The Fit of Thinking Style and Situation: New Measures of Situation-Specific Experiential and Rational Cognition

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Decades of research provide strong evidence that consumers process information in two distinct and qualitatively different ways, rational and experiential. However, little research has addressed situational influences on thinking style, and there have been no attempts to simultaneously measure and validate two-dimensional situation-specific thinking. We develop and validate a new instrument for measuring situation-specific thinking style using performance tasks, consumer Web activities, and differing motivations. We establish differences in thinking style across types of tasks and motivations, and congruence effects related to the fit of situation-specific thinking style and the nature of the task on performance and attitudinal outcomes.

Dual processing theories describe two qualitatively different systems of consumer information processing. For example, consumers are said to process information rationally or experientially (e.g., Epstein 1994), in a rule-based or associative manner (Sloman 1996), and using "System 1 or System 2" (e.g., Kahneman 2003). A key commonality among modern dual process theories is the existence of two qualitatively different and interoperating "thinking style" systems, each best suited to its own purpose.

Not surprisingly, a parallel duality underlies specific consumer behaviors. An extensive literature has identified two categories of consumer activities, generally defined as goal directed or experiential. Dichotomies have been drawn between many behaviors, including work versus play activities (Babin, Darden, and Griffin 1994; Hammond, McWilliam, and Diaz 1998; Wolfinbarger and Gilly 2001), directed versus nondirected search (Bloch, Sherrell, and Ridgway 1986), choice among alternatives versus navigational choice (Deci and Ryan 1985; Hoffman and Novak 1996), online searching versus browsing (Schlosser 2003), goal-directed versus experiential Web use (Novak, Hoffman, and Duhachek 2003), instrumental versus ritualized orientations to media (Rubin 1984; Rubin and Perse 1987), and planned purchases versus impulse buys (Rook 1987).

Considerable research has established that different thinking styles are better suited for different tasks or activities (e.g., Epstein 1994, 2003; Hammond 1996; Hammond et al. 1987; Hogarth 2002; Kahneman 2003; Kahneman and Frederick 2002) and that the nature of the task influences the degree to which a rational or experiential thinking style is adopted (e.g., Epstein, Donovan, and Denes-Raj 1999; Isen, Daubman, and Nowicki 1987; Schwarz and Bless 1991).

However, a host of important questions remain largely unaddressed. Do certain activities elicit certain thinking styles? Can the thinking style used during an activity be reliably and validly measured, and is it a one- or two-dimensional construct? Does the "fit" of thinking style with the activity matter, and if so, how? For example, does rational versus experiential thinking used during a rational, goal-directed, consumer decision task affect performance on that task as well as attitudes toward the task? Although thinking style is often primed or experimentally manipulated, it is rarely explicitly measured in the context of a given situation. Such measurement is an important first step toward addressing these unanswered questions.

To that end, we develop new two-dimensional scales to reliably measure situation-specific thinking style and dem-

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onstrate the validity of these scales. We show that the rational or experiential nature of a task, as well as the motivation for performing a task, influence situation-specific thinking style. Our scales thus have immediate application for consumer behavior researchers as manipulation checks to assess whether priming tasks or experimental manipulations induce an intended thinking style.

Further, our new scales allow us to systematically test which thinking style (experiential or rational) is superior under what conditions. Hammond (1996) proposes a general rule that to optimally solve a problem the kind of processing used should match the kind of problem. Higgins (2000) similarly raises the question, "What makes a decision good?" and notes that the fit of the means by which an outcome was obtained with the situation contributes to superior performance and perception of value from fit. We believe that significant insight into consumer behavior can be obtained by actually measuring the thinking style used in a given consumer activity as a process measure. Our findings contribute to the literature on fit and congruence effects involving thinking styles and also argue for situation-specific thinking style being routinely measured, not only for manipulation checks but also as a process variable when considering performance on a wide range of consumer activities.

CONCEPTUAL FRAMEWORK

Dual Process Theories

Over the past 35 years, beginning with Cognitive Experiential Self Theory (CEST; Epstein 1973), a series of dual process theories have been introduced that describe a rational and experiential system of thinking, two qualitatively different and interoperating systems that are each best suited to its own purpose. Note that dual process theories are considered broader than theories that describe two systems more narrowly differentiated by, for example, ease of processing, limitations on cognitive resources, or degree of motivation (e.g., Chaiken 1980; Fazio 1986; Petty and Cacioppo 1986).

In addition to experiential and rational systems in CEST (Epstein 1973, 1983, 1985, 1994, 2003), dual process theories include "rule-based versus associative" (Sloman 1996; Smith and DeCoster 2000); "System 1 versus System 2" (Kahneman 2003; Kahneman and Frederick 2002; Stanovich and West 1998, 2000); "reflective versus impulsive" (Strack and Deutsch 2004); "deliberative/analytic versus tacit/intuitive" (Hogarth 2002); imagery versus discursive processing (MacInnis and Price 1987); and visual versus verbal processing (Childers, Houston, and Heckler 1985). Smith and DeCoster (2000) provide a comprehensive summary of common features of eight dual process models, noting the considerable agreement across the theories regarding the defining characteristics of the two thinking styles.

It is useful to contrast rational and experiential thinking styles in terms of their defining characteristics. The two thinking styles operate in different ways, and their manner of operation has been richly characterized by a wide range of researchers. Experiential thinking is associative, emotional, low effort, rapid to implement but slow to change, parallel, immediate, outcome oriented, holistic, preconscious, and experienced passively with the process opaque to the individual. Rational thinking, on the other hand, is logical, cause and effect, rule based, hierarchical, sequential, process oriented, slower to implement but quicker to change, high effort, oriented toward delayed action, conscious, and experienced actively with the individual aware of and in control of the process (Epstein 1994, 2003; Hogarth 2002; Kahneman and Frederick 2002; Sloman 1996; Smith and DeCoster 2000). These authors and many others have elaborated on the defining characteristics of experiential and rational thinking (see also Chaiken and Trope 1999).

While it is beyond the scope of this article to provide a detailed comparison of the distinctions among these dual process theories (see Chaiken and Trope 1999 for a comprehensive comparison of dual process theories), we note that differences among theories can be substantial. For example, in Strack and Deutsch's (2004) reflective-impulsive theory, the impulsive system is driven only by immediate perceptions and operates as a simple associative network through spreading activation. This is a much more limited conceptualization compared to most other dual process theories, since complex outcomes such as affect, intuition, and emotion are viewed as joint products of interactions between the reflective and impulsive systems rather than as the product of the experiential system. In contrast, the core tenets of theories proposed by Epstein (1994) and subsequently by Sloman (1996), Smith and DeCoster (2000), and Stanovich and West (2000) largely agree.

Situation-Specific Thinking Style

The Rational-Experiential Inventory (REI) developed by Epstein and his coauthors (Epstein et al. 1996) has been used to measure individual differences in dispositional tendencies to adopt rational and experiential thinking styles. In contrast to dispositional thinking style, we define *situation-specific thinking style* (SSTS) as the particular thinking style or momentary thinking orientation adopted by a consumer in a specific situation. We consider situation to incorporate the different tasks or activities that consumers may undertake, as well as different motivations or orientations that consumers may bring to a specific task or activity. SSTS may be influenced by the task itself or by the consumer's underlying motive for performing a given task, independent of the task.

Dimensionality of SSTS. Epstein and his coauthors (e.g., Epstein et al. 1996; Pacini and Epstein 1999) have provided empirical evidence that dispositional thinking style is a two-dimensional construct, with separate dimensions for experiential and rational thinking. However, there is little prior empirical research on the measurement, let alone the dimensionality, of situation-specific thinking style. Hogarth (2002, 7), in discussing Hammond (1996), notes that "tasks can also be arranged on a continuum that reflects the extent to which they are likely to induce intuitive thought, at one extreme, to analytic thought, at the other." While we can speak of arranging tasks along a continuum from rational to experiential, this does not address the question of whether the thinking style used when completing a task is a one- or two-dimensional construct.

One notable exception is Shiv and Fedorikhin's (1999) five-item "decision basis" summed scale of bipolar items generating a postsituation self-report of what can be interpreted as rational versus experiential thinking style. However, the bipolar nature of Shiv and Fedorikhin's items, with experiential versus rational anchors for each semantic differential item, forces experiential and rational responses into a unidimensional structure and precludes identifying separate rational and experiential dimensions. If one developed separate scales to measure experiential and rational SSTS, dimensionality could be tested empirically.

CEST

Comprehensive descriptions of the rational and experiential systems in CEST can be found in Epstein (1994, 2003) and Epstein and Pacini (1999). The rational system as summarized in table 1 (drawn from Epstein 2003) is a uniquely human, verbal, effortful, abstract, affect-free, and analytic system that learns through logical inference (e.g., Epstein 1994, 2003). The operating characteristics of the experiential system shown in table 1 are consistent with and can be derived from the operation of an automatic, nonverbal learning system. Associative connections in the nonverbal, rapid, imagistic, affect-laden, and holistic experiential system are automatically learned by experience through classical conditioning, instrumental conditioning, and imitation learning. Rather than being a set of unrelated heuristics or cognitive shortcuts (e.g., Kahneman and Tversky 1982), the experiential system is an organized, adaptive cognitive system with roots in evolution that both influences and is influenced by affect (Epstein 2003). For example, Epstein et al. (1992) demonstrated increased irrational response to unfavorable outcomes outside one's control as the emotional intensity of these outcomes increased.

Key assumptions of CEST are that neither the experiential nor rational system is generally superior, and the two systems operate both simultaneously and sequentially, each able to influence the other. For example, Epstein, Denes-Raj, and Pacini (1995) identified the role of the experiential system in producing errors in a category of judgment tasks called conjunction problems. Conjunction problems present scenarios defined by event A, event B, or both event A and B, and ask respondents to judge which scenario is most probable. A conjunction error is the tendency of people to overestimate the joint probabilities of two events in certain contexts. When conjunction problems are presented in a natural context (for example, lotteries), the experiential system plays a positive, adaptive role by providing an intuitive, and correct, understanding of joint probabilities even when people cannot immediately articulate this understanding through the rational system. However, when conjunction problems are presented in an unnatural context, such as the well-known "Linda problem" that induces associations to extraneous, concrete aspects of the problem, the experiential system focuses on these associations, interfering with the rational system and creating conjunction errors.

TABLE 1

CHARACTERISTICS OF EXPERIENTIAL AND RATIONAL THINKING STYLES IN CEST (ADAPTED FROM EPSTEIN 2003)

	Experiential characteristics	Rational characteristics
1	Holistic	Analytic
2	Automatic, effortless	Intentional, effortful
3	Emotional/affective: pleasure-pain oriented (what feels good)	Logical: reason oriented (what is rational or sensible)
4	Associative connections	Logical, cause and effect, connections
5	Behavior mediated by "vibes" from past events	Behavior mediated by conscious appraisal of events
6	Encodes reality in concrete images, metaphors, and narratives	Encodes reality in abstract symbols, words, and numbers
7	More rapid processing; oriented toward immediate action	Slower processing; oriented toward delayed action
8	Slower and more resistant to change: change with repetitive or intense experience	Changes more rapidly and easily; changes with strength of argument and new evidence
9	More crudely differentiated; broad generalization gradient; context-specific processing; categorical and stereotypical thinking	More highly differentiated; dimensional thinking
10	More crudely integrated; dissociative, organized in part by emotional complexes; context-specific processing	More highly integrated; context-general principles
11	Experienced passively and preconsciously; we are seized by our emotions	Experienced actively and consciously; we are in control of our thoughts
12	Self-evidently valid; "experiencing is believing"	Requires justification via logic and evidence
13	More outcome oriented	More process oriented

We ground our work in Epstein's CEST for several reasons. First, CEST predates other modern dual process theories, with its foundations presented in Epstein (1973). Second, CEST provides the richest conceptual descriptions of two qualitatively different thinking styles, as summarized in table 1. Third, as a global theory of personality as well as a dual processing theory, CEST has a unique focus on individual differences that differentiates it from other dual process theories. Fourth, individual differences in dispositional tendency to adopt rational and experiential thinking styles can be measured using the Rational-Experiential Inventory, which has been in continuous development since 1996 (Epstein et al. 1996; Norris and Epstein 2003a, 2003b; Pacini and Epstein 1999) and follows directly from CEST.

In six studies, we develop and validate a new instrument for measuring experiential and rational situation-specific thinking style using a range of performance tasks, a set of consumer Web activities, and differing motivation contexts within a task. Studies 1 and 2 develop and cross-validate two original scales measuring experiential and rational SSTS, and test the dimensionality of our new scales. Study 3 tests hypotheses regarding fit of task and thinking style, while study 4 tests the effect of congruence of activity and SSTS on attitude. Studies 5 and 6 test predictions concerning SSTS and instrumental versus consummatory motives (study 5) as well as promotion versus prevention focus (study 6) and also provide nomological validity for the SSTS. The series of studies establish differences in thinking style across types of tasks and motivations, and congruence effects related to the fit of situation-specific thinking style and the nature of the task on performance and attitudinal outcomes with results that are relevant to a broad range of consumer behaviors and important consumer behavior constructs.

STUDY 1: SCALE DEVELOPMENT

The objective of the first study is to identify items for rational and experiential SSTS scales, based upon responses to experimental tasks that were determined a priori to be more compatible with either experiential or rational processing.

Method

Sample and Measures. Study 1 was programmed and administered via an academic Web-based online research facility, with respondents randomly selected from an online panel. Up to three e-mail notifications over a 1-week period were used to solicit cooperation for a Web-based experiment, and a $500 prize drawing served as an incentive. Of 2,400 invitations, 655 respondents (27%) completed study 1. We eliminated 37 respondents who spent less than 5 minutes or more than 1 hour on the full study, as well as 16 additional outliers with extremely low or high times spent on one of five experimental tasks, producing a calibration sample size of 602 respondents (mean age of 36.5 years, 66.1% women, and 47.9% graduated from college or more).

Prior to completing one of five experimental tasks, respondents completed a brief set of four warm-up questions dealing with general Internet use. Following the experimental task, respondents completed 53 SSTS items (5-point rating scales). Drawing from the 13 characteristics differentiating experiential and rational processing shown in table 1, we constructed 28 experiential and 25 rational items that spanned these 13 characteristics, worded as self-report, post-task measures of situation-specific thinking style (SSTS). Of the 53 items, 15 items were modified from the 40-item Rational-Experiential Inventory, a measure of dispositional thinking style (Pacini and Epstein 1999), and reworded to be suitable as situation-specific ratings. Many of the REI items tap very similar constructs, with redundancy in wording. The 20-item REI experiential scale, for example, includes seven items including either the word "intuition" or "intuitive" and seven items including either "gut feelings" or "feelings." Thus our remaining 38 items employed an expanded vocabulary to maximize coverage of the 13 characteristics in table 1.

Experimental Tasks. Respondents were randomly assigned to one of five experimental tasks in a between-subjects design. The five experimental tasks were chosen based upon whether experiential or rational processing would be most appropriate for successfully completing the task. As a nonverbal test of abstract reasoning, 11 problems from one of the more difficult sections of the Raven's Standard Progressive Matrices (Raven 1976) was expected to favor rational processing. Each problem consisted of a three by three grid of geometric patterns, with one item in the grid missing. Respondents were asked to select the correct missing piece from a set of eight alternatives. The geometric patterns increased in difficulty as the respondent moved through the task. In a second rational task, respondents were given five specific factual questions about films that could be answered by searching the Internet Movie Database (IMDB).

The Product Improvement Task from the Torrance Tests of Creative Thinking (Torrance 1990) was expected to favor experiential processing; respondents were shown a picture of a stuffed toy elephant and asked to "list the most clever, interesting, and unusual ways you can think of for changing this toy elephant so that children will have more fun playing with it." Respondents were allowed to list up to 20 different modifications but were asked to try and come up with at least five. In a similar experiential task, respondents were asked to browse the IMDB and provide up to 20 "clever, interesting, and unusual ways you can think of for modifying the IMDB Web site so that people like you will have more fun browsing through it." Finally, in a third experiential task, respondents were simply asked to "browse at your own pace" and "just have fun as you look around" the IMDB site.

Results

Using the full set of 53 SSTS items, coefficient alpha was .864 for the 28 experiential items, and .884 for the 25 rational items. However, a principal components analysis of the combined set of 53 rational and experiential items revealed 10 factors with eigenvalues greater than one, indicating a highly multidimensional structure, complicated by a few rational and experiential items cross-loading on the same factors. We sequentially eliminated 21 experiential and rational items with a corrected item-total correlation less than .4. This reduced the experiential item set from 28 to 14 items and reduced the rational item set from 25 to 18 items. We then sequentially dropped items that minimized the decrease in coefficient alpha for the rational and experiential item sets, producing final item sets of 10 rational and 10 experiential items. We note that identical 10-item subsets were obtained by the alternate procedure of selecting 10 items with the largest factor loadings on the first two unrotated factors from a five factor solution (after eliminating the 21 items with low item-total correlations). These final 10-item scales are indicated in the first two columns of table 2, along with factor pattern loadings from an oblique promax rotation (only two factors had eigenvalues greater than one, and the two factors explained 52.6% of variance). Coefficient alphas for the 10-item summed scales were .887 for the 10 experiential items and .900 for the 10 rational items. The 10-item summed scales for experiential and rational SSTS correlated −.102 in the calibration sample.

Table 3 reports means on the SSTS scales for each of the five study 1 tasks. Significant differences were found among the five task means for the dependent variable rational SSTS and also for experiential SSTS. The rational (experiential) tasks had higher rational (experiential) SSTS scores than the experiential (rational) tasks, consistent with our a priori characterization of the five tasks as either primarily rational or experiential.

TABLE 2

FINAL EXPERIENTIAL AND RATIONAL SSTS ITEMS

Study 1[a]		Study 2[b]		
Rat.	Exp.	Rat.	Exp.	
				Rational SSTS items
.776	−.083	**.767**	−.081	I reasoned things out carefully.
.768	−.078	**.802**	−.070	I tackled this task systematically.
.761	−.037	**.767**	−.062	I figured things out logically.
.742	−.068	**.707**	−.099	I approached this task analytically.
.722	.095	**.744**	.206	I was very focused on the steps involved in doing this task.
.719	−.071	**.783**	−.067	I applied precise rules to deduce the answers.
.716	.082	**.751**	.121	I was very focused on what I was doing to arrive at the answers.
.692	.124	**.749**	.143	I was very aware of my thinking process.
.675	.026	**.780**	−.025	I arrived at my answers by carefully assessing the information in front of me.
.670	.058	**.721**	.028	I used clear rules.
				Experiential SSTS items
.034	**.823**	−.075	**.826**	I used my gut feelings.
−.026	**.797**	−.003	**.812**	I went by what felt good to me.
.066	**.796**	.065	**.829**	I trusted my hunches.
−.081	**.756**	−.031	**.794**	I relied on my sense of intuition.
−.083	**.754**	−.065	**.748**	I relied on my first impressions.
.027	**.746**	.019	**.774**	I used my instincts.
−.134	**.694**	−.058	**.769**	I used my heart as a guide for my actions.
.231	**.567**	.277	**.635**	I had flashes of insight.
−.050	**.567**	−.158	**.635**	Ideas just popped into my head.
.242	**.531**	.135	**.502**	I used free-association, where one idea leads to the next.

NOTE.—Factor pattern coefficient from oblique promax solution. Each of the items is measured on the 5-point rating scale: 1 = definitely false, 2 = mostly false, 3 = undecided or equally true and false, 4 = mostly true, 5 = definitely true. Factor pattern coefficients greater than .40 are shown in bold.

[a]Study 1, first two factors explain 52.6% of variance; oblique promax correlation = −.102.

[b]Study 2, first two factors explain 57.0% of variance; oblique promax correlation = −.308.

TABLE 3

MEANS OF SSTS FOR EXPERIMENTAL TASKS USED IN STUDY 1 (n = 602)

		Mean	
	n	SSTS rational	SSTS experiential
Rational (11 Raven's Progressive Matrices Items)	93	4.04	2.97
Rational (search IMDB for specific information to answer five questions)	142	3.93	3.42
Experiential (product improvement task—toy elephant)	95	3.27	3.96
Experiential (browse IMDB and suggest fun product improvement)	138	3.48	3.76
Experiential (nondirected browsing of IMDB)	134	3.39	3.65
η^2		.188	.186
p-value		.000	.000
Coefficient alpha		.887	.900

NOTE.—Detailed timing data for these experimental tasks are available from the first author.

STUDY 2: VALIDATION

Hypotheses

In study 2 we validate the rational and experiential SSTS scales developed in study 1 in an independent sample and test the dimensionality of the SSTS scales. While tasks or activities can be characterized as primarily rational or experiential, CEST assumes that consumer responses draw upon both information processing systems. Considerable empirical evidence has found that the two underlying constructs of the rational and the experiential are independent, when measured as dispositional variables (e.g., Epstein et al. 1996; Norris and Epstein 2003a, 2003b; Pacini and Epstein 1999). Thus, we propose that this will also hold for situational measures:

> **H1:** Rational and experiential SSTS will be better fit by a two-dimensional factor structure than by a one-dimensional factor structure.

Method

Sample and Measures. Of 1,100 randomly selected respondents, 335 (30%) completed study 2. The same set and sequence of measures used in study 1 was also used in study 2, as was the same procedure of e-mailing invitations to respondents from an online panel for a Web-based study. Eliminating 16 outlier respondents who had extremely low or extremely high times on the full study and/or the experimental task produced an analysis sample size of 319 respondents (mean age of 37.7 years, 69.3% women, and 47% graduated from college or more), which served as the validation sample for the 10-item experiential and rational SSTS scales developed in study 1. This uneven split with more respondents in the calibration sample is recommended (Wickens 1989).

Experimental Tasks. Six experimental tasks in a between-subjects design were used in study 2, as summarized in table 4. The two tasks with the largest differences between mean SSTS scores were retained from study 1, and four new tasks were added to increase the generalizability of the validation. Four tasks were expected to elicit rational processing. Two rational tasks employed Raven's Matrices; one task used the same higher difficulty problems as in study 1, and a second Raven's task included only six lower difficulty problems. Verbal analogies were used in the other two rational conditions. For each of 10 pairs of words, respondents were asked to identify an answer pair from a list of five pairs that "best expresses a relationship similar to that expressed in the original pair." The 10 pairs were either at a low or high degree of difficulty, using preestablished items and difficulty ratings (College Board 2003). The toy elephant Product Improvement Task from study 1 was used as one experiential condition. The Alternate Uses Task was used as the second experiential condition to measure ideational fluency (Torrance 1990). In the Alternate Uses Task, respondents were asked "to list as many different uses for a common brick as you can think of."

Results

Coefficient alpha in the study 2 validation sample was .904 for the 10-item experiential SSTS scale and .916 for the 10-item rational SSTS scale. Experiential and rational SSTS correlated −.292 in the validation sample. The third and fourth columns in table 2 report factor pattern loadings from an oblique promax rotation (only two factors had eigenvalues greater than one). A two-factor confirmatory factor analysis model was fit to the 319 respondents in the validation sample, with 10 items loading on each of the experiential and rational factors. Fit of this structural model was acceptable with CFI = .93 and RMSEA = .07. These results provide good evidence of reliability and validity of the two-dimensional structure for experiential and rational situation-specific thinking style, and support hypothesis 1.

We note that the tasks used in studies 1 and 2 were somewhat different, suggesting that the factor structure is not dependent upon the nature of the task. Nevertheless, we fit two factor models to the 20 SSTS items within each of the five tasks in study 1 and each of the six tasks in study 2. For all 11 tasks, the rational items loaded more strongly on one factor, and the 10 experiential SSTS items loaded more strongly on the other factor.

Table 4 reports means on the SSTS scales for each of the six study 2 tasks. Significant differences were found among the six task means for the dependent variable rational SSTS and also for experiential SSTS. As in study 1, the rational (experiential) tasks had higher rational (experiential) SSTS scores than the experiential (rational) tasks, providing evidence of internal validity of the scales.

TABLE 4

MEANS OF SUMMED SSTS FOR EXPERIMENTAL TASKS USED IN STUDY 2 (n = 319)

		Mean	
	n	SSTS rational	SSTS experiential
Rational (10 verbal analogies items, low level of difficulty)	56	3.85	3.08
Rational (10 verbal analogies items, high level of difficulty)	53	3.74	3.23
Rational (six Raven's Progressive Matrices Items)	51	4.21	2.93
Rational (11 Raven's Progressive Matrices items)	54	4.08	2.91
Experiential (alternate uses task, uses of a brick)	52	3.36	3.76
Experiential (product improvement task with toy elephant)	53	3.29	4.02
η^2		.211	.262
p-value		.000	.000
Coefficient alpha		.904	.916

NOTE.—Detailed timing data for these experimental tasks are available from the first author.

STUDY 3: FIT OF THINKING STYLE AND TASK

Having developed and validated the SSTS scales, we next address the question of the degree to which fit of situation-specific thinking style with the experiential or rational nature of a task affects task performance.

Hypotheses

In the context of regulatory focus theory, the value of a good fit between task demands and processing style has been clearly established (Higgins 2000; Higgins et al. 2003), and it has been noted that "there is also evidence from other research programs that the fit effect is not restricted to regulatory focus variables" (Higgins et al. 2003, 1150). Some fit effects have been reported regarding thinking style and tasks, although none of these studies have employed self-report measures of thinking style. Hogarth (2002, 7–8) notes that "people's judgments will tend to be more valid when there is a match between properties of the task and the mode of thought employed," citing empirical evidence provided by Hammond et al. (1987). While fit between task and mode of thought appear to improve performance, lack of fit has been found to degrade performance (Hammond et al. 1987; Hogarth 2002; McMacklin and Slovic 2000; Schooler and Engstler-Schooler 1990; Schooler, Ohlsson, and Brooks 1993). For example, verbalization induces rational thinking and has a negative impact on the ability to solve problems that require insightful solutions (Schooler et al. 1993), even when the respondent is an expert (Fallshore and Schooler 1993; Wilson and Schooler 1991; Wilson et al. 1993).

Similarly, Cacioppo, Priester, and Berntson (1993) examined the outcome of the fit of an anagram task framed as either promotion or prevention regulatory focus with the orientation toward the task manipulated as either an approach or avoidance orientation. Fit of task framing with orientation taken toward the task improved performance. In addition to objective performance, subjective perceptions of performance have also been found to be affected by the fit of the task and the approach taken when performing the task (Higgins 2000; Higgins et al. 2003). Thus, study 3 tests predictions regarding the fit of thinking style on task performance (hypothesis 2a) and perceived task performance and task difficulty (hypothesis 2b):

H2a: SSTS that is congruent (incongruent) with the experiential or rational nature of a task will correlate positively (negatively) with objective measures of task performance.

H2b: SSTS that is congruent (incongruent) with the experiential or rational nature of a task will be positively (negatively) associated with subjective measures of increased perceived performance, and decreased perceived task difficulty.

It was critical to use tasks with established performance measures, so a set of eight standard psychological tasks with previously validated scoring criteria were used, including six tasks not used in studies 1 or 2.

Method

Sample and Measures. Study 3 was administered via an academic Web-based facility as in studies 1 and 2, with a cooperation rate of 26% (957 completes from 3,655 randomly selected respondents). Eliminating 92 respondents who spent less than 5 minutes or more than 60 minutes on the study produced an analysis sample size of 865 (mean age of 39.3 years, 48.4% women, and 43.7% graduated from college or more). Measures were collected in the following sequence. First, prior to completing the experimental task, dispositional thinking style was assessed using Norris and Epstein's (2003a) REI-24 scale. The experimental task was then presented followed by the 10-item rational and experiential SSTS scales validated in studies 1 and 2. This was followed by Shiv and Fedorikhin's (1999) unidimensional five-item Heart versus Mind scale (scaled so a higher summed score corresponded to rational thinking and a lower score to experiential thinking), perceived task performance, and task difficulty (four-item scale from Anand-Keller and McGill 1994). Three items were used to measure perceived performance: (1) "How would you rate your performance on the . . . task?" (seven-item scale from "extremely poor" to "extremely good"); (2) "Compared to other people, how well do you think you did on the . . . task?" (seven-item scale from "well below average" to "well above average"); and (3) "If you were to grade your performance on the . . . task, what grade would you give yourself?" (10-item scale ranging from "D or less," "C−," "C," . . . "A," "A+").

Experimental Tasks. Eight experimental tasks in a between-subjects design were used in study 3, as summarized in table 5. Some respondents were again asked to complete either the Raven's Progressive Matrices (11 items) task or the elephant product improvement task. Task performance for the Raven's Progressive Matrices task was measured as the number of items correctly answered. Performance on the elephant product improvement task was the sum of coded scores for fluency, originality, and flexibility (Torrance 1990).

Three additional rational tasks (Letter Sets, Vocabulary, and Advanced Vocabulary) and three additional experiential tasks (Figures of Speech, Word Arrangement, and Thing Categories) were drawn from the ETS *Kit of Factor-Referenced Cognitive Tests* (Ekstrom et al. 1976). Standard scoring algorithms from the ETS Kit were used to measure performance on these tasks. The rational Letter Sets task measured inductive ability, presenting five sets of letters with four letters in each set, with four of the five sets alike in some way. The task was to identify the one set that did not follow the rule of the other four. Verbal comprehension, related to verbal reasoning, is measured by the two vocabulary tests. The experiential Figures of Speech task measured associational fluency and asked subjects to think of words or phrases to complete figures of speech such as, "she was as pale as [ ]." The Word Arrangement task measured expressional fluency and presented four words, asking respondents to create as many sentences as they could with those words. The Thing Categories task, measuring ideational fluency, presented a topic, for example, "a man going up a ladder," and asked respondents to list all the ideas they can think of about the topic.

TABLE 5

MEANS OF SUMMED SSTS FOR EXPERIMENTAL TASKS USED IN STUDY 3 (n = 865)

		Mean	
	n	SSTS rational	SSTS experiental
Rational tasks:			
Raven's Progressive Matrices (11 items)	193	4.04	3.04
Letter Sets (induction)	102	3.81	3.09
Vocabulary (verbal comprehension)	94	3.79	3.56
Advanced Vocabulary (verbal comprehension)	96	3.61	3.32
Experiential tasks:			
Product Improvement (elephant task)	180	3.18	3.87
Figures of Speech (associational fluency)	65	3.14	3.70
Word Arrangement (expressional fluency)	67	3.29	3.64
Thing Categories (ideational fluency)	68	3.38	3.64
η^2		.206	.186
p-value		.000	.000
Coefficient alpha		.918	.904

Results

Reliabilities for all summed scales were greater than .7 (rational REI .824, experiential REI .877, rational SSTS .917, experiential SSTS .904; perceived performance .893, and task difficulty .748) with the exception of the Heart versus Mind scale (alpha = .679) which had marginal alpha. Table 5 reports means on the SSTS scales for each of the eight study 3 tasks. Significant differences among the eight task means were found for both rational and experiential SSTS. Once again, the pattern of rational and experiential SSTS means is consistent with our a priori characterization of the eight tasks as primarily either rational or experiential.

Correlations of rational and experiential SSTS with task performance shown in table 6, column *a*, support hypothesis 2a. For three of the four rational tasks, rational SSTS is significantly positively correlated with task performance, and experiential SSTS is significantly negatively correlated. For three of the four experiential tasks, experiential SSTS is significantly correlated with task performance, while rational SSTS is significantly negatively correlated for one experiential task. Standardized regression coefficients from table 7, column *a*, provide even stronger support of hypothesis 2a, with 15 of 16 standardized regression coefficients significant and in the hypothesized direction.

Correlations in columns *b* and *c* of table 6 provide support for hypothesis 2b. For the rational tasks, all four positive correlations of rational SSTS with perceived performance are significant, while three of four negative correlations of rational SSTS with task difficulty are significant. Experiential SSTS is not significantly correlated with perceived performance or task difficulty for the rational task. For the experiential task, all four positive correlations of experiential SSTS with perceived performance are significant, and three of four negative correlations of experiential SSTS with task difficulty are significant. However, for the experiential tasks, all four positive correlations of rational SSTS with perceived performance, and two of four negative correlations of rational SSTS with task difficulty, are also significant—despite the fact that from column *a* we see that rational SSTS does not help actual performance on experiential tasks. It appears that rational SSTS may produce a sense of "false confidence" with experiential tasks.

Competing Explanation: Dispositional Thinking Style. Columns *d* and *e* of table 6 show that dispositional thinking style as measured by the REI is significantly correlated with situation-specific thinking style for all eight tasks. Thus, it may be the case that the significant correlations in column *a* of table 7 are due to the influence of dispositional thinking style rather than SSTS.

Table 7 presents results of a set of regression models predicting task performance from the REI and SSTS scales for each of the eight experimental tasks. Model 1 provides standardized regression coefficients and R^2 statistics predicting task performance from rational and experiential SSTS, while model 2 provides parallel results predicting task performance from rational and experiential REI. For each of the eight tasks, R^2 is greater for model 1 (SSTS) than model 2 (REI). Model 3 predicts task performance from both REI and SSTS. When REI is included in the model with SSTS, rational and experiential REI are not statistically

TABLE 6

CORRELATIONS OF SSTS WITH EXPLANATORY VARIABLES IN STUDY 3

		(*a*) Actual performance correlated with:		(*b*) Perceived performance correlated with:		(*c*) Perceived task difficulty correlated with:		(*d*) REI rational correlated with:		(*e*) REI experiential correlated with:	
	n	SSTS Rat.	SSTS Exp.	SSTS Rat.	SSTS Exp.	SSTS Rat.	SSTS Exp.	SSTS Rat.	SSTS Exp.	SSTS Rat.	SSTS Exp.
Rational tasks:											
Raven's Progressive Matrices (11 items)	193	.408*	−.207*	.606*	−.096	−.317*	.042	.398*	−.108	−.030	.404*
Letter Sets (induction)	102	.533*	−.221*	.524*	.113	−.311*	.102	.455*	−.109	.070	.471*
Vocabulary (verbal comprehension)	94	.192	−.175	.375*	.037	−.148	−.073	.266*	.110	.101	.546*
Advanced Vocabulary (verbal comprehension)	96	.213*	−.350*	.339*	−.013	−.323*	.143	.442*	−.059	−.089	.452*
Experiential tasks:											
Product Improvement (elephant task)	180	−.218*	.182*	.269*	.404	−.013	−.330*	.265*	.124	−.022	.651*
Figures of Speech (associational fluency)	65	−.180	.296*	.484*	.351*	−.182	−.116	.253*	.107	.075	.676*
Word Arrangement (expressional fluency)	67	−.191	.165	.353*	.397*	−.250*	−.385*	.341*	.211	.259*	.521*
Thing Categories (ideational fluency)	68	.119	.253*	.478*	.316*	−.247*	−.021*	.267*	−.002	−.175	.511*

*$p < .05$.

TABLE 7

STANDARDIZED REGRESSION COEFFICIENTS (β) PREDICTING TASK PERFORMANCE FROM SSTS AND/OR REI IN STUDY 3

		(*a*) Model 1 task performance predicted from:			(*b*) Model 2 task performance predicted from:			(*c*) Model 3 task performance predicted from:				
	n	SSTS Rat. (β)	SSTS Exp. (β)	R^2	REI Rat. (β)	REI Exp. (β)	R^2	SSTS Rat. (β)	SSTS Exp. (β)	REI Rat. (β)	REI Exp. (β)	R^2
Rational tasks:												
Raven's Progressive Matrices (11 items)	193	.391*	−.168*	.194	.192*	−.076	.039	.389*	−.181*	.004	.031	.195
Letter Sets (induction)	102	.525*	−.197*	.323	.225*	−.119	.048	.558*	−.215*	−.081	.038	.328
Vocabulary (verbal comprehension)	94	.223*	−.209*	.080	.047	−.009	.002	.217*	−.276*	.016	.121	.090
Advanced Vocabulary (verbal comprehension)	96	.184*	−.334*	.156	.213*	−.007	.045	.142	−.421*	.118	.199	.203
Experiential tasks:												
Product Improvement (elephant task)	180	−.229*	.194*	.085	.139	.011	.019	−.286*	.300*	.179*	−.191*	.140
Figures of Speech (associational fluency)	65	−.240*	.339*	.144	−.171	.262*	.080	−.211	.306*	−.108	.058	.155
Word Arrangement (expressional fluency)	67	−.277*	.257*	.095	.180	.041	.039	−.358*	.236	.271*	−.019	.158
Thing Categories (ideational fluency)	68	.089	.242*	.072	.060	−.082	.010	.005	.398*	.060	−.284*	.128

*$p < .05$.

significant for the four rational tasks. While model 3 coefficients for REI terms are statistically significant in three of four experiential tasks, the signs of the coefficients for the REI terms are opposite those of the SSTS terms; additionally, the coefficients for rational and experiential SSTS are larger in model 3 than in model 1 where REI is not included. These sign reversals and increased magnitudes of the SSTS coefficients in model 3 suggest that rational and experiential REI serve as suppressor variables when predicting actual task performance on the experiential task (Maassen and Bakker 2001). Table 7 results show that SSTS fully mediates the dispositional thinking style in predicting task performance, ruling out disposition as a competing explanation.

Competing Explanation: Unidimensional Scale. It is possible that task performance on the eight tasks used in study 3 could be equally well predicted from a unidimensional scale of situational thinking style, such as Shiv and Fedorikhin's (1999) Heart versus Mind scale. Table 8 reports R^2 statistics and standardized betas predicting task performance from the Heart versus Mind scale and can be compared with model 1 results from table 7. While Heart versus Mind significantly predicts performance on all four rational tasks from study 3, Heart versus Mind significantly predicts performance on only one experiential task, Thing Categories (measuring ideational fluency). On the Thing Categories task, however, the sign of the standardized regression coefficient is opposite what one would expect, with higher values of Heart versus Mind (i.e., greater experiential thinking) corresponding to decreased performance. Thus, while Heart versus Mind predicts performance on our four rational tasks, it does not predict performance on our four experiential tasks.

STUDY 4: CONSUMER WEB ACTIVITIES

Studies 1–3 were based upon previously validated tasks from the psychology literature that could be characterized a priori as rational or experiential and that had objective scoring criteria. In study 4, to demonstrate applicability of SSTS scales to consumer activities that are not performance tasks, we consider four consumer Web activities that are either experiential (fun) or rational (goal directed) in nature (e.g., Novak et al. 2003; Wolfinbarger and Gilly 2001) and examine the fit of the activity with thinking style in predicting attitudinal outcome measures rather than performance measures.

Hypotheses

Product information can be framed in hedonic or utilitarian terms (Hirschman and Holbrook 1982; Shavitt 1990), and consumers may process information from either a hedonic or utilitarian perspective depending on their goals (Adaval 2001; Pham 1998; Shiv and Fedorikhin 1999). This motivates the joint consideration of thinking style with consumer activities that are primarily experiential (including hedonic activities) or rational (including utilitarian activities). Cognitive consistency theories, such as Abelson et al.'s (1968) selective interpretation and Heider's (1958) balance theory, as well as social schema theory (Fiske and Taylor 1991) suggest that cognitive and/or affective inconsistencies can influence attitudes. More recently, there is evidence to suggest that congruence between a consumer's affective or cognitive thought processes and the affective or cognitive nature of a message have an impact on the persuasiveness of the message (Fabrigar and Petty 1999; Petty, Wheeler, and Bizer 2000). Thus, we anticipate that congruence be-

TABLE 8

STANDARDIZED REGRESSION COEFFICIENTS (β) PREDICTING TASK PERFORMANCE FROM HEART VERSUS MIND IN STUDY 3

		Task performance predicted from:	
	n	Heart vs. Mind (β)	R^2
Rational tasks:			
Raven's Progressive Matrices (11 items)	193	−.376*	.142
Letter Sets (induction)	102	−.476*	.226
Vocabulary (verbal comprehension)	94	−.300*	.090
Advanced Vocabulary (verbal comprehension)	96	−.259*	.067
Experiential tasks:			
Product Improvement (elephant task)	180	−.015	.015
Figures of Speech (associational fluency)	65	.143	.021
Word Arrangement (expressional fluency)	67	−.036	.001
Thing Categories (ideational fluency)	68	−.258*	.067

*$p < .05$.

tween SSTS and the nature of a consumer activity will affect consumer attitudes:

H3: A rational (experiential) SSTS applied to a rational (experiential) consumer activity will positively correlate with attitude toward performing that activity.

Method

Sample and Measures. Study 4 was administered via an academic Web-based facility as in the previous studies, with a cooperation rate of 20% (264 completes from 1,335 randomly selected respondents). Eliminating 36 respondents who spent less than 5 minutes or more than 45 minutes on the study produced an analysis sample size of 228 (mean age of 40.1 years, 50.2% women, and 53.3% graduated from college or more). An experimental task was presented followed by the 10-item rational and experiential SSTS scales and attitude toward the activity (four-item scale from Pham 1996).

Experimental Tasks. Four experimental tasks in a between-subjects design were used in study 4, as summarized in table 9. In the two rational choice activities, subjects were asked to visit either MyProductAdvisor.com or Bizrate.com and use the information and features at that site to choose, respectively, a car or a toaster that they liked the best. In one experiential activity, subjects were asked to visit Burger King's interactive advertising site SubservientChicken.com and explore that site; in a second experiential activity, subjects were asked to visit the NikeID mass customization Web site and explore the process of interactively customizing a running shoe.

Results

Table 9, column *a*, reports means on the SSTS scales for each of the four study 4 tasks. Significant differences among the four consumer activities were found for both rational ($F(3, 267) = 11.29$, $p < .001$) and experiential ($F(3, 267) = 7.04$, $p < .001$) SSTS. The pattern of rational and experiential SSTS means is consistent with our a priori characterization of the four consumer activities as primarily either rational or experiential.

Correlations of rational and experiential SSTS with attitude toward the activity (col. *b* of table 9) support hypothesis 3. People hold a more favorable attitude toward an activity when their thinking style fits the activity. Rational SSTS has a significant positive correlation with attitude for both rational consumer activities, and experiential SSTS has a significant positive correlation with attitude toward both experiential exploratory consumer activities.

STUDY 5: CONSUMMATORY AND INSTRUMENTAL MOTIVES

The previous studies provide evidence that thinking style varies across different types of consumer tasks and activities and serve as an internal validation of the SSTS, since if the degree of experiential (rational) processing improves performance or attitude on an experiential (rational) activity, then this is also a confirmation that the task itself was experiential (rational) in nature. We now compare thinking styles for different motivations for the same activity. This tests the nomological validity of the SSTS scales by providing evidence that thinking style relates to existing consumer behavior constructs as expected by prior theory.

Hypotheses

Over 50 years ago, Alderson (1957) stated that "consummatory motives underlie consumption behaviors that are intrinsically rewarding . . . whereas instrumental motives underlie consumption behaviors that are seldom rewarding in themselves and are undertaken to achieve some other goals"

TABLE 9

MEANS AND CORRELATIONS FOR CONSUMER WEB ACTIVITIES IN STUDY 4

		(*a*) Mean		(*b*) Attitude correlated with:	
Consumer Web activity	*n*	SSTS Rat.	SSTS Exp.	SSTS Rat.	SSTS Exp.
Rational:					
My Product Advisor	54	4.01	3.29	.552*	.070
Bizrate	56	3.86	3.29	.604*	.096
Experiential:					
Subservient Chicken	59	3.47	3.78	.184	.464*
NikeID	59	3.55	3.70	.128	.554*

*$p < .05$.

(Pham 1998, 146). This is similar to the distinction made in the communications literature between ritualistic and instrumental orientations to media (Rubin 1984; Rubin and Perse 1987) and to the classification of expected benefits in the marketing literature into hedonic/experiential and utilitarian benefits (e.g., Havlena and Holbrook 1986) as well as the distinction between hedonic and instrumental components of attitudes (e.g., Batra and Ahtola 1990; Voss, Spangenberg, and Grohmann 2003).

In particular, it has been shown that consumers are more likely to rely on experiential decision strategies (such as the recruitment of anticipatory feelings through imagery) when they have consummatory motives (Pham 1998). On the other hand, consumers are more likely to rely on reason-based strategies (e.g., the comparison of pros and cons) when they have instrumental motives. To the extent that these decision strategies correspond to the processes captured by the SSTS scales, an important determinant of a consumer's situational thinking approach would be the consumer's underlying motive for performing the task, independent of the task itself. Thus:

H4a: Consumers with instrumental (consummatory) motives will have higher rational (experiential) SSTS scores than consumers with consummatory (instrumental) motives.

Method

Sample and Measures. Study 5 was administered via an academic Web-based facility, with a cooperation rate of 20% (409 completes from 2,050 randomly selected respondents). Eliminating 25 respondents who spent less than 5 minutes or more than 45 minutes on the study produced an analysis sample size of 384 (mean age of 39.6 years, 47.7% women, and 39.1% graduated from college or more). After completing the experimental task described below, respondents completed the 20 SSTS items.

Experimental Tasks. There were two experimental conditions in a between-subjects design. A variant of the product improvement task used in studies 1, 2, and 3 was used, with the difference that subjects were given one of two different instructions for a single task in order to manipulate consumer motivation to that task. In the consummatory condition ($n = 187$), subjects were told, "we are interested in your ideas of how the online shopping experience can be made more fun for people and better help them enjoy themselves while shopping." Subjects were asked to "provide any specific ideas you may have about how online shopping can be made more fun and engaging" and were encouraged to expand on their ideas in any way they wanted and to take as much time as needed. In the instrumental condition ($n = 197$), subjects were told, "we are interested in your ideas of how the online shopping process can be made more useful for people and better help them achieve their shopping goals." Subjects were asked to "provide any specific ideas you may have about how online shopping can be made more useful and functional" and were encouraged to expand on their ideas and take as much time as needed.

Results

The mean experiential SSTS for the consummatory motivation condition was significantly higher than the mean experiential SSTS for the instrumental motivation condition (3.83 vs. 3.55; $F(1, 382) = 15.51$, $p < .001$). Additionally, the mean rational SSTS for the instrumental condition was significantly higher than the mean rational SSTS for the consummatory condition (3.70 vs. 3.41; $F(1, 382) = 17.82$, $p < .001$). Thus, thinking style used in the same product improvement task is influenced by the consumer's motivation toward that task. These results support hypothesis 4a and provide evidence of external validity of the SSTS scales. We note that the effect size of the mean differences is small to moderate (Cohen 1988): η^2 for differences in experiential SSTS was .039, while η^2 for differences in rational SSTS was .045.

STUDY 6: REGULATORY FOCUS

Study 6 also provides support for the nomological validity of the SSTS scales, again using the experimental paradigm of manipulating different consumer motivations toward a comparable task.

Hypotheses

The regulatory focus literature (e.g., Higgins 2000) identifies two separate dimensions of promotion and prevention focus. As in CEST, we can speak of dispositional or situational tendencies to favor one of these dimensions. A tendency toward a promotion focus is characterized by an emphasis on ideals, reflecting an individual's hopes, wishes, and aspirations, while a tendency toward a prevention focus is characterized by an emphasis on oughts, reflecting an individual's duties, obligations, and responsibilities. Based upon the face value of these characterizations, a promotion focus appears to be suited to experiential thinking, while a prevention focus appears to be suited to rational thinking. In persuasion settings, it has been shown that consumers with a promotion focus (e.g., Higgins 1998) are more likely to rely on affective cues compared to consumers with a prevention focus. Consumers with a prevention focus are more likely to rely on substantive and factual information than consumers with a promotion focus (Pham and Avnet 2004). To the extent that the reliance on affect versus substance is consistent with the processes captured by the SSTS scales, consumers' situational thinking approaches should also depend on their self-regulatory orientation, independent of the task itself. Thus:

H4b: Consumers with a prevention (promotion) focus will have higher rational (experiential) SSTS scores than consumers with an experiential (rational) focus.

Method

Sample and Measures. Study 6 was administered via an academic Web-based facility, with a cooperation rate of 31% (231 completes from 750 randomly selected respondents). As this was a brief study, we eliminated 28 respondents who spent less than 30 seconds or more than 400 seconds on the experimental task, which produced an analysis sample size of 203 (mean age of 44.1 years, 50.2% women, and 45.1% graduated from college or more). After completing the experimental task described below, respondents completed the 20 SSTS items.

Experimental Tasks. As in study 5, there were two experimental conditions in a between-subjects design. The conditions were taken directly from Pham and Avnet's (2004) experimental conditions for promotion versus prevention focus. Subjects were asked about either their hopes and goals or their obligations and duties, both in the past and the present. In the promotion focus (ideals) condition ($n = 101$), subjects were told, "this study is about how people's hopes and goals evolve over time." Subjects were asked to think about their "hopes and goals" and to write down at least two hopes and goals they had in the past, as well as two they have today. In the prevention focus (oughts) condition ($n = 102$), subjects were told, "this study is about how people's sense of duty and obligations evolve over time." Subjects were asked to think about their "duties and obligations" and to write down at least two duties and obligations they had in the past as well as two they have today.

We note that in study 5, we directly provided either consummatory or instrumental objectives for the same task. In study 6, we primed respondents to think about either their hopes and goals or their duties and obligations, which has been found to manipulate the relative accessibility of a promotion (ideals) versus prevention (oughts) focus (Pham and Avnet 2004), and which we hypothesize further engenders experiential versus rational thinking. Thus, the manipulation is study 6 is somewhat less direct and more subtle than that used in study 5.

Results

The mean experiential SSTS for the promotion focus (ideals) condition was significantly higher than the mean experiential SSTS for the prevention focus (oughts) condition (3.80 vs. 3.60; $F(1, 201) = 5.61$, $p = .019$). Additionally, the mean rational SSTS for the prevention focus (oughts) condition was significantly higher than the mean rational SSTS for the promotion focus (ideals) condition (3.76 vs. 3.49; $F(1, 201) = 7.50$, $p = .006$). Thus, adopting a promotion versus prevention focus relates to whether a rational or experiential thinking style was used. These results support hypothesis 4b and provide evidence of external validity of the SSTS scales. We note that the effect size of the mean differences is small to moderate (Cohen 1988): η^2 for differences in experiential SSTS was .027, while η^2 for differences in rational SSTS was .036.

DISCUSSION

Relevance to Consumer Behavior

Although we developed and validated our SSTS scales using standard psychological tasks, our measures are relevant to a broad range of consumer behaviors for three important reasons. First, a number of our experimental tasks have direct relevance to consumption. The product improvement tasks used in studies 1, 2, and 3 have direct implications for the type of consumer thinking required to perform well in a product development activity. We note that the Web site improvement task used in study 5 suggests that consumer motivation for the product development activity should also be taken into account when considering the role of thinking style. Additionally, the directed versus nondirected Internet Movie Database task used in study 1 demonstrates relevance to consumer information search, and the four Web activities in study 4 suggest applicability to goal-directed and experiential consumer behaviors.

Second, prior research provides empirical evidence of the relationship of thinking style to consumer decision tasks. The five-item decision basis scale developed by Shiv and Fedorikhin (1999) is a unidimensional postsituation self-report of rational versus experiential thinking style. Consistent empirical evidence of differences in situation-specific thinking style using Shiv and Fedorikhin's Heart versus Mind scale in the domain of consumer decision tasks has been found by Shiv and Fedorikhin (1999, 2002) and Scarabis, Florack, and Gosejohann (2006). We expect parallel differences in these domains using our SSTS scale. Based upon table 8 there is reason to believe that SSTS could provide added value in predicting performance in consumer decision tasks involving experiential thinking.

Third, while dispositional tendencies in thinking styles have not previously been related to consumer behavior constructs, Hoffman, Kopalle, and Novak (2008) included the 24-item short form of the REI (Norris and Epstein 2003a) along with a set of scales related to innovation in both a small pilot study ($n = 91$) and a large-scale study ($n = 1{,}124$) of native English-speaking adult respondents randomly selected from an online panel. Table 10 shows previously unreported results. Disposition to a rational thinking style is more strongly related to market mavenism (Feick and Price 1987), change seeker index (Steenkamp and Baumgartner 1995), and verbal processing (Childers et al. 1985), while an experiential thinking style is more strongly related to exploratory information seeking (Baumgartner and Steenkamp 1996), new product novelty (Moorman 1995), dispositional innovativeness (Steenkamp and Gielens 2003), impulse buying (Rook 1987), and visual processing (Childers et al. 1985). Given that the REI is related to these constructs, and that SSTS is a situation-specific version of the REI, we expect SSTS to be a relevant measure in innovation contexts in which a situation-specific measure of thinking style is needed. More generally, since dispositional thinking style relates to a number of consumer behavior

TABLE 10

CORRELATIONS OF DISPOSITIONAL THINKING STYLE (REI) WITH PRODUCT INNOVATION SCALES

Correlations of REI with scale for:	Study A (n = 91)		Study B (n = 1,124)	
	REI rational	REI experiential	REI rational	REI experiential
Market mavenism	.213* (p = .043)	.157 (p = .138)		
Exploratory information seeking	.085 (p = .422)	.226* (p = .031)		
New product novelty	−.077 (p = .467)	.311* (p = .003)		
Change seeker index	.345* (p = .001)	.225* (p = .032)		
Verbal processing	.483* (p < .001)	.145 (p = .171)	.476* (p < .001)	.248* (p < .001)
Visual processing	−.178 (p = .092)	.220* (p = .036)	.115* (p < .001)	.277* (p < .001)
Dispositional innovativeness	.109 (p = .302)	.252* (p = .016)	.148* (p < .001)	.227* (p < .001)
Impulse buying	−.185 (p = .080)	.154 (p = .146)	−.151* (p < .001)	.139* (p < .001)

*p < .05.

constructs, we expect that SSTS would similarly relate to situational measures of these constructs.

As consumers think both rationally and experientially in the consumer activities they engage in, we expect our scales to have applicability to a wide range of consumer behaviors, including hedonic and utilitarian choice (e.g., Khan, Dhar, and Wertenbroch 2005), positional biases in decision making (Raghubir and Valenzuela 2006), and selection of luxury versus necessity awards under varying effort conditions (Kivetz and Simonson 2002). It is, however, important to consider boundary conditions on the relevance of our SSTS scales for consumer activities. As a topic for future research, we propose that our scales are most appropriate for rational and experiential activities that require a relatively higher degree of elaboration (e.g., MacInnis and Price 1987) and cognitive effort. Our 20-item scales require a certain degree of consumer motivation to answer. If a task takes 5 seconds, it may not make sense to ask consumers to answer 20 questions about their cognitions during the task. If one is using simple choice scenarios that take little time or effort, rather than the more extended scenarios considered in our experimental tasks, a shorter version of the SSTS may be more realistic and appropriate.

Further Research

Comparison of the experiential items shown in table 2 suggests that our operational definition of experiential SSTS largely consists of higher order constructs—gut feelings, hunches, intuition, instincts, insight—derived from the more fundamental characteristics of the experiential system listed in table 1. We started with a large set of experiential items spanning the dimensionality of the characteristics shown in table 1 and empirically reduced these in the scale development process into a single experiential dimension that can be roughly characterized as the extent to which people rely on their gut feelings and intuition. An important direction for future research is whether this operational definition fully captures the scope of experiential processing being measured. Recent work by Norris and Epstein (2003b) investigates three subdimensions of experiential thinking: intuition, affectivity, and imagination. It is worth exploring whether the construct of experiential thinking has a greater dimensionality than rational thinking and, if so, whether certain dimensions of experiential thinking are more or less relevant for certain experiential tasks.

Besides disposition, task demands, and motivation, there are likely many other factors that influence SSTS. For example, ability, in the form of task-relevant background knowledge or expertise, may influence whether rational or experiential thinking is employed in the service of a specific task. Novices tend to use rational thinking to construct a solution, whereas experts are more likely to rely on experiential thinking, drawing upon their extensive body of experience to recognize patterns and similarities in an intuitive manner (Alba and Hutchinson 1987; Ericsson and Lehmann 1996; Hogarth 2002). Prior research has also shown that consumers in an unhappy mood are more likely to engage in systematic (rational) processing, while those in a happy mood are more likely to engage in heuristic (experiential) processing (Bless and Schwarz 1999; Bless et al. 1990; Forgas 2001; Schwarz and Bless 1991).

In study 3, we found that rational thinking on an experiential task led to false confidence on that task that was not justified by superior performance. Further research is needed on the degree to which rational approaches to experiential problems lead to false confidence. One explanation is that for some experiential tasks, people are thinking both rationally and experientially but are more aware of their rational thinking. It may be the case that the rational system is attempting to rationalize (Epstein 2003) and reinterpret the creative output of the experiential system and, in the process, producing suboptimal solutions to creative problems. This corrective action of the rational system on the experiential system may lead to false confidence—people may incorrectly convince themselves that they are performing well on an experiential task simply because they are letting themselves approach it rationally. This would be an example of maladaptive biasing of the experiential system by the rational system.

Some might question whether our respondents are completing the experimental tasks according to their preexisting beliefs about the appropriate thinking style for the task as opposed to their true thinking process. In CEST theory, a distinction is made between the ability and favorability dimensions of thinking style. Ability refers to the extent one actually uses that thinking style and favorability to the extent the consumer has a preexisting belief that a particular thinking style should be used for the task. We argue that preexisting beliefs may explain some of the individual differences in the thinking style used for a particular task. A useful area for future research would be to develop situation-specific measures of ability and favorability. Such measures would help us discover whether, for example, respondents who believed that the product improvement task should be solved experientially and actually thought experientially performed better on the task than respondents who believed the task should be approached rationally but used the experiential system to perform it.

While our experimental tasks indicated largely oppositional effects of the two styles, it is likely that other tasks might demonstrate synergistic effects, with both experiential and rational SSTS correlating positively with task performance. For example, Donovan and Epstein (1997) demonstrated that priming intuitive knowledge can facilitate intellectual performance, Norris and Epstein (2003b) demonstrated numerous situations in which both thinking styles predict in the same direction, and Hoffman et al. (2008) provide evidence that consumers with a disposition to think both rationally and experientially produce product concepts that mainstream consumers find more appealing and useful.

Recently, cognitive neuropsychologists have utilized brain imaging tools such as fMRI to investigate the neurobiological basis of choice. On the one hand, some research supports the presence in the brain of dual thinking styles (Goel 2003; Goel and Dolan 2003), and McClure et al. (2004, 504), for example, found that "the discrepancy between short-run and long-run preferences reflects the differential activation of distinguishable neural systems." However, Kable and Glimcher's (2007, 1631) neuroimaging data appear to contradict McClure et al.'s contention that an impulsive neural system, compared to a more patient system, responds to immediate rewards. Thus, our empirical results not only have implications for a variety of consumer behaviors but may also provide further impetus to scientists seeking to measure the neurological pathways that correspond to human cognition and task performance.

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