits. Hence, automaticity also exists among nondepressives but in judging the self-descriptiveness of positive traits.

Overall, these data imply that a negative self-schema (or set of negative self-constructs) is more accessible for depressives than for nondepressives. That is, when depressed people think about the self, negative constructs come to mind and are used more readily, that is, with less cognitive effort and attention, than are other constructs. The opposite is true for nondepressives.

Predictive Certainty and Automaticity in Predicting Future Events

Conceptualizing the processes associated with certainty in depression in information-processing terms, it is apparent that negative associations are readily activated among depressed individuals and that this ease of retrieval or immediacy may make these associations feel more "real" and "true" to the depressed individual than other associations (Andersen, 1990; Bargh & Tota, 1988) because of the relative lack of felt effort or deliberate thought (see Bargh, 1989; Jacoby & Kelley, 1987, 1990). In other words, the amount of mental effort needed to interpret or categorize an event may be used as a cue as to how closely the event fits that interpretation; if little effort is needed and the interpretation is made relatively automatically, the person feels it is valid.

The Certainty-as-Efficiency Hypothesis

Hence, one way of conceptualizing depressive predictive certainty is in terms of efficiency in particular types of information processing, that is, as ease in considering the possibility of future suffering and in making effortless judgments about its occurrence (Andersen, 1990). If mild depression commences with increasingly frequent thought about the future that is increasingly pessimistic as compared with nondepressives (e.g., Andersen, 1990; Riskind et al., 1987), this process may ultimately become automatized. That is, depressed individuals may come to possess a pessimistic and highly efficient future-event schema that enables relatively effortless predictions about future events and that operates in accordance with a depressive predictive certainty that is not apparent among mildly depressed or nondepressed individuals.

Accordingly, we predicted that depressed individuals would make predictions about the future more pessimistically than would mildly depressed or nondepressed individuals and that they would show automaticity in making their future-event predictions. A depressive future-event schema should contain predictions that are relatively more pessimistic than those made by other subjects, that is, relatively more yes-to-negative and no-to-positive predictions, and should operate automatically. Hence, depressives' response latencies in making future-event predictions were not expected to increase reliably on the basis of a load on their attentional resources, whereas a reliable increase was expected among mildly depressed and nondepressed individuals, who were assumed not to possess a future-event schema and thus were not expected to show automaticity in their predictions. Supporting this notion, other research has shown not only pessimism in depressives' predictions (Alloy & Ahrens, 1987; Andersen, 1990; Pyszczynski et al., 1987; Riskind et al., 1987) but certainty as well. Such certainty exists concerning both positive and negative future events, is less prevalent among mild depressives, and does not exist among nondepressives (who are not even optimistically certain about future events; Andersen, 1990).

Depressive certainty has most recently been operationalized as a particular type of extreme responding that takes both event valence and yes–no response into account (Andersen, 1990), that is, as the selection of the most extreme subjective likelihood rating of negative events occurring and for positive events not occurring (Andersen, 1990). Depressives clearly do this more often than do mild depressives and nondepressives, even though they may do so for only a small number of future events. Operationalizing certainty in this way is important in that it taps into those expectancies around which depressives may have given up hope. Focusing exclusively on such events, however, makes it impossible to identify any other more generalized differences in predictive certainty between depressives and nondepressives that may exist. For example, if depressives possess a well-developed future-event schema that is relatively pessimistic, as we propose, all the predictions deriving from it ought to be made more automatically—with greater certainty—than are the predictions made by people with no such schema.

In a similar vein, research on self-schematic processing in depression (as applied to trait adjectives) has suggested that automatic processes cannot be clearly indexed using self-report decisions, such as yes or no responses, or their associated latencies. The problem is that response type tends to tap into deliberative processes in addition to construct activation and fluency, such as self-presentational concerns (Bargh & Tota, 1988; Wyer & Gordon, 1984). Moreover, response type (yes or no) rarely interacts with relevant variables to predict response la-

tency (Bargh & Tota, 1988; Rogers, 1974). Hence, it was in part for this reason that the certainty-as-efficiency hypothesis included no interaction with response type, although greater pessismism among depressives than among other subjects is a necessary component of our definition of the future-event schema.

The Matching Hypothesis

Our conceptualization of depressive predictive certainty as the efficient operation of a future-event schema is rather different from the framework typically invoked to account for findings in the self-schema literature. In self-judgment research, depressives are thought to judge the self-relevance of negative traits more quickly than that of positive traits (regardless of whether they respond with a yes or with a no judgment) because there is a match between their chronically accessible self-constructs (negative ones) and the valence of the potentially self-descriptive adjective (also negative). When there is a match between the valence of the trait adjective and the cognitive construct, the *matching hypothesis* of schema theory holds that the stimulus should be processed more automatically (Bargh & Tota, 1988; see also Spielman & Bargh, 1990).

Hence, just as is the case in judging the potential self-descriptiveness of trait adjectives, when depressed individuals confront negative information about the future (a negative future event) and judge it in relation to the self, the matching hypothesis suggests that their prediction be made automatically, due to the stimulus–self-relevant construct match. Thus, depressives should show automaticity in their predictions about negative events but not about positive events (as has been shown for trait judgments, Bargh & Tota, 1988). Moreover, because it is the self-schema that is pessimistic in nature, this pessimistic matching should take place only for self-judgments and not for judgments about others (unless of course depressives possess pessimistic, negative constructs in a variety of domains other than the self, in which case such negative matching could be more widespread).

The matching hypothesis, however, may well be less applicable to future-event predictions than to making current judgments, such as trait judgments. Its central tenet is that an underlying construct in memory corresponds directly to the current judgment task, in that the individual possesses an existing structure in memory directly relevant to the self-judgment: the self-schema. On presentation of a specific to-be-judged trait, the individual accesses the existing self-schema to determine whether a match exists. The more accessible the traits, the stronger the match between the self and the trait stimuli and the more automatic the judgment.

For predicting what will happen over time, however, the self-schema may be less effective, given its essential focus on the current attributes of the individual (e.g., Derry & Kuiper, 1981; Markus, 1977). Future-event predictions must, logically speaking, rely not only on one's notions about who one is at present but on the state of the world (which includes other people) and how it will evolve over time in relation to the self (see also Beck, 1967; Janoff-Bulman, 1989). Hence, although predictions about the future may involve reference to the self, considerable additional information is also required, suggesting that self-schema matching processes may not drive future-event predictions. If they did, the hypothesis would be that future-event predictions would show automaticity only when they concern negative events considered in relation to the self, that is, when there is a match to the depressive self-schema.

In a different vein, the matching hypothesis would suggest that nondepressed individuals should show automaticity for positive future events, as has been found for trait judgments (Bargh & Tota, 1988). By contrast, the certainty framework holds that because people cannot know exactly what their futures hold for them, nondepressives should not possess an elaborated future-event schema, and little automaticity should thus be found in their future-event predictions. In short, the framework suggests that something beyond self-schemata and pertinent matching processes is likely to be required in accounting for future-event predictions among depressives and, specifically, that whereas depressives possess a (pessimistic) future-event schema, nondepressives do not.

On the basis of our conceptualization of predictive certainty as efficiency in the operation of a relatively pessimistic future-event schema, we predicted that automaticity would exist in depressives' predictions about both positive and negative future events relative to both mildly depressed and nondepressed persons. We also examined the extent to which the obtained effects would be limited to the context in which people predict their own future experiences or, by contrast, would extend to making judgments about other individuals as well. If depressive predictive certainty is linked exclusively with self-constructs and not with other personal constructs used by the individual, the predicted effects should be observed only when the self is the target about whom the prediction is made, which would demonstrate self-concept mediation.

Method

Overview

Conceptualizing depressive predictive certainty in terms of automatic future-event predictions, we designed a study in which depressed and nondepressed subjects were asked to make predictions about the future, using either themselves or the average student as the target of the prediction. Seated at a computer screen, they pressed yes or no as quickly as they could on a response box in front of them to indicate whether each of a series of positive and negative future events was likely to occur in the future, either while under a concurrent attentional load or under no such cognitive load. This was a modified version of the Bargh and Tota (1988) paradigm, different only in that positive and negative future events served as stimuli (similar to those used by Andersen, 1990) instead of positive and negative descriptive traits.

Subjects

Subjects were 68 undergraduate students enrolled in introductory psychology at New York University, who participated in partial fulfillment of a course requirement. Subjects were preselected based on their scores on the BDI (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), administered as part of a mass testing session and again at the end of the experiment. Subjects were classified as *nondepressed* if they scored 4 or below on the BDI at the experimental session, as *mildly depressed* if they scored between 9 and 13, and as *moderately depressed* if they scored 14 or greater (as in Andersen, 1990). Ultimately, the study in-

cluded 36 nondepressed, 15 mildly depressed, and 17 moderately depressed subjects.

Apparatus and Materials

All experimental instructions and stimuli were presented to subjects using a cathode ray tube (CRT) monitor, under the control of an Apple II+ microcomputer located in a separate room (as in Bargh & Tota, 1988). Subjects responded to the presented stimuli by pressing one of two buttons (marked yes and no) located on a response box on the table in front of them. In the attentional load condition, a small microphone was placed on the table as well, near the response box, ostensibly to record subjects as they repeated aloud each of the random six-digit numbers to which they were exposed in this condition.

Fifty-two positive and negative future events were drawn from a pool that combined events used in Andersen (1990) and events developed for this study. The original events varied considerably in terms of their normative perceived likelihood for the average college student, and we added still others that seemed, based on face validity, to be either extremely likely or extremely unlikely to occur. These items were included to ensure that all subjects would make at least some yes and some no responses for both the positive and the negative events, permitting us to examine response latencies as a function of yes or no response. (In Bargh & Tota, 1988, this was not possible because nondepressed subjects rarely responded yes to the negative adjectives.) Ten practice trials of neutrally valenced items were included as buffers at the beginning of each session. All items are presented in Table 1.

Procedure

Subjects were run individually. After being greeted by the experimenter, subjects read a brief description of the basic task, which they were to perform entirely by computer, and signed a consent form. They then read detailed instructions, presented on the computer monitor. The instructions informed them that they would be asked to indicate as quickly as possible, by pressing yes or no on the response box, whether each of a series of events to be presented on the screen was likely to happen either to them or to the average New York University undergraduate, depending on the prompt that would precede every trial. In addition, subjects in the cognitive load condition were informed that, before each trial, a six-digit number would appear on the screen that they would be asked to hold in mind while making their judgment and that they would be asked to say this number aloud into the microphone after each trial.

After indicating that they understood the instructions, subjects completed a series of 10 practice trials with the experimenter present to make sure they understood the procedures. The experimenter then left the room, and the experimental trials began. Each future event was presented only once to each subject.

In each trial, subjects were first presented with the target person label and then, followed by a 1-s delay, with the future event to be judged. Their response terminated the display and thus enabled them to self-pace the experimental trials. The future events were presented in one of two random orders, within which the order of the target person (self or average person) was randomized, so as to prevent sub-

Table 1
Life Events That Subjects Judged Would or Would Not Happen at Some Time in the Future by the Event's Face-Value Likelihood

Negative events	Positive events
Exceptionally likely events	
Die (eventually)	Have a warm shower or bath
Accidentally break something	Listen to music
Catch a cold	Get a letter from a family member
Go to a concert	Be out on a sunny day
Get into an argument	
Have a headache	
Have an unexpected expense	
Events varying in likelihood	
Be stuck in an unfulfilling job	Cope successfully with job stress
Regret a major life decision	Achieve life goals
Work with people I don't like	Live a healthy and active life
Experience the death of a spouse	Have an ideal life-style
Get a fatal disease	Live in an ideal home
Suffer a great financial loss	Do enjoyable things
Be unhappy in long-term relationships	Have a sexually fulfilled life
Be committed to a mental institution	Have plenty of money
Fail to contribute to society	Have an ideal job
Be very lonely when old	Be satisfied with major life decisions
Eventually become senile	Gain the respect of my co-workers
Cause someone to suffer	Be able to retire at age 40
Be divorced	
Exceptionally unlikely events	
Be murdered	Win the lottery
Go blind	Win a Nobel prize
Be kidnapped	Become a film star
Have a home destroyed by a tornado	Make 10 million dollars
Be convicted of a felony	Be elected to Congress
Lose an arm	Write a best-seller
Be struck by lightning	

jects from developing any target expectancies that might artifactually affect response times (see Bargh & Tota, 1988). Each future event to be rated was either negative or positive and was either very likely, variable in likelihood, or not very likely. Equal numbers of events from each category were randomly paired with the self or the average-other prompt.

In the attentional load condition, a six-digit number was presented at the beginning of each trial for 2 s, followed by a 1-s blank screen pause and then the target (self or average other) and the future event, both presented as in the no-load condition. After subjects made their judgment, and before the next trial, they were prompted to repeat the six-digit number aloud. They were given 5 s to do this before the onset of the next trial. The experimenter kept track of the accuracy of the digit responses throughout the experiment.

For each of the 52 trials, accuracy scores in digit task performance for subjects in the load condition ranged from 6 (*all six digits recalled correctly*) to 0 (*no digit recalled correctly*). An analysis of the average number of errors subjects made across all trials showed that there were no significant differences in the number of errors made by nondepressed ($M = 1.25$), mildly depressed ($M = 1.67$), and depressed subjects ($M = 1.83$), $F(2, 20) < 1$.

Following the event trials, subjects completed the BDI to verify their depression group classification (made on the basis of their earlier BDI scores; see Kendall, Hollon, Beck, Hammen, & Ingram, 1987; Spielman & Bargh, 1990). The experimenter was blind to subjects' depression status throughout the experiment. Finally, subjects were debriefed and thanked for their participation.

Results

Yes–No Responses

Although our central hypotheses concern the effect of memory load on response latencies, such latencies are theoretically meaningful only if depressives show pessimism in their positive and negative future-event predictions. Subjects' yes–no responses to predict whether or not the future events would happen to them or to the average person were analyzed by calculating the percentage of yes responses to each type of event for each subject and examining the scores in a 3 (depression) × 2 (load) × 2 (future-event type) × 2 (self–other target) analysis of variance (ANOVA), with two repeated measures.

As predicted, the analysis yielded a highly reliable interaction between depression and future-event type, $F(2, 64) = 9.83$, $p < .0005$. These endorsement rates are presented in Figure 1. Planned contrasts indicated that depressed subjects said yes to reliably more negative events than did mildly depressed or nondepressed subjects, $t(64) = 6.46$, $p < .001$, and said no to reliably more positive events, $t(64) = 3.29$, $p < .001$. In addition, whereas nondepressed subjects said yes to reliably more positive events than negative events, $t(64) = 7.00$, $p < .001$, as did mildly depressed subjects, $t(64) = 1.62$, $p < .05$, depressed subjects said yes to an approximately equal number of positive and negative events ($t < 1$). (All planned contrasts are one-tailed t tests based on the error term from the relevant interaction.) Hence, these data clearly show greater pessimism among depressives than among other subjects.

This analysis also yielded three other reliable findings. First, it yielded a main effect for future-event type, $F(1, 64) = 28.52$, $p < .0001$, such that subjects, on the average, endorsed more positive events ($M = 0.62$) than negative events ($M = 0.47$), although this was qualified by the interaction reported earlier. Second, a two-way interaction between self–other target and future-event type also emerged, $F(1, 64) = 19.24$, $p < .0001$, indicating that subjects, on the average, predicted more positive events for themselves ($M = 0.67$) than for others ($M = 0.57$), $t(64) = 3.48$, $p < .001$, and fewer negative events (self, $M = 0.42$; others, $M = 0.52$), $t(64) = 3.62$, $p < .001$. This finding is consistent with previous studies of self–other differences in trait adjective endorsement, which typically have found that depressives and nondepressives alike endorse more positive traits for self than for other (e.g., Bargh & Tota, 1988; Pietromonaco & Markus, 1985; see review by Coyne & Gotlib, 1983). No other reliable effects emerged for the self–other target variable.

Finally, the analysis produced an unexpected two-way interaction between depression and load, $F(2, 64) = 3.27$, $p < .05$, indicating a linear trend of increasing yes responses with in-

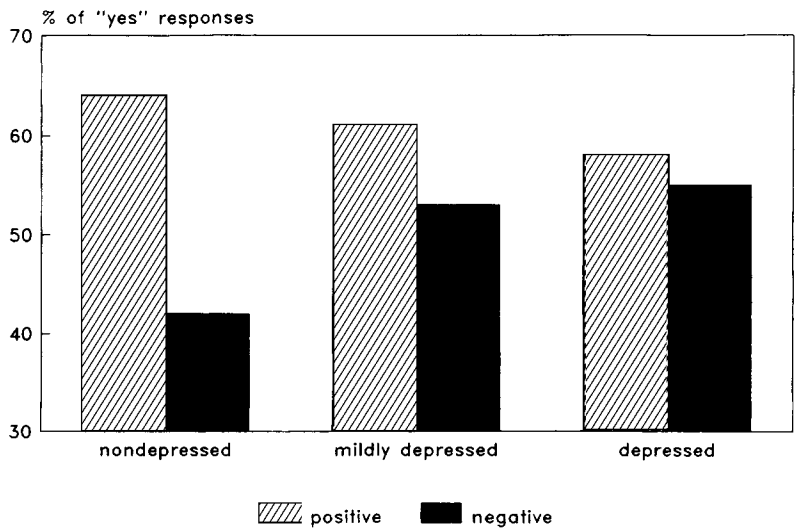

Figure 1. Mean endorsement rates for possible future life events by valence of the event and depression group.

creasing depression under no load (*M*s = 0.528, 0.552, and 0.614) and a curvilinear trend under load (*M*s = 0.533, 0.580, and 0.509). There was also a trend for depressed subjects to say yes to somewhat fewer events in the load condition ($M = 0.509$) than in the no-load condition ($M = 0.614$), whereas the remaining subjects did not. Although none of these trends was significant ($t < 1.21$, *ns*), the latter is one that is potentially problematic.

When yes–no responses change under load, it poses problems for interpreting response latency differences in terms of automaticity, even though it is not uncommon for people's responses to change as they adapt to the need for quick decisions (e.g., Bargh & Tota, 1988; Wyer & Gordon, 1984). For example, when subjects deliberate strategically in producing their yes–no responses in the no-load condition and this is no longer permitted in the load condition, the deliberative basis for their yes–no response is prevented and may thus leave only responses that are more automatic. This is, in principle, why a load condition is a better indicator of nonstrategic responding than a no-load condition.

On the other hand, such a finding creates an interpretational ambiguity for predicted differences in response latency between the load and no-load conditions. That is, one cannot unequivocally interpret such differences in terms of automaticity when subjects change what they are doing across the conditions. If some subjects respond almost as quickly in the load condition as in the no-load condition, while others show interference effects, but the former subjects also change their actual responses, it may be their change in response that prevents the dual-task interference rather than automaticity per se. Although the relevant contrast was nonsignificant in our data, the suggestion of such a difference poses an interpretational difficulty and indicates that our response latency data should be treated with some caution.

In a different vein, it is also relevant to note that our problematic interaction between yes–no response and load actually suggests only that depressed subjects said no somewhat more often across the board when strategic effort was not available. Because our response latency predictions do not involve any interaction with yes–no response and one might expect to find such an interaction if a change in yes–no response is what is responsible for differential effects among depressives versus nondepressives, it is at least somewhat less likely that this across-the-board change in depressives' responses could account for our predicted response latency findings.

Response Latencies

The response latency data were examined in a 3 (depression) × 2 (load) × 2 (future-event type) × 2 (yes–no response) × 2 (self–other target) ANOVA, in which the latter three factors were repeated measures. Our principal prediction was a greater automaticity (smaller increases due to load) in depressives' predictions about future events than in those made by mild depressives or nondepressives. If event valence plays no role, this should amount to a two-way interaction between depression and load; if event valence is relevant, it should result in a three-way interaction involving depression, load, and future-event type. The analysis, in fact, yielded the three-way interaction, $F(2, 62) = 4.20$, $p < .05$, and not the two-way interaction ($F < 1$). The four-way interaction between subjects' yes–no responses and these three factors was not reliable (*F*s < 1), nor was the four-way interaction involving the self–other target factor and these three factors (*F*s < 1).[2]

To test our specific hypotheses, we conducted planned contrasts that compared the load and no-load conditions for each type of future event (positive or negative) for each depression group. For ease of presentation, Figure 2 portrays the load–no-load difference scores that directly reflect the magnitude of the response delay difference tested by our contrast. These contrasts clearly showed that the difference between the load and the no-load conditions was reliable for both negative and positive events among nondepressed subjects, positive events, $t(62) = 2.72$, $p < .005$; negative events, $t(62) = 1.61$, $p = .06$, as well as among mild depressives, positive events, $t(62) = 2.59$, $p < .01$; negative events, $t(62) = 4.03$, $p < .001$. As predicted, however, the load condition had no reliable effect on depressed subjects' response latencies; that is, it did not reliably increase their response latencies in making predictions about either negative or positive future events (*t*s < 1), as in the certainty-as-fluency hypothesis. Cell means and marginals are presented in Table 2.

When an attentional load manipulation has little impact on the response latencies of a given set of subjects for a given set of items, even though the manipulation drains cognitive capacity enough to significantly increase response latencies for other subjects (or for the same set of subjects using different items), it suggests that the target judgments were made relatively automatically by these subjects. Hence, the lack of dual-task interference among depressives implies greater automaticity in their predictions about both negative and positive future events, although some caution is warranted due to their slightly different yes–no responses under load.

In interpreting these data, the argument might also be raised that depressives may have shown no load effects simply because they for some reason do not show load effects in this kind of paradigm. This can be ruled out by the fact that depressives have shown load effects when judging the self-relevance of positive trait adjectives (and not negative trait adjectives; Bargh & Tota, 1988). Ideally, of course, we would have included a control condition in which subjects made some altogether different type of prediction as well for which interference effects could be demonstrated, ensuring that they do show load effects with predictions. Nonetheless, the existing data clearly favor the notion that depressives show interference in this paradigm.

Considering the data slightly differently, we examined not automaticity in predictions, but absolute speed of processing

[2] The analysis did yield two highly reliable main effects. That is, predictions about the self were made more quickly ($M = 1{,}548$) than those about another person ($M = 1{,}662$), $F(1, 62) = 28.11$, $p < .001$, a finding that is now commonplace (see Bargh & Tota, 1988; Spielman & Bargh, 1990, for a review). In addition, predictions about positive events tended to be made more quickly ($M = 1{,}571$) than predictions about negative events ($M = 1{,}647$), $F(1, 62) = 17.99$, $p < .001$. It should again be noted, however, that in the absence of differential load effects on response latency conclusions about automaticity cannot be drawn from such data.

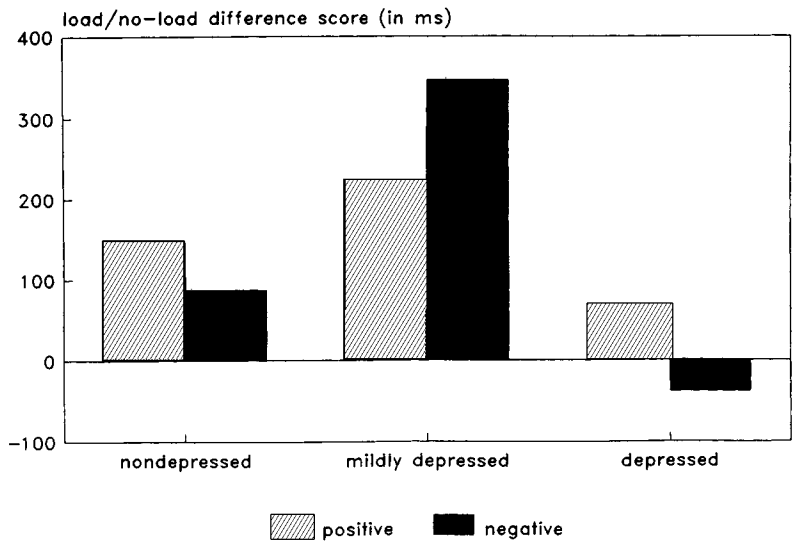

Figure 2. Mean difference scores between the load and the no-load conditions by valence of the event and depression group.

under load across the depression groups. The data showed that under attentional load, depressed subjects made predictions about the negative events significantly more quickly ($M = 1{,}601$) than did mildly depressed subjects ($M = 1{,}771$), $t(62) = 2.12$, $p < .025$, or nondepressed subjects ($M = 1{,}738$), $t(62) = 2.05$, $p < .025$. On the other hand, providing some support for differences in how negative versus positive events are anticipated, depressed subjects in the load condition did not differ significantly from the other subjects in the latency of their positive-event predictions (both ts < 1), although the means were in the

Table 2
Response Latency (in Milliseconds) to Predict That Positive or Negative Future Events Will or Will Not Happen to Self or to Another Person by Nondepressed, Mildly Depressed, and Depressed Individuals as a Function of Attentional Load Condition

	Nondepressives		Mild depressives		Depressives	
Measure	Load	No load	Load	No load	Load	No load
			Negative events			
Self						
Yes	1,661	1,596	1,641	1,432	1,491	1,683
No	1,638	1,558	1,872	1,426	1,574	1,536
Mean	1,650	1,577	1,757	1,429	1,533	1,610
Other						
Yes	1,821	1,668	1,777	1,443	1,683	1,634
No	1,829	1,739	1,791	1,436	1,655	1,763
Mean	1,825	1,704	1,784	1,440	1,669	1,699
Negative mean	1,738	1,641	1,771	1,435	1,601	1,655
			Positive events			
Self						
Yes	1,603	1,460	1,560	1,490	1,626	1,449
No	1,576	1,544	1,546	1,315	1,549	1,366
Mean	1,590	1,502	1,553	1,403	1,588	1,408
Other						
Yes	1,744	1,633	1,712	1,485	1,670	1,776
No	1,736	1,509	1,848	1,433	1,619	1,488
Mean	1,740	1,571	1,780	1,459	1,645	1,632
Positive mean	1,665	1,537	1,667	1,431	1,617	1,520
All events	1,702	1,589	1,719	1,433	1,609	1,588

same direction. Thus, under attentional load, depressives' predictions about negative events were made more rapidly than were those of mildly depressed or nondepressed subjects, whereas their predictions about positive events were not. The greater automaticity with which depressives make their future-event predictions appears to extend to both negative and positive events, whereas absolute speed differences across depression groups (under load) hold only for negative events.[3]

Figure 2 also makes it obvious that the notion of uncertainty in the future-event predictions of mildly depressed subjects is strongly supported by these data. Nothing at all close to automatic responding can be seen in these latency differences. As predicted, the load–no-load differences for mildly depressed subjects were unusually large for both positive, $t(62) = 2.59$, $p < .01$, and negative events, $t(62) = 4.03$, $p < .001$. In fact, these differences were an average of four times larger than the same differences for depressed and nondepressed subjects. This differential is striking and suggests that the constructs on the basis of which mildly depressed subjects made their predictions were used rather inefficiently.

Furthermore, it is interesting to note, as shown in Table 2, that mildly depressed subjects showed very fast response latencies to both positive and negative future events in the no-load condition, faster than any other group. That is, the data from the no-load condition suggest that when cognitive capacity was not in short supply—plenty was available—mildly depressed subjects nonetheless devoted far less time to making their predictions about both negative and positive events than did the other subjects; depressives, $t(62) = 2.47$, $p < .01$, and nondepressives, $t(62) = 3.25$, $p < .001$. No other comparison reached significance. This suggests that when cognitive capacity is available with which to strategically modulate one's responses, mildly depressed subjects use the opportunity to respond extremely rapidly. This quickness in making predictions does not reflect accessibility or automaticity because when attentional capacity is drained and strategic responding is thus not permitted, response latencies become far greater, indicating attentional dependence. Although the reason for such rapid responses is not completely understood, they would appear to result from previous practice of such strategic responses (making them is easier) and self-presentational efforts to appear knowledgeable about future events (see Bargh & Tota, 1988; Pagel & Becker, 1987; Rhodewalt & Agustsdottir, 1986; Tabachnik, Crocker, & Alloy, 1983; Weary, Elbin, & Hill, 1987). Note, however, that it is difficult to draw conclusions regarding raw response latencies (see Bargh & Tota, 1988, for a discussion).

Finally, our findings provide no evidence for a predictive role for the self-schema or self-representations in subjects' predictions of the future. First, nondepressed subjects did not show any amount of automaticity in their responses. Although this finding is consistent with past research showing little evidence of certainty about future events among nondepressives (Andersen, 1990), it contrasts with previous findings examining trait judgments about the (current) self (Bargh & Tota, 1988; Spielman & Bargh, 1990), in which nondepressives showed automaticity in self-judging positive but not negative traits. Second, none of our findings interacted with the target of the comparison (self or other) so that the automaticity of depressives' predictions of negative future events (and the nonautomaticity of nondepressed and mildly depressed subjects' predictions for both positive and negative events) held for both self and other. Together, these findings imply that the future-event predictions of depressives are not limited to predictions about the self and may therefore not be mediated by a self-structure in memory.[4]

Discussion

Our central prediction, that depressives, unlike nondepressed or mildly depressed individuals, would make predictions relatively automatically about future life events, was essentially confirmed by our results. As anticipated, the introduction of a substantial load on attentional capacity increased depressives' response latencies when making their future-event predictions reliably less than it increased the latencies of mild depressives and nondepressives for both negative and positive future events. That is, the load condition reliably increased the latencies of both nondepressed and mildly depressed subjects in making future-event predictions (both negative and positive), while producing no such increase for depressed subjects. Using this critical measure, depressives thus appear to have made their predictions about both negative and positive events more automatically than did other subjects. On the other hand, because the load condition also led depressives to make slightly different across-the-board yes–no responses, firm conclusions about the automaticity of the predictions made by these subjects cannot be unequivocally drawn. Nonetheless, the data provide support for the notion that greater automaticity may exist in the manner in which depressives make predictions about future events than exists for mildly depressed or nondepressed subjects. In terms of the distinction between positive and negative events, the absolute processing speed of depressives under attentional load showed that depressives made their predictions reliably faster than mild depressives and nondepressives only for negative events and not for positive ones. Hence, only for sheer processing speed under load was the weight of the data stronger in the case of negative events. Differences in automaticity occurred in both cases.

Importantly, the future-event predictions of depressives were highly pessimistic in nature, that is, depressives predicted more

[3] It should be noted that this latter measure is not ideal for indexing automaticity versus strategic processing because it examines response latencies only after load has been introduced, without taking baseline strategic latencies into account. This essentially means that any pattern of absolute latencies across depression groups could be obtained (under load) without speaking to automaticity because the load could still have increased speed of processing significantly, which would indicate strategic processing, or could have had little effect on it or even decreased it, which would imply automaticity.

[4] On an entirely different note, it is worth mentioning that it was impossible to include event likelihood (extremely high, variable, or extremely low) as a factor in our basic response latency analysis because the expansion from a five- to a six-factor design (i.e., from 48 to 144 cells), unsurprisingly, left several empty cells (e.g., most subjects said no to all extremely unlikely events and yes to all extremely likely ones). This is not problematic in the sense that we included these three event likelihoods (determined using face validity) only to ensure our capacity to test our hypotheses, taking subjects' actual yes–no responses into account.

negative and fewer positive future events than did other subjects. Combined with the apparent efficiency with which depressives made their predictions, these data provide support for the notion that depressive predictive certainty can be conceptualized in information-processing terms, as the certainty-as-efficiency hypothesis suggests. That is, these findings can be accounted for by assuming that depressives possess a well-developed knowledge structure about the future, including pessimistic expectancies, that mild depressives and nondepressives do not, one that enables automatic future-event predictions. This future-event schema includes both positive and negative events and relatively pessimistic expectations about these events (as compared with the expectations of mildly depressed and nondepressed people). When such conceptions of the future come so automatically and effortlessly to mind, they may tend to be viewed as particularly unequivocal and inevitable (see Jacoby & Kelley, 1987, 1990).

The data are thus readily handled by the conceptualization of depressive predictive certainty as efficiency in relation to a well-developed future-event schema held by depressives. Although the present findings yielded no greater automaticity among depressives for yes responses to negative events and no responses to positive events than for other types of responses, there is reason to expect all of the predictions within the future-event schema to be made more automatically. As anticipated, depressed subjects predicted more negative events and fewer positive events than did other subjects, showing pessimism in their expectations, and generally made their predictions more automatically as well.

The matching hypothesis, by contrast, derived from self-schema theory, suggests that automaticity should be observed only in depressives' predictions about negative events and not in their predictions about positive ones. In fact, research on self-judgments has shown that depressives make automatic self-judgments about negative traits but not about positive ones (Bargh & Tota, 1988) presumably because negative self-constructs become activated automatically for depressives. Yet, in the present study, both negative and positive future-event predictions appear to have been made more automatically by depressives. This is consistent with previous work on depressive predictive certainty (Andersen, 1990), which has demonstrated such certainty for both types of events, and is also consistent with the certainty-as-efficiency hypothesis.

On a different level, the matching hypothesis also predicts automaticity among *nondepressed* individuals about positive events but not about negative events, as in present self-judgments (Bargh & Tota, 1988). Our data, however, show that nondepressives do not make future-event predictions automatically. This is consistent with research on depressive predictive certainty among nondepressives, in which nondepressives appear to show little certainty about the future (Andersen, 1990). Similarly, Beck (1967) discussed schematized processing of future-event possibilities only among depressives. Hence, our data are consistent with the general notion that maintaining a view of the future that is relatively flexible or nonschematized, that is, that leaves at least some room for thoughtful analysis or for uncertainty, may be adaptive in conceptualizing future outcomes (see also Andersen & Schwartz, 1992). That is, it may not be very useful to think that one knows with certainty exactly what the future will hold. If one were to think this, it might minimally result in disappointment, and more seriously, in failing to initiate and choreograph desired outcomes in one's life.

Finally, although the matching hypothesis can apply to personal constructs, broadly speaking, as well as to self-schemata, in particular, most relevant research has focused on self-schemata and on judgments about the current self. In such research, the negative trait automaticity found among depressives is limited to self-judgments (Bargh & Tota, 1988). Depressives automatically think about the self in negative terms and actually automatically think about others in positive terms. The present data show, by contrast, that depressives' certainty about the future extends not only to both positive and negative events but to both the self and others; our findings were not limited to self-predictions. Although these data cannot definitively rule out the role of self-construct activation in depressives' future-event predictions, they clearly provide no evidence for self-concept mediation.

Overall, it is clear that processes other than the simple matching of chronically accessible negative constructs and available stimulus information (the future events examined in this study) must be invoked to account for our data. Depressives are thought to be far more concerned about the future than are nondepressives, thinking about it constantly (Beck, 1967). As Beck (1967) pointed out, "the depressed patient generally shows considerable preoccupation with ideas of the future. His expectations usually have a negative cast and may occur in the form of pictorial fantasies or as obsessive ruminations" (p. 259). Such frequent thought about a domain is a prerequisite for the development of an efficient schema (e.g., Hayes-Roth, 1977). That is, frequent and consistent thinking within a content domain, such as the future, is the precursor of efficient, automatized thought processes (see Bargh, 1984, 1989; Shiffrin & Schneider, 1977). A depressive future-event schema would enable quick, relatively attention-free judgments to be made about future events and would contain beliefs about both positive and negative events—that is, relatively pessimistic expectations about these events (Beck, 1967, pp. 259–261).

Interestingly, we also found support for the hypothesis that the constructs that mildly depressed individuals use to make predictions about future events are in a state of flux. The future-event predictions of mild depressives revealed no automaticity whatsoever and a very different pattern than shown by depressives or nondepressives. The data, in fact, suggest considerable uncertainty in the future-event predictions of these individuals, both for positive and for negative events. The differences between the load and the no-load conditions for these subjects were an average of four times greater than those for depressed or nondepressed subjects. Hence, the data strongly suggest that there is actual uncertainty in the constructs with which mild depressives make their future-event predictions. This is consistent with the notion that predictive certainty is an index of severity in depression, such that it distinguishes mild depressives from those more seriously depressed (Andersen, 1990).

The data also speak provocatively to the present conceptualization of how efficiency or certainty in future-event predictions may develop among depressives. That is, mildly depressed individuals should not yet have formed a future-event schema and should thus show no efficiency, as we found. Moreover, we

assume that continued, strategic mental rehearsal or rumination about future events in initial stages of dysphoria may ultimately become automatized in more serious depression (see Moretti & Shaw, 1989; Tait & Silver, 1989; see also Taylor & Schneider, 1989). Although the present data cannot test this rumination hypothesis, mild depressives did show some unusual "strategic" responses. That is, when these subjects had attentional capacity available to them (in the no-load condition), they made their predictions about both negative and positive events surprisingly rapidly and more rapidly than did any other group. These extremely fast responses were clearly strategic, because when attentional capacity was drained, their stored constructs showed no automaticity. Although one can only speculate about the meaning of these findings, it is possible that such strategic responses—quickly predicting future events—may eventually become set into place as automatic process among moderately and severely depressed individuals. In a similar vein, these responses may reflect a need to appear knowledgeable or certain about future outcomes among mild depressives, perhaps to counteract the disarray or uncertainty of their stored constructs. These speculative accounts clearly warrant continued research.

In conclusion, our findings demonstrate the relevance of the concept of depressive predictive certainty to understanding the cognitive processes of depressed individuals and provide further explanation for why it is often so difficult to successfully dispute the negative interpretational and predictive patterns of depressed individuals (Andersen, 1990; Andersen & Lyon, 1987; Bargh & Tota, 1988; Beck, 1967, 1976). Although further research is needed to specify more precisely the exact mechanisms underlying depressive predictive certainty, it appears to have its locus in the automatic cognitive processes through which depressives anticipate future events, which may feel unquestionably real and true to the individual.

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Received November 4, 1991
Revision received April 4, 1992
Accepted April 4, 1992 ■