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Effects of Social Comparison and Perceived Severity of Illness on Symptom Recognition and Monitoring

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EFFECTS OF SOCIAL COMPARISON AND PERCEIVED

SEVERITY OF ILLNESS ON SYMPTOM RECOGNITION AND MONITORING

A THESIS SUBMITTED TO

THE FACULTY OF THE GRADUATE SCHOOL

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BY

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CHAPTER I

LITERATURE REVIEW

Physicians have many medical tests and diagnostic tools available to them in order to correctly diagnose their patients. Medical doctors can conduct physical exams, use a variety of objective measures (e.g., blood tests, blood pressure, EEG), and rely on the patients' verbal reports of symptoms. But what brings the patient into the doctor's office in the first place? The patient, without the aid of the diagnostic tools available to professionals, must decide that he/she is suffering from a specific set of symptoms and that these symptoms warrant the consideration of a medical doctor. In addition, most patients form some sort of lay-theory about the diagnosis for their specific set of symptoms before ever seeking treatment (Sinacore, 1989). Even before any lay diagnosis is made, however, the individual must first recognize that certain symptoms are present. The social and cognitive factors that influence initial symptom recognition are the focus of the present study. Understanding this process of symptom recognition is not only important for discerning what factors are involved in bringing patients to the doctor's office. It also affects the physicians' diagnoses as well, because patients' verbal reports are part of the physicians' diagnostic tools (Skelton & Pennebaker, 1982).

Traditionally, illness has been understood within the framework of "the germ model" of disease. This model suggests that an individual experiences physical

symptoms when some external agent (i.e., a germ) invades the body (Lau &

Hartman, 1983). These unpleasant physical symptoms cause the patient to visit a

doctor. The doctor then kills the germ, curing the patient of the illness.

Unfortunately, this germ model is entirely too simplistic to explain how most people

experience disease. Skelton and Pennebaker (1982) list three types of instances that

demonstrate the limitations of the germ model in explaining all illness situations.

First, the experience of symptoms or bodily sensations often occurs without any

detectable physiological change (e.g., phantom-limb pain). Second, there are

differences in pain experiences and symptom reporting across cultures. For

example, women of the Arapesh tribe show no signs of morning sickness during

pregnancy, while this symptom is considered a "normal" part of pregnancy in

western cultures. Third, people are not very accurate at reporting and interpreting

symptoms that can be objectively measured (e.g., heart rate). Clearly, people do

not just respond to presence of the symptoms. They consider the nature of the

symptoms and what they might indicate (Bishop, 1987).

Obviously, there must be other factors which contribute to the perception of

symptoms other than the mere presence of germs in the body. Research has

indicated that such diverse factors as illness schemas or prototypes (Anderson &

Pennebaker, 1980; Bishop, 1987; Bishop, Briede, Cavazos, Grotzinger, &

McMahon, 1987; Bishop & Converse, 1986; Murray, 1990; Pennebaker, 1982;

Skelton & Pennebaker, 1982), social comparison (Colligan & Murphy, 1982;

Kerckhoff & Back, 1968; Sanders, 1982; Stahl, 1982), availability (Skelton et al.,

1982; Skelton & Strohmetz, 1990), gender (Bishop, 1987; Moos & Van Dort, 1977), and perceived severity of symptoms (Hunter, Lohrenz, & Schwartzman, 1964; Murray, 1990) can contribute to physical perceptions of illness. These contributing factors will be discussed along with the unique conditions of medical students' disease and mass psychogenic illness as illustrations of the symptom recognition process.

Schema Use In Perception

Attribution theorists (e.g., Jones & Davis, 1965; Kelley, 1967) hold the view that individuals who perceive social situations act as naive scientists. These naive scientists use rational, logical thought processes to gather cause-effect information from past experiences and current situational factors in order to make accurate causal attributions. The prevailing viewpoint today, however, is not of a highly rational perceiver scientifically interpreting the world. Rather, it is theorized that individuals rely on very little, and often incomplete, information when making decisions and judgments. Frequently, decisions need to be made under time constraints that do not allow for a thorough investigative process. In addition, in many situations (e.g., meeting a prospective employer, or visiting a foreign country) only limited or ambiguous information is available. For purposes of efficiency and due to practical limitations, individuals make use of schemata in order to assess new information and situations. Schemata are scripts or prototypes that people use as a framework for making behavioral, social, or cognitive inferences (Fiske & Taylor, 1984). These prototypes are not clearly defined sets of rules. Often referred to as

"fuzzy sets" (Bishop et al., 1987; Murray, 1990), schemata are repertoires of concepts that have been acquired through life experience. When very little information is available or when the information is ambiguous, people are more likely to rely upon schemata to help define the situation and to aid in decision-making (Fiske & Taylor, 1984; Skelton & Pennebaker, 1982). A person can maintain more than one schema for any given situation. The factors that influence an individual to choose one script over another will be discussed in more detail later. The schemas that a person holds will limit the information that is attended to in the environment. Specifically, individuals are more likely to pay attention to schema-consistent information than to that which is inconsistent with a particular schema (Pennebaker, 1982).

Lay Use of Illness Prototypes

The use of prototypes is often employed when an individual is faced with the possibility of illness. Much of the process of becoming ill involves uncertainty. People may ask themselves, "Am I sick? If I am sick, what disease do I have? Do I need to see a doctor? How serious is it? How should the illness be treated?" Illness prototypes are well suited to provide some structure and guidance to people facing such confusing, and often disturbing, questions. Illness prototypes held by lay people consist of lists of symptoms which are associated with specific diseases. These symptom lists do not necessarily coincide with those established by the medical community. The main function of these disease prototypes is to help lay people bring meaning to their physical or mental symptoms. A perfect fit between

the symptoms that an individual experiences and the prototype associated with a particular disease is not required (Bishop et al., 1987). However, research has shown that the more symptoms that a person experiences that fit a particular illness prototype, the more likely he/she is to interpret those symptoms as indicative of that particular illness (Murray, 1990).

Two studies conducted by Bishop and Converse (1986) help to substantiate the existence of illness prototypes. In the first study, prototypical symptom lists were generated for nine diseases: chicken pox, flu, hay fever, heart attack, mumps, pneumonia, strep throat, stroke, and ulcer. Subjects were then provided with a story about an individual with either six prototypical symptoms (high prototype condition) of a disease, four prototypical symptoms and two non-prototypical symptoms (medium prototype condition), two prototypical and four non-prototypical symptoms (low prototype condition), or six non-prototypical symptoms (random condition). On a 7-point scale, subjects were asked to indicate whether the symptoms indicated that the individual had a disease. If the subjects thought that a disease was indicated, they were asked to name the disease and rate their confidence in their response. Results showed that subjects in the high prototype condition were significantly more likely to perceive the descriptions as indicating a disease than medium prototype, low prototype, or random condition subjects. Subjects also made more correct disease identifications with the high prototype sets than with the other sets of symptoms.

In the second experiment, the symptom sets from the first experiment were

paired with photographs and names of individuals who supposedly were experiencing the listed symptoms. After subjects reviewed the cases, they were asked to recall the symptoms of each individual. The results showed that subjects were able to recall significantly more symptoms from high prototype sets than from low or random sets.

Illness prototypes are not only used for matching symptoms with a particular disease. Because schemas limit the stimuli that people pay attention to in the environment, they also guide symptom-monitoring behavior. People do not just passively take in all available sensory data. They selectively choose information that is in line with the schemas that they hold (Anderson & Pennebaker, 1980). If a particular symptom is not part of a disease prototype, it is less likely to be noticed. An illness schema can act as a hypothesis which is used as a guide in searching for relevant symptoms. Symptoms are more likely to be noticed if they are hypothesis-consistent and are likely to be ignored if they are inconsistent with a salient hypothesis. When symptoms are ambiguous, they are likely to be interpreted as hypothesis-consistent (Bishop et al., 1987; Skelton & Pennebaker, 1982).

Leventhal (1986) describes a situation that could prime symptom-monitoring behavior by providing a salient illness schema. If a friend dies from cancer, a person may begin to notice and continually monitor previously ignored benign physical symptoms, such as skin blemishes. These ambiguous symptoms are likely to be re-interpreted as potential signs of cancer.

One study that demonstrated this hypothesis-guided interpretation of

symptoms was conducted by Anderson and Pennebaker (1980). Forty-nine subjects were divided into three groups. One group (pain condition) signed consent forms that indicated that the subjects would come into contact with a stimulus that produces pain. Subjects in the second group (pleasure condition) signed identical consent forms to those signed by the pain group members except that the word "pain" was replaced with the word "pleasure." A third group of subjects (control condition) signed consent forms with no information regarding the painfulness or pleasurableness of the stimulus. Subjects were then asked to place their finger on a vibrating emery board and to rate the experience on a 13-point pain-pleasure scale. Highly significant differences were found between the three groups. Pain condition subjects reported the experience as painful, pleasure condition subjects reported experiencing pleasure, and control condition subjects' ratings were very close to the neutral point of the scale. During the debriefing, the pain condition subjects indicated that they did not think that the stimulus could be interpreted as pleasurable. Similarly, the pleasure condition subjects could not believe that the stimulus could hurt.

Another study (Burnam & Pennebaker, 1977) also illustrates the effects of suggestion on perception of symptoms and symptom interpretation. After the subjects participated in physical exercise, the experimenter casually commented to half of the subjects, "As you know, this is the time of year when we are surrounded by cold and flu-producing viruses, and many people aren't feeling well." Subjects then filled out a checklist of 12 common symptoms. Some of the items on the

checklist were associated with flu symptoms. Others were associated with physical exercise. Results showed that subjects in the flu-suggestion condition checked more flu related symptoms.

The studies mentioned above demonstrate that symptom awareness involves more than simply paying attention to physical sensations. People use schemas, illness prototypes, as guides in order to lend meaning to their symptoms. These prototypes play a key role in narrowing the focus during the selective search process of symptom-monitoring behavior. Symptom searching behavior is not an objective, unbiased activity. Symptoms that are hypothesis-confirming are more likely to be attended to than symptoms which fall outside of the scope of the prototype. In addition, ambiguous symptoms are reinterpreted within the framework of the illness schema (Pennebaker, 1982).

Availability Heuristics

A dilemma arises, however, when more than one plausible hypothesis can be formed to explain a set of symptoms. Since many physical symptoms are ambiguous, it is likely that many competing prototypes could be generated for each symptom (Skelton & Pennebaker, 1982). What are the criteria for choosing a guiding hypothesis? One theory used to help explain this dilemma is that of *availability heuristics*. This cognitive tool is employed when a person estimates the probability of the occurrence of an instance by the ease with which it comes to mind (Tversky & Kahneman,1973). In other words, people assume that if an association is made easily, then it must be correct.

Taylor (1982) lists three processes that individuals use to estimate the frequency of a situation. These are the ease of retrieval of the information from memory, the ease of construction, and the ease with which the association is made. These factors, and not the actual number of examples, are relied upon to provide frequency estimates. Thus, information that fits within a pre-existing schema could be recalled more easily. Reliance upon availability can lead to biased perceptions of the world. Rodin (1978) provides an example of this bias: If a smoker seldom encounters others who suffer from emphysema or lung cancer, she may tend to underestimate her chances of contracting these diseases and resist admonitions to quit smoking. On the other hand, this same individual may overestimate her likelihood of contracting breast cancer because she frequently hears in the media about famous people who have it. The availability of vivid images of an illness play a role in probability judgments concerning illness susceptibility (Rodin, 1978). Skelton and Strohmetz (1990) refer to this as a "symptom priming effect" (p. 450).

Skelton and Pennebaker (1982) identify some factors that may increase the availability of physical symptoms. Most of the time people focus their attention on external stimuli while internal processes are not closely monitored. However, the more one attends to internal stimuli, the more those stimuli are evaluated. When external stimuli are minimized, monitoring of internal processes increases. Thus, these internal processes are made more cognitively available. In addition, experiencing *novel* bodily sensations also increases internal monitoring. Once attention is focused internally, evaluation of physical sensations will be extreme.

The process of symptom recognition proceeds as follows: Available stimuli are evaluated; plausible hypotheses are generated; and then, these hypotheses are used as guides to search for confirmatory information.

Selective Monitoring of Symptoms

"We do not passively wait for information or stimuli to bombard our receptors and brain. Rather, we actively and selectively seek information" (Pennebaker, 1982, p. 104). In the preceding sections, the role that illness schemas plays in guiding the selective search process was explored. In this section, the concept of symptom-monitoring or symptom-awareness will be discussed in greater detail including the factors that trigger *unguided* searches for physical symptoms.

One factor that has a surprisingly strong influence on symptom-searching behavior is mere observation. When individuals simply hear about a set of symptoms or witness another person experience certain physical sensations, they will begin to search their own bodies for those symptoms (Pennebaker, 1982; Skelton & Pennebaker, 1982; Skelton & Strohmetz, 1990). Physical symptoms can "spread" via mere observation. Two very interesting naturalistic studies were conducted which illustrate the suggestive influence of observation. The first involved the symptom of itching manifested in scratching behavior. Two confederates sat down next to a student in a college library. One of the confederates did one of the following things: scratched her skin and claimed that a mosquito had bitten her (mosquito condition), scratched her skin and complained of sun poisoning (sun condition), scratched her skin and said she was hungry (no cause condition), or did

not scratch and said she was hungry (no scratch condition). The two confederates then left the library. An observer at a nearby table recorded whether or not the student scratched in the next one-minute period. This study was designed to test the effects of different causes on symptom-monitoring behavior. The results showed that the subject was more likely to engage in scratching behavior in any of the scratch conditions (regardless of cause) compared to the "no scratch condition." Scratching behavior was unrelated to the cause of the itching (Pennebaker, 1982; Skelton & Pennebaker, 1982). Just seeing another person scratching triggered the symptom-searching process of monitoring the skin to see if it felt itchy. Without this visual cue, people remain unaware of benign bodily sensations.

The second study used coughing as the target symptom. During exams in large lecture halls, the number and location of spontaneous coughs were recorded. The results showed that coughs occur in "bunches." A large number of coughs would erupt within 3 - 5 seconds of each other followed by a period of silence. In addition, the closer one was to someone who coughed, the more likely it was that he would cough too. Just hearing someone else cough triggered people to monitor their own throats for tickling sensations (Skelton & Pennebaker, 1982). An alternative explanation for this phenomenon was suggested by E. J. Posavac (personal communication, December 20, 1994). Several of the students may have been suppressing coughs in the silent exam setting. When one student finally did cough, thus breaking the silence, this allowed the other reluctant coughers to cough also. The silence returned after these coughs were released.

Skelton and Strohmetz (1990) demonstrated that just thinking about health, in general, can trigger greater symptom awareness. Twenty subjects were presented with a series of word pairs and were asked to decide which word in each pair brought thoughts of health or illness to mind. After completing this task, these subjects filled out an inventory of symptoms (the Pennebaker Inventory of Limbic Languidness, PILL; Pennebaker, 1982) by indicating which symptoms they have personally experienced in the last month. Another group of 20 subjects performed these tasks in reverse order (i.e., they filled out the PILL first and then did the word pair task). Results showed more symptom-reporting when the word pair task was performed first.

The number of competing stimuli can affect the likelihood of noticing a physical sensation. The probability of an individual noticing a particular stimulus is inversely related to the number of competing stimuli that are present at the time (Pennebaker, 1982). An experiment was conducted to demonstrate this relationship (Pennebaker & Brittingham, 1981). Subjects were randomly assigned to work on math problems at either a slow, moderate, or fast pace. They were told that they would receive short bursts of air on their arm and back during the study. Subjects received six air squirts on their arms during the arithmetic task, but none on their backs. Results showed that only the subjects in the slow paced condition were able to accurately recall the number and location of the air squirts. These results are presented as evidence that lack of environmental stimulation allows for more attention to physical sensations.

Another study was performed that provides support for the idea that the number of competing stimuli and symptom-monitoring are inversely related (Pennebaker, 1980). Introductory Psychology classes were shown a movie which had been previously rated on how interesting it was (at 30-second intervals). The number of coughs that occurred during the viewing were counted. The results showed that there were significantly more coughs during the less interesting parts of the movie than there were during the more interesting parts. Again, an internal stimulus (i.e., dry or scratchy throat) was more closely monitored when external stimuli were reduced.

Stress is frequently cited as a major factor that contributes to symptom awareness (see review of literature on *mass psychogenic illness* and *medical students' disease* below). A stressful environment can produce a number of ambiguous internal physical sensations. The more symptoms that are present, the easier it will be for an individual to confirm any number of illness schemas. Pennebaker (1982) believes that most people do not recognize the common symptoms of stress. These symptoms, then, could be easily misinterpreted as being associated with other causes. Pennebaker concludes that the best way to avoid selective search behavior is to eliminate or reduce the causes of stress in a person's environment. As Skelton and Strohmetz (1990) demonstrated, however, stress is not a necessary element in producing symptom awareness. Merely the thought of health issues can bring about search behavior.

Mass Psychogenic Illness

Mass psychogenic illness (MPI) occurs when a group of people experience similar physical symptoms that could be indicative of an organic disorder but in actuality have a psychological cause (Colligan & Murphy, 1982; Rockney & Lemke, 1992). This phenomenon has been referred to with various labels: mass hysteria (Rockney & Lemke, 1992), hysterical contagion (Skelton & Pennebaker, 1982), and Multiple Occurrences of Unexplained Symptoms (MOUS) (McGrath, 1982). Incidents of MPI typically occur in work or school settings where groups of people are in close proximity to one another (Phoon, 1982; Skelton & Pennebaker, 1982). The contagious episodes follow a typical pattern of progression and the symptoms experienced by most of the victims are remarkably similar.

Most incidents of MPI occur in relatively isolated environments where individuals are under high levels of stress (Skelton & Pennebaker, 1982). Virtually every episode of MPI occurs when people are tense, anxious, or overworked (Pennebaker, 1982). Most MPI situations are unexpected, disruptive, and short-lived (Kerckhoff & Back, 1968). Rockney and Lemke (1992) list several characteristic features of mass hysteria: (a) There is an absence of evidence for a physical cause, (b) it occurs more often in females than in males, (c) transmission occurs by seeing or hearing about others with symptoms, (d) symptoms spread rapidly and end rapidly, and (e) physical or psychological stress is present.

The typical symptoms reported in a MPI outbreak are those which are usually associated with stress. The prevailing explanation for this phenomenon is

that hearing about or seeing someone else become physically ill causes one to monitor her own symptoms. In high stress environments, it is likely that many people are experiencing the often ambiguous symptoms of stress. When these individuals begin to attend to their physiological state, they may incorrectly attribute their stress symptoms to the alleged illness that is "going around." Symptoms most often reported in the literature are: dizziness, headaches, nausea, vomiting, chest pains, fatigue, rash, difficulty breathing, and nervousness (Colligan & Murphy, 1982; Kerckhoff & Back, 1968; Rockney & Lemke, 1992).

To illustrate the dynamics that take place during MPI episodes, two examples, one which occurred in a school and another in an industrial setting, will be presented. The first is a famous case which occurred in June of 1962 in a dress-making factory (Kerckhoff, 1982; Kerckhoff & Back, 1968). Several employees developed unexplained symptoms of nausea and skin irritation. Rumors quickly spread throughout the clothing plant and in the media that a bug arrived in a shipment of material from England. The insect was believed to have bitten the infected workers and to have caused the mysterious symptoms. As this "June bug" theory spread, more victims reported being "bitten" and they subsequently experienced the same physical symptoms. Management officials of the company had the building fumigated and the matter was thoroughly investigated by the U.S. Public Health Service Communicable Disease Center. No insects were found and no physical explanation for the outbreak of symptoms could be identified. The incident began on a Wednesday. By the time the incident ended on the following Monday, 62

cases had been confirmed. Of the 62 affected workers, 59 were female. The "experts" came to the conclusion that the entire incident was due to "'nothing', just anxiety" (Kerckhoff & Back, 1968, p. 7). The factors that contribute to an outbreak of MPI are not "nothing," however. Among these contributing factors are stress, gender, social isolation, social comparison, and a variety of personality characteristics.

The second example (Rockney & Lemke, 1992) occurred more recently, in February of 1991, at Central Falls High School in Rhode Island. Twenty-one students and teachers developed symptoms ranging from abdominal pain and hyperventilation to irritated eyes and dizziness after reports circulated that toxic gas had emanated from an air vent in one of the classrooms. The first student to become ill sat closest to the suspect vent. She fell to the floor crying and complaining of stomach pains. Students sitting close to this student also developed symptoms, as did students in other classrooms who could see the initial incident from the door. Of the 21 people affected, 16 were female.

Skelton and Pennebaker (1982) describe the general progression of events in a typical MPI incident. First, a few people develop symptoms that can either be seen or heard by others. Second, a hypothesis is formed regarding what triggered the symptoms. Finally, others engage in hypothesis-confirming symptom-searching behavior. This process repeats itself as more people become "infected." Pennebaker (1982) describes a mini-contagion incident that occurred during one of his classes that met between the hours of 10:30am and 1:30pm. It was a hot day. He and many

of his students were experiencing relatively ambiguous symptoms produced by the heat (i.e., they felt drowsy and sweaty). One student indicated that she thought she smelled natural gas. Many of the students, including Pennebaker as well, began feeling nauseous and dizzy. The introduction of the new hypothesis (i.e., gas leak) caused the reinterpretation of ambiguous symptoms into schema-consistent symptoms. Hunger was reinterpreted as nausea, and drowsiness seemed more like dizziness in light of the new hypothesis. Schema-inconsistent symptoms (e.g., sweating) were ignored.

In the next section, a phenomenon similar to MPI, medical students' disease, will be discussed. The same processes that occur on a group level in MPI occur at the individual level in medical students' disease.

Medical Students' Disease

During their course of studies, medical students are required to read about many diseases, examine patients with these diseases, and be able to knowledgeably discuss them. This intense concentration on the symptoms of various illnesses combined with high levels of stress inherent in medical training provides the perfect environment for the development of both illness schemas and ambiguous stress-related symptoms. When medical students attribute their symptoms of stress to the latest illness that they are studying, this phenomenon is referred to as medical students' disease (MSD). Sometimes it is also called hypochondriasis in medical students (Hunter et al., 1964; Kellner, Wiggins, & Pathak, 1986; Woods, Natterson, & Silverman, 1966) or nosophobia (Hunter et al., 1964). MSD is a relatively

common occurrence among medical students. Prevalence rates are reported between 70% (Hunter et al., 1964) and 78.8% (Woods et al., 1966).

The typical progression follows that of MPI and other instances of schema-consistent symptom searching. Students experience the normal stresses of medical school while they are hearing about, reading about, and witnessing first hand symptoms that are associated with specific illnesses. They begin to attribute their previously ignored ambiguous stress symptoms as those which fit a specific disease prototype.

Hunter et al. (1964) report a typical example of a MSD case. A third-year medical student fell asleep studying at his desk. He experienced some mild hypnagogic phenomena. The student became anxious, and had a restless sleep. In the morning he decided that he was suffering from temporal lobe epilepsy.

It could be argued that stress alone can bring about a focus on an illness schema. Just having ambiguous symptoms that one does not associate with stress may cause anyone, not just medical students or those exposed to an illness hypothesis, to misattribute symptoms. One study (Kellner et al., 1986) compared the scores of 60 medical students to those of 60 law students on the Illness Behavior Questionnaire and the Illness Attitude Scales. The results showed that medical students took more health precautions and paid more attention to physical symptoms than did law students. Students who study law and those who study medicine are both likely to be experiencing very high levels of stress. The exposure to health issues, however, seems to play a necessary role in producing symptom-monitoring

behavior.

It is important to note that neither MPI nor MSD should be viewed as an example of abnormal functioning. The behaviors exhibited by individuals in these situations are not indicative of the more serious disorder of hypochondriasis, which has been defined as "a morbid mental symptom which consists in an undue preoccupation in one's own state of health with a tendency to find evidence of disease from insignificant signs" (Hunter et al., 1964, p. 147). MSD and MPI are normal reactions to certain conditions (i.e., when attention is directed to the body, when there is a belief that one may have been exposed to symptom-causing stimuli, or when an illness prototype becomes salient) (Skelton & Strohmetz, 1990). In contrast to MSD, which occurs frequently, hypochondriasis is very rare among medical students. Students with MSD usually approach their professors with their concerns and are easily convinced that they are not symptomatic. On the other hand, students who truly do suffer from hypochondriasis are not easily dissuaded (Hunter et al., 1964).

Social Comparison

According to social comparison theory (Festinger, 1954), when faced with ambiguous information, individuals are likely to compare themselves with others in order to better understand the situation and themselves. Similar others are more likely than dissimilar others to be used as sources of comparison. Individuals will seek out comparisons with others who are believed to be similar to themselves (Swallow & Kuiper, 1988). Social comparison theory has stimulated a large amount

of research which focuses on the issues of similarity of comparison others (see Olson & Hazlewood, 1986). Although similarity of a comparison other has never been directly manipulated in a study of symptom-monitoring behavior, there are many indications in the literature that suggest that symptom-monitoring behavior is more likely to occur when the model is similar rather than dissimilar to the target person.

Social comparison theory is useful in explaining the contagion of sensations/symptoms (Pennebaker, 1982). The hypotheses that one develops about a set of symptoms is influenced by either overt or subtle suggestions by other people (Skelton & Pennebaker, 1982). Following from the theory, individuals would be more likely to adopt hypotheses suggested by others who are similar to them than by those who are dissimilar. Sanders (1982) notes that social comparison is influential in an individual's choice of health-relevant behavior.

Information from cases of mass psychogenic illness provides support for the influence of social comparisons on the monitoring, reporting, and interpretation of physical symptoms. Singer, Baum, Baum, and Thew (1982) point out that social comparison theory would predict that in an outbreak of MPI in an ethnically diverse setting, "infected" persons would be concentrated in one ethnic group. This prediction is supported in several instances. An outbreak of hysterical contagion occurred in a factory in Singapore (Phoon, 1982). The factory employed 9% Indians, 23% Chinese, and 65% Malays. Of the 84 workers affected by the incident, 83 were Malays, none were Chinese, and only one was Indian. Another example is found in the "June bug" incident where almost all of the victims were white

(Kerckhoff & Back, 1968). Although ethnicity is a factor in social comparisons, this does not imply that ethnic groups differ in their propensity to develop MPI. It is just that people respond more to MPI sufferers of the same ethnic backgrounds than to those with different backgrounds.

In addition to ethnicity, another social comparison factor is gender (Colligan & Murphy, 1982; McGrath, 1982; Singer et al., 1982). Women are more likely to be the initiators of an MPI incident and consequently, more women are infected. Other women may feel more "at risk" when they see or hear about another woman who becomes ill with a mysterious sickness. MPI also seems to travel within social support groups in industrial settings (Stahl, 1982). People who are friends or who have similar job responsibilities tend to develop similar symptoms, whereas more isolated workers remain symptom-free.

Optimistic Bias

A phenomenon known as *optimistic bias* may be an additional factor in the recognition of symptoms. Optimistic bias is a general tendency for people to perceive their own risks as lower than others' risks (Whalen, Henker, O'Neil, Hollingshead, Holman, & Moore, 1994). Also referred to as *perceived invulnerability, positive illusion*, or *unrealistic optimism*, this phenomenon may occur when an individual is faced with an undesirable feature of a similar comparison other. For example, a person may learn that others who are similar to her are at risk for contracting the AIDS virus. This person may believe that she is less at risk than these other people for this particular disease. She may even be correct in her belief.

However, it is logically impossible for <u>everyone</u> to be less at risk than the average.
An optimistic bias effect can be demonstrated in studies where most or all of the
respondents believe that they are less at risk than the others. Whalen et al. (1994)
found an optimistic bias effect in children. Perceived invulnerability was greatest for
controllable or stigmatizing events. No gender differences were found for this effect.
Another study (Weinstein, 1982) demonstrated the same optimistic bias effect in
college students who compared their own risk with that of their peers for 45 different
life- and health-threatening problems.

<u>Symptom Severity</u>

Are symptom-recognition and monitoring greater when the symptoms or
underlying illnesses are perceived to be serious or severe compared to when they are
seen as relatively benign? Clearly, it has been demonstrated that symptom-searching
behavior occurs for even the most innocuous symptoms (e.g., coughing, itching).
The literature is mixed, however, concerning whether or not this effect is greater
when the symptoms, or the perceived consequences of the symptoms, are more
serious.

In support of the symptom-severity/symptom-recognition connection, Murray
(1990) lists seriousness as one of the factors that contributes to lay representations of
illness. Other support comes from two studies (Bishop et al., 1987) which found that
disease recognition and identification were greater for more serious symptom sets
than for less serious ones. A connection between these two variables was also found
by Weinstein (1982) and by Soni and Windgassen (1991). However, these latter

findings were in the opposite direction of what Bishop et al. (1987) reported, that is, symptom severity served to decrease symptom-recognition/reporting, possibly due to an increase in perceived invulnerability. In contrast, Hunter et al. (1964) found no relation between the severity of symptoms and medical students' disease. Also, Weinstein (1980) found no relationship between symptom severity and perceived invulnerability.

Goals of the Study

The goals of the present study were to examine the effects of the perceived severity of an illness and the similarity of a comparison other on the symptom-monitoring process in a non-stressful environment and to test for an optimistic bias effect. Subjects were presented with a description of a new (but fictitious) illness. The illness was described as having either very serious consequences (high severity condition) or relatively benign consequences (low severity condition). The population of victims of the disease was described as not very similar to the subjects, moderately similar to the subjects, or very similar to the subjects. In addition, some subjects did not read any description of the illness (control condition). Thus, seven experimental conditions were used: low similarity/low severity, moderate similarity/low severity, high similarity/low severity, low similarity/high severity, moderate similarity/high severity, high similarity/high severity, and a control condition.

Several hypotheses were made: (1) Subjects who read about the illness (regardless of condition) would exhibit more symptom-monitoring behavior than

subjects in the control condition. (2) As the degree of similarity of the affected population increased, symptom-monitoring would increase (i.e., subjects in the high similarity conditions should show more symptom-monitoring than subjects in the moderate or low similarity conditions, and subjects in the moderate similarity conditions should show more symptom-monitoring than those in the low similarity conditions). (3) Symptom-monitoring would increase as illness severity increased. (4) Subjects who read about an illness would rate others' risk of contracting the disease as greater than their own.

Chapter II

METHOD

<u>Subjects</u>

Subjects were 158 (39 male and 119 female) undergraduate students enrolled in introductory psychology courses at Loyola University. They ranged in age from 17 to 37 years with 93% between the ages of 17 and 19. Most of the participants were Freshmen ($\underline{N}$ = 131). They received one experiment credit for their participation. Subjects were randomly assigned to the experimental conditions in this between-groups design.

<u>Instruments</u>

A packet with the title: "Assessment of College Students' Health Knowledge" (see Appendix A) was used. The packet contained four questionnaires. The first had the heading "General Information" and contained questions regarding demographics of subjects (e.g., age, sex, major, etc.).

The second questionnaire was called "General Health Knowledge" and contained questions such as "What is considered a high cholesterol level?" and "What is the 'normal' human body temperature?" Data analysis was not conducted on this second questionnaire. It was included in order to disguise the manipulation.

The third questionnaire had the heading "Learning About New Health Issues"

and contained the social comparison and severity of illness manipulations. The questionnaire contained a description of a "new disease" among other filler questions about how new health information is acquired. The description described a fictitious new illness, Raddell's disease, that is affecting either elderly nursing home patients (low similarity condition), or college students in Canada (moderate similarity condition), or United States college students including one case at Loyola (high similarity condition). The disease was described as having either low or high severity consequences. The description included seven possible symptoms: headaches, fatigue, difficulty concentrating, sore muscles, nausea, chest pain, and a rash. With the exception of the rash, these symptoms were chosen because they are common, they can be symptoms of stress, and they are frequently cited in cases of mass psychogenic illness (cf. Colligan, Pennebaker, & Murphy, 1982). The rash was included because the literature on illness prototypes shows that an individual need only experience most of the symptoms in an illness set in order to identify with that illness. Seven symptoms were chosen because memory research has shown that the short-term memory capacity is 7 ± 2 items (Anderson, 1985). This third questionnaire also included five questions about the described illness as a manipulation check. In addition, two optimistic bias items asked the subjects to rate their own level of risk for RD and that of others. Responses were given on a 1 (not at all likely) to 10 (extremely likely) scale.

The fourth questionnaire in the packet contained the dependent measure. It had the heading "Personal Health History" and included several general questions

about the subjects' health. In addition, it included a modified version of the Pennebaker Inventory of Limbic Languidness (PILL)(Pennebaker, 1982). This is a checklist of common symptoms. The internal consistency of the PILL is reported to be .88, and the test-retest reliability across a two month period is .79 (Pennebaker, 1982). Subjects were asked to indicate the number of times in the last two weeks that they recalled experiencing each of the symptoms. The seven symptoms from the fictitious disease were interspersed in the symptom list. Only these seven symptoms were used in the data analysis. This was called the symptom frequency score. The number of symptoms indicated by the subject served as the operational definition of symptom-monitoring.

Procedure

Subjects were informed that they would be participating in a study about "health issues pertaining to college students." They were told that their participation would include filling out several questionnaires regarding their personal health history, their knowledge of new illnesses and their knowledge of health in general. They were informed that their responses would be kept completely anonymous and confidential.

After informed consent forms (see Appendix B) were signed, each subject received the "Assessment of College Students' Health Knowledge" packet. Upon completion of all four questionnaires, subjects were thoroughly debriefed orally and in writing (see Appendix C). Time was allowed to answer any questions that the subjects had. Subjects were thanked for their participation and dismissed.

CHAPTER III

RESULTS

Effect of Knowledge of a Disease on Symptom-Monitoring

It was predicted, in Hypothesis 1, that subjects who read about Raddell's Disease (regardless of condition) would exhibit more symptom-monitoring behavior than subjects in the control condition. A greater number of symptoms were reported on the PILL by treatment groups ($\underline{M}$ = 14.00) compared to the control group ($\underline{M}$ = 12.83); however, this difference was not significant, $\underline{t}(153)=.49$, $\underline{p}=.63$.

Effect of Social Comparison on Symptom-Monitoring

It was also predicted that as the degree of similarity of the affected population to the subjects increases, symptom-monitoring would increase (Hypothesis 2). As shown in Table 1, more symptoms were reported by subjects in the moderate similarity condition than by subjects in the other two similarity conditions when RD was described as not very serious (low severity condition). When RD was described as serious (high severity), however, subjects in the low similarity condition reported more symptoms than subjects in the other two conditions. A 2 (severity) X 3 (similarity) analysis of variance was used to examine group differences in symptom-monitoring. Because no significant interaction between the severity and similarity variables was found ($\underline{F}(2,125)=.75$, $\underline{p}=.47$), the main effects of these variables

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Table 1

Mean Symptom Frequency Score as a Function of Experimental Group

	Severity of Illness		
	Low	High	
Similarity	Mean (SD)	Mean (SD)	Total
Low	11.21 (8.08)	15.05 (16.24)	13.00 (12.56)
Moderate	16.59 (10.69)	14.77 (8.52)	15.68 (9.60)
High	14.50 (9.28)	12.00 (11.35)	13.31 (10.26)
Total	14.02 (9.50)	13.99 (12.30)	14.00 (10.85)

were examined. The main effect for similarity was not significant ($\underline{F}(2,125)=2.41$, $\underline{p}=.09$). Histograms of the symptom frequency scores for each condition were generated in order to examine the normality assumption of the distributions. Visual inspection of these distributions revealed several extreme outlier scores. In order to minimize the influence of these extreme scores, the data were recoded so that the number of symptoms experienced by each subject was found instead of the number of times these symptoms were experienced. Table 2 contains the mean number of symptoms experienced for each treatment condition. More different symptoms were reported by subjects in the moderate similarity conditions than in any of the other four conditions. A 2 (severity) X 3 (similarity) analysis of variance revealed neither a significant interaction nor significant main effects.

Effect of Severity of Illness on Symptom-Monitoring

It was predicted in Hypothesis 3 that symptom-monitoring, that is, the symptom frequency score, would increase as illness severity increases. The number of symptoms reported by subjects in the high severity conditions ($\underline{M} = 13.99$) was virtually the same as the number reported by subjects in the low severity conditions ($\underline{M} = 14.02$) (refer to Table 1). The analysis of variance found that this main effect was not significant, $\underline{F}(1,125)=.44$, $\underline{p}=.51$.

Optimistic Bias Effect

It was predicted that subjects who read about Raddell's disease would report that other college students' risk of contracting the disease is higher than their own risk (Hypothesis 4). Subjects were asked, "How likely do you think it is that you will

Table 2

Mean Number of Symptoms Reported by Subjects in Experimental Groups

	Severity of Illness		
	Low	High	
Similarity	Mean (SD)	Mean (SD)	Total
Low	2.71 (1.40)	3.33 (1.68)	3.00 (1.55)
Moderate	3.91 (1.54)	3.45 (1.40)	3.68 (1.47)
High	3.64 (1.40)	3.15 (1.72)	3.40 (1.56)
Total	3.40 (1.52)	3.32 (1.58)	3.36 (1.54)

contract RD while you are in college?" (self-risk rating), and "How likely do you think it is that other college students will contract RD while they are in college?" (other-risk rating). Optimistic bias was defined as the difference between a subject's self-risk rating and other-risk rating. Table 3 provides the mean responses, according to treatment condition, for self-risk, other-risk, and optimistic bias. The optimistic bias effect was analyzed with a 2 (severity) X 3 (similarity) X 2 (target) repeated measures analysis of variance for mixed designs. A significant interaction between target and similarity was found, $\underline{F}$ (2,125) = 7.48, $\underline{p}$ = .001. This interaction appears to be due to the low similarity condition (see Figure 1). Figure 1 shows that subjects assigned a very low risk to both self and other in the low similarity conditions; however, in the moderate and high similarity conditions, subjects assigned relatively high risks to others compared to themselves. Thus, the optimistic bias effect is most evident in the moderate and high similarity conditions.

Another repeated measures ANOVA for mixed designs was conducted excluding the low similarity condition; no significant interaction was found between target and similarity. In addition, a main effect for target was found ($\underline{F}$ (1,125) = 46.77, $\underline{p}$ < .0005) with other-risk rated higher than self-risk.

Table 3

Mean Ratings of Self-Risk and Other-Risk, and Optimistic Bias for Treatment
Conditions

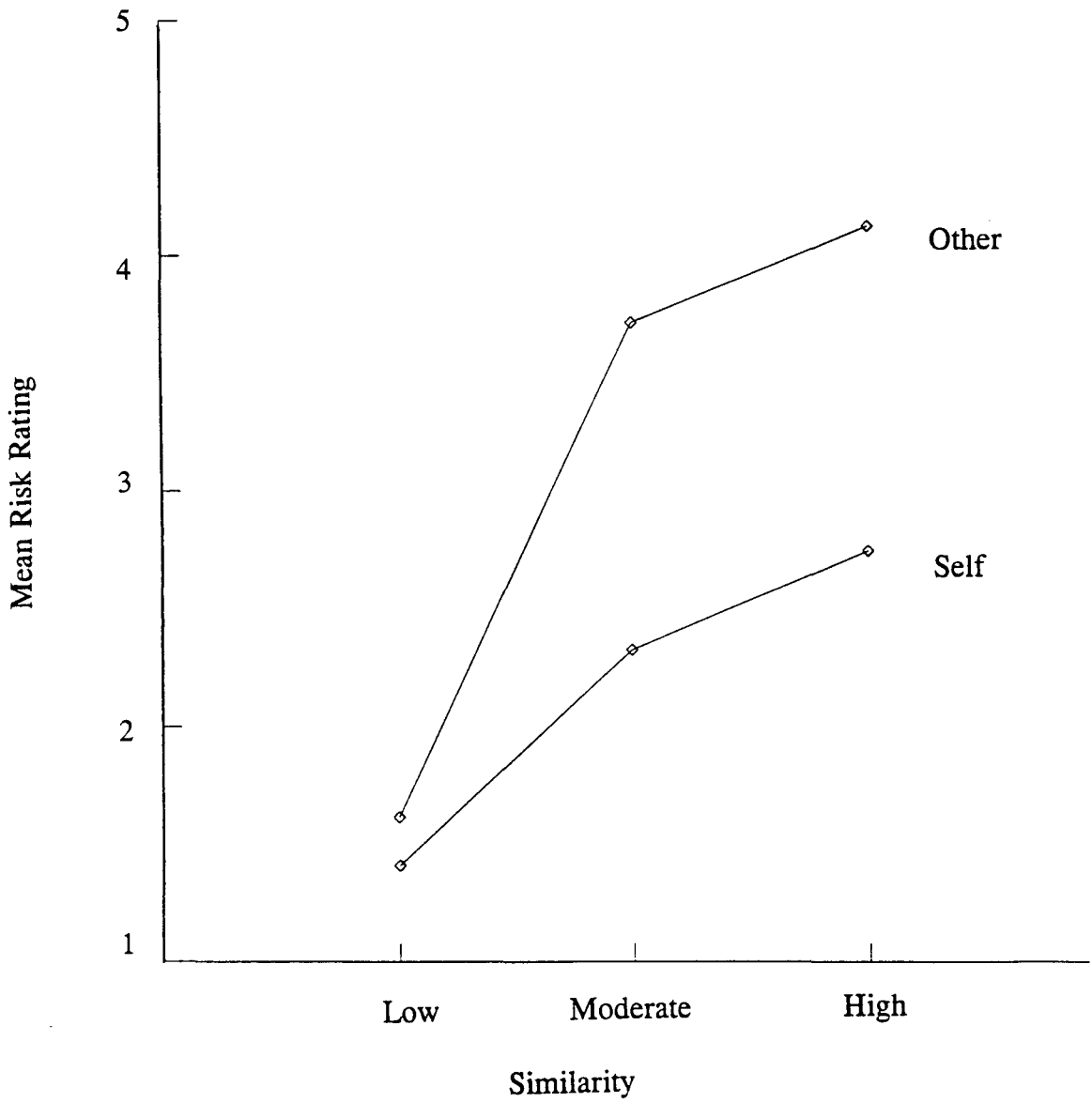| | Target of Risk Rating | | |
Condition	Self	Other	Bias[a]
Low Severity/ Low Similarity	1.54	1.79	.25
Low Severity/ Moderate Similarity	2.59	4.00	1.41
Low Severity/ High Similarity	2.91	4.13	1.22
High Severity/ Low Similarity	1.25	1.40	.15
High Severity/ Moderate Similarity	2.05	3.43	1.38
High Severity/ High Similarity	2.57	4.14	1.57
All Conditions	2.15	3.15	

[a]Bias = Other-rating - Self-rating

Fig. 1. Interaction between target and similarity

CHAPTER IV

DISCUSSION

In general, the predicted effects of increased symptom-monitoring, under any of the manipulated conditions, were not found. There was no significant difference in symptom-reporting between subjects who read about Raddell's disease and those who did not. In addition, regardless of experimental group, the subjects did not differ in their symptom-reporting. The predicted optimistic bias effect, however, was found. That is, subjects rated their own risk of Raddell's disease as less likely than other college students' risk of contracting it. Each of the predicted effects are discussed separately and in more detail below.

Effect of Knowledge of a Disease on Symptom-Monitoring

It was predicted that subjects who read about Raddell's disease would exhibit more symptom-monitoring than subjects who did not read about it (Hypothesis 1). This hypothesis was not supported. Although higher symptom frequency scores were reported by subjects in the treatment conditions than by those in the control condition, this difference was not statistically significant. This result suggests a trend in the predicted direction. One possible reason for the absence of this expected effect is that there was a small number of subjects in the control group (N = 24) compared to the treatment group (N = 134). A more plausible explanation, though,

is an inadequate implementation of the treatment. By "inadequate," I mean the impact of reading about Raddell's disease may not have been strong enough to produce the expected effect. During debriefing, several of the subjects suggested that they would have been more inclined to believe the manipulation had it been presented in a more realistic format (e.g., as a realistic mock newscast on videotape). Following this suggestion may facilitate two outcomes: (a) subjects may attend to the information about Raddell's disease more intensely, and (b) subjects may be more inclined to believe that RD is a real disease. The artificial setting (i.e., reading about a disease during a psychology experiment) may have contributed to the nonsignificant findings. On the other hand, several students remarked during the debriefing that they truly thought that they had RD and had intended to approach the experimenter with their concerns after the session. This suggests that the subjects believed the information concerning RD but that they may not have attended to it as closely as they would have in a more realistic situation. It would be interesting to see the results of a replication of this study with the information on RD presented as a news broadcast. Under these circumstances it is possible that the mean differences between subjects who hear about RD and those who do not would be statistically significant.

Effect of Social Comparison on Symptom-Monitoring

Social comparison theory postulates that individuals are more likely to compare themselves to similar others than to those who are dissimilar. The logic behind the present experiment was that subjects, who compared themselves to similar

others with Raddell's disease, would attend to those symptoms more closely than subjects who were not presented with similar others for comparison. This increased attention to the symptoms of RD was predicted to lead to increased symptom-monitoring and reporting. This effect was not found. A possible explanation for this nonsignificant finding is that social comparison theory does not apply to the process of symptom-monitoring. It is possible that there is another explanation for the pattern of results that were found. Social comparison theory has never been previously applied to the process of symptom-monitoring. Future research is needed either to support or to contradict the nonsignificant results of the present study. Symptom-monitoring may not be triggered by simple identification with a similar other. A more complex process may have occurred in the present study. In both the low and high severity conditions, subjects in the moderate similarity condition demonstrated more symptom-monitoring than subjects in the high similarity condition. One explanation for this trend is that subjects may have felt more personally threatened by the possibility of contracting RD when the affected population was very similar to themselves. This feeling may have produced an avoidance response where the subjects purposely did not monitor (or report) their own symptoms for fear of discovering that they have RD as well. This reasoning can also explain the relatively high symptom reporting of subjects in the high severity/low similarity condition. These subjects would not feel as threatened by information about a new disease that affects people dissimilar to them. This explanation, however, does not explain the low symptom reporting of subjects in the

low severity/low similarity condition. These subjects would have the least to fear of all of the experimental conditions, yet they reported fewer symptoms than any other condition. It is possible, though, that a disease that is not very serious and affects elderly nursing home patients in Europe is not relevant enough to college students to hold their attention and produce symptom searching behavior. This idea of a non-linear effect of similarity is, of course, post hoc speculation.

The particular pattern of results in this study were not statistically significant for the main effect for similarity (p = .09). However, greater attention to design sensitivity issues may have produced significant results for this non-linear trend (see Lipsey, 1990). The ability of a design to detect a true effect is contingent upon many factors aside from the actual size of the effect. Sample sizes could be increased. Steps could be introduced to reduce subject heterogeneity, measurement error, and experimental error. In the present study, procedures and instructions were standardized, subjects in several or all of the conditions were run simultaneously in group sessions, and the experimenter was blind to which condition subjects were assigned. Although the reliability of the original version of the PILL is well-established, the reliability of the modified version used in the present study has not been determined. An unreliable measure reduces power and can produce uninterpretable results.

Effect of Severity of Illness on Symptom-Monitoring

It was predicted that subjects in the high severity conditions would report that they have experienced more of the symptoms of RD than the subjects in the low

severity conditions. This effect was not found. It is possible that the high severity manipulation, which described RD as very serious and potentially life-threatening, may have produced a fear avoidance response in the subjects.

Optimistic Bias Effect

As predicted, subjects rated their own risk of contracting RD as less than that of other college students. This effect was weaker in the low similarity conditions, and stronger in the moderate and high similarity conditions. This is reasonable since subjects in the low similarity conditions would have little reason to believe that they or their peers would be at risk for a disease that afflicts the elderly. The optimistic bias effect demonstrated in this study is consistent with similar effects reported in the literature (e.g., Weinstein, 1982, Whalen et al., 1994). This significant, expected result serves to substantiate the implementation of this experiment. That is, the replication of the optimistic bias effect implies that subjects were not responding randomly to the questionnaires and that the results of the other analyses can be examined with confidence.

Conclusion

On a daily basis people are faced with decisions concerning which physical symptoms require attention and which can be safely ignored. Recognizing which factors affect such decisions will lead to a better understanding of the symptom-monitoring process. With the current focus on health-care reform in the United States, research that helps to shed light on the initial processes that motivate individuals to seek medical care is vital. The high costs of medical treatment are

exacerbated by individuals who seek help for nonexistant medical problems. Availability heuristics and illness prototypes may influence people to misinterpret minor symptoms as indicative of more serious illnesses.

The results of the present study can be used as a launching pad for future research in this area. Specific suggestions for such research include: examining the influence of the media on symptom-monitoring, determining which symptoms are more likely to be monitored under specific conditions, examining how physicians indirectly encourage symptom-searching behavior, and investigating which factors inhibit symptom-monitoring. The present study used a fairly homogenous group of respondents (i.e., young undergraduate students at a midwestern university). In order to increase external validity, future research should include samples from more diverse populations.

Appendix A

Experimental Questionnaires

Identification #: ____ ____ ____ ____

Questionnaire #1

I. <u>General Information</u>

Do not put your name on this or any of the pages of this questionnaire packet. The information you provide in this section will be used for research purposes only. Your answers are completely anonymous and confidential.

1) What is your age? _____

2) Sex (circle):   Male   Female

3) Year in school (circle):

   Freshman   Sophomore   Junior   Senior   Unclassified

4) What is your major? _____

5) Are you a trained health professional (such as a nurse or physical therapist)?

        Yes   No

6) Does your religion prevent you from seeking medical care?

        Yes   No

Questionnaire #2

II. General Health Knowledge

I am interested in determining what is the general level of knowledge that the average college student has regarding health issues. In this section please answer each question to the best of your ability. You are not expected to know the answers to all of the questions.

1) What is the average resting heart rate of a healthy 20 year old male? _____.

2) What is the average normal human body temperature? _____.

3) What is the ideal percentage of body fat for males? _____.

for females? _____.

4) At what level would a person's cholesterol be considered borderline high? _____.

5) How many pints of blood are circulating in the human body at any given time? _____.

6) List as many risk factors as you can think of for contracting the AIDS virus (use back of page if necessary).

7) What is the leading cause of death in America? _____

8) What factors affect a person's chances of developing cancer? (List as many as you can think of).

Questionnaire #3

III. <u>Learning About New Health Issues</u>

In addition to general health knowledge, I am also interested in how college students learn about *new* health issues. In this section please read and answer the following questions:

1) Where do you get most of your medical information?
   (circle all that apply)

   a) health programs on TV   e) your doctor
   b) news shows on TV   f) family members
   c) newspapers/magazines   g) friends
   d) in classes at school   h) medical journals

2) How often do you watch TV programs pertaining to health issues?

   a) several times a week   d) once a month
   b) once a week   e) less than once a month
   c) several times a month   f) never

3) When you hear about a new disease, you
   a) find out everything you can about it (by reading articles, watching shows, talking to others, etc.)
   b) ask friends what they know about it
   c) talk to your doctor
   d) see if it applies to you. If not, don't really think about it.
   e) don't really think about it

4) Which of the following have you read about or heard about on TV? (circle all that apply)

   a) meningitis   e) Schindelar's syndrome
   b) Raddell's disease   f) chronic neutropenia
   c) AIDS   g) Parkinson's disease
   d) strep bacteria ("the flesh-eating disease")

   On the following page you will find a description of one of the diseases mentioned in question #4 and a series of questions about that disease. If you are already familiar with the illness described in <u>your</u> packet, you may skip the description and go directly to the questions below it.

Information on Raddell's disease

[If you are already familiar with this disorder, you can skip this section and go to question #5]

[Low Severity/Low Similarity]

Raddell's disease (RD) is a relatively new disorder that has been reported about in the media. It is a disease that affects the functioning of the brain. The cause of this illness is unknown, but most doctors believe that it is not contagious. Only 1400 cases of RD have been reported. These cases have been primarily in elderly nursing home patients in several European countries. The initial symptoms may include the following: headaches, fatigue, difficulty concentrating, sore muscles, nausea, chest pain, and a rash. No treatment is usually needed. RD typically runs its course within 4-6 weeks.

[Low Severity/Moderate Similarity]

Raddell's disease (RD) is a relatively new disorder that has been reported about in the media. It is a disease that affects the functioning of the brain. The cause of this illness is unknown, but most doctors believe that it is not contagious. Only 1,400 cases of RD have been reported. These cases have been primarily in young adults ages 17-25 on college campuses in Canada. The initial symptoms may include the following: headaches, fatigue, difficulty concentrating, sore muscles, nausea, chest pain, and a rash. No treatment is usually needed. RD typically runs its course within 4-6 weeks.

[Low Severity/High Similarity]

Raddell's disease (RD) is a relatively new disorder that has been reported about in the media. It is a disease that affects the functioning of the brain. The cause of this illness is unknown, but most doctors believe that it is not contagious. Only 1,400 cases of RD have been reported. These cases have been primarily in young adults ages 17-25 on college campuses across the country (only 1 case has been confirmed here at Loyola). The initial symptoms may include the following: headaches, fatigue, difficulty concentrating, sore muscles, nausea, chest pain, and a rash. No treatment is usually needed. RD typically runs its course within 4-6 weeks.

[High Severity/Low Similarity]

Raddell's disease (RD) is a relatively new disorder that has been reported about in the media. It is a disease that affects the functioning of the brain. The cause of this illness is unknown, but most doctors believe that it is not contagious. Only 1400 cases of RD have been reported. These cases have been primarily in elderly nursing home patients in several European countries. The initial symptoms may include the following: headaches, fatigue, difficulty concentrating, sore muscles, nausea, chest pain, and a rash. Immediate diagnosis and medical intervention is necessary. Left

untreated serious complications could result including: partial paralysis, memory loss, and death.

[High Severity/Moderate Similarity]

    Raddell's disease (RD) is a relatively new disorder that has been reported about in the media. It is a disease that affects the functioning of the brain. The cause of this illness is unknown, but most doctors believe that it is not contagious. Only 1400 cases of RD have been reported. These cases have been primarily in young adults ages 17-25 on college campuses in Canada. The initial symptoms may include the following: headaches, fatigue, difficulty concentrating, sore muscles, nausea, chest pain, and a rash. Immediate diagnosis and medical intervention is necessary. Left untreated serious complications could result including: partial paralysis, memory loss, and death.

[High Severity/High Similarity]

    Raddell's disease (RD) is a relatively new disorder that has been reported about in the media. It is a disease that affects the functioning of the brain. The cause of this illness is unknown, but most doctors believe that it is not contagious. Only 1,400 cases of RD have been reported. These cases have been primarily in young adults ages 17-25 on college campuses across the country (only 1 case has been confirmed here at Loyola). The initial symptoms may include the following: headaches, fatigue, difficulty concentrating, sore muscles, nausea, chest pain, and a rash. Immediate diagnosis and medical intervention is necessary. Left untreated serious complications could result including: partial paralysis, memory loss, and death.

Knowledge of Raddell's Disease (RD)

    This section will help me to determine how well students remember specific information (either recently attained or from previous sources) about illness. Please answer the following questions as accurately as you can.

5) What are the major symptoms of Raddell's disease?

6) If a person had the symptoms listed above, how important would it be for him/her to seek treatment? (circle one)

not at all
important   1   2   3   4   5   6   7   8   9   10 extremely important

7) List characteristics of people who contract RD.

8) What is the typical prognosis for a patient who has been diagnosed with RD?

9) What causes RD?

10) How long does RD usually last?

11) Where and when did you first hear about RD?

12) How likely do you think it is that you have RD?

   not at all
   likely   1   2   3   4   5   6   7   8   9   10   extremely likely

13) How likely do you think it is that you will contract RD while you are in college?

   (circle one)

   not at all
   likely   1   2   3   4   5   6   7   8   9   10   extremely likely

14) How likely do you think it is that other college students will contract RD while they are in college? (circle one)

   not at all
   likely   1   2   3   4   5   6   7   8   9   10   extremely likely

15) How likely do you think it is that your parents will contract RD while you are in college? (circle one)

   not at all
   likely   1   2   3   4   5   6   7   8   9   10   extremely likely

Questionnaire #4

IV. Personal Health History

The following questions refer to your personal helath history. Please answer each question to the best of your knowledge. Remember that your answers are completely anonymous and confidential. You may skip any questions that you do not feel comfortable answering.

16) Height:

17) Weight:

18) How many times in the past year have you visited a doctor?

19) What were the reasons for your doctor visits?

20) When was the last time you were in the hospital?

21) Do you have any serious or chronic diseases? Yes   No

   If yes, which one(s)?

22) Have you received all required immunizations?

   Yes   No   Unsure

23) Are you currently taking any medication? Yes   No

   If yes, which one(s)?

24) Do you have a family member who is chronically ill? Yes   No

   If yes, what is the relation of this person to you?

Below and on the following page is a list of symptoms. Please read each symptom carefully and write on the line <u>the number of times</u> you have experienced this symptom **in the last two weeks**. Please fill in all of the blanks. If you have not experienced a particular symptom in the last 2 weeks, indicate this by a "0" on that line.

<u>Symptom Checklist</u>

____1. Eyes water	____23. Heartburn
____2. Itching or painful eyes	____24. Severe stomach cramps
____3. Ringing in ears	____25. Diarrhea
____4. Temporary deafness	____26. Constipation
____5. Lump in throat	____27. Hemorrhoids
____6. Choking sensations	____28. Swollen joints
____7. Sneezing spells	____29. Stiff muscles
____8. Running nose	____30. Back pains
____9. Congested nose	____31. Sensitive or tender skin
____10. Bleeding nose	____32. Face flushes
____11. Asthma or wheezing	____33. Severe itching
____12. Coughing	____34. Skin breaks out in a rash
____13. Out of breath	____35. Acne or pimples on face
____14. Swollen ankles	____36. Acne on other than face
____15. Chest pains	____37. Difficulty concentrating
____16. Racing heart	____38. Sweating

____17. Cold hands and feet, even in hot weather

_____39. Reaction to an insect bite

_____18. Leg cramps

_____40. Headaches

_____19. Insomnia

_____41. Sensation of pressure in head

_____20. Toothaches

_____42. Fatigue

_____21. Upset stomach

_____43. Chills

_____22. Indigestion

_____44. Dizziness

_____45. Feel faint

_____50. Stiff joints

_____46. Numbness or tingling

_____51. Sore muscles

_____47. Twitching of eyelid

_____52. Sore throat

_____48. Twitching other than eyelid

_____53. Sunburn

_____49. Hands tremble or shake

_____54. Nausea

Appendix B

Informed Consent Form

(Date)

  I, _____, voluntarily agree to participate in a research project conducted by Susan Sheffer, a graduate student at Loyola University of Chicago.

  The research is being conducted in order to study health issues pertaining to college students. I will be required to fill out four written questionnaires. It will take approximately 30 minutes of my time. I will receive one experiment credit for my participation.

  I acknowledge that Susan Sheffer has explained fully the task to me; has informed me that I may withdraw from participation at any time without prejudice or penalty; has offered to answer any questions that I might have concerning the research procedure; has assured me that any information that I give will be used for research purposes only and will be kept confidential. My responses to the questionnaires will be completely anonymous. My name will not appear on any of my written responses.

  I also acknowledge that the benefits derived from, or rewards given for, my participation have been fully explained to me, as well as the alternatives for earning these rewards, and that upon my completion of the research task I have been promised a brief description of the role my specific performance plays in this project. I understand that this experiment will not benefit me directly, but I may learn more about psychology and the research process.

_____   _____
  (researcher)   (participant)

Appendix C

Debriefing Form

Thank you for participating in this experiment! It is important for you to know that Raddell's disease is a **fictitious illness**. Some of you read about "Raddell's disease." Some of you were told that RD has affected elderly nursing home patients. Others were informed that it has affected Canadian college students. The rest of you read that RD has affected college students in the United States including one student at Loyola. In addition, half of you were told that RD is a mild disease and that no treatment is needed. The other half read that RD is very serious and can be life-threatening.

As stated in the informed consent which you signed earlier, this research is being conducted in order to study health issues pertaining to college students. Specifically, it is designed to study one aspect of a phenomenon known as mass psychogenic illness (MPI) or medical students' disease. This is a "disease" that occurs when people hear about a new illness and then become convinced that they have contracted it. This is a common phenomenon among first year medical students who believe they are suffering from every new disease they learn about. This problem also occurs in industrial settings where one worker truly develops an illness with an unknown cause. Soon many other workers begin to believe that they too have this new sickness. It is believed that illnesses are "contracted" in this way when individuals begin paying more attention to their own bodies and begin symptom-seeking behavior. Physical symptoms that would have been otherwise ignored, become focused upon and given greater importance.

Social comparison theory tells us that individuals are more likely to compare themselves with similar others than with dissimilar others. In other words, we are more likely to imitate people who are most like us than people who are different from us. Therefore, in this study it is predicted that symptom monitoring will occur more frequently when infected individuals are very similar to the susceptible individual.

When you were asked to circle any symptoms on the list that you remember experiencing in the last two weeks, your degree of symptom-monitoring was being measured. This study is being conducted to determine the effects of social comparison and severity of illness on symptom monitoring.

Please feel free to ask me any questions you may have concerning this study. Also, if you would like to know the final results of this project or if you simply would like to discuss it in more detail, please contact me, Susan Sheffer, by placing a note in my mailbox in the psychology office on the 6th floor of Damen Hall. I will be happy to discuss it with you.

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VITA

Susan McCabe Sheffer was born on August 31st, 1964, in Highland Park, Illinois to Thomas and Dorothy McCabe. Susan attended Grove City College in Grove City, Pennsylvania where she worked as a teaching assistant and as a research assistant. She received her Bachelor's of Arts degree in Psychology from Grove City College in 1988. She graduated from Grove City College *summa cum laude* with highest honors in psychology.

Mrs. Sheffer began her graduate work at Loyola University of Chicago in 1993. At Loyola, she has worked as a teaching and research assistant. Susan has participated in three psychology conferences including: the Western Pennsylvania Undergraduate Psychology Conference (1987), the Midwestern Psychological Association Annual Convention (1995), and the American Psychological Society Annual Convention (1995).

Susan is currently working to complete her doctorate degree in psychology at Loyola. She now resides in Naperville, Illinois with her husband, Keith, and their two children, Shauna and David.

THESIS APPROVAL SHEET

The thesis submitted by Susan McCabe Sheffer has been read and approved by the following committee:

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The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the committee with reference to content and form.

The thesis is, therefore, accepted in partial fulfillment of the requirements for the degree of Master of Arts.

March 20, 1995
Date

[signature]
Director's Signature