Descriptive experience sampling of individuals with high natural rates of speech

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DESCRIPTIVE EXPERIENCE SAMPLING OF INDIVIDUALS
WITH HIGH NATURAL RATES
OF SPEECH

by

Margie G. Koch

A thesis submitted in partial fulfillment
of the requirements for the degree of

Master of Arts

in

Psychology

Department of Psychology
University of Nevada, Las Vegas
August 1997

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ABSTRACT

This study employed the descriptive experience sampling method to investigate inner experiences of seven fast talkers. Subjects who identified themselves as very fast talkers on a questionnaire then told a standardized story, during which their speech rate was measured. Subjects with high measured rates were then asked to use the descriptive experience sampling method to record inner experiences (thoughts, images, and feelings) in a notebook when randomly signaled by a programmed beeper. The subjects and investigators discussed each sample in detail. Salient characteristics were identified for each subject. Salient characteristics shared across subjects were identified: fast talkers samples were characterized by information in their inner experience at any one moment, including multiple experiences and inner images. Additionally, all of the subjects identified unsymbolized thinking as the most frequently occurring single characteristic. Emotional feelings were often experienced as a mental events rather then bodily occurrences.
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ACKNOWLEDGEMENTS

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CHAPTER 1
INTRODUCTION

The purpose of this study is to determine whether individuals who share a common and distinctive external characteristic also share characteristics of inner experience. The possibility of relationships between external features or behaviors and inner experience has not been thoroughly investigated. In fact, such research is rare. Therefore, this study is for the most part a probe into uncharted territory.

We choose to investigate high natural rates of speaking as the external characteristic because many theories of thinking (one aspect of inner experience) have naively assumed that there is a strong link between speech and thinking. We then wonder if individuals who share an atypical characteristic of speech (high rate) share characteristics of inner experience.

We shall begin this probe by reviewing two areas of literature: (a) the methods and results of investigations of inner experience; and (b) the methods and results of the measurement of speech rate.

Investigations of Inner Experience

Interviews

Researchers who are interested in aspects of inner experience often use interviews to obtain self-report information from the subject. For example, Csikszentmihalyi (1975) conducted a series of interviews that led to the initial definition of a concept he termed "flow" — "the wholistic sensation present when we act with total involvement" (p. 43).
In his early studies of flow, Csikszentmihalyi continued to use the interview method (Csikszentmihalyi, 1976; Csikszentmihalyi & Larson, 1978).

Clearly, the interview is a powerful tool and can be useful in a variety of clinical and research situations. However, there are times when the clinician or researcher requires greater assurance that the information that he has received is complete and accurate. The retrospective nature of interviews leaves researchers wondering to what extent the information obtained is valid. When subjects are asked to reflect on what happened within their inner experience during the previous day, week, or even months, there is always a possibility that the reflection is biased or even totally inaccurate. An additional problem with the interview method is that the data gathered is usually general in nature. An example of this would be the client who claims to be depressed all of the time or most of the time. Preferred information would reveal how the patient experiences depression at various times, in various situations, and coexisting with what other states, but that may be difficult to obtain using standard interviews. There is thus the possibility that the information gathered by interview is at best only partially complete.

To enable the gathering of data more valid and complete than the interview might provide, subjects may be asked to provide self-reports of daily life outside of the clinician’s or researcher’s office. The following three types of research have been identified for investigating daily life: diaries; event-contingent recording; experience sampling; and descriptive experience sampling (Dijkman-Caes, Kraan, & deVries, 1993; Hurlburt, in press). We discuss each in turn.

Diaries

Diaries are daily journals in which individuals write about experiences that they perceive to be important and reflective of both the common and unique experiences of their lives, and are frequently completed by subjects who are involved in a wide variety
of research areas. Thus diaries, as understood in this way, rely upon the subjective introspective decisions of the subjects concerning which information is worthy of a diary entry.

Hedges, Krantz, Contrada, and Rozanski (1990) conducted three studies to investigate the validity of self-monitoring diaries used to find relationships among psychological events, states, and activities. They presented evidence for concurrent and discriminate validity. However, several difficulties with using the diary method were noted. First, subjects who had not graduated from high school tended to return incomplete or incorrect diary entries. In addition, subjects who lacked motivation tended to return incomplete data. The researchers also noted that wide time frames such as are used for diary methods have a greater reliance on retrospection resulting in an increase in the inaccuracy of reports. The issue of retrospection inaccuracy is the primary driving force behind newer research methods that seek to obtain information on experience as soon as possible after the event occurs.

**Event-contingent recording**

Event-contingent recording asks the subject to record information following a specific event or event episode. For example, in a series of three studies involving police officers, secretaries and correctional officers, an event-contingent method was employed to study the effects of the processes of supportive interactions relating to occupational stress (Buunk & Peeters, 1994). An “event” was defined as any occurrence that had caused the subjects to feel upset for a minimum of two hours. Following any such event, the subjects were asked to complete the Daily Interaction Record in Organizations and to describe events that had caused them to feel upset.

In another study, in which an event was defined as a panic attack, patients with panic disorder were asked to keep a record of their panic attacks for a period of four weeks (de Jong & Bouman, 1995). The results suggested that subjects who have a high
rate of avoiding social situations are more likely to suffer from agoraphobia, and subjects
who are required to attend to external demands such as employment are less likely to
develop agoraphobia.

Newton and Barbaree (1987) used the occurrence of a headache as the event that
triggered event-contingent recording. Patients were to respond to each event by
recording their thoughts 30 minutes, three hours, and six hours following the event. The
purpose of the study was to examine at the cognitive changes that occurred following
cognitive-behavioral treatment.

Event-contingent recording can also be done in laboratory settings. In a study of
thinking, the event was defined as any positive or negative intrusive thought. Subjects
were given boring tasks to complete for five minute periods and asked to press a golf
counter each time a positive or negative intrusive thought occurred (Reynolds &
Salkovskis, 1992).

In a study that specifically addressed the retrospective issue, reports that were
completed when panic attacks actually occurred (event-recording) were compared with
retrospective interview and questionnaire data for panic attack patients (Margraf, Taylor,
Ehlers, Roth, & Agras, 1987). The researchers found that the patients had a tendency to
exaggerate on the retrospective reports. The logical conclusion is that event-recorded
reports are often a preferred research method for obtaining accurate reports over the more
retrospective method of using interviews.

Even though event-contingent recording may reduce retrospective inaccuracy,
there remains concern that this method samples only a small portion of the individuals’
experience, and important data may be missed by relying only on the subjects’ judgment
of which events to record. Experience sampling methods have been developed as a
means of obtaining a representative sample of each subject’s experience.
Experience sampling methods

The purpose of using the Experience Sampling Method (ESM) is to "be as ‘objective’ about subjective phenomena as possible without compromising the essential personal meaning of the experience" (Csikszentmihalyi & Larson, 1987, p. 527). This method generally involves having the subject carrying a beeper or pager (e.g. Freeman, Csikszentmihalyi, & Larson, 1986; Gauvin & Szabo, 1992), an electronic random pocket timer (e.g. Franzoi, Kessenich, & Sugrue, 1989), a digital alarm watch (e.g. Cantor, Norem, Langston, Zirkel, et-al, 1991), or other similar devices that signal the subject at quasi-random times throughout the day. At the time of the signal, the subject is expected to complete questionnaires, make notebook or computer entries, or to respond in some other unique way. Distortions that are often found in retrospective recall can be avoided by using ESM (deVries, 1992). Ecological validity refers to the extent that research findings of such things as behaviors and experiences are the same as those found in the natural environment. ESM allows for ecological validity as well as the study of stream of thought or stream of behavior and the study of interactions between person variables and situation variables (Hormuth, 1986).

Experience sampling methods have been found to be reliable, and they are valued for their ability to identify individual differences, specific features, and global features (Alliger & Williams, 1993). The method has been found to be effective for assessing rapid changes through the day and across situations (Dijkman & deVries, 1987). Studies employing experiential sampling methods have the advantage of being able to use the natural environment. According to Gauvin and Szabo (1992), "ESM allows for assessment of average, daily, or weekly affective states based on large number of data points over an extended period of time instead of single one-shot assessments" (p. 364).

Csikszentmihalyi and LeFevre (1989) reported that 90 percent of subjects in one study believed that the events of their weeks of sampling were well captured by the
reports given. Of the same subjects, 68 percent said that the procedure was not disruptive or annoying.

Subjects using the ESM procedure have been as young as nine years or fifth graders (Duckett, Raffaelli, & Richards, 1989; Greene, 1990; Larson, 1989) and old as 95 years (Ellis, Voelkl, & Morris, 1994). One study dealt entirely with elderly persons between the ages of 69 and 94 years (Hnatiuk, 1991).

One of the advantages of using ESM rather than retrospective methods is that validity is improved when subjects record information immediately after the event. Therefore, the amount of time that elapses between reports are completed needs to be kept short. In a study which was completed in 1984 (Hormuth, 1986), 5,145 beeps were sent to the subjects to signal them to respond. Responses were made within one minute 50 percent of the time; 75 percent of responses were made within four minutes; and 90 percent of responses were made within 18 minutes of receiving a beep.

The important ability of ESM to be used in studies of large numbers of subjects was well demonstrated when a group of 182 subjects participated in a study of mood variability in which over 9,000 self-reports were generated (Larson, Csikszentmihalyi, & Graef, 1980). Other large studies include 401 subjects (Leone & Richards, 1989), 208 high school students (Rathunde & Csikszentmihalyi, 1993), 481 subjects (Richards, Casper, & Larson, 1990), and 295 subjects (Richards & Duckett, 1994).

Compliance with the ESM procedure is of concern to the researchers who use this method because validity might be lowered if the subjects were allowed to choose to which signals to respond. The rates of response to the signals that have been randomly sent have ranged from 98.1% to 63%. Women between the ages of 24 and 59 gave responses 98.1% of the time (Norem & Illingworth, 1993); males, 89.2% (Marco & Suls, 1993); children in grades five through eight, 89% (Richards, Casper, & Larson, 1990); youth between the ages of 9 and 15, 85% (Greene, 1990) and 80% (Larson, 1989); adults,
83% (Graef, Csikszentmihalyi, & Gianinno, 1983); sorority women, 73% (Fleeson & Cantor, 1995) and 72% (Harlow & Cantor, 1994); subjects who were committed to exercise, 69% for an experimental group and 62% for a control group (Gauvin & Szabo, 1992); adolescents, 69% (Kleiber, Larson, & Csikszentmihalyi, 1986); adolescents who reported daily use of alcohol and marijuana, 69% (Larson, Csikszentmihalyi & Freeman, 1984); and heroin addicts, 63% (Kaplan, 1992).

An understanding of the reasons given for non-response to the random signals could be helpful in alleviating researcher concerns about validity. For example, in the study previously mentioned in which only 63% of beeps were responded to by heroin addicts (Kaplan, 1992), there was an assumption that the low rate of response was due to the fact that the subjects were involved in illegal activities during some of the beeps and were unwilling to reveal such information. In one study, sleep was the reason for 30% of misses (Dijkman-Caes, DeVries, Kraan, and Volovics, 1993). In a three-week study with undergraduate students (Emmons, 1986), failure to respond to beeps was explained in the following ways: the subject was asleep (52% of misses); the subject was in an inconvenient place (15%); the watch malfunctioned (12%); or the subject forgot the watch or forgot to set the watch (8%). In a large study of 5th to 9th grade students (Larson, 1989), many of the students who discontinued did so during the last day or two of a one week sampling study due to a loss of motivation.

ESM usually employs quantitative analysis to measure events or experiences. Either the subject answers quantitative questionnaires, thereby rating their own experiences, or their narrative reports are rated by trained raters.

Although ESM has been used to measure a broad range of events, we are at this time interested primarily in discoveries related to inner experience such as the following. Foulkes (1994) worked with a group of young females who participated in an ESM study in which they were asked to recall the very last mental event which they experienced just
before being signaled. Many of the events were of visual images that varied according to
the perspective in which the images were seen. Images were seen as if through the
subject’s own eyes in 60 percent of the cases. The subjects themselves were not in the
visual scene 21 percent of the time. The subjects saw images in which they were present
as others might see them 15 percent of the time, and 4 percent of the images were
reported as containing some mixture of above mentioned qualities.

Personal striving and ambivalence were found to be related to negative affect,
depression, neuroticism and psychosomatic complaints in a study in which subjects
responded to four adjective pairs that assessed positive affect and five adjective pairs that
assessed negative affect (Emmons & King, 1989). Emmons and King concluded that
subjects who were emotionally reactive had a striving system that was more
differentiated.

The emotional component of inner experience has been studied on several
occasions. For example, Csikszentmihalyi and Figurski (1982) found that emotional
experience involves less affect, activation and involvement when a subject is thinking
about the self than when thinking about someone else, if the activity is voluntary
(Csikszentmihalyi & Figurski, 1982).

The experience of anger was investigated among ten hospitalized men between the
ages of 22 and 38 with histories of violent behavior (Hillbrand & Waite, 1992). The
subjects were asked to respond to the random signals by completing 20 Likert scales, ten
of which measured anger. The findings indicated that the presence of anger did not vary
significantly, but the severity of anger varied depending on the type of activity in which
the subjects were involved and by the valence of emotions during events that preceded
the beep. An idiographic study of an institutionalized sex offender asked the subject to
participate in a one week study and identify where he was, what he was doing, who he
was with, his thoughts, and he completed 20 likert scales (Hillbrand & Waite, 1994).
The subject told of thoughts that were sexual in nature or thoughts concerning the attractiveness of females in 17% of the samples. The researchers discovered that the individual’s anger was determined by the activity in which he was involved and the emotional valence of events that preceded the experience.

Affectivity patterns among students in the fifth through ninth grades were analyzed to identify patterns in the transition from childhood to adolescence (Greene, 1990). The students completed a number of rating scales that were averaged for composite daily affect scores. The standard deviations of the daily affect scores were used to measure affect lability. Findings revealed that adolescent affect was comparable to adult affect, and variations may be related to adolescent social transition.

Intrinsic motivation was studied with the use of questionnaires that included semantic differentials that were completed with each randomly received signal (Graef, Csikszentmihalyi, & Gianinno, 1983). The study led to the finding that the perceived psychological well-being and the level of competence of the subjects were higher when experiences were more intrinsically rewarding (Graef, Csikszentmihalyi, & Gianinno, 1983). These particular subjects reported experiences as being intrinsically rewarding 20 percent of the time.

ESM case studies provide valuable insights into the mood and thought characteristics of anorexic women aged 20 and 23 years (Larson & Johnson, 1981). In one subject, the researchers identified an abnormal preoccupation with food, and in the other subject, the researchers found a relationship between the subject’s sense of control and moods.

In a quantitative analysis of data obtained in an early experience sampling study of a 48 year old male who suffered from anxiety attacks (Hurlburt & Sipprelle, 1978), the frequency of thoughts relating to his annoyance with his three children was found to be approximately one third of his thoughts.
Highly anxious and moderately depressed subjects differed from highly anxious and highly depressed subjects in terms of thought content, expressed psychopathology, where they were, what they were doing, and whom they were with (deVries, Delespaul, & Dijkman-Caes, 1992). Highly depressed individuals worried more and thought more about leisure and work, and they spent more time thinking about nothing.

Thoughts, an important component of inner experience, have been investigated for comparisons between schizophrenic patients and normal subjects (Delespaul & deVries, 1987). These subjects completed a series of 26 likert-type 7-point scales and responded to open-ended questions that were later coded. Findings included more off-line and more abnormal thoughts among the schizophrenic patients than the normal subjects.

Thoughts were identified using ESM with a group of subjects who were participating in problem-based discussions in small groups (Geerligs, 1994). The subjects identified their thoughts which were later placed into six different categories by external raters. The findings showed that 75 percent of the thoughts were related to the task being undertaken.

Self-reports of thoughts were rated by observers using scales for the tense of the thought, affective tone, sex content, aggression content, level of human interaction, and the degree of relatedness to the activity in which the subject was engaged (Hurlburt, 1979). The use of this quantitative method allowed Hurlburt to conclude that “people are not good estimators of the relative frequencies of their thought classes, even if they themselves intuitively define the classes” (p. 109). Hurlburt (1980) specifically investigated the ability of subjects to estimate the relative frequencies of their thoughts by comparing retrospective reports of various thought categories with thought-sampling data. The correlations which he found ranged from -.01 for aggressive thoughts to .40 for sexual thoughts. The findings indicate that retrospective reports do not accurately reflect the actual thoughts that occur.
Quantitative experience sampling methods have been used to identify stable factors of thoughts that occurred in both a natural environment as well as in a fixed setting (Hurlburt, Lech, & Saltman, 1984). These factors included Aggressive/Bad Mood, Pleasant Sexual, Daydreaming/Past Sexual, Clear Thought, Self-Critical, and Thought or Mood Duration. The researchers found that subjects' ratings of thoughts were somewhat inflated for visual images and for aggression when the ratings were done at a later time rather than immediately after the thought.

Experience-sampling methodology was used to rate the mood of 37 subjects who were also independently rated for mood by their parents (Larson, 1989), and the statistical analysis revealed that these ratings correlated with a median $r = .2$.

ESM has eliminated retrospectiveness, one of the main limitations of diary and event-recording methods. However, ESM itself still has limitations. For example, Hurlburt (personal communication, September 30, 1996) considered studies such as that of Larson (1989) where correlations between external ratings and self-report were low. He wondered “if people who know the subject well and who are watching cannot accurately rate mood, how can external raters who see only written expression be expected to do so?” This statement leads us to identify some of the limitations of the ESM, namely intrusiveness; self-selection bias; response compliance; variance in usage of the method; effects of priming; and limitations of possible field settings (Alliger & Williams, 1993). Concern has been mentioned about the effects on studies in which the subjects repeatedly respond to the same questionnaire (Gauvin & Szabo, 1992). Even though relationships are commonly found using ESM, causality can be left undetermined (Csikszentmihalyi & Figurski, 1982). A final limitation that has led to our decision to use the descriptive sampling method is that ESM uses predefined categories prohibiting the discovery of unrealized categories.
Descriptive sampling methods

An experience sampling method termed “descriptive” (Hurlburt, 1990) has been used to study the inner experiences of a variety of individuals. This method involves having the subjects respond to random beeps by taking notes about (or otherwise recording) the characteristics of their inner experience that was occurring at the moment of the beep. Soon after these beeps, they meet with the investigators to discuss those samples. The purpose of these meetings are to train the subjects to pay attention to characteristics that are actually occurring at the moment and to ensure that the subject and the investigators are in agreement about the characteristics of the subject’s inner experience. The intent of this type of investigation is to describe salient experiences, including types of experiences that may have never been described in the previous studies. Therefore, questionnaires are not used. The descriptive procedure “encourages subjects to develop their own descriptive language and to report salient aspects of their inner experience as they themselves experience them, and does not ask subjects to rate or categorize experience according to predefined dimensions or categories” (Hurlburt, in press).

Descriptive experience sampling studies have been used to describe some inner experiences, but do not create a complete catalogue of inner experiences (Hurlburt, 1990). It was recognized that these studies were only preliminary investigations (Hurlburt, 1990), so the results of such investigations were not meant to create generalizations. As stated by Hurlburt (in press), descriptive experience sampling “seeks simply to describe inner experience, rather than to quantify it, based on the view that careful descriptions should be the foundation on which subsequent quantification should build.”

Descriptive experience sampling has shown that inner verbal experiences exists in a wide variety of forms (Hurlburt, 1990). Hurlburt’s subjects frequently described
experiences that involved complete words and meaningful sentences, although there were times when the verbal experience occurred without words, with words only partially present, or with words having no meanings. At times, the verbal experiences were felt to be directors of activity, but at other times they were not related to other experiences or external activity. Inner verbal experience could appear to be spoken or heard and could even come from more than one voice. Inner speech might be expressed exactly like external speech including tone of voice and inflections (Hurlburt, 1990; Monson; 1989).

Hurlburt’s observations of inner images has yielded some surprising results. Visual experiences at times involve impossible scenes (1990). Schizophrenic subjects identified color (often exaggerated) as being important to their experience, and they reported visual experiences more frequently than the normal subjects did. Schizophrenics’ images were more concrete than were the images of normal subjects, and were also occasionally reported “goofed-up.” Although images of anxious subjects could be clear and colorful, most were less detailed and difficult to report (Hebert, 1991). Bulimic subjects reported indeterminate visual experiences with an unusually high frequency (Doucette, 1992). For two subjects suffering from Asperger syndrome, visual inner experiences were the only experiences reported (Hurlburt, Happe, & Frith, 1994). Images can involve movement or no movement and can be seen from different perspectives including being-there and an external perspective.

Hurlburt (1990) found that meaning can be experienced in inner experience without verbalizations or visualizations. These experiences, which Hurlburt (1990) called “unsymbolized thinking,” may have been the same phenomenon called “imageless thought,” first identified in 1901 by Mayer and Orth (Hurlburt, 1993; Leahy, 1994). Mayer and Orth’s finding was hotly debated and largely not believed because the method, systematic introspection, was considered unreliable. However, Hurlburt’s recent findings with the descriptive sampling method give validity to the concept of imageless
thought. Not only has this phenomenon been observed in normal subjects, but Hurlburt (1990) noted in depressed subjects that as the level of depression increased, the frequency of unsymbolized thinking increased. Thus “depression may be due to a lack of words and images in the thinking process rather than negative self thoughts” (Hurlburt, 1990, p. 1). Unsymbolized thinking occurred more frequently with anxious subjects (Hebert, 1991) than with normal subjects but not as frequently as with depressed subjects, and bulimic subjects reported this type of experience in 73 percent of their samples (Doucette, 1992). All of the learning disabled adolescents in one study (Monson, 1989) experienced unsymbolized thinking.

Subjects can perform actions without having inner experience (Hurlburt, 1990). This experience was observed for samples with normal subjects as well as with one schizophrenic subject who was decompensating. In a separate study, the lack of inner experience was observed in one individual who had Asperger syndrome (Hurlburt, Happe, & Frith, 1994).

Descriptive sampling has contributed to the understanding of the inner experience of emotions. Hurlburt (1990) found that when schizophrenic subjects are not decompensating, they may have emotional experiences which are very clear even though they appear to be emotionally blunted. At the other end of the spectrum, depressed individuals who did have emotional processes occurring in their bodies might not be aware of these emotional processes at the time of the beep (Hurlburt, 1993). Anxious subjects had primarily negative feelings that they experienced as bodily tension, and they were unable to describe their feelings with any detail (Hebert, 1991).

Other observations about inner experience include the fact that rumination (the process of continuously and rapidly repeating thoughts, over and over, one after the other) occurs frequently with anxious subjects (Hebert, 1991); critical thoughts about self or others and labeling things as good or bad occurred more often with anxious subjects.
than with normal subjects (Hebert, 1991); anxious subjects had a lack of bodily
awareness except when they were anxious, in which case the awareness of the bodily
experience was very clear (Hebert, 1991); anxious individuals experienced seeing and
listening as requiring active effort and being directive, but speaking just happened
(Hebert, 1991); subjects who were more actively bulimic experienced a greater
percentage of multiple inner experiences than subjects who were less actively bulimic
(Doucette, 1992); bulimics experienced sensed awareness which refers to the knowledge
that a thought or feeling is occurring, but it is outside of the immediate awareness
(Doucette, 1992); and the distinction between thoughts and feelings was blurred for the
bulimic subjects, and they experienced incongruent bodily awareness (Doucette, 1992).

Thus descriptive sampling method has resulted in new and interesting findings
about inner experience ranging from normals to schizophrenics. It therefore appears to
be the method of choice for exploring new phenomenon related to inner experience.

Investigations of Speech Rate

Early research into speech rates dealt with the ability of subjects to maintain
comprehension of speech that had been compressed or expanded (Fairbanks, Everitt &
Jaeger, 1966; Fairbanks, Guttman & Miron, 1966), thus enabling the researchers to
identify the minimum duration of speech necessary for perception.

Modern research involving speech rate has focused on relationships between
speech rate and memory span (Roodenrys, Hulme, Alban, Ellis & Brown, 1994;
Roodenrys, Hulme & Brown, 1993; Das, Mok & Mishra, 1993; Brown & Hulme, 1995;
Goerlich, Daum, Hertrich & Ackermann, 1995; White, Craft, Hale & Park, 1994; and
Henry, 1994), reading ability (McDougall, Hulme, Ellis & Monk, 1994; Das, Mok &
Mishra, 1993), hemispheric specialization (Clarici, Fabbro, Bava & Daro, 1994),
phonological or articulatory loops (Goerlich, Daum, Hertrich & Ackermann, 1995;
White, Craft, Hale & Park, 1994), stuttering (Yaruss & Conture, 1995; Kalinowski, Armson & Stuart, 1995), neurological damage (Goerlich, Daum, Hertrich & Ackermann, 1995; White, Craft, Hale & Park, 1994), affect (McKenna & Lewis, 1994), and gender and dialect regions of the United States (Byrd, 1994).

The most frequently used method for measuring speech rate has been to have the subject repeat a specified one-syllable, two-syllable, or three-syllable word, pair of words or triad of words as rapidly as possible until completing 10 repetitions (Roodenrys, Hulme, Alban, Ellis & Brown, 1994; Roodenrys, Hulme & Brown, 1993; McDougall, Hulme, Ellis & Monk, 1994; Das, Mok & Mishra, 1993; White, Craft, Hale & Park, 1994; Henry, 1994). The subjects have been timed and given scores indicating the number of words per second.

Clarici, Fabbro, Bava, and Daro (1994) asked subjects to recite a memorized text for 20 seconds while simultaneously tapping a finger. The subjects each performed two trials, one at their normal talking pace and the other as quickly as possible. The number of syllables that they had spoken were then counted. Of course, any researcher interested only in measuring the speech rate would not want to include finger tapping.

Evidence has shown that varying levels of complexity used in speech rate measuring methods can be utilized to obtain different results. Goerlich, Daum, Hertrich, and Ackermann (1995) used four techniques to measure speech rate in healthy volunteers and patients with Broca’s aphasia. In a syllable repetition task, subjects were asked to repeat the syllable sequence “ka pa ta” as rapidly as possible for the duration of a breath. In another task, subjects repeated test sentences, and a measurement was taken of five syllabic segments. Additionally, subjects read seven four-word sentences, and researchers measured syllable duration from the onset of the first vowel of the second word to the onset of the first vowel of the last word. Subjects also participated in an
interview from which five segments containing 4-16 syllables were taken for measurement.

Speech rate has also been measured by audio-videotaping mother-child interactions for 30-35 minutes (Yaruss & Conture, 1995). From this material, segments of fluent speech were analyzed that were at least three words in length so that a score of syllables per second was obtained.

Other subjects have been asked to count from 1-50 at each of a normal pace and a rapid pace (McKenna & Lewis, 1994). The procedure was taped and timed to 1/100th of a second.

Speech rates in syllables per second were obtained when adult subjects read from textbooks for junior high school students (Kalinowski, Armson & Stuart, 1995). They read two passages, each of which contained 300 syllables, at fast and normal paces. Due to the fact that the subjects suffered from stuttering, only fluent speech was used. A similar method used for measuring speech rate involved obtaining a syllable count after subjects delivered a 2 minute monologue for which they were given a list of suggested topics (Bakker, Brutten & McQuain, 1995).

In the most extensive research study of speech rate that we have identified, Byrd (1994) used a TIMET data base of 630 talkers from many areas of the United States. Each of the speakers had read two sentences enabling a score for syllables per second to be found. Although this study resulted in the finding of significant differences in speech rates between the genders and between people of various geographical regions, the study gave no indication of what should be considered a normal speaking rate.

Bakker, Brutten and McQuain (1995) developed a mechanical instrument for counting syllables of speech that were identified by prosodic stress, voice initiations, and pauses greater than 250ms. They found that the automated measure by stressed syllables most closely matched manual counting methods, implying validity.
Although some data has been collected on speech rate, we have not yet identified literature containing population norms. Fairbanks, Guttman and Miron (1966) gave the most definitive statement found but limited the statement to skilled speakers. They claimed that 140 words per minute was "unquestionably close to the central tendency which would be expected for skilled speakers reading to communicate the content in question" (p. 44). They also found that reducing the speech duration mechanically to 282 words per minute would not decrease comprehension much.

Studies of speech rate have demonstrated clearly that there are internal differences (even though only a few of the potential variables have been studied) between fast and normal talkers such as neurological dysfunction, memory span and affect. However, there is to our knowledge, no literature whatever relating speaking rates to features of inner experience, which is the intent of this study. Therefore, the present study should be considered a totally exploratory investigation of the connection, if any, between speech rate and inner experience. The research literature involving speech rates issues is minimal, and no standardized method for measuring rate of speech has yet been developed nor have validity and reliability issues been addressed for the methods that have been used. Therefore, any method of measuring speech rate should be considered exploratory.

Because no acceptable speech-rate measurement tool was found, we conducted an informal investigation to determine if story telling could provide an acceptable way to measure speech rates. A convenience sample of four college students with apparently normal speaking rates was asked to read a three-page story (Breathed, 1991) and then to retell the story in their own words. Their speech rates were measured during this retelling by counting the number of words that they had used and dividing this number by the number of minutes that they used in telling the story. The speech rates for these four students were 140, 149, 155 and 204 words per minute (see Table 1). None of these four
students were directly aware that their rates of speech were being measured. Additionally, three students who either identified themselves as being fast talkers or who were so identified by classmates were asked to participate in the same procedure. Their

Table 1

Speech Rates in Words Per Minute of Normal and Fast Talkers

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-study of assumed normal speakers</td>
<td></td>
</tr>
<tr>
<td>Adam</td>
<td>140</td>
</tr>
<tr>
<td>Alice</td>
<td>149</td>
</tr>
<tr>
<td>Becky</td>
<td>155</td>
</tr>
<tr>
<td>Brian</td>
<td>204</td>
</tr>
<tr>
<td>Pre-study fast talkers</td>
<td></td>
</tr>
<tr>
<td>Carmen</td>
<td>198</td>
</tr>
<tr>
<td>Debbie</td>
<td>217</td>
</tr>
<tr>
<td>Sabrina</td>
<td>227</td>
</tr>
<tr>
<td>Sampled fast talkers</td>
<td></td>
</tr>
<tr>
<td>Hans</td>
<td>188</td>
</tr>
<tr>
<td>Eric</td>
<td>195</td>
</tr>
<tr>
<td>Darlene</td>
<td>207</td>
</tr>
<tr>
<td>Carol</td>
<td>207</td>
</tr>
<tr>
<td>Barbara</td>
<td>210</td>
</tr>
<tr>
<td>Anna</td>
<td>225</td>
</tr>
<tr>
<td>Sabrina*</td>
<td>227</td>
</tr>
</tbody>
</table>

*Sabrina was chosen for inner experience sampling based on results from the pre-study
speech rates were 198, 217 and 227 words per minute. Because three or four subjects in the convenience sample had speaking rates quite close to Fairbanks, Guttman, and Miron's (1966) ideal rate of 140 wpm, and having found such a large difference between these two samples, we thought there was reason to believe that measuring speech rate during the retelling of the story was an acceptable way of measuring natural rates of speech. Table 1 is given to provide the reader with a clearer understanding of the difference in speech rates between normal and fast talkers. The seven subjects (all names have been changed) listed at the end of the table were chosen, based on their speech rates, for the present study.

The Present Study

In the present study, we investigated the characteristics of inner experience of seven individuals who had identified themselves as being very fast talkers on a questionnaire and who had high measured rates of speech as measured during their telling of a standardized story. We used the descriptive experience sampling method (Hurlburt, 1990) to investigate the inner experiences. Each subject carried a beeping device that was programmed to send random signals to the subject. The subjects each wrote details about their inner experiences at just the moment of the beep such as any thoughts, images, or feelings. The investigators and each subject then met within a 24 hour period to discuss the details of those samples, and we looked at the salient characteristics of each subject. After completing a summary for each subject similar to chapters 3 through 9 of this thesis, each subject was asked to read the summary and provide feedback concerning the accuracy. Then the subjects' samples were considered collectively with the following research question in mind: "Do individuals who share the common external characteristic of high natural rates of speech also share characteristics
of inner experience?" We determined to conduct this investigation without forming a hypothesis as a precautionary measure against being blinded to unforeseen outcomes.
CHAPTER 2
METHOD

This study consisted of three phases that were identified as Phase One, the questionnaire phase, in which subjects were asked to give self-reports of their speaking rate; Phase Two, the measurement phase, in which subjects' actual speaking rates were measured while they told a story in their own words; and Phase Three, the sampling phase, the examination of subjects' inner experience using the descriptive sampling method. The first two phases were designed to identify and recruit high-rate-of-speech subjects for the third (sampling) phase.

Subjects

Subjects entering phase one of the study were 348 undergraduate volunteers from introductory psychology classes. Of these subjects, 129 (all from one class) were given one extra credit point for completing the questionnaire. From the group of 348 subjects, 17 were invited to participate in phase two of the study, and 12 did participate. Of those subjects 6 further advanced to phase three. Additionally, one subject ("Sabrina") completed phase three of the study after participating in the informal investigation that was conducted before the study. She had originally volunteered in response to an inquiry for fast talkers in an undergraduate psychology class.
Materials and apparatus

Phase one

Subjects who participated in phase one of the study were given a questionnaire that consisted of six non-invasive questions to which each subject could respond by choosing from among three or four given alternatives. These responses rated the subjects’ number of telephone contacts with friends, level of fashion consciousness, natural rate of talking, degree of political interest, employment status, and frequency of on-campus dining. In addition, this questionnaire contained a consent section and asked for the subject’s name and telephone number. A copy of this complete questionnaire can be found in Appendix A.

Phase two

Subjects in phase two of the study read “A Wish for Wings That Work” by Berkeley Breathed (1991). The story is a children’s fable and was presented to the subjects in typed form on three pages (1,213 words) and contained none of the illustrations from Breathed’s book.

Phase three

A random-interval generating beeping device that is small enough to fit into a pocket was supplied to each subject in this phase of this study (Hurlburt, 1980). The beeper gave off a 400Hz tone that could be heard through a small earphone such as the ones that are used with transistor radios. The beeper was set to sound at random intervals. These intervals ranged from a few seconds to one hour and averaged 30 minutes. The volume of the beeper was adjustable by the subject, and the signal could be stopped by the subject by pressing a button top of the beeper.

Pocket-sized (2 1/2” X 4 3/4”) notebooks were supplied to each subject in which they recorded their perceptions of their inner experiences at the moment of each beep.
Procedure

Phase one

In phase one of this study, students from UNLV Psychology undergraduate classes were asked to complete a questionnaire that asked for consent and asked six general, noninvasive questions. One of these was the question “How would you characterize your natural rate of talking?” The possible responses were: “1) I talk slower than do most students; 2) About the same as most students; 3) Faster than most students; and 4) A lot faster than most students.” Names and telephone numbers were also requested on the questionnaire, and all subjects who responded with the “A lot faster than most students” response were contacted and asked to proceed to the second phase of the study. Subjects were not informed why they had been selected.

Phase two

In phase two of the study, subjects completed consent forms and then were asked to read the children’s fable. They were then asked to retell the story in their own words while they were being audiotaped. The tapes were transcribed, and the subjects’ rate of speaking was found by dividing the number of words that they used by the number of minutes required for retelling. Subjects who were identified as having high rates of speech were asked to continue on to phase three, the experience sampling portion of the study. Additionally, one subject was included in the study who responded to a request in an undergraduate class for people who believed themselves to be fast talkers. This subject completed phase two of the study, and was selected for phase three after her speech rate was found to be 227 words per minute, using the story-telling method.
Phase three

Subjects who proceeded to the sampling phase of this study were examined using the descriptive experience sampling method described by Hurlburt (1990). Each of the subjects participated individually in a series of interviews.

During the initial interview, the sampling process was explained. The beeping device and notebooks were given and explained to each subject, and they were asked to turn the beeper on and wear the earphone for a convenient and consecutive five hour period or until at least eight signals have been received. They were instructed to “freeze” the inner experience that was ongoing at the moment of the beep and describe what occurred at that moment in the inner experience and write about the details of their inner experience in the notebook each time the beeper signaled. They were asked not to consider why the experience occurred or what it might mean. Each subject was advised that he or she should feel free to decline to describe any sampled experience, and they were encouraged to maintain privacy in any sampling instance in which they chose. None of the events or discussions that occurred between each subject and the investigators were shared with the other subjects.

A meeting was held on the same day as the sampling procedure or on the following day during which the investigators debriefed the subject concerning the samples. The meetings were either videotaped or audiotaped. The goal was for the investigators to reach a clear understanding of the inner experience that was occurring at each sample. In an effort to reach the goal, the subjects were asked open ended questions that encouraged complete descriptions. The complete sampling procedure was repeated until the investigators and the subject were in agreement that enough samples had been collected to reasonably represent, in a clearly defined way, the subject’s usual inner experience in a variety of situations.
The investigators then discussed each of the subjects' samples and reached agreement on emerging salient characteristics. A summary chapter was composed for each subject that identified the salient characteristics and provided examples. Then attempts were made to contact the subjects and ask them to read the summary in order to provide the researchers with feedback concerning the accuracy of the written summaries. At this time, all of the subjects were given the option of choosing the name that would be used for describing their experiences in this thesis. Four of the subjects did read the summaries and made no suggestions other than name changes. The percentages of times that each inner experience characteristic occurred in the samples of each subject were used to compare salient characteristics among the subjects and group characteristics were found.
CHAPTER 3
RESULTS - SABRINA

Chapters 3 through 9 will each contain the results that were obtained during the descriptive experience sampling procedures for our seven subjects, each taken one at a time as if that particular person were the only subject in the study. We will begin with the results for Sabrina, who had the fastest speech rate, here in Chapter 3, and finish with Hans, who had the lowest fast speech rate, in Chapter 9. Then Chapter 10 will discuss how these individual results were similar across subjects.

Sabrina (not her real name) was a senior in the psychology department at the time of the study. She was recruited from an upper division class after responding to a request for fast talkers. Sabrina was involved in the pre-study investigation to determine how best to quantify speech rate. Her rate, in phase 2, was found to be 227 words per minute. Although she claimed, after storytelling, to be talking at her normal rate of speech, there is a possibility that her knowledge of our desire to find fast talkers affected her speech rate during the storytelling portion of the study. However, we are confident that she is indeed a fast talker because her rate was higher than the rates of all of the other volunteers in the pre-study and casual observation during subsequent interviews indicated that she is a fast talker.

Sabrina’s participation in the study was entirely voluntary. She received no research participation credit for any of her classes. She completed five days of sampling over the course of a month and a half. Sabrina was beeped a total of 27 times, and she was able to respond to 25 of these. She was unable to attend to one beep due to the fact that she was driving, and to another because she was involved in a classroom discussion.
Of the 25 samples that were obtained, we were able to review 22 during our discussion sessions. Time restraints prohibited the discussion of samples #6 - #8. The 22 samples that we discussed are used for our description of Sabrina's inner experience.

Sabrina had a wide variety of salient characteristics in her inner experience. The most dominant characteristics were unsymbolized thinking, which occurred in nine (41%) of her 22 samples; multiple inner experiences in seven (32%); inner hearing in six (27%); bodily awareness in six (27%); feelings in five (23%); sensory awareness in three (14%); phrase repetitions in three (14%); and an inner image in one (5%) of the samples. There was one (5%) sample that apparently lacked inner experience. We will discuss each of these characteristics of inner experience in more detail in the following sections beginning with the most dominant characteristic (unsymbolized thinking) and continuing in descending order of frequency. However, multiple experiences, which were the second most frequent characteristic of inner experience, will be discussed last so that we may first discuss the individual characteristics.

Unsymbolized Thinking

In nine (41%) of her samples, Sabrina reported that she was thinking a specific thought at the moment of the beep, but that this thought was not represented or symbolized by words, images, feelings, or any other symbols. Hurlburt (1990) referred to this type of experience as unsymbolized thinking.

In three of Sabrina's unsymbolized thinking samples, she was attending to the activities of other people or television at the same time that she was thinking. For example, in sample #13, Sabrina was working at an archaeological excavation site and watching two coworkers who were lifting up a large sheet of plastic with water on it. This sheet had been used to cover adobe to protect it from the weather, and the coworkers were lifting the large sheet carefully so that they would not get the adobe wet.
While watching, Sabrina was wondering whether they would spill the water. If the wondering could be put into words, they might be “Are they gonna pull it off?” “Will the adobe get wet?” “Will it work?” “Is it gonna fall?” However, these wonderings were all wrapped up in one thought with no words or images present to awareness. Sabrina was confident that this wondering was a mental event that was ongoing at the moment of the beep. She was equally confident that there were no symbols (words, images, etc.) accompanying this wondering.

Sabrina’s experiences of unsymbolized thinking never occurred as the only inner experience present. Therefore we will describe other examples of unsymbolized thinking in subsequent sections. Multiple unsymbolized thoughts occurred in four of these eight samples, and we will discuss them in detail later in the section on multiple experiences.

**Inner Hearing**

The second most frequent characteristic of inner experience was inner hearing, identified in six (27%) of Sabrina’s samples. For example, at sample #5, Sabrina was hearing a song in her imagination. She was sitting at a desk with her legs up and trying to relax, and she was aware of a song playing in her head. She could hear a man’s voice singing a song Sabrina knew, without accompaniment. The words that the man was singing were, for the most part, made up; a few were the actual words of the song. She experienced this as being similar to listening to the radio. Sabrina was also thinking about a grade that she would be receiving and whether the grade would be high enough. This thought was unsymbolized with no volume, words or images.

In sample #2, Sabrina was in a hallway when the beep sounded. She was aware of a song “playing in her head,” and she could hear both the words and the accompaniment, but the words were not the exact words from the song, rather they were made up words. The voice singing the song may or may not have been the real singer of the song but was
a woman's soprano voice similar to Celine Dion's voice. The song was reported to be occupying or filling a space inside of Sabrina's head. In addition to the inner hearing, Sabrina was aware of a bodily nervous feeling that was described as a "pom pon" sort of feeling that was strongest deep inside the center of her chest and radiated out in a rippling and tingling feeling (this feeling of nervousness will be discussed in more detail below in the section call Feelings). Also at the same time, Sabrina was thinking about three posters without words or images.

Sabrina's experiences of inner hearing of songs were similar in that each was a hearing of a voice not her own, and the words were mostly made up rather than being the actual words of the known song. Additionally, the experiences of hearing a song mentally occurred, both times, simultaneously with other inner experiences.

In sample #20, Sabrina was aware of a conversation that she was having in her imagination. She could see, dimly in her imagination, the room in which Sabrina and an unidentifiable man were conversing. She was the imaginary speaker at the moment of the beep and had just said the word "RITZ." Although Sabrina was unable to reconstruct her sentence, she was quite sure that the male speaker of her imagination had used the name RITZ to refer to someone (she did not know whom). Sabrina's experience, as she said the word "RITZ," was of hearing the word rather than speaking it, as if she were listening to herself having a conversation. Simultaneously to the inner hearing of the word "RITZ," Sabrina saw the word clearly displayed in her imagination. The letters appeared very clear and "typed" in all capitals, and the letters appeared to be somewhat slanted. These letters were larger in her experience than regular typing, yet this image left space for her to maintain her inner visual awareness of the room that she was in. The word "RITZ" was represented in her awareness as being superimposed over the imaginal room that the word occupied her attention. The details of the room, in this inner experience, were not clear, although Sabrina believed there was a desk off to the left.
Bodily Awareness

Sabrina was aware of bodily events or characteristics in six (27%) of her samples. Most (five) of these bodily awareness experiences involved being aware of activities of the body such as breathing, yawning, or squinting. At sample #27 Sabrina was performing the cool-down portion of an aerobic exercise program, and she was aware of breathing in deeply. She felt a surge in the shape of a narrow strip or band traveling slowly upwards from the bottom of her lungs.

Another bodily awareness occurred in sample #24. Sabrina was watching television and was aware of a tightening in her lower abdomen (the result of earlier exercise). This was described as being a narrow band or strip lengthwise across the abdomen. The whole abdominal area was experienced to be tight.

Feelings

Sabrina had five samples (23%) that included a feeling of nervousness. Each episode of nervousness was identified as having had one main focal point in the body that extended or radiated out into the rest of the body. The focal point for three of these nervous feelings was in the chest region. For example, in sample #2 (previously discussed in the inner hearing section), Sabrina was in a hallway when the beep sounded, and she was aware of a bodily nervous feeling that was described as being like a “pom pom”: it was strongest and more focused deep inside the center of her chest, and from this focal point, rippling and tingling tendrils radiated out into all regions of her body including her fingers and toes.

At sample #10, Sabrina was sitting in a psychology class and playing with her pen near her face. At the moment of the beep, she was aware of smelling the smoke from her right hand (earlier, she had been smoking). She had caught a whiff of the smoke and was reacting negatively to the smell. Simultaneously, Sabrina was aware of a feeling of
nervousness that was experienced as being a strong and heavy ball-shaped sensation within her stomach similar to the pom pom experience that she had had in sample #2 except stronger. It seemed to extend from her stomach in all directions like a pom pom with some tendrils going down to her legs, and some tendrils going up through her chest and down her arms, even to her fingers. The nervous experience was felt in her entire body. Also simultaneously, Sabrina’s head was so full of thoughts that it was like an overload. There were tens of thoughts or maybe a hundred or a thousand thoughts. There were just so many thoughts that they couldn’t be counted. She had thoughts about her family, thoughts about school, thoughts about friends, thoughts about what she would do in December, and thoughts about guilt. There were numerous thoughts in each of these categories. For example, in the family category, Sabrina was thinking that her parents were in Las Vegas to visit with her only a week ago, and she was thinking that her aunt was sick, very sick, perhaps dying. She was thinking that her aunt would die soon, perhaps even before the end of November. She was also thinking that her grandfather’s death was the only death she had ever experienced. Sabrina was thinking that that had been a very difficult time for her, and she really did not handle that well, so she may not handle her aunt’s death well either. As we have already mentioned, there were so many thoughts that it was like an overload. It was as if Sabrina just blanked out, there being so many thoughts that she was paying attention to none of them. Each of the thoughts were complete thoughts, yet they were not represented in words, with any voice, or in any visual way. Although, Sabrina placed these thoughts in categories for convenience in describing her experiences, they were in no way categorized or organized in her experience. There was no order to them at all.

We see that this sample was a set of multiple simultaneous experiences that we describe below: a sensory awareness of the smell of cigarettes on her hand (see next section), the nervous feeling, and a multiple unsymbolized thinking.
Although the nervous feeling was experienced most strongly when the core was in the stomach and least strongly when the core was in the chest region, Sabrina's experience varied in intensity even in each of these conditions. For example, in sample #11, Sabrina was in the process of answering a question out loud, and she was shaking her head in the affirmative and saying "not enough." At the same time, Sabrina was still having many of the same thoughts as in sample #10, all mixed together with no thought being prominent. Also at the same time, Sabrina was again experiencing a nervous feeling with a core in her stomach that was not quite as strong as in the previous beep. The pom pon feeling, however, was more pronounced.

Sensory Awareness

Sabrina had three (14%) samples that contained an awareness of sensory activity such as smelling or feeling pressure. One example of this type of experience was found in sample #10 (previously discussed in the nervousness section). As Sabrina sat in a psychology class, she was playing with her pen near her face and was aware of smelling the smoke from her right hand (earlier, she had been smoking). She had caught a whiff of the smoke and was reacting negatively to it.

In one instance, Sabrina's sensory awareness was nearly overwhelming. In sample #22, Sabrina was in a class and doing group work. The room was full of noise, and Sabrina was aware of the noise and people talking while she leafed aimlessly through her notebook. Although she was not physically agitated, Sabrina experienced the noise as being so overwhelming as to severely impair her concentration and prevent the separation of thoughts from noise.
Phrase Repetitions

In three (14%) of Sabrina's samples, she had an inner experience of repeating multiple word segments over and over in her head. Two of these samples involved repeating information that was needed at the moment. For example, in sample #3, the beep occurred while Sabrina was typing address cards for a convention application. She was working on the UNLV address and was repeating the entire address ("4505 Maryland Parkway, Las Vegas, Nevada 89154-2009") over and over in her head. Her experience was of hearing rather than a speaking even though she perceived that she was deliberately repeating the address. She heard what she thought may have been her own voice repeating the address as if from a distance of about two rooms away. The volume of her inner voice was lower than a spoken voice.

The other sample that contained a repetition of a phrase was #19. Sabrina was sitting in a chair with her eyes closed and trying to rest when the beep came. She was in the process of mentally repeating the phrase "I wish I were wearing comfortable clothes" over and over. At the moment of the beep, she was on the word "were." The phrase was being said in her own voice with the same tone and speed. It was distinct and clear, but not loud or muffled. It also was not soft but sounded as if it were far away. The repetition was similar to what a tape recorder would produce.

Inner Image

Sabrina had one (5%) experience, in sample #20 (previously discussed in the inner hearing section), of paying attention to a distinct inner image that was overlaid on an indistinct inner image. At the moment of the beep, Sabrina was aware of a distinct inner image of the word RITZ. The letters were very clear and typed in all capitals, and the letters even appeared to be somewhat slanted. These letters were larger in her experience than regular typing, yet this image left space for her to maintain her awareness of the
imagined room that she was in. The indistinct image was of this imagined room. The details of the room were not clear, although Sabrina believed there was a desk off to the left. The word RITZ was represented in her awareness as being superimposed over the imaginal room so that the word occupied her attention.

Multiple Experiences

One of the more salient characteristics of Sabrina’s inner experience was multiple experiences. Sabrina had seven (32%) samples with two or more characteristics of inner experience that were unrelated to each other. It would be impossible to state how many different inner experiences Sabrina had demonstrated having at one time, because of the unquantifiable number of thoughts that occurred in samples #9 through #12. However, we can say that many of the thoughts that she had, at one time, were unrelated. For example, there were thoughts about family, others about friends, some about school, and others about guilt. Also, there were characteristics of inner experience other than thoughts that occurred simultaneously with the thoughts such as nervousness and sensory awareness.

One example of this phenomenon was sample #10 which was previously discussed in the nervousness and sensory awareness sections. Sabrina was in a psychology class and had just caught a whiff of smoke to which she was reacting negatively. Additionally, she was experiencing multiple unsymbolized thoughts including thoughts of her parents visiting with her, the possibility of her aunt dying, her grandfather’s death, what she would do in December, her friends, school, and guilt. Additionally, Sabrina was experiencing a sort of nervousness that involved a strong and heavy ball-shaped sensation in her abdomen and extended like a “pom pon” to the extremities of her body. Therefore, this was a complex experience with multiple unsymbolized thoughts, a sensory awareness of smell, and a bodily feeling of nervousness.
Sample #2 (previously discussed in the inner hearing and nervousness sections) was an example of multiple inner experiences without the characteristic of multiple thoughts. Sabrina was in a hallway when the beep sounded. She was aware hearing a song playing in her head with both the words as sung by the singer and the accompaniment. In addition, Sabrina was aware of a bodily nervous feeling that was strongest in her chest and radiated out in a rippling and tingling feeling. She was also thinking about three posters at the time of the beep but was unsure of the nature of this thought.

Lack of Inner Experience

In sample #23, Sabrina was in class doing group work. At the moment of the beep, an unidentified real person was saying aloud “and.” Sabrina was not tracking the conversation or paying attention to anything. She was just leafing through her notebook, sort of skimming but not absorbing. No inner experience could be identified.

Summary

The best way to summarize Sabrina’s inner experience is to say that it is complex. No one type of inner experience characteristic seemed to dominate Sabrina’s samples, and even the most frequently occurring characteristics, unsymbolized thinking, occurred in only 36% of her samples. Seven other salient characteristics were also identified including multiple experiences, inner hearing, bodily awarenesses, nervous feeling, sensory awareness, phrase repetitions, and even one image.

Sabrina’s inner experiences could be so complex as to include hundreds of unsymbolized thoughts as well as feelings and sensations. At other times, Sabrina’s inner experience could verge on being non-existent as was the case in sample #23.
We note that inner images were rare for Sabrina (occurring in one sample), and inner speech, the experience of talking to oneself, was totally absent.
CHAPTER 4
RESULTS - ANNA

Anna was an undergraduate student with an undeclared major at the University of Nevada, Las Vegas. She was recruited for the study from a general psychology class after she had identified herself as being a very fast talker during phase 1 (questionnaire phase) of the study. She then completed the second phase of the study (measurement phase) and was found to have a speech rate of 225 words per minute, our second fastest rate. However, Anna reported that she was actually attempting to slow her rate of speech. Anna’s participation in this study was voluntary, and she was given research participation credit for her involvement.

Anna completed three days of sampling over a two week period and responded to all of the 19 beeps that she received. She missed one day of sampling due to an illness. Following our final discussion session with Anna, we were all in agreement that we had obtained enough samples to provide a representative description of her inner experiences, so we decided to discontinue the sampling process.

Anna’s inner experience involved a variety of salient characteristics none of which were overwhelmingly dominant. Anna had eight (42%) samples with inner visual images, six (32%) samples with bodily or sensory awarenesses, four (21%) samples with unsymbolized thinking, four (21%) samples with feelings, four (21%) samples with multiple experiences, two (11%) samples with inner speech, and two (11%) samples with no apparent inner experience.
Images

Anna’s inner experience involved images in eight (42%) of her 19 samples. An inner image for Anna was sometimes a realistic representation of something she had previously seen, viewed as if she were looking at the scene from a position directly in front of it. She usually had a particular point of focus, images was full of color, and images that were motionless.

A total of four or (50%) of Anna’s images contained exactly the features described in the previous paragraph. For example, at sample #4, Anna was preparing to get a box down from a storage shelf at work. She was on a ladder and knew what she was looking to find. She was looking at a picture on an actual box while having an inner image of a lighthouse display from the front part of the store. In this image were four lighthouses on one side and three on the other side. The image was in color and was a realistic representation of the actual display. Anna saw the image from the view as if standing in front of it but looking with more focus to the right than the left side. The image had no borders but was seen in the same way that she would have seen it in reality. Anna was wondering if the store display had one of the lighthouses from the picture on a box. This was an ongoing wondering for which the image was a segment.

In sample #9, Anna was on her bed with her eyes closed and an ice bag on her knee. She was aware that her knee was very cold and simultaneously aware that her eyes were hurting. She had an image in her head of her room as it would look from her position if her eyes had been open and looking. This image was in color and included the desk that sits in front of the bed as well as the lamp that sits on the desk. In this image, she was aware of where the things were in her room in proportion to her position in the room. She was just sort of idly viewing the image.

Sample #13 contained an inner image that was in motion, and was actually a composite image of two scenes. One scene of this image was of the front desk of the
MGM hotel—an accurate representation of how the area looks in reality. This image was seen as if from the view that would be had when coming through the front doors. The second portion of this image was from a movie scene. There was a lady working behind the desk who snapped her fingers and said, “front, please!” Anna knew what the words were that were said, but she did not actually hear them in her experience. The image contained both motion and color. However, the image did not occur in real time. The entire event seemed to happen instantly, but in real time, it would have taken a few seconds.

In sample #10, Anna was sitting on her bed, in her pajamas while painting her toenails. She was aware of the physical discomfort in her body with her waist bent and the back of her legs stretching, and she was trying to remember when the last time was that she had painted her toenails. Anna was having an image of herself sitting on her bed in her pajamas as if viewed from across the room. Along with this image, Anna had an imagined inner hearing of her brother’s voice commenting that he didn’t like the color of the polish. This image was actually a composite of two different previous times when she had done her toenails. The visual portion of the image represented the most recent toenail-painting episode, and the auditory portion of this image was representative of an earlier toenail-painting episode during which her brother commented on the polish color. An anomaly of the visual portion of the image was that the pajamas that Anna was wearing in the image were the ones that she was actually currently wearing, not the ones worn at the toenail painting episode.

Sensory and Bodily Awarenesses

In six of Anna’s samples (32%), she had an awareness of sensory experiences or bodily awarenesses. Sample #9 (previously discussed in the images section) actually contained two experiences of sensory awareness. Anna was on her bed with her eyes
closed and an ice bag on her knee. She was aware that her knee was very cold and simultaneously aware that her eyes were hurting from being tired. This experience was a sensory awareness of her body.

In sample #11, Anna was petting her dog at the moment of the beep. She had a sensory awareness of the coarseness of his hair, and she was vaguely aware that this was a feeling of dirtiness. Anna’s awareness of the dog’s dirty hair did not involve a thought. This experience was different than the experience in sample #9, because this sensory awareness was of something other than her body. Anna was simultaneously singing a song out loud but not thinking about this. Also simultaneously, Anna was experiencing a feeling of happiness that was a mental feeling without a thought. The happiness was there, but Anna did not notice it until the beep sounded. It could be verbally described as being a lack of irritation, frustration, or concern.

Unsymbolized Thinking

Anna had four samples (21%) that contained thoughts that were clearly ongoing mental events and whose content was clear, yet were not symbolized by images, words, or feelings. We have labeled them as unsymbolized thinking. For example, in sample #19, Anna had just hit her head while getting into her car, and she was thinking that she was a big idiot. This thought did not have words or images but was a clear mental phenomenon.

One of the four samples (sample #8) illustrates a difficulty in determining whether something is or is not unsymbolized thinking; the other three are clearly unsymbolized. At sample #8, Anna was talking to a friend who was considering working in a bank. This resulted in the re-experiencing of the tense and uptight feeling she had when she worked there. The feeling was accompanied by a knowing about what she hated about the bank, but there were not words to this knowing. Anna could not really be sure if the knowing
was a thought. It was difficult for Anna to distinguish whether this was a mental event or whether the knowing seemed like a portion of the frustration feeling (refer to the next section on feelings for examples of the difficulty involved in describing feelings).

Feelings

Feelings are generally difficult to describe, and Anna experienced this difficulty in attempting to describe her feelings.

In sample #18, Anna had been involved in trying to encourage other people to write letters to the music department at the university about the lack of attention paid to people who are waiting for service at the front desk. At the moment of the beep, Anna was talking to her friend’s boyfriend about this. She was experiencing a mental feeling of excitement about having found someone else to write a letter. This feeling, however, was too difficult to describe in words other than the certainty that it was a mental rather than a bodily feeling. Also at the moment of the beep, Anna was having an inner image of the front desk in the music department. There were two boys behind the front desk in addition to a secretary who was cleaning her computer screen and a girl on the phone and another girl who was talking. The gentleman whom Anna was talking to was pictured in the image at the front desk. Anna’s view of the image was as if she had been standing at the side wall. She could see the gentleman’s facial expression very clearly. He had his hands in his pockets, and he looked to be annoyed. As the various people talked, their hands were moving. Not only did this image have movement, but it was in color.

In sample #12, Anna was playing with her dog, and she had just noticed that her dog’s teeth were dirty. She was experiencing a feeling of guilt that included a difficult to describe mental element as well as a bodily element that was a sinking of the heart. This sample differed from sample #18 in that guilt, in addition to being a mental feeling, was also a bodily feeling.
Multiple Experiences

Anna had a total of four (21% of total) samples in which two or more unrelated elements of inner experience were identified. Each of these four samples had either a thought, image, or feeling accompanied by sensory or bodily awarenesses. For example, in sample #9 (previously discussed in the image and sensory and bodily awarenesses sections), Anna was aware that her knee was very cold and simultaneously aware that her eyes were hurting. She also had an inner image of her bedroom. Therefore, we note that this was a complicated experience with an inner image and two distinct sensory awarenesses that each occurred simultaneously.

In sample #11 (previously discussed in the sensory and bodily awarenesses section), Anna was petting her dog at the moment of the beep, and she could feel the coarseness of his hair which meant that the hair was dirty. She was also singing but not thinking about the singing. In addition, Anna was experiencing a feeling of happiness that was a mental feeling without a thought. Therefore, during this sample, Anna had the distinct experiences of a sensory awareness and a mental feeling while simultaneously singing a song.

In sample #17, Anna was on a friend's bed, at the moment of the beep, and aware of the effort and muscle control involved in trying to sit up. Simultaneously, she was thinking that she would be going home soon and going to bed. There were no words or images to this thought. We therefore note that this sample contained a bodily awareness as well as an unsymbolized thinking.

Inner Speech

Anna had two (11%) samples that included the phenomenon of talking to herself in her imagination. The speech was apprehended as occurring in her own voice, intonation, and inflection. We have labeled this as being inner speech. The inner phenomenon was
the same as it would be if she had been actually talking out loud except she was making no sound.

For example, in sample #2, Anna had just heard the song “Irish Eyes are Smiling,” and she heard a customer say, “What, you don’t like The Sound of Music?” At the moment of the beep, Anna reacted to the customer by asking herself in inner speech, “Irish Eyes was part of The Sound of Music?” This was experienced as being like speaking out loud in her own voice and with her own intonation. For example, there was the inflection of questioning at the end of the sentence.

No Inner Experience

Anna had two (11%) samples that contained no inner experiences. For example, in sample #3, Anna had just finished putting some things away at work, so she got to cross something off her to-do list. She was not having any thought but was taking a deep breath. This was a deliberate taking in of a breath, a sort of augmenting of the breath, not a bodily awareness. Anna was unable to identify any salient characteristics of inner experience.

It is possible that no inner experience was going on for Anna at all during sample #5. She was humming at the time of the beep, but she had no idea of what was going on. She was inclined to believe that nothing was going on, but did not believe this type of thing to be possible. Maybe something was going on and got lost, or maybe nothing was going on.

Summary

Anna’s inner experiences included images, sensory and bodily awarenesses, unsymbolized thinking, mental and bodily feelings, multiple experiences, inner speech,
and no apparent inner experience. Although 8 of the total of 19 samples contained images, no one type of salient characteristic seemed to dominate Anna’s experience.

Anna’s inner images usually contained color, no motion, a focal point, and a straight-on point of view. These images were generally from one scene that she had experienced in reality. However, there were exceptions. She had inner images with motion, an element of hearing, and no particular point of focus. Two inner images were actually the composite representations of two scenes that she had experienced in reality.

Anna had a total of six samples with sensory and bodily awarenesses. These included a tactile sensation of coarse hair, discomfort from her sitting positions, hurting eyes, a cold knee, pain from banging her head, and the effort and muscle control involved in sitting up.

Multiple inner experiences were found in four (21%) of Anna’s samples. All of these samples included sensory or bodily awarenesses along with an image, thought or feeling.

Feelings which occurred in four (21%) of the samples were difficult for Anna to describe. They appeared in the following forms: mental excitement; mental happiness; mental frustration; bodily tension and uptightness; and mental guilt and bodily guilt represented by a sinking in the heart.

Unsymbolized thinking which is a category for thoughts that are not represented by any symbols such as images, words or feelings, was identified in four (21%) of Anna’s samples. Inner speech only occurred twice, and the lack of apparent inner experience occurred in 2 (21%) of the samples.

One final note should be made that words were rare in Anna’s experience. She only had two examples of inner speech and three or four examples of unsymbolized thinking. In both of the samples with images that contained the element of other people talking, Anna was the receiver of the words rather than the creator of the words.
CHAPTER 5
RESULTS - BARBARA

Barbara was an undergraduate student at the University of Nevada, Las Vegas when she participated in this study. She was selected for this study after she had identified herself as being a very fast talker during phase 1 (questionnaire phase) of the study. She then completed the second phase of the study (measurement phase) and was found to have a speech rate of 210 words per minute (she stated that she was trying to slow her speech rate), which was the third fastest rate for our subjects. Barbara was given research participation credit for her voluntary involvement in this study.

Barbara completed four days of sampling over a two week period and responded to all but one of the 23 beeps that she received. She missed one beep due to the fact that she was asleep at the moment of the beep. Following our final discussion session with Barbara, we were all in agreement that we had obtained enough samples to provide a representative description of her inner experiences, so we decided to discontinue the sampling process.

Barbara’s inner experience was dominated by 17 (77%) samples with multiple inner experiences, 16 (73%) samples with inner speech, 13 (59%) samples with unsymbolized thinking, 6 (27%) samples with bodily or mental feelings, and 6 (27%) samples with bodily or sensory awareness. Each of these characteristics of Barbara’s inner experience will be discussed in the sections to follow. Although we usually would begin the discussion of salient characteristics with the characteristic that occurred most frequently, we will save our discussion of this characteristic, multiple inner experience, until after we have discussed the individual characteristics of inner experiences.
Inner Speech

Inner speech was identified in nearly three-fourths (73%) of Barbara’s samples. Inner speech was an experience for Barbara that involved having a thought that occurred with exact words as if she were saying the words herself, with her own voice and with her own tone and inflections. Of Barbara’s 16 samples that included inner speech, 13 also included one or more other characteristics of inner experience. In every one of these cases, the inner speech was identified as being the most dominant inner experience characteristic.

There were three samples in which Barbara experienced inner speech with no other inner experience. For example, in sample #2, Barbara was driving her car and wondering if she should make a U-turn or change lanes. Another car was going slow, and she was thinking with the exact words, “Am I going to have time to change lanes?” The thought was experienced as if it was being said out loud in her own voice with the same sound, intonation, and pauses of her voice.

Sample #7 provided an example of Barbara’s inner speech along with other simultaneous inner experiences. Barbara was sitting on her bed and polishing her toenails. She was being careful not to spill the polish, and she was thinking about her boyfriend being late to telephone her. Specifically, she was thinking, “He’d better not have gotten in a wreck.” This was a thought that was as if spoken in her own voice with the same inflection and tone as if spoken aloud, and it was a more dominant and intense thought than a simultaneously occurring thought about a paper which was due. This thought about a paper may or may not have been in the words, “I gotta do the paper”; Barbara could not be sure. It was definitely not as if spoken, and it may have been located in the back of her head. Barbara was also simultaneously experiencing a nervousness in her abdomen like butterflies. It covered the whole abdomen equally and only the abdomen.
In sample #19, Barbara’s inner speech was in the form of a song. Barbara was driving to the store without really concentrating on the driving. Her favorite song was on the radio, and she was singing along in her head. Barbara was very certain that this song was being sung in her own voice rather than the voice on the radio, and although she was singing the song in her head, she was paying more attention to the song as heard on the radio. Simultaneously, she was thinking, without words, about how pretty it was outside. At the same time, Barbara was experiencing a sort of mental feeling of being happy. This feeling was more than an absence of problems. This experience involved the appearance of increased brightness both in her head and in the external world about her. Everything seemed to be clearer and more colorful than at other times.

In sample #3, Barbara was at a gas station pumping gas. She was very aware of being cold, and she was thinking about really wanting to get back into the car. This thought was not represented with words; nonetheless, it was clearly a mental wanting to get back in. At the same time, Barbara was mentally counting repetitively from 1 to 10 ("1, 2, 3, 4...9, 10, 1, 2..."). This counting was done mentally rather than aloud, as if in her own voice. This inner speech was done without any concentration or effort, and it was not related to the numbers on the pump display that she was watching. (Barbara explained that sometimes she just mentally counts to herself to make the time go by faster, and this was one of those times.) Also at the same time, Barbara was actively watching the number display on the gas pump, but these numbers were not related to the repetitively counted numbers. She had one additional thought at the moment of the beep. This thought was a wondering of when the next beep would come in light of the fact that the previous beep was only 20 seconds earlier. This thought was not in exact words, and it was not as dominant as the other two thoughts.
In summary, Barbara frequently had inner experiences of speaking her thoughts with her own voice just as if she were speaking aloud. These thoughts were dominant in the inner experience and generally were accompanied by other inner experiences.

Unsymbolized Thinking

Barbara had 13 (59%) samples that contained thoughts that were not symbolized with words, images, or feelings. We use Hurlburt’s (1990) term “unsymbolized thinking” to refer to these thoughts. In 12 of these 13 samples, additional simultaneous inner experiences were noted. For example, in sample #12, Barbara was watching “Party of Five” on television with a friend. The friend had made a comment that a particular actress was good looking. Barbara was thinking in inner speech, “She looks like she’s a freakin’ five year old.” Simultaneously, Barbara was thinking that her assigned paper would be all right. This thinking about the paper was a mental phenomenon without words, images, or other symbols. Additionally, Barbara was simultaneously experiencing a nervous feeling.

Although most of Barbara’s samples with unsymbolized thinking contained only one unsymbolized thought, there were five samples that contained more than one. In sample #23, Barbara was waiting for her friend, Lucy, to pick her up. With no words or other symbolization, Barbara was thinking two thoughts: she wanted the beeper to go off, because she was tired of wearing it; and that Lucy was taking a very long time to get there. Both of these thoughts occurred simultaneously, but neither occurred with words, images, or other symbols. In addition, Barbara was simultaneously thinking in inner speech in her own voice, “She better get her, because I’m not staying up too late.”

There was at least one sample in which it was difficult for Barbara to decide if her thought had words or not. At the moment of the beep, in sample #22, Barbara was standing in the bathroom and putting makeup on. She was also involved in a
conversation on the telephone with Bill who had her waiting on hold. She was thinking, "I'm gonna hang up now," in exact words and in her own voice, a clear example of inner speech. At the same time, she had a thought something like, "I shouldn't go out, because I don't feel great." This thought was partly in words, therefore only a weak sort of inner speech. Also at the same moment, she was thinking that her lip looked ugly (she had a cold sore), but this thinking did not involve words at all. It was as if there were a continuum from clear words to no words. Her thought about hanging up would have been at the clear words end of the continuum; the thought about not going out in the middle, and the ugly-lip thought was at the no words end of the continuum.

In sample #7 (previously discussed in the inner speech section), Barbara was thinking about a paper that was due. This was a thought that may or may not have been in the words, "I gotta do the paper." It was less dominant than the "wreck" thought and definitely not as if speech, and it may have been in the back of her head. Due to Barbara's uncertainty, we would be reluctant to firmly categorize this thought as either in words or unsymbolized thinking. However, Barbara's reporting of sample #22 as described in the previous paragraph may provide a clue about her inability to give a description to this experience. Perhaps this thought should be placed somewhere in the middle of the continuum from clear words to no words.

In summary, while it is true that many of Barbara's thoughts are symbolized with words, our goal here has been to help the reader understand that Barbara was very capable of having thoughts that had no symbolization such as words or feelings. These unsymbolized thoughts very often occurred simultaneously with other more dominant inner experiences.
Feelings

Barbara had six (27%) samples with feelings including nervousness (four samples), anger (one sample), and happiness (one sample). Barbara described nervousness first in sample #7 (previously discussed in the inner speech and unsymbolized thinking sections). She was polishing her toenails and was aware of a nervousness in her abdomen like butterflies. It covered the whole abdomen equally yet only the abdomen. The other samples that Barbara had with nervousness were described as being a very similar bodily experience.

In sample #11, Barbara was in the process of making a sandwich in her kitchen while talking to her boyfriend on the telephone. Barbara was saying out loud, “I need to go.” They were fighting, and she was thinking, “Why did I ever get back together with him?” This thought was in inner speech, spoken as if in her own voice. She also had a recognition of needing more mustard without have a thought for this. Simultaneously, Barbara was experiencing anger which she found very difficult to describe, but she was quite certain that the anger had both bodily and mental elements. Part of this angry feeling was definitely an all-over bodily tension that was strongest in her arms and hands, but the predominant portion of the experience was a mental feeling as if “everything was firing off.” It was not until a later beep (#19), while experiencing a nearly opposite feeling of happiness, that she realized that during this angry time, everything she perceived mentally as well as in the physical environment was somehow dimmer or darker and less focused than how she normally experienced it.

Sample #19 (previously discussed in the inner speech section) contained Barbara’s only example of a purely mental feeling that she called happiness. This feeling was more than an absence of problems. This experience involved the appearance of increased brightness both in her head and in the external world about her. Everything seemed to be clearer and more colorful than at other times.
In summary, Barbara's experience of feelings sometimes contained bodily elements, sometimes mental elements and sometimes both. She found the anger to be the most difficult experience to describe, and happiness which involved mental clarity was somewhat easier to provide with a description.

Bodily and Sensory Awareness

Awareness of sensory activity or awareness of the body occurred in six (27%) of Barbara's samples. Her sensory awarenesses were of smell, visual sensations and tactile sensations, and her bodily awarenesses were of being cold and being sick. For example, both a sensory awareness and a bodily awareness occurred in sample #3 (previously discussed in the inner speech section). Barbara was at a gas station pumping gas, and as she was actively aware of watching the number display on the gas pump, she was also very aware of being physically cold.

Sensory awareness for Barbara could occur without bodily awareness such as in sample #5. Barbara had been flipping through a book moments before the beep. At the time of the beep, she had her head down, laying on the book. She had no thoughts present, but she was aware of smelling the book. The smell seemed to be located totally in her nose, yet she was not attending to the location of the smell. She recognized the smell as being a familiar smell, and this recognition of familiarity seemed to occur in her head.

In sample #21, Barbara experienced two sensory awarenesses. She was in her closet and looking for an outfit and she was aware of both seeing and touching the shirts — aware of the characteristics of the fabric — so that she could identify the material. Simultaneously, Barbara was having a sort of collage of multiple thoughts without words. One thought was a wondering of why she had bought a particular pair of pants. Another
thought was a wondering if she should dress up or down, and the final thought was a wondering if it was cold outside.

Bodily awareness for Barbara occurred without any simultaneous sensory awareness in sample #13. She was on her bed and involved in a conversation on the telephone to which she was not paying attention. Her whole body felt sick, and she experienced a heaviness in her chest. Additionally, Barbara was watching the program “Home Improvement” on television and saw a scene of an enlarged photo of Jill that Barbara assumed that Jill would have found to be ugly. In reaction to this scene, Barbara was thinking “If my husband ever did that, I’d kick his ass.” This thought was in exact words and as if spoken in Barbara’s own voice including her own inflections. Barbara was paying more attention to the thought than to the television, but she was able to attend to all of the program.

Multiple Inner Experience

Multiple unrelated inner experiences occurred in 17 (77%) of Barbara’s samples. For example, at sample #4 Barbara was sitting in her computer class. She was experiencing several thoughts, two of which were about equally dominant. One was that “David (a fellow student) looks pretty good tonight.” This was as if she had spoken it in her own voice and is an example of inner speech. The other equally dominant thought was a wondering about the possibility of needing a new computer disk for her class. This thought had been in words about ten or twenty seconds previously but now was a nonverbal wondering, which we labeled as unsymbolized thinking. A less dominant thought that occurred simultaneously with the other two thoughts was about a test, and in included a feeling of stress or a nervousness.

Barbara’s samples revealed that she was capable of being involved in external activities while having multiple inner experiences. For example, in sample #18, Barbara
was talking to her friend, Lucy, about Lucy’s boyfriend, Jack. At the moment of the beep, Barbara was in the process of saying aloud, “you need to just quit talking to him.” She was simultaneously having two thoughts without words (unsymbolized thoughts). The first was that she was tired of hearing about Jack. The second thought was a wondering why Lucy doesn’t just stop putting up with him.

Sample #17 was an example of multiple inner experience that included physical activity, inner speech, unsymbolized thinking, and bodily awareness. Barbara was in bed at the moment of the beep, and she was concentrating on getting warm and putting more covers over herself. This concentrating involved both a bodily awareness of being cold and a mental process. A thought which occurred at the same time was in inner speech, exact words, and in her own voice: “God, my throat really hurts.” An additional unsymbolized thought that was present was a wish that the next beep would come so that she could go to bed.

A mental and bodily feeling was included in Barbara’s multiple inner experience in sample #11 (previously discussed in the mental and bodily feeling section). At the moment of the beep, Barbara was making a sandwich in her kitchen while talking on the telephone with her boyfriend, Tim. They were arguing, and she was telling him aloud “I need to go.” At the same time, she was mentally saying, “Why did I ever get back together with him” as if she were talking in her own voice (an example of inner speech). Furthermore, at the same moment, she knew that she needed more mustard for her sandwich; this was unsymbolized thinking - a knowing without words. Furthermore, at the moment of the beep, she was experiencing a feeling of anger that she found very difficult to describe. Part of this angry feeling was definitely an all-over bodily tension, but the predominant portion of the experience was mental, and Barbara was unable to describe it fuller.
In summary, Barbara's most salient characteristic of inner experience was multiple inner experiences. She was capable of having multiple simultaneous thoughts some of which were in the form of inner speech and some of which were unsymbolized. As was previously explained in the unsymbolized thinking section, some of Barbara's thoughts were between inner speech and unsymbolized thinking. Additionally, Barbara's multiple inner experiences included mental or bodily feelings, or sensory or bodily awarenesses.

Summary

We were able to obtain 22 samples of Barbara's inner experience, and the most prevalent (77%) characteristic of her inner experience was multiple unrelated inner experiences. At any given moment, Barbara was capable of having multiple thoughts that fall along a continuum from inner speech to unsymbolized thinking. These thoughts were sometimes combined with feelings or bodily or sensory awarenesses.

Inner speech was also very prevalent (73%) for Barbara. She had thoughts that occur in exact words, in her own voice, and with her own intonation, inflections and pauses. Thoughts that were in the form of inner speech, for Barbara, were generally the dominant thoughts that occurred at any given moment when more than one thought appeared. In one sample, Barbara's inner speech was actually inner singing, and in one sample the inner speech was a mindless repetitive counting. Only rarely (14%) did inner speech occur as the only characteristic of experience.

Unsymbolized thinking occurred in 59% of Barbara's samples. This type of Barbara's thinking was characterized by a lack of words, images, or feelings to symbolize the thoughts. In 5 of Barbara's 13 samples with unsymbolized thinking, there was more than one totally unsymbolized thought.

Bodily feelings occurred in 23% of Barbara's samples, and mental feelings occurred in 9% of the samples. Nervousness was an entirely bodily experience for
Barbara, and happiness was an entirely mental experience. Anger, however, was both a bodily and a mental experience. The experience of anger was a very difficult phenomenon for Barbara to describe, but the experience of happiness was somewhat easier and helpful in understanding anger.

Sensory awarenesses and bodily awarenesses each occurred in 14% of Barbara's samples. Sensory experiences were visual, tactile, and olfactory. The bodily awarenesses were of being cold and being sick with a heaviness in the chest.
CHAPTER 6
RESULTS - CAROL

Carol was enrolled in a general psychology class that was asked to complete phase 1 (questionnaire phase) of this study. She indicated that she believed herself to speak at a much faster rate than her peers, so she was invited to participate in phase 2 (measurement phase). The result of her participation was a finding that her speech rate was 207 words per minute, the fourth highest rate among our subjects. Therefore, Carol was further recruited for the inner experience sampling portion of the study. Carol participated on a voluntary basis and was given research participation credit for her involvement.

Carol completed three days of sampling over a one-week period and responded to all of the 19 beeps that she received. Her first two samples were not characterized for our study due to the fact the beep was surprising to her and caused some interference with her ability to remember exactly what she was experiencing at the moment of the beep. Therefore, our discussion is based on the remaining 17 samples. Carol’s participation in this study came at the end of the spring semester, so as final’s week approached, we recognized her need to focus on classes and decided that we had enough samples to be able to make a statement about her inner experience. Therefore, we all agreed to discontinue the sampling process after the third session.

The most common salient characteristic of Carol’s inner experience was unsymbolized thinking, which was described in 12 (71%) of her samples. Carol also had 3 (18%) samples with feelings, 3 (18%) with multiple experiences, 2 (12%) samples with inner speech, 2 (12%) with worded thinking, and 1 (6%) with an inner image. The following sections will provide a description of each these characteristics in the order of
their frequency of occurrence with the exception that multiple experiences will be
discussed last.

Unsymbolized Thinking

Carol had 12 (71%) samples that contained specific thoughts that were not
symbolized with words, images, or feelings. Following Hurlburt (1990), we refer to this
type of thought as unsymbolized thinking. In four of the 12 samples, the unsymbolized
thought was the only element of her awareness at the moment of the beep. For example,
in sample #7, Carol was a passenger in a car when she saw a crane moving a huge
tarp-like item near a billboard. She was watching this happen and mentally wondering
what was occurring. She was wondering whether they were taking it down or putting it
up and what the tarp was. There were no words or images to this wondering.

There were other times when Carol experienced unsymbolized thinking along with
at least one other type of inner experience characteristic. In sample #10, Carol was
walking into the Fine Arts building to go to her music appreciation class. At the moment
of the beep, she was thinking, “I wish class would get canceled.” This thought was in
exact words and in her own voice, an example of inner speech. Simultaneously, Carol
was thinking that it was futile to wish for class to be canceled, and it would not happen.
The thought about futility was unsymbolized — presented without words or images.

In sample #19, Carol was sitting in her computer class and half listening to her
instructor give a lecture while also thinking about a conversation that she had with her
friend, Tanja, about a potential new job. Tanja had recently been promoted in her job,
and Carol was thinking that maybe she should ask Tanja to bring her an application.
Several related thoughts that occurred at the same time were: “My schedule fits with
what they need”; “The hours are better”; “How will I work out the transportation”; and
“The money is better.” Some of the thoughts were worded and some were not, but there
was no voice to any of them. No one thought was more dominant than any other. Carol believed that there would be no way to pick out exactly which thoughts were worded but clearly knew that some were not worded, and those we labeled as unsymbolized thinking.

Making a decision about whether or not to labeled an experience as unsymbolized thinking is difficult when the experience is a thought about words rather than being a thought done in words. Even though we would not want to label a thought done in words as unsymbolized thinking, we must be careful to understand when a subject is thinking about words without the words actually being present in the awareness. This seemed to have been the case in sample #16. Carol was reading “My Fair Lady,” and she had previously read a line where the character said, “I hadn’t quite realized you were going away.” At the moment of the beep, Carol was in the process of going back to find that line in the book, but she had not quite found it. She could remember exactly what the line said, but there was no voice, no visual representation, and no hearing. She was unable to explain how the words were represented in her awareness except that she just knew what the words were. This was Carol’s only example of a thought about words that may have been unsymbolized, so we hesitate to firmly label this experience.

Feelings

Carol had three (18%) samples with experiences of feelings, inner events, that she found to be very difficult to try to describe. In sample #3, Carol was watching the Beverly Hillbillies on television while attending to nothing else. Because she is an actress, Carol’s focus was on the skill of the actors. In particular, Carol had just seen one actor unbutton his shirt in order to brush his teeth. She thought that this was a particularly funny thing to do, so the acting would be difficult to perform without laughing. This thought did not involve words or images and so is an example of unsymbolized thinking. In addition to the thought, Carol experienced a mental feeling of
amazement at how “ignorant” the things are that the actors do without laughing. Even though Carol did an excellent job of relaying the fact that she felt amazed, she could not describe the feeling beyond the idea that it was a mental phenomenon and did not seem to exist in her body.

In sample #6 (previously discussed in the doing section), Carol was wondering about her official title in connection with directing a children’s musical, at her church. In the three years that she had directed plays for the children, she had never known her title, and at the moment of the beep, Carol was experiencing a slight feeling of frustration or aggravation. Just as with the amazement of the previous example, this was a mental phenomenon. It seemed to make her wondering more present, intense, and definite and was described by Carol as containing the content of “This is so stupid. Why do I even have to wonder.”

The feeling that Carol experienced in sample #4 seemed to be the most difficult for her to describe. Carol was in her room while the music for the “Puppet Master” was playing. At the moment of the beep, she was not attending to the music but was reading Psalms 139:14-15. Carol was thinking that it’s incredible that she can not go anywhere that God is not. This thought was without words. She was also experiencing a feeling of amazement that was very difficult for her to describe. She could only explain it as going beyond being a mental and a bodily phenomenon. Carol’s “deeper-than-mental” experience, if put to words, might be something like “It’s incredible, awesome, and it’s so cool.” She would point to her chest to describe the “deeper-than-physical” component of this experience, but she was very clear that to call this a physical experience would be inaccurate. The feeling was very deep inside but not a physical part of her.
Inner Speech

Carol had two (12%) samples that we considered categorizing as inner speech, the experience she had of talking to herself mentally. For example, in sample #10 (previously discussed in the unsymbolized thinking section), Carol was walking into the Fine Arts building to go to her music appreciation class. At the moment of the beep, she was thinking in exact words and in her own voice, “I wish class would get canceled.”

Sample #5 may or may not have been inner speech. Carol was in the process of walking back and forth from her bed to her closet while hanging up her clothes, but this was done mechanically and without thought. She had been preparing for a play that her church was having, and she was thinking about a conversation that she had had with her agent the night before. At the moment of the beep, Carol was rehearsing a revised conversation of the one she had with the agent. She thought the rehearsal might have been done by thinking out loud to herself in the exact words, “This will be the Las Vegas debut of the Final Verdict.” However, she knew that if she was not speaking out loud, the speech was mental and on the verge of being said out loud.

Worded Thinking

Thoughts were symbolized with words in two (12%) of Carol’s samples, but because they were experienced without a voice, we did not consider this to be inner speech. Sample #17 was Carol’s clearest example of worded thinking. She was sitting in a study room of the library and writing “instrumental” as one of a list of categories for a fine arts festival. She described this writing as being her most dominant experience at the moment of the beep. The second most dominant experience was a thought of “instrumental ensemble.” This was a thought without a voice but with exact words (worded thought). A less dominant experience was of an inner image of an instrumental ensemble. This image had a keyboard player, a drummer, and guitars. The people in the
image were present but not as clear as the instruments which were very clear. There was one man picking up a guitar, and this indicated that the image had movement, but Carol said the image was so quick that she could not be sure if there was movement. She thought the image was in color but could not be sure of this. The fact that the image was the third layer down in her awareness made it less easy for her to describe. Carol simultaneously experienced a non-worded knowing (unsymbolized thinking) that the image was not what was meant by “instrumental ensemble.”

In sample #19 (previously discussed in the unsymbolized thinking section), Carol was sitting in her computer class and having multiple simultaneous thoughts such as “Maybe I should ask Tanja to bring me an application”; “My schedule fits with what they need”; “The hours are better”; “How will I work out the transportation”; and “The money is better.” Some of the thoughts were worded and some were unsymbolized thinking, but none of them were as if she were talking to herself.

**Inner Image**

Carol had one visual image in sample #17 (previously discussed in the worded thinking section). The inner image was the third most dominant of Carol’s experiences at the moment of the beep, after writing and worded thinking about an instrumental ensemble. This perception of lesser dominance along with the fact that she experienced the image as being very quick resulted in her having some difficulty in fully recalling the details of the image. She did recall that there was a keyboard player, a drummer, and guitars. There was one man picking up a guitar, and this indicated to Carol that the image had movement, but she did not recall movement. She also thought the image was in color but could not be sure of this.
Multiple Inner Experiences

Carol had multiple separate inner experiences in three (18%) of her samples. For example, in sample #19 (previously discussed in the unsymbolized thinking and worded thinking sections), Carol was half listening to an instructor during class time while simultaneously having a complicated thought process about the possibility of obtaining a new job. With a mixture of unsymbolized thinking and worded thought, Carol was thinking many thoughts such as “My schedule fits with what they need”; “The hours are better”; “The money is better”; and “How will I work out the transportation?” Additionally, she was thinking that maybe she should ask her friend to bring her an application.

Summary

The most salient of Carol’s inner experiences was unsymbolized thinking (71%). We found examples of unsymbolized thinking that occurred as the sole experiences and others that included one or more additional simultaneous inner experiences. For example, one complicated sample included unsymbolized thinking along with writing, worded thinking, and an image. We also obtained a sample in which it was likely that Carol was having an unsymbolized thought about words.

Carol experienced feelings in 3 (18%) of her samples. A feeling of frustration and one of the feelings of amazement were described, with some difficulty, as being mental phenomenons. In the second example of a feeling of amazement, Carol attempted to describe a feeling that was deeper than mental and deeper than physical. This amazement at God occurred while she was reading a Psalm.

Each of the samples with feelings as well as the two (12%) samples with worded thinking and the one (6%) sample with an inner image occurred simultaneously with unsymbolized thinking. This was also true of the one (6%) definite example of inner
speech, but the example of a possible inner speech may have actually been an example in which Carol was just talking. In either case, this was a sample with only one identified characteristic.

Although we have identified samples that were complicated by different layers of inner experience characteristics that involved the same experience (for example, a feeling of amazement that joined with a thought of an actor's great skill), Carol did have three (18%) samples with multiple unrelated inner experiences.
CHAPTER 7
RESULTS - DARLENE

Darlene was an undergraduate student at the University of Nevada, Las Vegas who had plans to become a physical therapist. She completed phase 1 (questionnaire phase) of the study during a general psychology class and identified herself as being a very fast talker. Darlene then agreed to complete the second phase of the study (measurement phase) and was found to have a speech rate of 207 words per minute, tied for fourth fastest of our subjects. However, Darlene mentioned that she had been trying to slow her rate of speech. Darlene was then recruited for the inner experience sampling. Her participation in this study was voluntary, and she was given research participation credit for her involvement.

Darlene completed four days of sampling over a four week period and responded to all of the 18 beeps that she received. The first two samples were not fully understood by the researchers, so they are not characterized here. Darlene missed one day of sampling due to problems with the beeper, and we had a two week period with no sampling during which time Darlene had surgery. The sampling procedure was discontinued following the fourth session because we were all in agreement that we had obtained enough samples to provide an adequate description of Darlene’s inner experiences.

The most dominant characteristic of Darlene’s experience was external communication (56%), either speaking aloud (50%) or writing (6%). Other characteristics were unsymbolized thinking (31%), inner images (19%), sensory
awarenesses (19%), feelings (13%), and inner speech (13%). Each of these characteristics will be discussed in detail in the sections to follow.

**External Communication**

In nine of Darlene’s 16 samples (56%), she was either speaking aloud or writing a note to someone. Of the eight samples in which Darlene was speaking aloud, five contained no other experience.

In sample #4, Darlene was in the bathroom and involved in a conversation with a friend about tanning. Darlene was looking in the mirror and saying aloud something like, “Oh, more freckles” as she saw freckles on her neck. She had no other identifiable experience at this time.

In two of Darlene’s samples that involved speaking aloud, she was experiencing a sensory awareness that was related to the content of her speech. For example, in sample #7, Darlene was in the process of saying aloud, “My knee is in pain.” Pain was the word she was speaking at the moment of the beep. Simultaneously, she was feeling a throbbing pain that she described as being located only in her knee.

One of Darlene’s samples involved her speaking aloud as well as unsymbolized thinking. In sample #16, Darlene was in the process of saying aloud to her roommate and boyfriend, “I’m flying home tonight.” At the moment of the beep, she had just said, “flying home.” Additionally, she was thinking about the things involved in flying home such as packing, preparing to go, and the tickets. This was one unsymbolized thought with no words or images.

Darlene’s sample with the external communication of writing to a friend was #17, which also contained unsymbolized thinking. Darlene was writing a note her roommate to remind her to make potato salad, and she had just written the words, “potato salad.”
She was also thinking, without words or images, that she needed to remind the roommate to make the salad.

Unsymbolized Thinking

Darlene had five sampling experiences (31%) of clear thinking processes that were not accompanied by words, images, feelings, or other characteristics, experiences we call unsymbolized thinking. For example, in sample #6, Darlene was riding up in an elevator at the university where she had just seen a sign that indicated that all of the classrooms were in the C building. At the moment of the beep, Darlene was thinking about how many classrooms existed did not include images or words.

In sample #5, Darlene experienced both unsymbolized thinking and a visual image. She was involved in a conversation with a fellow student from her psychology class. The other student had just told Darlene that she works for Sporting Unlimited. This was interesting to Darlene, because her father had worked for the Sports Warehouse, which is a competitor of Sporting Unlimited. At the moment of the beep, Darlene’s friend was saying, “Sporting Unlimited” At the same time, Darlene was also seeing an inner image of a Sporting Unlimited sign on the side of a supply truck. This was a red sign with white lettering and a white truck cab to the right of the sign. The scene was an accurate depiction of reality and very clear. Darlene’s focus of the inner image was on the middle of the sign, and the view was from rather close up. In addition to this inner visual experience, Darlene was remembering the competition that her father encountered with Sporting Unlimited. This was recalling that her father had competitive experiences between the Sports Warehouse and Sporting Unlimited that involved her father being stressed, supply trucks, and telephone conversations. The remembering was not represented with images or words, but was clearly a mental phenomenon.
Inner Images

Darlene had three samples (19%) that contained inner visual experiences that we have called images. All three of the images contained no movement, and all were related to Darlene’s external activities. We have described one image, a clear seeing of the Sporting Unlimited sign, above in the unsymbolized thinking section. In another example, moments before the beep for sample #3, Darlene had been looking at a picture of an evangelist in the university’s student newspaper. As she looked at the picture, she remembered that she had seen him standing on campus and holding up a sign. At the moment of the beep, the remembering was in the form of an inner image of the evangelist as she had actually seen him standing in the amphitheater, viewed from the pathway near the amphitheater. This was a semi-clear image in black and white with no movement. The inner image was as if she were seeing it with her own eyes, so with no borders like those that were seen in the newspaper. Darlene was no longer looking at the newspaper. The reader should note that this image was related to Darlene’s external experience of looking at the newspaper.

In sample #10, Darlene had an inner image that was related to her external experience of typing. Darlene was in the process of typing the words, “Alvin Ailey.” She was trying to be careful in typing the correct sequence of the spelling of this name, so she was mentally sounding out the name at the same rate that she was typing it. This was mentally spoken in her own voice. Additionally, she had a clear image of the printed name in her mental awareness. This inner image was in black letters and in the same font as the typewriter would produce.

Sensory Awarenesses

Darlene had three samples (19%) that included an awareness of sensory experience. In two of these samples, Darlene was in the process of talking about the
sensations. For example, in sample #14, Darlene was feeling sick and nauseous at the moment of the beep. She was speaking aloud saying, “I’m feeling nauseous” to her roommate. The feeling of nausea was accompanied by an awareness of pain in her throat, stomach, and head.

In one sample, Darlene’s experience of sensory awareness was accompanied by a feeling. In sample #8, there were workmen repairing the roof where Darlene lives, and she was aware of the noise of the hammering. She was also aware of a sort of mental aggravation over the noise. The aggravation was very difficult to describe, but it was a sort of knowing that she was aggravated.

Feelings

Darlene experienced feelings in two of her samples (13%). In sample #13, Darlene was mentally saying “I’m lazy.” This was an experience of mentally speaking in her own voice just as if she had been speaking aloud, an example of inner speech. Additionally, she was aware of feeling lazy. This feeling was characterized by a physical sluggishness, a heavy feeling all over her body.

A feeling of aggravation about the noise level of the workmen on her roof in sample #8 (previously discussed in the sensory awareness section) was described as being a mental phenomenon that was too difficult an experience to further describe.

As the reader should note, Darlene experienced feelings that could be described as being either physical or mental phenomena, and the mental feelings were more difficult to describe than the physical feelings.

Inner Speech

Inner speech was a characteristic in two of Darlene’s samples (13%) in which she mentally talked to herself, in her head and in her own voice. Both of these examples of
inner speech were short, two-word experiences. For example, in sample #10 (previously discussed in the inner image section), as Darlene was typing “Alvin Ailey,” she was trying to be careful to type the correct sequence of the spelling of this name, so she was mentally sounding out the name at the same rate that she was typing it. This was mentally spoken in her own voice.

In sample #13 (previously discussed in the feelings section), Darlene was mentally saying “I’m lazy.” This was an experience of mentally speaking in her own voice just as if she had been speaking aloud.

Summary

This description of Darlene’s inner experience was based on 16 random samples. The majority (56%) of Darlene’s samples were obtained at times when she was in the process of communicating with others. This was generally in the form of speaking aloud but one time was in the form of writing a note. Of the nine samples in which she was communicating, five contained no inner experience, two included sensory awarenesses, and two included unsymbolized thinking.

Darlene had five samples (31%) with clear thoughts that were not symbolized with words, images, feelings, or other symbols. We labeled these experiences as unsymbolized thinking. Four of the five unsymbolized thoughts were the sole inner experience, at the moment of the beep. The one exception included an image.

Inner visual images occurred in three of Darlene’s samples (19%). They were motionless images that were related to external activities that Darlene was engaged in. Sensory awareness of pain, nauseousness, and noise occurred in three samples (19%). Feelings (13%) included a mental feeling of aggravation and a physical feeling of laziness. The physical feeling was more easily described by Darlene than the aggravation which could only be described as being mental. Inner speech was Darlene’s final
characteristic of inner experience. It occurred in only two (13%) of her samples, and both times there were only two words present.

It seems appropriate to make a note that although Darlene spoke aloud frequently, words were rare in her inner experience.
CHAPTER 8
RESULTS - ERIC

Eric was a student with junior standing who was a business major at the University of Nevada, Las Vegas. Eric's involvement in this study began with phase 1 (questionnaire phase) during which he identified himself as being a very fast talker. In the second phase of the study (measurement phase), Eric's rate of speech was found to be 195 words per minute (he had been trying to slow his speech rate), a rate that ranked him sixth among the seven subjects who completed the study. Due to his high speech rate, Eric was recruited for the third phase which was the inner experience sampling phase of the study. Eric's participation in this study was voluntary, and he was given research participation credit for his involvement.

Eric completed four days of sampling over a five and a half week period and responded to all of the 25 beeps that he received. The six samples that were obtained on the first day of sampling were not rated due to the fact that Eric was still learning about the types of information that we were seeking (inner experience rather external activities), so our discussion is based on 19 samples. Eric missed two days of sampling, one due to an illness and one due to a need to repair damage at his home. We all agreed to discontinue the sampling process after the fourth session, because we were in agreement that we had enough samples to describe adequately the salient characteristics of Eric's inner experience.

The most common salient characteristic of Eric's inner experience was unsymbolized thinking, which was described in 10 (53%) of Eric's samples. Eric had 6 (32%) samples with inner speech, 6 (32%) with multiple experiences, 4 (21%) with no
apparent inner experience, 2 (11%) with images, 2 (11%) with feelings, and 1 (5%) sample with a bodily awareness. Each of these characteristics of Eric’s inner experience will be discussed in the sections to follow with multiple experiences being discussed last.

Unsymbolized Thinking

Eric had 10 (53%) samples with thoughts that were mental phenomena without words, images, feelings, or other symbols — that is, experiences that we have called unsymbolized thinking. For example, in sample #11, Eric had just lost a game on the computer, and he was thinking something like, if put into words, would be “Damn it. Why couldn’t I have done better.” This was not however in exact, and there were no images or other symbols. Eric also identified a sort of feeling of being upset with himself for failing. The upset feeling was described as being both a mental and a bodily phenomenon. The bodily component was a tenseness, and the mental component was related to the thought of “Why couldn’t I have done better.” Additionally, Eric was experiencing and aware of his back being stiff and tense, although the tenseness was not related to the tense portion of his feeling of failing.

In one instance Eric had two simultaneous thoughts that were unsymbolized. In sample #10, Eric was involved in typing dialogue to his future mother-in-law on the computer. He had just typed “yes, they,” and he was thinking that the next words he needed to type were “would have.” Eric was unsure of how the thought existed in his inner experience except that the thought of the letters for “would have” was just there without any image of the letters. Simultaneously, Eric was thinking about how upset his parents would be if they knew some of the things that he had done. This thought was the less clearly focused of the two thoughts, and it also was not represented by words or pictures; therefore, we call it unsymbolized.
In sample #7, Eric was in the process of making noodles. At the moment of the beep, he was saying "Two" as he added the second cup of water to the noodles. He was not sure if this saying was being done mentally or aloud, but was in his own voice whether mentally or aloud. At the same time he was thinking something that if expressed in words might be, "I hope they come out this time" or "I hope it works." [The previous time that Eric had made noodles, they did not turn out correctly.] This thinking was not in words, an example of unsymbolized thinking. There was also an unclear inner image of the current noodles superimposed over the scene of the previous noodles. Eric could see the chicken of the new noodles floating on top of the previous noodles. This was a semi-clear image that did not fully capture the thought of hoping that the noodles would come out that time.

In sample #21, Eric may or may not have had an unsymbolized thought. We include it to illustrate the occasional difficulty of classification. He was staring at the print preview screen on his computer, and his mind may have been blank, or he may have been having a little thought of wondering if the paper was going to look OK or print out right. If this was a thought, it was a somewhat less-than-focused thought. Eric was sort of idly curious without using any words in his wondering.

Eric had one sample, #16, that contained two thoughts that were partially unsymbolized and partially worded. Eric was watching a show on the television about monkeys and their homes. At the moment of the beep, Eric was thinking about the word "home." This thinking involved two sequential lines of thought that involved the inner experience of some words but not entirely words. If placed on a continuum with worded thinking at one end and unworded thinking at the other end, Eric's thoughts, at the moment of the beep, would be towards the center of the continuum. If Eric's two lines of thought could be expressed in words, they might be "How do they know that's home?" and "Where do they sleep at night?" Eric was quite certain that it would have been
impossible for him to separate the worded portions of the thoughts from the unworded portions. Although this experience was not entirely unsymbolized, we again mention it here to illustrate the occasional difficulty in placing inner experiences firmly into predetermined categories.

Inner Speech

Eric had experiences of mentally talking to himself just as if he were talking aloud in 6 (32%) of his samples. For example, in sample #14, Eric was “channel surfing” while watching television, and he saw on the television a man with his hair on fire. At the moment of the beep he was thinking, “What the heck?” This thought was in his own voice and in exact words.

In sample #22, Eric had multiple experiences of inner speech, two of which were also experiences of inner hearing. Eric was involved in typing a letter about vacating his apartment. He was typing the word “vacating” while mentally saying “vacating” to himself. This was done in his own voice and was his most dominant inner experience, at the moment of the beep. Additionally, Eric was having two related but separate thoughts about what to type and how to make the writing “sound” best. Both of these thoughts contained words and included both a saying and a hearing of the words. These two thoughts occurred consecutively and repetitively. One thought was worded in such a way that the apartment number was stated before the statement on vacating, and the other thought was worded so that the apartment number was stated after “vacating.”

In sample #12, Eric experienced a sequencing of images as well as a sequence of thoughts in inner speech. At the moment of the beep, Eric was involved in a computer game, and he was thinking about the manager of the Community Health Spa. Eric was thinking that he did not like the manager, and he would like her to fail. This was not just one thought but a lot of thoughts about what he could do about her or how he could get
rid of her. As a part of this experience, Eric was rapidly cycling through a series of inner images that had no consistent order. These were images of people in the community such as the manager's boss, and the images were each of one or more people and in color. The images were cycling through so fast that Eric was unable to discern whether only one was present exactly at the moment of the beep. The thoughts that he had went beyond the images. The thoughts were distinct and separate from the images but some were related to the present images. For example, there might have been an image of the director's boss and a thought of "getting her fired." There were multiple thoughts that rapidly cycled through in an unordered fashion just as the images. The thoughts generally had a longer duration than the images, so multiple images were generally seen during each thought. Eric's thoughts were in words and in his own voice, but he could not remember the exact words. They may have been something like, "What can I do?"; "How can I beat her at her own game?"; "I could take members away"; "I could keep members from going"; "I could cancel all of her appointments"; "I want to screw her"; and "I want to get her fired."

Sample #18 contained inner speech that was synchronized with outer speech. Eric had just picked up his friend, and they were driving home in Eric's car while talking about how the people at his apartment complex were interested in more profit. Eric was speaking, at the moment of the beep, and his exact word was "more," part of the sentence, "They are interested in more profit." Eric had been trying to think and plan his words before speaking so that he would not get into trouble for what he would say. Therefore, at the moment of this beep, he had the entire sentence ("They are interested in more profit") planned and stored in his mental awareness. Eric was in the process of mentally repeating, over and over, the sentence very rapidly as he said the words (once) aloud. This cycling of inner speech was synchronized with the outer speech in the sense that he uttered aloud each word at the instant that the same word appeared in his inner
speech. Because the inner spoken words moved much faster than the external speech, the inner speech cycled repeatedly during the same interval that the external speech was spoken. In each cycling of Eric’s inner speech, the already externally uttered word or words were omitted, and only the portion of the sentence that remained to be spoken aloud continued cycling. The result was that the later words in this sentence were uttered more quickly than the earlier words. The following is given as a demonstration of the simultaneous synchronization of the changing inner speech cycles with the outer speech.

Inner speech: They are interested in more profit. are interested in more profit.

Outer speech: They are

Inner speech: interested in more profit. in more profit. more profit. profit.

Outer speech: interested in more profit.

Eric also noticed that smaller words were spoken more quickly than larger words in his outer speech.

No Inner Experience

In four (21%) of Eric’s samples, he was unable to identify any inner experience. For example, in sample #8, Eric was working on his computer and reading about a casino web site, but he was not taking in what he was reading. He was in the process of reaching for his mouse and about to move on, but he was not thinking about this. There was nothing in his awareness.

Just as in the previous example, all of Eric’s samples with no inner experiences occurred at a time when Eric was engaged in some sort of a mindless activity such as sticking out his tongue (sample #17), eating candy (sample #15), or waiting while listening to his finance have a conversation (sample #24).
An additional sample, #23, may also belong in this section for samples with no inner experience, but it was not included due to the possibility that it involved some feeling. This sample will be discussed in detail in the feelings section.

Inner Images

Eric had two (11%) samples that contained inner visual experiences that we have called images. For example, #7 (previously discussed in the unsymbolized thinking section) contained an unclear inner image of the noodles that he was in the process of making superimposed over the scene of noodles that he had previously made. Eric could see the chicken of the new noodles floating on top of the previous noodles.

In sample #12 (previously discussed in the inner speech section), Eric was rapidly cycling through a series of inner images that had no set or consistent sequence. These were images of various people in the community, and the images were each of one or more people and in color. The images were cycling through so fast that Eric was unable to discern which if only one was present exactly at the moment of the beep.

Feelings

Feelings were a part of two (11%) of Eric’s samples. For example, in sample #11 (previously discussed in the unsymbolized thinking section), Eric had just lost a game on the computer, and he was upset with himself for failing. The upset feeling was described as having both bodily and mental components. The bodily component was a tenseness, and the mental component involved a wondering of why he had not done better.

In sample #23 (previously discussed in the no apparent awareness section), Eric was walking through his apartment while looking for a lost bill. He was not thinking or talking, but he was frustrated in a bodily way. However, at the moment of the beep, Eric
could not be certain whether or not he was aware of the frustration. As mentioned in a previous section, it is possible that Eric was having no inner experience.

Bodily Awareness

Eric had only one (5%) sample during which he was aware of some aspect of his body. In sample #11 (previously discussed in the unsymbolized thinking and feelings sections), Eric was aware of his back being stiff and tense.

Multiple Experiences

Multiple unrelated experiences occurred in six (32%) of Eric’s samples. For example, in sample #10 (previously discussed in the unsymbolized thinking section), Eric was involved in a computer chat with his future mother-in-law. At the moment of the beep, he was having two unsymbolized thoughts, one that the next words he needed to type were “would have” and the other about how upset his parents would be if they knew some of the things that he had done. The first thought was more focused than was the thought about his parents.

An example of multiple inner experiences that included inner speech was sample #12 which was previously discussed in the inner speech and inner images sections. This was a sample in which Eric was rapidly cycling through multiple inner images while simultaneously cycling through multiple inner speech phrases about a lady who he disliked. This was an unordered cycling in that not only were the images and inner speeches not maintained in any set order during the cycling, but the cycling was not synchronized between the images and inner speeches in any way.
Summary

Eric gathered 19 samples from which we have described seven salient characteristics. Unsymbolized thinking occurred most frequently (53% of samples). In four of the ten samples with unsymbolized thinking Eric was experiencing a single unsymbolized thought. A fifth sample may have had one unsymbolized thought, or this could have been a sample with no inner experience. An additional sample consisted of two unsymbolized thoughts, and another had two partially unsymbolized and partially worded thoughts. Two of the samples with unsymbolized thinking simultaneously included inner speech, one also simultaneously included an unclear image. The final example of unsymbolized thinking occurred with a simultaneous feeling as well as a bodily awareness.

Inner speech (32%) was an experience in which Eric was mentally talking to himself in his own voice. Of Eric’s six samples with inner speech, only one sample had the inner speech as the sole characteristic of inner experience. Inner speech was a characteristic in each of Eric’s most complicated samples and included multiple inner speech experiences and synchronized inner speech with outer speech.

Eric had six (32%) samples with multiple experiences, and four (21%) samples with no apparent inner experiences. Images, feelings, and multiple experiences each occurred in 2 (11%) samples, and a bodily awareness of stiffness and tenseness occurred in 1 (5%) sample.
CHAPTER 9
RESULTS - HANS

Hans was an undergraduate student in the university’s business department at the time of the study. He was a citizen of Germany, and even though English was his second language, Hans demonstrated excellent command of the language. He was recruited from a general psychology class after identifying himself as a very fast talker on the screening questionnaire of phase 1. His speech rate was measured in phase 2 at 188 words per minute using the story telling method, the slowest in our fast talking sample. Although Hans’s speech rate was somewhat lower than the rate of the other participants who completed this study, his rate was substantially higher than the 140 word per minute rate that had been identified as being the most common rate of speech, and he stated that he had been trying to slow his rate of speech. Hans’s participation was voluntary, and he was given a total of three hours of research participation credit for his involvement in this study. Although the three hours fulfilled his requirements for the general psychology class, his participation extended beyond three hours.

Hans completed three days of sampling over a period nearly two weeks, and he responded to all of the 20 beeps that he received. After we had met and discussed these beeps, we were confident that Hans’s experiences were quite consistent, and we agreed that we had enough information to be able to describe salient features of his experiences. Therefore, the sampling process was discontinued.

The most salient characteristics of Hans’s inner experience were images which occurred in 18 (90%) of the 20 samples, unsymbolized thinking in four (20%), imagined mental feelings in two (10%), and imagined bodily awareness in one (5%) of his samples.
Images were by far the most dominant characteristic of Hans's inner experiences, occurring in 90% of his samples. An inner image, for Hans, was typically a scene with multiple colors, much detail, movement, and sometimes sound or tactile experiences. The images were typically viewed with a particular focus and an awareness of a complete, though less focused, view of the outer areas of the images. In other words, the images were viewed as if from his own eyes without borders to limit the view.

A typical example of Hans's inner images is sample #16. Hans was sitting in his economics class when the beep came. The professor was conducting a review for an upcoming exam, discussing price regulation by the government and the setting of minimum prices. In the past, the professor had frequently used car prices as examples for this topic. At the moment of the beep, Hans was seeing an image of a used car lot, as if he were looking down from a somewhat elevated location. There were colored pennants all about the car lot, and they were flapping in the breeze. There were many cars in the lot, but his main focus was on one particular red car which had a price of $1,000,000 marked across the front window, and the car dealer who was standing in front of this car. The car dealer was dressed in a suit and standing on gray concrete. Hans could hear him shouting "Used cars!" in the image. As a part of this image, he could also hear background noise of automobile traffic -- traffic that was heard not seen. Hans's inner experience was just as if he had actually been in this scene with a full view of the car lot and hearing the noises behind him.

At sample #2, Hans experienced the transmitting a real voice into his inner image. Hans was in his economics class where he was listening to his instructor discussing government finances. At the same time, Hans remembered a previous conversation with a friend who Hans thought might benefit from the instructor's lecture. Hans mentally transmitted the actual voice of his instructor into an image in which the friend was seen
seated at the head of a dining room table and wearing a light blue dress shirt. Hans viewed the image as if from his own perspective of being seated at the side of the table. A large picture from a wine advertisement of a village in Germany was hanging on the wooden wall panels behind the left shoulder of Hans’s friend. The friend was looking at Hans, and he was able to hear the instructor’s voice.

Tactile characteristics were experienced as being a part of an inner image in sample #14. Hans was still writing about the last beep, at the moment of this beep. He was in his psychology class where the professor was showing a picture of a train. Hans had an image as if looking at the outside of the train with his head out the window. He could see the engine of the train and could see that the train was turning a curve. This image was created in comic style rather than having a realistic view. Green was dominant to the right, but the train’s true rustic color was seen to the other side. At the moment of the beep, while seeing this imaginary view, Hans could feel the sensation of the wind blowing in his face as he looked out the window.

An example of an image formed from the combination of scenes was obtained in sample #20 when Hans was printing from his station in a computer lab. Hans normally used a different computer lab, which charged five cents per page of printing, whereas printing in the current lab was free. While Hans was looking at the computer screen that he was using, he was seeing an inner image of an identical screen except that the imagined screen contained an accurate balance counter in the bottom left corner. The counter was reducing the balance by five cents for each page printed. For example, a beginning balance of $5.00 would turn to 4.95 after the first page of printing, then turn to 4.90 after the second page of printing, and so on. (The actual computer lab that Hans normally uses has a screen that shows the counter moving in steps, jumping from 5.00 directly to 4.00 for 10 copies). This moving image was in color.
There were exceptions to the type of details that we have described as occurring in Hans’s inner images. For example, Hans did have two black and white images. In sample #9. Hans was walking up the stairs of a university building to the second floor. He was wondering whether his girlfriend was in class already or if she was still in the bathroom. At the moment of the beep, he had a black and white image of his girlfriend walking out of the bathroom door. This was an image with movement but no sound. The wondering about the girlfriend occurred with the image but went beyond the image. Hans could be certain if the wondering contained words or not.

Eight of Hans’s images did not contain movement. For example, in sample #7, Hans had been sitting in the computer lab at the university when the beep came. His e-mail address list was on the screen, and he noticed that he did not have a current e-mail address for one of his friends. He was not certain whether or not it would be possible, in the United States, to obtain an e-mail address over the Internet, so he was wondering about the alternative methods of obtaining the address. This wondering was represented by an inner image of the computer lab with a monitor in the center of the image. In this image, the Internet screen was on, and off to the sides of the monitor were a telephone, a letter to a friend, and an e-mail address of another friend (all represented as visual images). The telephone, letter and address each represented possible ways of getting the address that he wanted. The images appeared in color but had no motion. It should be clear that this was one image with several objects arrayed in it, rather than a collage of images.

In summary, Hans’s inner experience was dominated by visual images. These images usually contained much detail including color and movement, and some also contained sound and tactile characteristics. Hans had images with combined scenes and others with a voice transmitted into the image. All of the images were viewed in the same way that his eyes would have viewed such scenes.
Hans had four samples (20%) that contained thoughts that he found difficult to describe. He referred to them as “wonderings,” and he was not aware, despite careful probing, of any words, images, or feelings that could be used to explain the thoughts. We have termed these experiences “unsymbolized thinking.”

A sample that contained a thought that Hans clearly knew was not represented by words, images, or feelings was sample #12. He was sitting in a class listening to a teacher who was of German descent. This teacher speaks English but occasionally uses a German word. At the moment of the beep, the teacher had just used a German slang word in the middle of a sentence. Hans was wondering if he himself does the same kind of thing when he talks. This wondering was not in the form of words or images. He was simply wondering, in a mental way, whether he talks like this himself. Hans was also experiencing a sort of inner laughter; this experience was identified as being totally separate from the thought about whether he inserts German words into his English speaking.

In the previous example, Hans was certain that there was no symbolization for his thought, but there was one instance when Hans was less certain, yet he found giving a total description to his inner experience difficult. In Hans’s first sample, he was in his economics class and thinking about the government’s power in dealing with money and imagining how good it would be not to have to worry about money such as would happen if he could own a money printing press. At the moment of the beep, Hans had an inner image of a money press in a room. His image was clear and viewed as if looking straight on towards the machine. A sheet of green bills was coming out of the steel machine as if towards him. The money was coming out quickly, and even though his focus was on the money and the press, he was aware of the room in which the machine was located. There was nothing, in this visual experience, in the room except the money press. Hans also
experienced a mental feeling along with this image of not having to worry about money. Although Hans had a clear image of a printing press, and he identified a sort of mental feeling of not having to worry about money, he seemed to indicate that his thoughts about the government’s power went beyond the meaning of the image and the feeling. It is therefore possible that this experience involved unsymbolized thinking overlaying the image. However, we hesitate to offers conclusive statements due to the fact that this was Hans’s first effort in learning to identify the salient characteristics of his inner experience.

In review, Hans clearly experienced unsymbolized thinking in three samples, and possibly in one additional sample. This represents 15 to 20 percent of his total samples.

**Imagined Mental Feelings**

Hans had two inner experience samples (10%) that contained imagined mental feelings. These feelings accompanied thoughts and both were a part of a sort of hypothetical wondering about the consequences of certain actions or events.

In sample #5, Hans was lifting the lid of the copier, and the green light was still on. He was wondering if the green light was doing harm to his eyes. He had a “feeling” of the consequences of being blind. This was described as being a mental feeling of being blind, a kind of mental sorrow without words or images.

The other examples of an imagined mental feeling was in sample #1 (previously discussed in the unsymbolized thinking section). Hans imagined a mental feeling of not having to worry about money.

**Imagined Bodily Awareness**

In one of Hans’s samples (5%) Hans experienced a imagined awareness of bodily activity and effort. In sample #6, Hans was sitting in the computer lab and looking at the
screen for his e-mail address list. He was wondering if it would be worth the effort to ask the lab attendant how to delete an old address, or if he should just leave the address on his list. This wondering involved a color image of himself with his hands pushing on the arms of his chair and feeling the work involved in pushing himself out of the chair. This was a sort of imagined mental feeling of the effort.

Summary

Hans had inner experiences that included images, unsymbolized thinking, imagined mental feelings, and imagined bodily awareness. By far (90%), Hans’s most common inner experience was of images. These images usually contained color (14 of 18), were with or without movement, were with or without sound, were with or without tactile characteristics, and two times, even had the characteristic of having a voice (currently externally present or not) transmitted into the image. In general, Hans had many inner images, and these images were quite varied.

Hans demonstrated the ability to formulate a thought without symbolic representation by either images, words, or feelings. We have referred to this as unsymbolized thinking, and in fact, this may have occurred in up to 20 percent of his samples.

An interesting phenomenon for Hans is that he experiences imagined mental feelings. These are feelings that seemed to be located mentally rather than within the body, and they are the result of hypothetical thought process rather than real circumstances in his life.
CHAPTER 10

DISCUSSION

We have investigated the inner experiences of seven subjects using the descriptive sampling method, which involves the random beeping of subjects so that they may note the inner experiences that were occurring at the moment of the beep. All of our subjects were chosen for this study based on self disclosures of being fast talkers and their subsequent demonstrations of high measured rates of speaking (in excess of 188 words per minute; we remind the reader that 140 words per minute is the approximate rate at which professional speakers attempt to speak).

Review of Subjects

Before we begin our discussion of the salient characteristics of inner experiences (see Table 2) of the fast talkers, we will provide a review of each of the subjects. All the subjects are between 18 and 25 years old.

Sabrina (226 wpm) was an upper division undergraduate student with interests in forensics and psychology. The salient characteristics that were identified in her samples were unsymbolized thinking (41%), multiple inner experiences (32%), inner hearing (27%), bodily awareness (27%), feelings of nervousness (23%), sensory awareness (14%), phrase repetitions (14%), inner image (5%), and no inner experience (5%).

Anna (225 wpm, but she said that she had actually been attempting to slow her rate of speech in order to be understood) was an undergraduate student with an undeclared major. The salient characteristics of her samples were inner images (42%), bodily or
sensory awarenesses (32%), unsymbolized thinking (21%), feelings (21%), multiple experiences (21%), inner speech (11%), and no inner experience (11%).

Table 2
Speech Rate and Percent of Subjects' Samples with Each Characteristic

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Sabrina</th>
<th>Anna</th>
<th>Barb</th>
<th>Carol</th>
<th>Darlene</th>
<th>Eric</th>
<th>Hans</th>
<th>Mean</th>
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<tbody>
<tr>
<td>Speech rate</td>
<td>224</td>
<td>225</td>
<td>210</td>
<td>207</td>
<td>207</td>
<td>195</td>
<td>188</td>
<td>208</td>
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<tr>
<td>Inner Experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unsymbolized thinking</td>
<td>41</td>
<td>21</td>
<td>59</td>
<td>71</td>
<td>31</td>
<td>53</td>
<td>20</td>
<td>42</td>
</tr>
<tr>
<td>Images</td>
<td>5</td>
<td>42</td>
<td>6</td>
<td>19</td>
<td>11</td>
<td>90</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Feelings</td>
<td>23</td>
<td>21</td>
<td>27</td>
<td>18</td>
<td>13</td>
<td>11</td>
<td>16</td>
<td></td>
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<tr>
<td>Inner speech</td>
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<td>73</td>
<td>12</td>
<td>13</td>
<td>32</td>
<td>20</td>
<td></td>
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<td>18</td>
<td>32</td>
<td>26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bodily awareness</td>
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<td>16</td>
<td>14</td>
<td>5</td>
<td></td>
<td>9</td>
<td></td>
<td></td>
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<td>5</td>
<td>5</td>
<td>12</td>
<td>5</td>
<td>4</td>
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<td></td>
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<tr>
<td>No inner experience</td>
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<td>11</td>
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<td>18</td>
<td>19</td>
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<td>90</td>
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<tr>
<td>Number of samples</td>
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<td>19</td>
<td>22</td>
<td>17</td>
<td>16</td>
<td>19</td>
<td>20</td>
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</table>

Percentage totals for each subject will exceed 100% due to multiple characteristics in each sample.
Barbara (210 wpm, but she also said she attempted to slow her speech rate) was an undergraduate student with an undeclared major. Her salient characteristics included multiple inner experiences (77%), inner speech (73%), unsymbolized thinking (59%), feelings (27%), and bodily or sensory awarenesses (27%).

Carol (207 wpm) was a performing arts student who was actively involved in various acting and directing activities at the time of the study. The salient characteristics of her samples were unsymbolized thinking (71%), feelings (18%), multiple inner experiences (18%), inner speech (12%), worded thinking (12%), and inner image (6%).

Darlene (207 wpm, but she also said she attempted to slow her speech rate) was enrolled in general classes, and although her major was undeclared, she had hopes of becoming a physical therapist. Her salient characteristics of inner experience were external communication (56%), unsymbolized thinking (31%), inner images (19%), sensory awarenesses (19%), feelings (13%), and inner speech (13%).

Eric (195 wpm, but he also said he attempted to slow his speech rate) was a junior majoring in business management at the time of the study. His salient characteristics were unsymbolized thinking (53%), multiple inner experiences (32%), inner speech (32%), no inner experience (21%), inner images (11%), feelings (11%), and a bodily awareness (5%).

Hans (188 wpm, but he also said he attempted to slow his speech rate) was a University of Nevada Las Vegas (UNLV) undergraduate student who was majoring in business management at the time of the study. He was a citizen of Germany who spoke English as a second language, but he claimed to have no difficulty with speaking the language and claimed that his speech rate was not affected by his choice of language. The salient characteristics of Hans’s inner experience were inner images (90%), unsymbolized thinking (20%), imagined mental feelings (10%), and imagined bodily awareness (5%).
Salient Characteristics

We began this study with no hypotheses about the type of characteristics that we would find among the subjects with high natural rates of speech, because we preferred not to bias our view. Instead we would look for shared salient characteristics of inner experience, if any existed. We realize that a sample size of seven is too small to draw definitive conclusions that generalize to the entire population without further research, so our generalizations should be considered to be preliminary speculation. The percentage of frequency of the most salient characteristics of these subjects’ inner experiences are given in Table 2.

Each of the seven subjects had many samples with unsymbolized thinking, the experience of having a thought with clear content that is not symbolized with words, images, or feelings. Our subjects experienced this unsymbolized thinking with a range of 20% to 71% (mean 42%), thereby making it the most common single characteristic of our subjects’ inner experience. Even though many of the samples with unsymbolized thinking contained only this one inner experience characteristic, there were others that contained multiple unsymbolized thoughts. Although norms are not available, experience shows that this is a higher frequency of unsymbolized thinking than might be expected in a college student population.

Multiple inner experiences occurred with the second highest frequency across our subjects with a mean rate for all subjects’ samples of 25% even though only four subjects had this characteristic. We have described multiple inner experiences as being present when more than one unrelated characteristic of inner experience occurred at a moment in time. For example, we would label an experience of having a thought about ice cream and another simultaneous thought about a baseball game as being a multiple inner experience. However, a thought about cold ice cream accompanied by a cold sensation would not be a multiple experience. Again, norms are not available, but this percentage
(25%) of multiple inner experiences was higher than might have been expected in a college student population.

Inner images occurred nearly as frequently (mean of 25%) as multiple inner experiences. Barbara was the only subject not to experience inner images, whereas Hans had images in 90% of his samples. The images for our subjects varied in complexity from simple images of one black and white scene to highly complex images with color, movement, sound, tactile characteristics, feelings, and combined scenes. However, we should note that all images contain a substantial amount of information. For example, in Hans's sample #4, he was thinking with an image that "students don't give a damn" about the warnings of library copyright notices and the threatened punishments. His image was a black and white visual experience of a judge with a wig sitting up high on a courtroom bench with a gavel. This was a simple image by Hans's standards, and yet contained rich detail.

Inner speech, the experience of talking to oneself with exact words and in one's own voice, occurred in the samples of five of our subjects. Although two of our subjects did not experience inner speech, Barbara had this experience in 73% of her samples. However, inner speech occurred as the sole characteristic of her experience in only three samples. The fact that inner speech typically occurred as only a part of samples with more than one characteristic is shown by the finding that of the 27 samples for all subjects that contained inner speech, only 7 (5% of total samples) had inner speech as the sole characteristic.

Feelings, defined as being emotional events, were experienced by six of the subjects in this study at an average rate of 16% of the samples of all subjects. Feelings are generally quite difficult to describe, but when subjects attempt a description, they usually say that the feelings are either bodily or mental, or they are unable to decide.
The three feelings be identified as desirable were amazement, excitement and happiness. Each of these were described as not having physical aspects. In fact, all of them were described as being entirely mental phenomenon with the exception of Carol’s description of her second experience with amazement that was deeper than mental and deeper than physical yet not at all physical.

By contrast to the positive emotions, negative emotions were sometimes experienced as being mental and sometimes experienced as being physical or even both mental and physical. Aggravation, for example, was described by Darlene as being entirely mental as were Anna’s and Carol’s feelings of frustration. However, Eric’s feeling of frustration was physical in nature. Sabrina’s feelings of nervousness and Darlene’s laziness were entirely physical, and other feelings of failure, guilt, and anger had both mental and physical qualities.

Mental feelings as experienced by these fast talkers were very difficult for them to describe, so much so that they often resorted to giving analogies to help the investigators understand the experience. For example, in describing the mental component of her anger, Barbara said that the experience was unquestionably mental in nature, but she did not know how to describe it except to say that it was as if “everything was firing off.” She said this while gesturing towards her head. It was not that anything actually was firing off. Rather this was an analogy that she offered as her best attempt to help us understand. The end result was that we were certain that this was a mental phenomenon, but we still had no description of that experience.

We would also like to bring to the readers’ attention the fact that even though we had one subject, Hans, who experienced no emotional feelings of his own, he did have two samples with what we referred to as being imagined feelings. These were feelings that were a part, not of himself, but of the inner visual image or the unsymbolized thought process that he was having at the moment of the beep. For example, in one
sample, Hans having an image of a printing press while having an imagined feeling of what it would be like not to have to worry about money. In another example, with not an image but an unsymbolized thought, he experienced an imagined feeling of what it must feel like, a sort of mental sorrow, to be blind. A previous study (Hurlburt, 1994) showed that subjects with Asperger syndrome (subjects who have difficulty in taking the point of view of others) had inner experience samples that were dominated by inner images. Hans's samples were also dominated by inner images, and his only feelings were hypothetical in nature. It seems a reasonable question to think about would be whether or not it is difficult for individuals who have inner experiences dominated by visual experiences to take the point of view of others.

No inner experience characteristics were identified in 13% of the subjects' samples. All but two of the subjects identified this lack of experience at rates that ranged from 5% to 31%. These were usually samples in which the subject was mindlessly involved in some activity such as talking, writing, watching television or performing work.

Other inner experience characteristics included bodily awareness (9% of subjects' samples), sensory awareness (9%), inner hearing (5%), worded thinking (4%), and imagined feelings (1%).

Conclusions

Before we attempt to draw any conclusions based on this research, we remind ourselves that this was purely exploratory research, an exploration of a small sample intended only to be an initiation into uncharted territory that needs much further research. That being said, we note that the most prominent characteristic of our subjects' experiences, by contrast to our sense of normal college students, is that the inner experience of our fast-talking subjects is "rich" in the sense that it is complex.
complicated, richly detailed, or multiple. To quantify this concept, we use the term "rich" to refer to those samples that either involve multiple simultaneous experience or involve visual images (or, of course, both). Our intent is to use the term "rich" to mean basically "nonsimple," in the sense that a "simple" experience is a straightforward thought (or feeling, or bodily awareness, etc.) about one thing, whereas a "rich" experience is about several things simultaneously or is a richly detailed representation of one thing [for example, is a (usually visual) image]. As can be seen in Table 2, nearly half of our subjects' experiences meet this definition (multiple or image) of "rich."

To help the reader fully understand this phenomenon of complicated inner experiences, we will now review a complicated sample for each subject.

Sabrina was beeped while sitting in a psychology class during which she was aware of smelling the smoke on her right hand. Simultaneously, Sabrina was aware of a strong bodily feeling of nervousness that was strongest within her stomach and seemed to extend into all areas of her body. Also, simultaneously, Sabrina's head was so full of thoughts that it was like an overload. There were multitudes of unsymbolized thoughts, so many that they couldn't be counted. She had numerous thoughts within each of the categories of family, school, friends, what she would do in December, and guilt. Sabrina placed these thoughts in categories for ease in discussing them, but they were not categorized in her experience. This rich experience of sensory awareness, nervousness, and multiple unsymbolized thoughts as experienced by Sabrina was the most complicated experience obtained by any of our subjects.

Anna was beeped while she was sitting on her bed painting her toenails. She was aware of the physical discomfort in her waist and in the back of her legs as she was simultaneously trying to remember when she last painted her toenails. Anna had an image of herself sitting on her bed in her pajamas that included an imagined inner hearing of her brother's voice commenting on the color of the polish. This was actually a
composite of two different previous times when she had done her toenails. The various components that were identified in this experience were the doing of painting nails, bodily awareness of her waist, bodily awareness of legs, and an inner image of composite scenes with color and an imagined hearing.

Barbara was beeped at a time that involved a mindless inner speech, sensory awareness of being cold, another sensory awareness of watching, and two unsymbolized thoughts all while pumping gas. Barbara was very cold while pumping gas, and she was thinking without symbolization about really wanting to get back into the car. Additionally, she was mindlessly and repetitively counting from 1 to 10 in inner speech. Also, she was actively watching the number display on the gas pump, and she had a simultaneous additional unsymbolized thought that was a wondering of when the next beep would come.

Carol’s richest sample involved an inner image, unsymbolized thinking, and a worded thought at a time when she was involved in writing. She was able to rank each of these experiences in order of their dominance beginning with the writing of “instrumental” as being her most dominant experience at the moment of the beep. A worded thought of “instrumental ensemble” was ranked second. An inner image of an instrumental ensemble was ranked next. This was an image of several clear instruments and their players. Carol had a simultaneous unsymbolized thought that the image was not what was meant by “instrumental ensemble.”

Darlene had a rich experience of both unsymbolized thinking and a visual inner image. Darlene’s inner image was of a red Sporting Unlimited sign with white lettering on the side of an supply truck and a white truck cab to the right of the sign. Additionally, Darlene was remembering the competition between her father’s company, the Sports Warehouse, and Sporting Unlimited. This was an unsymbolized thinking of the competition, stress, supply trucks, and telephone conversations.
Eric experienced a simultaneous sequencing of multiple images and multiple inner speeches. Eric was involved in playing a computer game and thinking about a woman whom he did not like. Eric was thinking that he did not like her, and he would like her to fail. At the moment of the beep, Eric was rapidly cycling through a series of inner images of people in the community such as the woman’s boss who Eric might use to hurt her. The images were cycling through so fast that Eric was unable to discern how many were present exactly at the moment of the beep. Additionally, Eric had many distinct and separate thoughts that rapidly cycled through just as the images. Eric’s thoughts were in inner speech such as: “What can I do?”; “How can I beat her at her own game?”; “I could take members away”; “I could keep members from going”; “I could cancel all of her appointments”; “I want to screw her”; and “I want to get her fired.” This was a complicated experience of multiple images and simultaneous thoughts.

Hans had an inner image of a used car lot in which there were colored pennants flapping in the breeze all around the car lot. Hans’s main focus was on a car dealer standing in front of a red car with a price of $1,000,000 marked across the front window. The car dealer was dressed in a suit and standing on gray concrete. Hans could hear the dealer shouting “used cars” and the sounds of cars from the traffic — background noise that must have been going by. Although this sample contained only the characteristic of an inner image, the sample is complicated by the many characteristics (color, movement, sound, price tag, etc.) of the image that occupied Hans’s attention.

Two other characteristics warrant attention: the relatively high rate of unsymbolized thinking and the relatively low rate of inner speech. We are thus led to the speculation that high rate of speech is associated with infrequent occurrences of words in inner experience. When inner speech was frequent in our sample (in the case of Barbara), it was nearly always only as one aspect (albeit often the most prominent aspect) of multiple (and therefore “rich”) experience.
The current study has provided evidence that our subjects who shared the external common characteristic of fast speech also shared common internal characteristics that include unsymbolized thinking at a rate of 42%, a propensity for rich inner experiences at a rate of 46%, and a mental component to their feelings that is very difficult to talk about.

Unsymbolized thinking occurred at a rate far higher than that of the combined total of the 3 characteristics that included words: inner speech (20%), inner hearing (5%), and worded thinking (4%). Therefore, we conclude that words are less common in the inner experience of these fast talkers than unsymbolized thinking.

Difficulties With This Study and Future Recommendation

The initial problem that we encountered with this study was that no research literature was found to detail the best method for finding individual speech rates, and no research was found that provided measurement of the normal rate of speech. We used only a small convenience sample to perform our pre-study to determine the range of normal speech rate, and we recognize that speech rate is an area in which much research still needs to be done. Slowed or quickened speech rates are often cited as indicators of mental problems, so it would seem that we should have a standard around which to base the perceptions of altered speech rates. If we are correct in our tentative conclusion that people with high natural rates of speech have shared common inner experiences, research should be done to determine what qualifies as high natural rates of speech.

The story-telling procedure that we used for the measurement phase of this study seemed to be appropriate for finding samples of subjects with differences in their speech rates, but may not be the best method for finding the exact natural rate of speech for subjects. Most of the fast talkers admitted to slowing their speech rates in order to be understood. Additionally, the storytelling method does not account for the pauses that
may come during speech. We should note that we did have subjects who had short pauses while retelling the story, but their rates remain large enough for our purposes.

Another problem, one that we have previously stated, was that our sample size was too small to draw definitive conclusions. Therefore, this study should be replicated with larger sample sizes. In addition, studies should be done that elicited a larger number of samples from each subject over a longer period of time.

The descriptive sampling method requires a lengthy time commitment from both the investigators and the subjects, and the risk of subjects dropping out of such a study would seem to be high, but we did not encounter this problem. A similar problem that we did encounter was that subjects have private lives that often require them to put sampling on hold for events such as funerals, vacations, final exams, surgery and broken hot water heaters. These are normal difficulties; descriptive experience sampling investigators need to be patient.

The types of experiences that we hoped to learn about are often difficult for the subjects to describe and difficult for the investigators to ask about without leading the subject or influencing the descriptions. However, we found that most subjects quickly learned the procedure, and the discussion sessions moved along faster by the second or third day of sampling.

A final problem that we should identify is that our results are only accurate to the extent that our subjects were honest, that they had true understanding, and we understood their intents in describing their experiences. Although we assure the subjects that they may refuse to provide information at any time, we can not guarantee that they will always be honest. However, we trust the subjects and we attempt to report aspects of inner experience only to the extent that we understand them.
Bibliography


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