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CAUSAL BELIEFS ABOUT CANCER

by

Ronnie C. Lesser

A dissertation submitted to the Graduate Faculty in Educational Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York.

1986

This manuscript has been read and accepted for the Graduate Faculty in Education in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

7/28/86
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Abstract

CAUSAL BELIEFS ABOUT CANCER

By

Ronnie C. Lesser

Advisor: Professor Sue Rosenberg Zalk

According to Sontag (1977), it is common in this society for people to blame cancer victims for getting cancer. Such explanations (subjective causal beliefs) attribute the disease to unconscious motivations, and exclude the notion of chance or randomness. The defensive attribution literature, in exploring how people explain serious misfortunes, finds that blaming victims for serious accidents allows observers to maintain an "illusion of control" (Walster, 1966; Lerner, 1980). Piaget's (1974) theory of causality, on the other hand, views concepts of causality as developing tightly in concert with logical structures (objective causal beliefs). These two formulations are examined by a study of causal beliefs about cancer victims which varied severity, similarity and personal concern. The sample consisted of 96 subjects who were students or recent graduates of masters programs. Forty-nine were psychology majors and forty-seven were non-psychology majors. While there were no significant differences on the severity and personal concern variables, significant differences were found on the similarity variables for instability ($p < .05$), externality ($p < .01$) and diet ($p < .005$). That is, when victims were similar to themselves, subjects viewed their getting cancer as due to unstable, external and

dietary factors. In addition, there was a significant interaction between psychology major and similarity on the control item ($p < .02$), with psychology majors believing that similar victims had more control over getting cancer than did non-psychology majors. It is speculated that this greater attribution of control by psychology majors is due to their seeing victims as unconsciously motivated to get cancer. The results indicate that theories about cancer etiology (e.g., diet and unconscious motivation) are employed differentially by people depending on whether the victims are similar or dissimilar to themselves.

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This dissertation is dedicated to the memory of my father, Morton A. Lesser, in whose eyes it was born.

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Chapter I

Introduction

By 1986 one out of every three Americans will develop cancer (Time, 1985). It is the purpose of this study to explore some of the psychological aspects of this phenomenon in adults. According to Hersh (1982), the psychological dimensions of cancer are colored by fears that society projects on to it, so that the very word "cancer" itself has become a metaphor for loss of control and mortality.

> It presents one's own body destroying one's self. Appearing to come from nowhere, it strikes without warning...Cancer represents the abnormal condition of the physical self which symbolizes both our tenuous hold on life, and the fragile reality of our own control (p. 5).

All major diseases whose causes and cures have been unknown have been imbued with similar metaphorical significance throughout history (e.g., leprosy, bubonic plague, tuberculosis). In this culture, mysterious diseases which end in personal suffering tend to be associated with sin (Hersh, 1982). This association is exhibited in behaviors towards cancer victims which range from the distancing of friends and family, to employers who fire or won't hire cancer victims, to neighborhoods blocking a family whose child has cancer from buying a home.

Sontag (1977) finds that modern explanations of cancer are rife with psychologizing (i.e., the cancer victim's character is held responsible for his or her illness). This casual belief is seen as functioning to allow observers to undermine the reality of the disease by implying that it really means or is a symbol of something else. These types of interpretations, which place the onus on the victim of

the disease, encourage both victims and non-victims to believe that people get sick because they unconsciously want to and that they can choose to get better. Any disease whose causality is ambiguous, like cancer, and for which a treatment is not effective, is open to being imbued with metaphorical significance (Sontag, 1977).

The medical profession has also participated in "psychologizing" cancer. The literature is rife with articles about a "cancer-prone personality" which is described as a person whose childhood was marked by chronic feelings of social alienation, depression and loss (Dusynski, Shaffer & Thomas, 1981; Fox, 1984). Bearison & Pacifici (1984) report, however, that there is no reliable evidence to support this claim as the studies done have relied exclusively on retrospective techniques and data analyses with poor control conditions. The only study to date with proper control conditions (i.e., a longitudinal study of medical students) found no significant relationship between childhood emotional trauma and cancer incidence.

The findings cited above point to the existence of subjective causal beliefs about cancer in adults in this society. According to Brodie (1974), the preoperational notion of death as a form of punishment which is merited is never fully replaced by more rational explanations. Curiously, a limited amount of attention (either empirical or theoretical) has been paid to causal beliefs about cancer victims. The present study explores concepts of causality about victims of cancer from a contextualized structural-developmental perspective. Through an examination of these beliefs it attempts to show that far from being totally objective, normal adults in our

culture have both objective and subjective causal beliefs, and that these beliefs vary in different contexts and serve different purposes.

Objective causality is being defined here in the Piagetian sense of causal beliefs in which the existence of chance as "interference of a causal sequence" (Piaget, 1951) is understood. This concept, which develops during formal operations, enables one to understand that events such as illness, accidents, and other misfortunes often occur at random and that there is no intentionality to them. Objective causal beliefs take into account objective correlates of events in which people are victimized, rather than reading a personal meaning or significance into them. An objective causal account of a car accident would, for example, consider multiple factors such as whether one or both of the drivers were drunk, had had their brakes inspected, were wearing seat belts, why they collided, etc. It would not consider subjective meanings such as whether the accident was an act of God or the personal destiny of one of the victims as relevant factors. Because of the fact that objective causal accounts differentiate between the victim and the event, an inherent aspect of them is the understanding that accidents can often occur without design, and that victims may have little or no control over them.

Subjective causality, on the other hand, is characterized by the absence of the notion of chance and randomness and the ensuing idea that death, sickness, rapes, accidents, and other misfortunes are infused with personal or subjective meanings. Lesser & Paisner (1985), in an investigation of causal beliefs in formal operational adults in a spiritual community, report subjective causal beliefs in which the individual is held responsible for his or her being born poor,

handicapped, etc. Every event which occurs to individuals during their lives is seen as part of an individually-tailored plan, and there is a total denial of chance or randomness. Such causal beliefs do not differentiate between the self and the world, and are often singular.

In order to understand both the nature and function of subjective and objective causal beliefs about cancer, two developmental theories of causality, Piagetian and Attribution Theory, will be reviewed. Both theories will be shown to be limited in scope and to not adequately reflect the multilinearity (i.e., subjective and objective causal beliefs) of adult causality. It will be argued that these shortcomings reflect problems inherent in the organismic paradigm. Then, the contextualist world view will be delineated, with attention to how it may be used to illuminate and extend the cognitive-structural view of adult causal beliefs.

The Organismic Paradigm

The root metaphor of the organismic world hypothesis is the biological organism. In psychology, this is reflected in the "active organism model of man" (Reese & Overton, 1970). The organism is represented as an inherently active, organized entity. Individual psychological change is assumed, and the nature of such change is believed to be qualitative. Piaget (1974) maps a universal sequence of stages each of which represents a particular type of interaction between subject and object, from the sensorimotor stage to formal operations. Individual development is viewed as being impelled towards the idealized telos of formal thought, and cultural and situational differences are dismissed as "noise variables" which obfuscate the genotypic trajectory of development (Zimmerman, 1983). The world of

objects is perceived as a stable entity, and individual response differences explained as attributes of differing constructions of this constant environment.

The Relationship Between Logic and Causality

Piaget's theoretical account of adult causal thinking is informed by his use of idealistic categories, and his lack of attention to cultural and individual variation. According to Piaget (1974), explaining a phenomenon causally requires the ability to demonstrate what transformations it underwent, as well as the way in which the outcome is continuous with the initial state. Thus, causality contains aspects of both production and conservation, characteristics it shares with operational transformations. While operations transform reality and "correspond to what the subject can do to objects in his deductive or deductible manipulations...causality expresses what objects do as they act on one another and on the subject" (Piaget, 1974, p. 20).

Piaget describes the developmental trajectories of the structures of causality and those of the logical operations as closely intertwined. Initially fused with each other, logic and causality become progressively differentiated through a reciprocal process of coordination, manifesting a particular instance of the equilibration process. In this mutual interchange, the causal pole leans more toward "the conquest of reality," developing from experimentation with objects to a generalization of relations between them (as when one tries to understand why two pendulums, set in motion from two opposing points, exchange their original positions). Logic, on the other hand, develops through a process of reflective abstraction upon the subject's internal coordination of actions. At every level of development, logic and

causality facilitate and inform one another, and true causality appears when operations become "attributed" to objects through logical deduction and not merely "applied" to objects through physical experience.

> In classifications, seriations, enumerations, it is he who acts, whereas the objects allow themselves to be acted upon without imposing on the subject any one operation more than another. When, on the other hand, an operational composition is attributed to objects, such as transitivity in the case of transmission, it is the objects that act, they themselves guarantee the transmissions, and it is up to the subject to accept the facts...Ten pebbles are ten only if a subject counts them in correspondence with other sets, whereas a movement is transmitted without the intervention of the subject (Piaget, 1974, p. 21-22).

The Development of Logical Causality

Piaget (1930) outlines three major periods in the development of causality, i.e., causality which employs hypothetico-deductive reasoning.

> The first is that which precedes any clear consciousness of self, and may be arbitrarily set down as lasting till the age of 2 - 3, that is, till the appearance of the first "whys," which symbolize in a way the first awareness of resistance from the external world. As far as we can conjecture, two phenomena characterize this first stage. From the point of view of logic, it is pure autism, or thought akin to dreams or day-dreams, thought in which truth is confused with desire. From the ontological view-point, what corresponds to this manner of thinking is primitive psychological causality, probably in a form that implies magic proper: the belief that any desire whatsoever can influence objects, the belief in the obedience of external things. Magic and autism are therefore two different sides of one and the same phenomenon --that confusion between the self and the world which destroys both logical truth and objective existence (pp. 301-305).

The second period starts at the age of two to three and lasts to the age of seven to eight. It is characterized by "ontological egocentrism" in which the child's sense of reality is merged with the self, and thought is seen as belonging to the realm of physical matter.

This realism is extended by dynamic participation (the belief that two objects which resemble each other have an effect on each other) and magic (the belief that one's own thoughts, gestures, or objects have control over events). The child believes that she can utilize participation to magically modify reality. Thus a four and one-half year old may construe events in the following way:

> Q: Can the moon go wherever it wants, or does something make it move?
>
> A: It's me, when I walk.
>
> (Piaget, 1926, p. 146)

Causality at this level also shows signs of psychological motivation (e.g., God sends us nightmares because we've misbehaved).

At the time when logical thought becomes deductive, the concept of reality breaks away from this primitive realism which conflates the boundaries between the self and the world. At this time, a new parallelism develops between logic and the categories of reality which is marked by objectivity "the mental attitude of persons who are able to distinguish what comes from themselves and what forms part of external reality as it can be observed by everyone" (Piaget, 1926, p. 150). This third period in the development of causality occurs in two phases. During the concrete operational period, children begin to conceive of reality no longer merely by what is perceptually given to them, but by taking into consideration other people's perspectives as well. During this period, the child stresses the spatio-temporal or mechanical properties of events in her explanations of why objects behave as they do. Clouds, for example, are said to move as a consequence of being pushed by the wind. This causal explanation is still based upon concrete, perceptual facts. It hasn't yet reached the

level of deductive reasoning which imposes necessity upon causal relations (Langer, 1969). True logical causality doesn't emerge until the formal operational stage when the adolescent is able to construct formal theories of events. Since these theories are no longer tied to specific, actual events they can consider possible events as well. Thus, thought combines possibility, hypothesis testing, and deductive reasoning, and is no longer limited to deductions on the basis of the immediate situation.

The Status of "Chance" in Causal Conceptions

Central to adult concepts of reality and causality is the ideal of chance and the intuition of probability. Chance is characterized by Piaget as "the discovery of indetermination" (1951) which involves dissociating the possible and the necessary.

> In our daily lives, all occurrences are complex. The fantastic path of a falling leaf is seen more often than is a straight line, and this is why we reduced all our lives to guessing or to basing our expectancies on empirical frequencies and contingencies (Piaget and Inhelder, 1985).

A mature notion of chance is thought to be present in the "normal civilized adult" except under states of passion or psychopathology; this is in contrast to "the primitive mind" which sees every event as a result of a personal cause, hidden or visible.

> Leaving aside both those psychopathological states in which the notion of chance is lost in a welter of obsessional or frenzied interpretations which lend the most fortuitous events with subjective meanings, and also those states of passion of a lover or gambler which are characterized by a like regession in favor of symbolism or a play of imaginary tokens, there are two normal psychological states in which an understanding of chance and probability are missing: the samll child and the primitive (Piaget, 1975).

In the irreversible thought of the young child, as in the "primitive mind," chance and necessity are undifferentiated. Every

event is seen as the result of a personal hidden cause. It is through the child's developing search for order and lawfulness in the universe under the organization of the rational operations that an intuition of probability develops, and with it a notion of chance as "interference of a causal series" (Piaget, 1951). Only with the attainments of combinatorial logic and ordered permutations during the formal operational stage can the probable (chance events) and the certain (operations) become fully synthesized.

Thus, according to Piaget, adults have concepts of causality and chance which reflect universal formal structures. Subjective beliefs about causality, which appear pre-operational on the surface by confusing the boundary between the self and the world, should only be found to exist in children, non-Western "primitive" peoples, or as transient ideas in Western adults. In the latter instance Piaget makes a concession to contextual variables by invoking a competence-performance-like explanation, in acknowledging that under circumstances of anxiety, involuntary or sympathetic imitations (e.g., as when playing billiards, one strains one's body forward hoping the ball will roll in a similar direction), psychopathology, and "monoideic desire" in which one so passionately desires something outside of his or her control that the desire is projected onto the event (e.g., a traveller in a storm avoids the idea of a flat tire in the "belief" that thinking about an accident will cause it to happen) Western adults exhibit fleeting subjective causal beliefs.

There are three major problems with Piaget's formulation of causality: 1) the problem of lack of cross-cultural verification; 2) evidence of pervasive subjective causal beliefs in Western adults;

and 3) his lack of attention to just which contextual variables are responsible for transient subjective causal beliefs. Each of these problems will be discussed below.

1) Lack of Cross-Cultural Verification

While the presence of "transient" subjective beliefs in Western adults who are otherwise formal operational does not compromise stage theory, cross-cultural findings of pervasive subjective systems and lack of either concrete or formal operations in non-Western adults (Glick, 1975; Greenfield, 1976; Dasen, 1977) limits the scope of the theory by failing to corroborate its universalistic claims. Piagetians have attempted to account for this variance (Piaget, 1974; Dasen, 1977) while retaining the construct of universal stages.

The literature on the dreams concept, for example, examines the interation between cognitive development and particular cultural systems. Kohlberg (1969) has studied the development of dream concepts among the Atayal. In this tribe, while children believe in the imaginary nature of dreams, adolescents and adults believe that dream are "real," i.e., not imaginary. Two explanations for this phenomenon have been offered. The first (Turiel, in Kohlberg, 1969) asserts that such regression is due to the superimposition of social content upon a mature cognitive structure. Kohlberg, in contrast, suggests that exposure to adults' magical beliefs may engender actual cognitive conflicts among the adolescents, thus promoting true structural regression. (The fact that the regression is structural is validated by the fact that there is some loss of the teenagers' ability to understand a logical conservation task.)

Kahana (1970) has found similar conflict among Hasidic adolescents. This conflict is produced by the culture's belief system which simultaneously encourages intellectual activity while inhibiting autonomous thought. This conflict is reflected in the dream concepts of Hasidic adolescents who are unclear about whether dreams originate within the self or emanate from God.

Although the explanations given by Kohlberg and Turiel (1969) of the relationship between culture and thought account for the process of enculturation, they do so from the vantage point of a theory which sees certain forms of thought as "culture free" and universal. The questions they are answering seem to be "how can be account for variance from the norm, or how does culture throw people off track?" The use of idealistic categories leads to value judgments about which cultures are more advanced than others.

2) Evidence of Subjective Causal Beliefs in Western Adults

The Piagetian literature has paid scant attention to those forms of Western adult thought which bear a surface similarity to the magical ideas of preoperational children. References to such though are discussed in the literature about animism and in a study of causality (Lesser & Paisner, 1985), each of which will be reviewed below.

The literature on animism reveals the prevalence of animistic thought in adults. Most authors (Brown and Thouless, 1965; Looft and Bartz, 1969) conclude that animism in maturity differs from that of childhood in that adults use animistic thinking by choice, or in the service of higher ends. Brown finds that adults occasionally use animistic categories to help them transcend the limits of language (e.g., a "live wire"). The presence of animism in adults has also been

explained as metaphorical, as an agent of formal operational thought, and as an artifact of tests which do not ask subjects to differentiate between scientific and metaphoric language (Looft & Bartz, 1969).

In the area of causal beliefs, a study by Lesser & Paisner (1985) of an American spiritual community revealed objective causal ideas existing along side subjective beliefs. While the group believes in a totally deterministic universe where chance doesn't exist and the self is the locus of control over all external events (including the choice of one's own parents), the group was also found to be formal operational. Such evidence of non-transient, systematized subjective causal beliefs in Western formal operational adults presents a challenge to Piagetian theory: If formal operational adults show extensive signs of this type of thought, can it be that causality and logic are tightly linked systems of understanding and that they develop in concert with each other?

Harris (1984) points out the danger of Piaget's constructivist position which avoids considering that primitive experiences and rational thought might coexist in the mature adult. She sees the notion of hierarchical reorganization as a rejection of the unconscious, as though all less organized functioning is lost to the "newly accommodated rational structures." Shweder (1981) points out that because Piaget conceives of cognition as a rational, constructive process, he ends up ignoring the rest of the mind which is not reason, evidence, or logic. These shortcomings are a function of the embeddedness of Piaget's theory in the organismic paradigm with its emphasis on idealist categories and teleological changes dictated by logical necessity.

3) Lack of Attention to Contextual Variables

A. Piaget's studies of causality and chance all focus on causal thinking about physical objects. To study conceptions of chance, for example, Piaget presented a series of beads lined up at one end of a rectangular tray, with red beads on one side and white beads on the other side. The tray was then tilted so that all the beads ran together and became mixed and randomized. Subjects were asked to predict the outcome of the first, and then subsequent tilts by drawing the itineraries of the separate beads. The fact that no comparable experiment is done on causal thinking about social objects is partly a function of Piaget's belief that cognition about the social and physical domains utilize the same underlying structures. In fact, Piaget presents no evidence that causal thought across the domains is parallel.

B. While Piaget concedes that "certain circumstances" elicit subjective thinking in adults, he neither delineates nor explains these conditions other than in the most cursory manner. Piaget's lack of attention to these contexts, a characteristic of his theory in general, is attributable to the fact that his major concern is on the development of formal thought, and context is deemed inessential. Although Piaget acknowledges that development doesn't occur in a vacuum but is reliant on interactions with objects, these objects aren't seen as playing a substantive role (Buck-Morss, 1980). One can look at all of Piaget's stages as steps in the development of the ability to leave the world of objects behind (e.g., from object constancy, through conservation, to formal thought).

It will be the purpose of the rest of this review and study to explore the issues raised in sections A and B above; that causal structures are not unidimensional, but vary from objective to subjective; and to precisely delineate the contexts which elicit each type of causal thought. Some of these issues are discussed in the Attribution literature.

Attribution Theory

The focus of Attribution Theory, as delineated by Heider (1958), and developed and operationalized by Kelley (1977; 1971) and Weiner (1970) is on how people attribute causes to or explain events which have already occurred. The attribution process is seen as one in which a naive individual first observes an event and then, on the basis of available information, as well as background and motivational factors, forms an attribution about why the event occurred.

The foundation of attribution theory was laid down by Heider (1958) who viewed causal attributions as functions of the human need to predict and control the environment. Although Heider suggested that at times the attribution process becomes distorted due to personal biases, he basically saw it as rational, operating on the same principles as experimental methods.

Kelley (1975) helped instigate the formal study of naive perceptions of causality by formulating a general theory of how types of information are processed to arrive at judgments about the locus of causality. In his model the observer of a causal event is analogous to a social scientist. Accordingly, three principles were delineated as forming the basis of causal judgments: 1) the covariation principle- effects covary over time with their causes; 2) the discounting

principle-in situations with several possible causes, the role of any one specific cause in producing an effect is lower than if there weren't other possible causes; and 3) the augmentation principle-if there are both a plausable inhibitory cause and a plausible facilitative cause present, the role of the facilitative cause will be seen as greater.

Weiner (1970), coming from a different theoretical framework than Kelley, tried to show how cognitive reactions to success and failure were important in understanding achievement-oriented behavior. His original focus was to add cognitive dimensions to theories of achievement motivation, but these dimensions have been found to underlie causal attributions as well. In this regard he posited that causal explanations may be classified on three dimensions: 1) internality/externality (whether the cause is a function of the actor or a function of circumstances external to the actor); 2) stability/instability (certain variables are stable across tasks like ability and task difficulty, while other variables such as effort or luck are unstable); and 3) controllability/uncontrollability (whether the event is seen as one which the actor can control, or one which he cannot control).

Developmental studies of how children attribute causes to physical events are numerous, and have been used as the basis for making predictions about performance in the social domain. Influenced by Piaget's (1969) assertion that before the age of seven or eight children base their causal inferences on temporal contiguity (i.e., an inferred cause must be close in time with the event it explains), the basic paradigm is showing children a series of trials in which an

effect (e.g., bell ringing) does or doesn't occur after possible causal events (e.g., a marble dropping into a a box) occur. Subjects are then asked causal questions such as "If the marble drops into the green hole will the bell ring?" The results are consistent with Piagetian theory; young children don't think that covarying events are causally related if they are temporally delayed. However, children as young as three or four can use the covariation principle if events occur close together in time.

One study on covariation in a social situation was done by DiVitto and McArthur (1978). First, third, sixth graders, and college students heard pairs of stories in which an action by an agent to a target person was identical across conditions (e.g., sharing), but covariation information varied (e.g., everyone else or no one else shared in the situation). Unlike attribution studies with adults, subjects were asked to evaluate the agent and the target independently, with a forced-choice format (who is nicer, Agent 1 or 2?). Data indicated that even though first graders made logical use of covariation information at higher than chance levels, their use of such data was extremely limited.

Developmental studies of Weiner's three dimensions find that while adults use external/internal, stable/unstable, and controllable/uncontrollable categories in their causal thinking, children don't utilize these categories (Ruble & Rholes, 1972). According to Secord and Peever (1973), children don't understand that other people are stable entities who act in predictable ways on the basis of internal intention, nor do they have concepts that certain events are uncontrollable. Instead, children rely on contextual explanations of

causality, rather than subjective, personality-oriented ones. It is noteworthy that this theoretical account of development as moving towards dispositional explanations and away from contextual ones seems at odds with Piaget's own account of preoperational children projecting intent onto the most innocent events.

The attribution theorists' account of adult causality which is based on logical necessity, and of a developmental trajectory which proceeds from "primitive" reliance on context to a mature account of disposition, is in the same vein as Piaget's descriptions of adult causal beliefs. Both theories have visions of adults as rational beings who make attributions on the basis of idealist, logical categories. In a recent cross-cultural comparison of American and Indian adults, Miller (1984) found that cross-cultural and developmental variations in the use of dispositional representations may be predicted from differences between the individualistic American and the holistic Indian cultural views of personality. In the Indian culture, where the stress is on viewing the individual as an integral part of the social context, less emphasis is placed on dispositional interpretations of what causes people to behave as they do and more on contextual interpretations. This study, which found no differences in cognitive abilities between the two groups, contradicts both attributional and Piagetian predictions of cross-cultural and developmental differences as products of different cognitive capacities.

Miller (1984) believes that what is missing from both the Piagetian and attribution accounts of causality is the impact of a cultural meaning system as an entity separate from subjective and

objective determinants. For Piaget, culture is subordinate to operational structures and not a source of patterning of individual modes of conceptual representation. Culture, for Kelley, is a non-essential source of data about the objective, conariational structure of experience. The role that culture plays in the attributional process is neglected, as though the categories of attributions are self-evident and given objective information which is processed accurately, any intelligent adult would come up with the one "true" conceptual representation of causality. According to Miller, conceptual assumptions about social attributions are discretionary and socially variable, not self-evident. The same objective information may give rise to contrasting but equally adequate conceptual representations, depending on the particular culturally-derived conceptual premises used in interpreting information.

The Contextual Paradigm

Miller's approach is a contextualist one. While both contextualism and organicism emphasize the centrality of change, the importance of qualitative and not just quantitative shifts in development, and the role of dialectical tensions in promoting change, they differ in an essential way. While organicists believe that all change is ordered and teleological, contextualists look at change as just that, making no assumptions that any change is serving a goal or idealized end state. The contextualist is compared to a disillusioned organicist "who has peered into the Platonic cave and found it empty" (Labouvie-Vief & Chandler, 1978). Due to this basic disappointment, the contemporary philosophy of science has had to reject idealist epistemology which views scientific and developmental progress as

cumulatively proceeding to expose a more and more accurate and logical picture of the universe. In its stead it has constructed an epistemology which sees both scientific and human activity as reflecting cultural norms. In this view, the idealist forms of the organicist are content to the contextualist. Contextual variables are no longer derogated as "noise variables" (Zimmerman, 1983). The contextualist argues for multiformity, and no one telos as ideal.

The model of causality which is derived from this world hypothesis is radically different from that of Piaget and the attributional theorists. Causal inferences, rather than tied to universal forms which are determined by logical necessity, are seen as contextually-dependent. Logic is viewed as pluralistic, and as a derivative of culturally-derived premises, rather than ideal forms. Different types of causal thought may coexist in the adult, and be useful in different contexts.

Under the influence of contextual thought, theorists from both Piagetian and attributional perspectives have tried to incorporate contextual categories into their accounts of adult causality. Labouvie-Vief (1982), for example has tried to add cultural and personal variables to Piagetian theory by considering how conflicts between internal equilibria (forces within the individual) and external equilibria (cultural views) may result in defenses which produce subjective causal views. These defenses (dystonic equilibria) are automatized and function to exclude specific aspects of reality. Piaget's conception of formal operational thought is seen as representing an "idealized trajectory," and socialization and/or individual differences "trajectory-varying" factors.

Labouvie-Vief's theory may be used to extend Piaget's concept of why normal adults have both objective and subjective causal beliefs under "special circumstances." Social factors (external equilibria) serve to make specific causal theories available in each society, while personal factors (internal equilibria) determine which theory an individual will utilize in a particular context.

Personal Concern

One personal factor which has been suggested as operating in the aea of causality is personal concern (Folkman, 1981); if a chance event occurs that is of high personal concern to an individual, she might be motivated to utilize subjective causal thinking. Such subjective thought would allow her to rule out the element of chance and randomization, leading to a feeling of control over the event. Thus, individuals might use this type of causal thinking about events which are of high personal concern to them, and objective causal thinking about events of low personal concern.

Personal concern about an event is defined in terms of how much the event resonates with an individual's own goals, values, commitments, and needs (Folkman, 1981). The latter determine the stakes which are involved in encounters, and affect the significance of one's beliefs about control. The more seriously an encounter threatens one's commitments, for example, the higher the stakes will be, and the more important it will be to feel that one can control the outcome. Thompson (1981) believes that events which an individual is personally concerned about reflect on her self-image or self-esteem. Feeling that one cannot control an outcome where the stakes are so high that one's

way of viewing the world is threatened, changes one's view of oneself as well.

The distinction being made here between events which are of high personal concern and those which are of low personal concern cannot be reduced to the distinction between the physical and social domains made by the neo-Piagetians. Physical objects can be of high personal concern to individuals (e.g., nuclear weapons), and social objects can be of low personal concern to people who are not directly involved with them (e.g., the homeless and poor).

The prediction that events which are of high personal concern elicit more subjective causal thinking than events which are of low personal concern is supported by the current literature on defensive attributions about victimization. Defensive attributions are causal beliefs which function to create an "illusion of control" over a threatening event which in reality was random (Shaver, 1970). According to Lerner (1975), the motivation to believe in a predictable, controllable world is likely to effect one's causal attributions only when one is confronted with outcomes which are personally meaningful. The "Just World Theory" makes specific predictions about the relationship between the desire to control one's outcomes and the assignment of causality (Lerner, 1980). Individuals are described as motivated to believe in a "just world" where people receive what they deserve and deserve what they get. In such a world the events which happen to people are controllable, and misfortunes can be avoided by being cautious, good, and worthy. The world is perceived as non-random and meaningful. It is largely because of the issue of deserving (a causal concept), that the child learns to forgo immediate gratification

and endure deprivations, effort, and pain in order to merit desirable outcomes in the long run. In those situations where someone is victimized, the "just world" view is shattered and the resulting stress and anxiety prompts a search for a hidden meaning in the experience. Answering the question "why me?" in a way which assigns responsibility and blame to oneself, helps to reestablish a system in which bad things don't happen to one unless they are merited.

Lerner's theory is supported by several studies about victimization. Taylor (1982), for example, has found that victims who find a reason for their victimization, even when they see it as their own fault, are less stressed. This finding is complicated, however, by the type of blame which people place on themselves; if one's own character is blamed, the blame creates more stress because there's little one can do to change the outcome in the future. If, on the other hand, some temporary and mutative characteristic of oneself is blamed, people feel that they can change and create different outcomes in the future. In a study of cancer patients, Abrams and Finesinger (1953) found that 93% blamed their illnesses on prior misdeeds. Lifton (1963) has discussed how victims of the bombing of Hiroshima felt that it occurred because of their prior misbehavior. Feeling guilty and personally responsible enabled them to feel a reassuring sense of control over the bombing, and less stress and anxiety. Thus, the belief that one can control events which are of high personal concern leads to the feeling that such misfortunes can be avoided in the future.

Another portion of the defensive attribution literature has focused on observers' attributions about other people's victimization.

Lerner (1970) has consistently demonstrated that participants in a study will derogate a fellow subject who has received painful shocks. Much anecdotal evidence shows that non-victims feel uncomfortable with people who are ill, maimed, or disfigured and seek to avoid contact with them. They also tend to blame and denigrate victims of violent crime, excluding them from normal social exchange (Coates, Wortman & Abbey, 1979). Several theorists have proposed that victims are rejected due to negative attributions which are formed about them. These negative attributions are seen as primarily determined by the observer's need for security or self-esteem; if the victim is held responsible for his victimization, the observer feels that the event didn't occur at random and that if he were in a similar situation he would be able to control it.

While the variable of personal concern is implicated as important in the defensive attribution process, no study has specifically focused on it. However, closely-related evidence of its role in attribution is found in a study by Perloff (1983). This study described how perceptions of unique vulnerability (i.e., seeing oneself as more or less likely than others to be victimized) and universal vulnerability (i.e., seeing oneself as having equal chances to be victimized) are associated with different causal attributions for negative events. When people think that outcomes are more or less likely to happen to themselves than to others they tend to attribute the outcome to internal factors. (Note: external factors are defined here as chance or the environment, while internal factors are traits or behavior.) In the one study of this hypothesis that was done about cancer, college students who rated their own odds and other people's odds of getting

cancer as equal, made greater external attributions than students who rated their own odds as higher than others. These findings give indirect support to the hypothesis that people who are more personally concerned about getting cancer tend to be more subjective (attributing greater control to the individual) in their causal beliefs about cancer than people who are less personally concerned.

The majority of studies of defensive attribution have focused on the variables of severity of outcome and similarity between the victim and observer, both of which will be discussed below.

1) Severity of Outcome

The classic study of severity of outcome was done by Walster (1966). Subjects were exposed to a tape recorded account of a car accident. The car owner's behavior was held constant in the various conditions, while subjects were told that the consequences of the accident were either severe or mild. Findings revealed that car owners were seen as more responsible for the accident when the consequences were severe, than when they were mild. According to Walster, as the negative consequences of an accident become more serious, people are likely to assign blame to victims even though their victimization was clearly beyond their control. Such denied, undeserved victimization is threatening to observers because it makes them aware that such misfortunes can happen to them. Thus, they cognitively defend themselves against this threat by creating an "illusion of control" over the event which in reality was random.

Chaikin and Darley (1973), replicated Walster's findings in an experiment which manipulated severity of outcome in a two-person dyad working on a task. In one condition, an accident occurred which had

mild consequences, in another condition the accident has severe consequences. Findings indicated that the more severe the consequences were, the more the dyad was viewed as responsible.

2) Personal Similarity

According to Shaver (1970), subjects must feel some degrees of similarity between themselves and the victim in order to feel threatened and motivated to distort their attributions. Two distinct motives are seen as underlying the defensive attribution process: people are motivated to cognitively defend themslves against the threat of similar uncontrollable outcomes; and people defend themselves against being held responsible for a similar fate that could befall themselves. These motives are referred to respectively as harm avoidance and blame avoidance. When there is little personal similarity between the subject and the victim, the victim is blamed for the outcome in the interest of the harm avoidance motive. If, on the other hand, the subject and the victim are highly similar (in terms of attitudes, age, sex and background), the victim isn't blamed and chance factors are seem as operating in the interest of the blame avoidance motive.

Shaver's findings are in contradistinction to both Walster (1966) and Lerner (1980). While both Walster and Lerner find that people tend to blame victims the more similar they are to them and the more severe the outcome is, Shaver reports that when people identify with victims and are personally threatened, they blame chance variables and exonerate victims. While Shaver's position has been supported by some research (Burger, 1981), other point out that Shaver's paradigm investigates attributions in situations where outcomes are relatively

mild. Feldman, Summers, & Linder (1976) asked subjects to respond to questions about an account of a rape given by the victim herself. The results were strikingly dissimilar to Shaver: women subjects were found to attribute more responsibility to the victim and less to chance than male subjects. This appears to corroborate Walster and Lerner's contentions that the more similar the victim is to the subject, the more personally threatened the subject will be, and hence more motivated to avoid believing that the event was random.

While the defensive attribution literature delves into the contextual variables which influence causal thinking more deeply than Piaget, a few problems should be pointed out:

1) There is a wide disparity between studies in terms of methodology. This includes the following differences:

a) The media employed vary from study to study, e.g., some studies use video tapes, others written accounts or tape-recordings;

b) The accounts of victimization aren't standardized; in some accounts the victim has no control over the event, in other accounts she has some control;

c) Both the types of questions subjects are asked and the coding of their responses vary from study to study. Russell (1982) has addressed this problem by creating the Causal Dimension Scale (see Methodology Section, p. 33). This measure uses standardized questions about the three dimensions on controllability/uncontrollability, internality/externality, and stability/unstability. Subjects are asked, for example, to indicate whether an event is

controlled by the victim or by external events by selecting a number on a scale which ranges from internal to external. The problem with this approach is that a lot of information is lost in the process; does an internal response (i.e., the victim is responsible for the event) mean that genetic factors, characterological factors, unconscious factors, or conscious intention is being cited? Does an external response implicate chance factors (e.g., being in the wrong place at the wrong time), fate, an act of God, or another person's control? Vital information which would enable us to know more about causal beliefs is lost.

In addition, because of the lack of purcision in this type of questionnaire, there is no way of knowing whether there is a relationship between the three attribution dimensions and Piaget's concept of adult causality. If, for example, a subject indicates that an event was caused by the victim, was highly controllable, and was highly stable, does this correspond to Piaget's account of subjective causal thinking as lacking the concepts of chance and randomness? In addition, there is no precise way of determining which causal factor is being cited by the subject due to the grossness of the categories. A respondent who attributed the cause of an illness to genetics, and one who attributed it to the victim's willing it, would both score as high internal, for example.

2) Although the variable of personal concern has been mentioned by several writers (Lerner, 1980; Folkman, 1984), no formal

investigation of it has been undertaken. Such an endeavor, in fact, might lead to the resolution of the conflict between Shaver and Walster's positions; it might be found, for example, that personal concern mediates both similarity and severity.

Summary

While Piaget acknowledges that subjective causal thinking (i.e., thought which denies the existence of chance factors and randomization) occurs under "special circumstances" in formal operational adults, he does not delineate these contexts. It has been argued that this shortcoming is a function of his emphasis on abstract form divorced from content. Defensive attribution theory, on the other hand, has explored these contexts but because it doesn't use an instrument like Piaget's clinical interview, it lacks precision about just what people mean when they attribute causes to an event. Due to this shortcoming, the defensive attribution literature has not been able to take advantage of Piaget's theory of adult causal thought. Also, it remains unclear whether there is a relationship between the causal dimensions studied by the attributionists, and Piaget's definitions of objective and subjective causal thought. In addition, despite the attributionists' clear delineation of severity of outcome and similarity between observer and victim as variables which determine the mode of causal thought, the variable of personal concern and its relationship to causal thought has received little attention. Furthermore, although studies have been done to explore cancer victim's attributions about their illness, the issue of attributions of others towards cancer victims is rarely addressed.

Chapter II

Statement of the Problem

This study has the following aims:

1. to explore people's causal beliefs about victims of cancer by:

    a. studying the variables of personal concern, similarity and severity and their relationship to causal beliefs about cancer victims;

    b. studying the interactions between personal concern, similarity, and severity of outcome.

2. to determine the relationship between Piaget's concept of objective and subjective causal thought and the three dimensions (internality/externality, stability/instability, and controllability/uncontrollability) proposed by the attribution literature.

Hypotheses

With regard to the objectives of the present study, the following hypotheses were formulated:

A. There will be differences in causal thinking as a function of personal concern, similarity, and severity of outcome:

Hypothesis 1

The more personally concerned subjects are about cancer, the more subjective their thought will be.

Hypothesis 2

The more similar the victim is to the subject, the more subjective their thought will be;

Hypothesis 2a

When subjects are similar to victims they will see the cause as internal;

Hypothesis 2b

When subjects are similar to victims they will see the cause as controllable;

Hypothesis 2c

When subjects are similar to victims they will see the cause as unstable;

Hypothesis 2d

When subjects are similar to victims they will not see the cause as genetic;

Hypothesis 2e

When subjects are similar to victims they will see the cause as dietary;

Hypothesis 2f

When subjects are similar to victims they will see the cause as personally controllable;

Hypothesis 2g

When subjects are similar to victims they will not see the cause as environmental;

Hypothesis 2h

When subjects are similar to victims they will see the cause as a function of personality;

Hypothesis 2i

When subjects are similar to victims they will see the cause as stress related;

Hypothesis 2j

When subjects are similar to victims they will not see the cause as related to chance.

Hypothesis 3

The more personally concerned subjects are about cancer and the more similar they are to the victim, the more subjective their thought will be.

Hypothesis 4

The more severe the outcome is, the more subjective subjects' thought will be.

Hypothesis 5

The more severe the outcome is, and the more personally concerned subjects are about cancer, the more subjective their thought will be.

Hypothesis 6

The more severe the outcome is and the more similar subjects are to the victim, the more subjective their thought will be.

Hypothesis 7

The more personally concerned subjects are about cancer, the more similar they are to the victim, and the more severe the outcome is, the more subjective their thought will be.

B. There will be a relationship between internality/externality, stability/instability, and controllability/uncontrollability and Piaget's concept of objective causality:

Hypothesis 8

Subjects who view the victim as high in controllability, internality, and instability will see the victimization situation as non-chance (i.e., as subjectively determined).

Chapter III

Methodology

Subjects

The sample consisted of ninety-six graduate students and recent graduates from masters programs in the New York City area. They were contacted either through their schools, or through their places of employment. Since many of the places where subjects were employed turned out to be clinical settings (due to the author's contacts), almost half of the subjects (forty-nine) were psychology majors and half were from non-psychological areas (forty-seven), is the variable had to be added to the design (psychology major/non-psychology major). A discussion of this variable and how it was treated may be found in the Results Section, p. 43.

The average age of the subjects was thirty-four and the age range was from 22 to 60. Fifty subjects were female, and forty-six were male. The average age of the female subjects was thirty-four and the average age of the male subjects, thirty-five. Eighty subjects were white and sixteen were non-white, and all were in the middle income range. The data was collected in the summer of 1985.

Dependent Measures

Three dependent measures were employed in this study. A description of each follows:

1) The Causal Dimension Scale

This instrument was designed by Russell (1982) to assess a person's causal attributions by categorizing them into three dimensions. According to Russell, research about attributions has suggested that three causal dimensions underlie attributions about

causality (i.e., internality/externality, stability/instability and controllability/uncontrollability). Rather than have each researcher code attribution statements into these dimensions, which had been the case in the literature, Russell devised a standardized measure whereby the attributor would do his or her own coding. Responses on this measure should accurately reflect the meaning of the causal attribution to the attributor.

The instrument consists of nine questions with each of the three dimensions being represented by three questions. Subjects respond to each question by choosing a number on a scale from one to nine. A total score for each of the three subscales is obtained by summing the responses to the three questions for each category. High scores on the subscales indicate that the cause is seen as internal, stable, and controllable (see Appendix 1).

The instructions are as follows: Think about the reason that this happened to the person you just read about. Circle one number for each of the following items.

Validity tests (Russell, 1982) for individual Causal Dimension Scale items show that the largest main effect was for the dimension the items was designed to measure. A 3-Mode Factor Analysis revealed that all three scales were internally consistent. The subscales were found to be only moderately related to each other, with correlations ranging from .19 to .28. ANOVA's were performed on the subscale scores; between-subjects factors were sex of subject and outcome and within-subject factors were the three attribution dimensions. The largest effects were the main effects for the three dimensions

subscale. No significant main effects for sex or outcome were found (Russell, 1982).

2) The Causal Interview

The Causal Interview is an adaptation of the Lesser and Paisner (1985) Causality Interview which was designed to give an in-depth picture of causal perceptions. The original interview was composed of questions which came out of an analysis of audio tapes of thirty adult subjects. This analysis yielded four categories of investigation, each representing a separate aspect of a causal belief system. One of these categories was utilized in this study: the personal responsibility/chance category.

The personal responsibility/chance category reflects how much the individual believes an outcome is attributable to chance or to personal responsibility. Scores in this category are tied to Piaget's concept of adult causality: high chance scores are characteristic of objective causal beliefs in situations where the individual lacks control, and high personal responsibility scores are characteristic of subjective causal beliefs in situations in which the individual lacks control.

The reliability scores on the original interview were computed by having each of the authors code the tapes separately. Variants of intraclass correlations were then computed. Individual inter-rater reliability was .948 (for all categories), and the reliability of the average score of the two authors was .972. Individual inter-rater agreement was .948.

The Causal Interview used in this study explored the Personal Responsibility/Chance domain cited above, and, in addition, looked at causal beliefs in a more in-depth manner than the original interview.

The protocol consisted of four formated questions which were asked after each of the CAse Histories were read. Responses were taped. The questions were as follows:

1. Why did this happen to _____?
2. How much personal control did _____ have over the outcome?
3. How much of a role did chance play in what happened?
4. What percentage would you give to each of the factors you've implicated as playing a role in causing the outcome?

After the second Case History was read, respondents were asked an additional question:

5. How do you explain the difference between what happened to _____ (i.e., the victim in Case History I) and _____ (i.e. the victim in Case History II)?

Causal Interview Scoring

1. Responses to questions four (which incorporated respondents' views on questions one through three) were coded into seven separate categories. Each category represents an aspect of the respondent's causal beliefs about the outcomes of the case histories. The categories were derived from subjects' responses on the interview; any causal explanation which was mentioned by more than five subjects was used as a category. In addition, personal control and chance (questions two and three respectively) were also utilized as categories of analysis.

Scores for each of the seven categories were assesed by using the percentages provided by the respondents themselves in Question Four. These percentages were coded as follows: a score of 1 was assigned when the respondent attributed a 1-33% causal role to a particular

category; a score of 2 was assigned for percentages which ranged from 34-65%; and a score of 3 was assigned for percentages ranging from 66-100%. Since the Causal Interview was open-ended, not all categories were mentioned by each respondent, and a 0 was assigned to any category which was not mentioned.

The categories (each of which ranged from 1 - 100%) are as follows:

a. Genetic/Physical Constitution: How much of a role genetics/physical constitution is seen as playing in causing the outcome.

b. Diet: The degree to which diet is viewed as instrumental in causing the outcome.

c. Control: How much control the victim is seen as having for the outcome.

d. Environmental Factors: The degree to which environmental factors (e.g., chemical emissions) are seen as playing a role in causing the outcome.

e. Personality: How much of a role the victim's personality (e.g., neurotic style, negative thinking, will to live, management of stress) is seen as playing in producing the outcome.

f. Stress/Lifestyle: The degree to which the victim's lifestyle (i.e., whether its stressful or non-stressful) is seen as significant in causing the outcome.

g. Chance: How large a role chance is seen as playing in determining the outcome.

High diet, control, personality and stress scores are characteristic of subjective causal beliefs, and high genetics, environment and chance scores characterize objective causal beliefs.

2. Personal Responsibility/Chance Score: This score was based on an analysis of responses to the fifth question of the Causal Interview: "How do you account for the difference between what happened to _____ (i.e., the victim in Case History I) and what happened to _____ (i.e., the victim in Case History II)?"

Scoring on this item followed the original model of the Lesser/Paisner Interview. As in the former, responses ranged from 0-4, with a score of 0 representing high chance (e.g., genetics, luck, fate), a score of 1 representing low chance (e.g., environment), 2, representing responses which were neither personal responsibility nor chance (e.g., Karma), 3 representing low personal responsibility (e.g., personality), and 4 representing high personal responsibility (e.g., awareness of body). (See Figure 1 for a full explication of scoring for this item.) Each of the respondent's responses to this item were scored, with the mean of all scores representing the total personal responsibility/chance score. High personal responsibility scores are associated with subjective causal thought in situations where individuals have little personal responsibility, and high chance scores are associated with objective causal thought in situation which the individual has little personal responsibility.

3. Health Questionnaire

The Health Questionnaire (see Appendix 2) was specifically designed for this study in order to assess the personal concern variable. The original instrument consisted of thirty-four questions

Figure 1

Coding Scheme for Personal Responsibility/Chance Score. Description of Each Category and Sample Responses.

Score	Category and Description	Responses
0	High Chance Description: Respondent thinks that personal responsibility did not play any role in causing the difference in outcomes.	Genetics Luck Chance Quality of treatment Fate
1	Low Chance Description: Respondent thinks that personal responsibility was not a factor in causing the difference in outcomes to any significant degrees.	Response to treatment Environmental factor Strength of exposure Duration of exposure
2	Non-Personal Responsibility/Personal Responsibility Description: Respondent is not sure whether the victims were instrumental in causing the difference in outcomes; or respondent's answers fall midway between personal responsibility and non-personal responsibility.	Better health Karma
3	Low Personal responsibility Description: Respondent believes the difference in outcomes is partially a function of the victim's responsibility.	Personality Early detection Will to live Ability to deal with stress Attitude when told had cancer Support of family Knowledge of health care
4	High Personal Responsibility Description: Respondent believes the difference in outcomes is a function of the personal responsibility of the victims.	Awareness of body Couldn't leave children Control Denial of symptoms

about two different areas: personal feelings about getting cancer, and degree to which one exercised caution to avoid getting cancer. A pilot study was done on forty subjects. An item analysis was then performed; on the original thirty-four items zero variability was found on two items, weak negative correlations on four items, and weak positive correlations on four items. These ten items were then deleted, leaving twenty-four questions. The original reliability figure (the average of inter-item reliabilities) was .71; after the ten questions were deleted the reliability was .80. (See Appendix 11 and 12 for correlations, means, standard deviations, and ranges of each item.)

The Health Questionnaire was scored in the following way: all "yes" responses received a score of one, and all "no" responses received a score of zero. The range of scores was from 0 to 24. After all respondents had taken this measure, the median score was found and used as a mark-off point (thirteen): any score above thirteen was considered high personal concern and any score below thirteen was considered low personal concern.

Independent Measures

The independent measures were two case histories about people who had contracted cancer (see Appendix 3). The information given about each person remained fairly constant, but varied sufficiently for subjects to believe that they were reading about two different people. In the first case history, for example, the victim was 30 years old, named Mary, was married and the mother of a young child and prior to being ill had been in excellent health with good dietary habits. In the second case history Wanda was 28 years old, married, the mother of two children, and prior to being ill had been in excellent health with

good dietary habits. While this information remained constant, what varied was that in one case history the victim recovered from cancer, and in the other the victim died (Severe/Non-Severe Condition). In addition, the sex and ethnic group of the case histories varied so that subjects could be assigned to either the Similar Condition (i.e., they received case histories in which the victims were of the same sex and ethnic group as themselves) or the Dissimilar Condition (they received case histories in which victims were of a different sex and ethnic group).

Procedure

Subjects were told that they were participating in a two-phase study designed to investigate how people think about cancer. For these purposes they would be reviewing two case histories of patients, and answering questions about these patients. After this introduction, they were informed that in Phase I of the study they would be asked to give some medical information about themselves by filling in a Health Questionnaire. Several weeks later (Phase II) they were given the first Case History to read. They responded to the Case History by filling out the Causal Dimension Scale, and then participating in a taped interview (i.e., the Causal Interview). This procuedure was then repeated for the second Case History.

After all subjects participated in Phase I of the study, the Health Questionnaire was scored and the median Personal Concern score was computed. All scores above the median (>13) were designated "high personal concern," and those below the median (<13) "low personal concern." In Phase II of the study, half of the high personal concern group were assigned to the similarity condition (i.e., they received

case histories in which the "victims" were of the same sex as themselves), and half were assigned to the dissimilarity condition (i.e., they received case histories in which the "victims" were of the opposite sex and different ethnic group than themselves). In addition, half of the low personal concern group were assigned to the similarity condition, and half were assigned to the dissimilarity condition.

A repeated measure design was utilized for the severity condition; all subjects received both a severe case history and a non-severe case history (see Appendix 3).

In order to counterbalance any biasing effects from lack of symmetricality between the two case histories (which would arouse subject's suspicions if they were exactly alike), half of the subjects received Case History I with a severe outcome and Case History II with a non-severe outcome, and half of the subjects received Case History I with a non-severe outcome and Case History II with a severe outcome. In addition, order of presentation of the two case histories was counter-balanced.

Chapter IV

Results

The results are presented in five sections: (I) results of the inter-rater reliability on the Causal Interview; (11) results of the univariate repeated measure analysis of variance for all dependent variables (hypotheses one through seven); (III) an analysis of the interrelations between the Causal Dimension Scale and the Causal Interview (hypothesis eight); (IV) an analysis of sex differences on all the variables; (V) an analysis of question five on the Clinical Interview.

I. Inter-rater Reliability on the Causal Interview

The Inter-rater Reliability was obtained on this measure by having the Experimenter and a research assistant serve as blind raters. Each rater coded the interviews separately (twenty-six interviews were utilized) and inter-rater reliabilities were then computed using variants of intra-class correlations. The overall alpha was .87, and the standardized item alpha was .87. On the personal responsibility/ chance score (Question Five), the overall alpha was .96, and the standardized item alpha was .96.

II. Univariate Repeated Measure Analysis of Variance for All Dependent Variables

A 2 x 2 x 2 x 2 (Personal Concern & Similarity x Psychology Major x Severity) univariate repeated measure analysis of variance was conducted for each of the 10 dependent variables. It will be noted that a new independent variable was added to the experimental design: whether the subject was a psychology major or not. As mentioned in the Methodology Section, p. 33 , sampling procedures yielded two groups of

subjects, psychology majors (N = 49) and non-psychology majors N = 47). When the Experimenter began to code the interviews, it appeared very likely that this factor was going to effect subjects' responses by significantly interacting with the other variables. For example, it appeared that psychology majors were more likely when victims were similar to themselves to give psychological explanations of the cause of cancer, than were non-psychology majors. Thus, it was decided to add psychology major as an independent variable.

The Between Subjects variables were: 1) similarity, 2) personal concern, and 3) psychology major. The Within-Subjects variable was severity. There were eight groups of subjects, sixteen cells in all. The means, standard deviations, and number of subjects in each cell for the Causal Dimension Scale by Psychology Major Status, Severity Status, Personal Concern Status, and Similarity Status are presented in Table 1. Table 2 presents the means, standard deviations, and number of subjects in each cell on the Causal Interview. Table 3 presents the findings of the repeated measure analysis of variance for the Between-Subjects Variables, and Table 4 presents the findings of the same analysis for the Within-Subjects Variable (these tables are in Appendices 4 and 5). Table 5 summarizes the significant effects by dependent variable of this analysis. Table 6 shows the means and standard deviations for the significant effect of Similarity/Dissimilarity on Stability/Instability, Internality/Externality and Diet Measures. Table 7 shows the means for the significant interaction between Psychology Major and Similarity/Dissimilarity on Control. Table 8 shows the means and standard deviations for the significant

Table 1

Means and Standard Deviations for Causal Dimension Scale by Personal Concern Status, Similarity Status, Severity Status, and Psychology Major Status.

	Mean on Uncontrollability/ Controllability Dimension	Standard Deviation	Mean on Instability/ Stability Dimension	Standard Deviation	Mean on External/ Internal Dimension	Standard Deviation
Psychology Major Similar Low Personal Concern Severe Condition (n = 10)	9.20	4.26	5.10	4.48	16.60	5.30
Non-Psychology Major Similar Low Personal Concern Severe Condition (n = 14)	7.50	4.62	13.50	5.81	12.86	5.64
Psychology Major Similar Low Personal Concern Non-Severe Condition (n = 10)	8.50	4.14	15.00	3.23	16.00	4.40

Table 1 (continued)

	Mean on Uncontrollability/ Controllability Dimension	Standard Deviation	Mean on Instability/ Stability Dimension	Standard Deviation	Mean on External/ Internal Dimension	Standard Deviation
Non-Psychology Major Similar Low Personal Concern Non-Severe Condition (n = 14)	8.00	4.24	12.64	5.29	13.71	4.87
Psychology Major Similar High Personal Concern Severe Condition (n = 7)	9.29	5.28	13.12	2.62	15.59	3.91
Non-Psychology Major Similar High Personal Concern Severe Condition (n = 13)	7.10	4.43	14.31	5.20	14.15	5.94

Table 1 (continued)

	Mean on Uncontrollability/ Controllability Dimension	Standard Deviation	Mean on Instability/ Stability Dimension	Standard Deviation	Mean on External/ Internal Dimension	Standard Deviation
Psychology Major Similar High Personal Concern Non-Severe Condition (n = 17)	9.59	5.40	12.82	4.10	14.29	3.10
Non-Psychology Major Similar High Personal Concern Non-Severe Condition (n = 13)	7.15	3.46	14.54	4.39	15.53	7.59
Psychology Major Dissimilar Low Personal Concern Severe Condition (n = 10)	7.90	5.67	14.40	6.45	17.00	5.42

Table 1 (continued)

	Mean on Uncontrollability/ Controllability Dimension	Standard Deviation	Mean on Instability/ Stability Dimension	Standard Deviation	Mean on External/ Internal Dimension	Standard Deviation
Non-Psychology Major Dissimilar Low Personal Concern Severe Condition (n = 8)	6.98	2.64	16.63	4.97	21.25	11.36
Psychology Major Dissimilar Low Personal Concern Non-Severe Condition (n = 10)	10.30	6.73	14.20	5.45	16.90	5.20
Non-Psychology Major Dissimilar Low Personal Concern Non-Severe Condition (n = 8)	7.63	3.29	16.75	5.44	17.50	4.96

Table 1 (continued)

	Mean on Uncontrollability/ Controllability Dimension	Standard Deviation	Mean on Instability/ Stability Dimension	Standard Deviation	Mean on External/ Internal Dimension	Standard Deviation
Psychology Major Dissimilar High Personal Concern Severe Condition (n = 13)	8.70	5.17	15.38	4.07	16.77	2.86
Non-Psychology Major Dissimilar High Personal Concern Severe Condition (n = 11)	8.82	4.19	16.91	3.99	16.27	2.10
Psychology Major Dissimilar High Personal Concern Non-Severe Condition (n = 13)	8.85	4.58	14.39	4.22	16.92	5.02

Table 1 (continued)

	Mean on Uncontrollability/ Controllability Dimension	Standard Deviation	Mean on Instability/ Stability Dimension	Standard Deviation	Mean on External/ Internal Dimension	Standard Deviation
Non-Psychology Major Dissimilar High Personal Concern Non-Severe Condition (n = 11)	8.18	3.37	14.00	5.21	16.92	4.78

Table 2

Means and Standard Deviations for Causal Interview by Personal Concern Status, Similarity Status, and Psychology Major Status

	Mean on Genetics Item	S.D.	Mean on Diet Item	S.D.	Mean on Control Item	S.D.	Mean on Environmental Factors Item	S.D.	Mean on Personality Item	S.D.	Mean on Stress Item	S.D.	Mean on Chance Item	S.D.
Psychology Major Similar Low Personal Concern Severe Condition (n = 10)	1.80	1.13	1.10	0.88	1.20	0.92	1.10	1.10	0.80	0.92	0.60	0.84	1.20	0.92
Non-Psychology Major Similar Low Personal Concern Severe Condition (n = 14)	1.71	1.14	0.86	0.95	0.57	0.65	1.36	1.08	0.64	0.93	0.36	0.74	1.50	1.29
Psychology Major Similar Low Personal Concern Non-Severe Condition (n = 10)	1.90	0.88	1.10	0.74	1.20	0.92	1.10	0.99	0.80	0.79	0.50	0.71	1.40	1.08

Table 2 (continued)

	Mean on Genetics Item	S.D.	Mean on Diet Item	S.D.	Mean on Control Item	S.D.	Mean on Environmental Factors Item	S.D.	Mean on Personality Item	S.D.	Mean on Stress Item	S.D.	Mean on Chance Item	S.D.
Non-Psychology Major Similar Low Personal Concern Non-Severe Condition (n = 14)	1.64	1.22	0.86	0.95	0.71	0.91	1.29	1.07	0.71	0.99	0.43	0.76	1.43	1.16
Psychology Major Similar High Personal Concern Severe Condition (n = 17)	1.41	1.12	0.88	0.99	1.06	0.97	1.18	1.24	1.29	1.10	0.76	1.02	1.42	1.18
Non-Psychology Major Similar High Personal Concern Severe Condition (n = 13)	2.23	0.73	0.92	0.95	0.38	0.65	1.08	1.18	0.77	0.93	0.38	0.65	1.15	1.21
Psychology Major Similar High Personal Concern Non-Severe Condition (n = 17)	1.53	1.12	0.88	0.99	1.18	0.95	1.24	1.20	1.29	1.10	0.65	0.10	1.29	1.15

Table 2 (continued)

	Mean on Genetics Item	S.D.	Mean on Diet Item	S.D.	Mean on Control Item	S.D.	Mean on Environmental Factors Item	S.D.	Mean on Personality Item	S.D.	Mean on Stress Item	S.D.	Mean on Chance Item	S.D.
Non-Psychology Major Similar High Personal Concern Non-Severe Condition (n = 13)	2.23	0.73	0.77	0.93	0.62	0.87	1.00	1.06	0.77	1.17	0.46	0.66	1.08	1.15
Psychology Major Dissimilar Low Personal Concern Severe Condition (n = 10)	2.40	0.97	0.20	0.42	0.50	0.71	1.00	1.24	0.40	0.70	0.10	0.32	1.30	1.06
Psychology Major Dissimilar Low Personal Concern Severe Condition (n = 8)	1.88	0.99	0.75	1.17	0.50	0.53	1.63	1.06	0.63	0.92	0.50	1.07	1.00	0.76
Psychology Major Dissimilar Low Personal Concern Non-Severe Condition (n = 10)	2.40	0.97	0.20	0.42	0.60	0.70	0.70	1.20	0.50	0.71	0.10	0.32	1.30	1.06

Table 2 (continued)

	Mean on Genetics Item	S.D.	Mean on Diet Item	S.D.	Mean on Control Item	S.D.	Mean on Environmental Factors Item	S.D.	Mean on Personality	S.D.	Mean on Stress Item	S.D.	Mean on Chance Item	S.D.
Non-Psychology Major Dissimilar Low Personal Concern Non-Severe Condition (n = 8)	1.63	1.19	0.50	0.07	0.75	0.46	1.63	1.06	0.38	0.74	0.38	0.74	0.88	0.83
Psychology Major Dissimilar High Personal Concern Severe Condition (n = 13)	2.00	1.08	0.31	0.63	0.69	0.95	0.69	1.03	0.92	1.12	0.69	0.95	1.08	1.19
Non-Psychology Major Dissimilar High Personal Concern Severe Condition (n = 11)	2.09	0.94	0.36	0.81	0.73	0.79	1.36	1.12	0.55	1.03	0.36	0.92	0.82	0.98
Psychology Major Dissimilar High Personal Concern Non-Severe Condition (n = 13)	2.00	1.08	0.46	0.78	0.46	0.52	0.77	1.09	1.00	1.08	0.54	0.88	1.15	1.28

Table 2 (continued)

	Mean on Genetics Item	S.D.	Mean on Diet Item	S.D.	Mean on Control Item	S.D.	Mean on Environmental Factors Item	S.D.	Mean on Personality Item	S.D.	Mean on Stress Item	S.D.	Mean on Chance Item	S.D.
Non-Psychology Major Dissimilar High Personal Concern Non-Severe Condition (n = 11)	2.10	0.70	0.64	0.92	0.73	0.79	1.18	1.67	0.64	0.92	0.00	0.00	0.73	0.91

S.D. = Standard Deviations

interaction between Psychology Major/Non-Psychology Major and Personal Concern on Genetics.

1. Between-Subjects Variables (Personal Concern, Similarity, Psychology Major)

a. Personal Concern: No significant differences were found for the personal concern variable on any of the dependent measures, disconfirming the first hypothesis.

b. Similarity: Significant findings of a main effect of Similarity status on the stability/instability dimension ($F = 3.98$, $df = 1/88$, $p < .05$), the internality/externality dimension ($F = 6.43$, $df = 1/88$, $p < .01$) and the diet item on the Causal Interview ($F = 8.10$, $df = 1/88$, $p < .005$) were found. When subjects were similar to victims, they were likely to see the cause of cancer as external, unstable, and as a consequence of poor diet. These findings confirmed hypotheses 2c and 2e (which predicted that when subjects were similar to victims they would see the cause of cancer as unstable and as a function of diet), and disconfirmed hypothesis 2a (which predicted that similar subjects would see the cause as internal). Hypotheses 2b, 2f and 2g were not supported.

c. Psychology Major: No significant findings were found for whether the subject was a psychology major or not.

d. Personal Concern x Similarity: No significant findings of an interaction effect beween personal concern and similarity were found on any of the measures, disconfirming hypothesis 3 which predicted that the interaction would yield subjective causal thinking.

e. Similarity x Psychology Major: A significant interaction effect between these variables was found on the control item of the

Causal Interview (F = 5.57, df = 1/88, p <.02). When subjects were psychology majors they were more likely to see victims who were similar to themselves as having control over the outcome.

f. Personal Concern x Psychology Major: A significant interaction between these variables was found on the genetics item of the Causal Interview (F = 4.41, df = 1/88, p <.04). When subjects were psychology majors and personally concerned about getting cancer, they were less likely to implicate genetic factors as causative in the outcome.

g. Similarity x Personal Concern x Psychology Major: No significant interactions between these variables were found.

1. Within-Subjects Variable (Severity)

a. Severity: The severity variable approached significance only on the Stress/Lifestyle (f) item on the Causal Interview (F = 3.61, df = 1/88, p <.06), very slightly confirming hypothesis 4, which predicted that in this condition more subjective causal thinking would be found than in the non-severe condition. When the outcome was severe, subjects were more likely to see the cause as stress-related.

b. Severity x Similarity/Dissimilarity: No significant findings of an interaction between these variables was found, disconfirming hypothesis 6, which predicted subjective causal thinking as a function of this interaction.

c. Severity x Personal Concern: No significant findings of an interaction between these variables was found, disconfirming hypothesis 5, which predicted subjective causal thinking as a function of this interaction.

d. Severity x Psychology Major: No significant findings of an interaction between these variables was found.

e. Severity x Similarity x Personal Concern: This interaction only approached significance on the diet item of the Causal Interview (F = 2.98, df = 1/88, p <.09), very slightly confirming the seventh hypothesis, which predicted subjective causal thinking as a function of this interaction.

f. Severity x Similarity x Psychology Major: There was no significant interaction between these variables, although it did approach significance on the internality/externality dimension (F = 3.76, df = 1.88, p <.06), and on the stress/lifestyle item on the Causal Interview (F = 3.50, df = 1/88, p <.06).

g. Severity x Personal Concern x Psychology Major: No significant interaction was found.

h. Severity x Personal Concern x Similarity x Psychology Major: No significant interaction was found.

Table 5

Summary of Significant Effects on Repeated Measure Analysis of Variance.

		Analysis of Variance		
Source	Dependent Measure	df	F	p
Similar/ Dissimilar	Stability/ Instability	1	3.98	.05*
	Internality/ Externality	1	6.43	.01**
	Diet	1	8.10	.005**
Similar/Dissimilar x Psychology Major	Control	1	5.57	.02*
Personal Concern x Psychology Major	Genetics	1	4.41	.04*

* $p < .05$

** $p < .01$

Table 6

Cell Means and Standard Deviations of Similarity Condition on Stability/Instability, Internality/Externality Dimensions & Diet Item.

	Similarity		Dissimilarity	
Stability/	27.46	mean	31.19	mean
Instability*	7.94	S.D.	9.39	S.D.
Internality/	29.48	mean	34.41	mean
Externality*	9.77	S.D.	8.96	S.D.
Diet*	1.82	mean	.83	mean
	1.75	S.D.	1.45	S.D.

*Key

High scores = internal, stable, and large role to diet.

Table 7

Means and Standard Deviations of Interaction Between Similarity Status x Psychology Major Status on Control Item

	Control			
	Similarity		Dissimilarity	
Psychology Major	2.30	mean	1.13	mean
	1.77	S.D.	1.25	S.D.
Non-Psychology Major	1.15	mean	1.37	mean
	1.33	S.D.	1.26	S.D.

Table 8

Means and Standard Deviations for Interaction of Personal Concern x Psychology Major Status on Genetics Item.

	Genetics			
	High Personal Concern		Low Personal Concern	
Psychology Major	3.40	mean	4.25	mean
	2.09	S.D.	1.86	S.D.
Non-Psychology Major	4.33	mean	3.41	mean
	1.31	S.D.	2.20	S.D.

2. Interrelations Between the Causal Dimension Scale and the Causal Interview

In order to test hypothesis eight (i.e., that high scores on controllability, instability and internality on the Causal Dimension Scale would be associated with high scores on diet, control, personality, stressful lifestyle, and personal responsibility on the Causal Interview), one-tailed Pearson's Correlation coefficients were computed for each measure. Significant results are as follows (see Table 9):

a. Controllability/Uncontrollability: High controllability scores on the Causal Dimension Scale (i.e., the victim is viewed as being in control of the outcome) were positively related to high control (r = .33, p <.01), high personality (r = 44, p <.01), high stress (r = .40, p <.01), and high personal responsibility scores (r = .20, p = <.05), and negatively correlated with high environment scores (r = .22, p <.05) on the Causal Interview. Respondents who perceived the victim's getting cancer as highly controllable on the Causal Dimension Scale, also saw him or her as being in control of getting cancer, and as getting it for reasons having to do with personality and stressful lifestyle on the Causal Interview. They were less likely to think that environmental factors played a role.

b. Stability/Instability: High stability scores on the Causal Dimension Scale (i.e., the outcome is viewed as being permanent, rather than temporary), were positively correlated with high genetics scores (r = .26, p <.01), and negatively correlated with high diet scores (r = -.18, p <.05) and high environmental scores (r = -.29, p <.01) on the Causal Interview. Respondents who saw victims as getting cancer

because of causes which were stable, also saw them as getting cancer because of genetic factors and not because of dietary and environmental factors.

c. Internality/Externality: High internal scores on the Causal Dimension Scale (i.e., the outcome is viewed as being caused by internal factors) were positively related to high genetics scores (r = .29, p <.01). It was negatively correlated with diet scores (r = -21, p <.05) and environmental scores (r = -0.48, p <.01). Respondents who saw the cause of cancer as highly internal, also saw it as being due to genetic factors, and tended not to see dietary factors or environmental factors as playing a role.

Table 9

Pearson Correlation Coefficients of the Causal Dimension Scale and the Causal Interview.

	Controllability/ Uncontrollability	Stability/ Instability	Internality/ Externality
A. Genetic Factors	-0.01	0.26**	0.29**
B. Dietary Factors	0.15	-0.18*	-0.21*
C. Control	0.33**	0.02	0.09
D. Environmental Factors	-0.22*	-0.29**	-0.48**
E. Personality Factors	0.44**	-0.08	0.15
F. Stress/Lifestyle	0.40**	-0.07	0.10
G. Chance	-0.14	-0.07	-0.12
Personal Responsibility	0.20*	-0.02	0.08

*$p < .05$.

**$p < .01$.

3. Sex Differences

Although no sex differernces were hypothesized on any of the variables, t tests were done to see if any differences could be discerned. 2-tailed t tests were conducted because no directionality was hypothesized. Contrary to expectations, two significant results were found:

a. there was a significant sex difference found on the personal concern measure (t = 1.98, df = 94, p <.05). Females scored significantly higher (M = 1.65, $S.D.$ = 0.48) than males (M = 1.45, $S.D.$ = 2.13) on this measure.

b. there was a significant sex difference on the stability dimension of the Causal Dimension Scale (t = -2.15, df = 04, p <.03). Female scores were significantly higher (i.e., more stable) (M = 15.64, $S.D.$ = 4.60) than male scores (M = 13.61, $S.D.$ = 4.59).

4. Results of Frequency Count on Question Five of Causal Interview

This section will present the results of a frequency count on responses to Question Five of the Causal Interview.

A frequency count of responses to Question Five (prior to their being coded into the Personal Responsibility/Chance Score) indicated that out of 96 respondents, only 3 said that they did not know why one victim got better and the other died. Of the remaining 93 subjects, the most popular reasons were: that one detected his or her cancer sooner than the other (38), that one had better luck than the other (25), that there were genetic differences between the two subjects (17 subjects), that one was of a personality type which enabled him or her to get better while the other was of a negative personality type (15), that the quality of treatment received differed (15), and that one had a better attitude when he or she found out about having cancer than the other (10). (See Table 10 for a frequency count of all responses.) (Note: Most respondents gave more than one response.) Of the responses just cited, only genetic differences and luck were in the high chance domain, while the rest of the responses were viewed as subject to personal responsibility.

Table 10

Frequency Table for Pre-coded Responses to Question 5 (Personal Responsibility Item) on the Causal Interview.

Response	Frequency
One was emotionally stronger than the other	3
Genetic differences	17
Quality of treatment differed	15
Response to treatment differed	4
Strength and duration of exposure differed	2
One had better luck than the other	25
One was of a better personality type than the other	15
One detected the cancer sooner than the other	38
One had a stronger will to live than the other	8
One had a greater ability to deal with stress	3
One had a better attitude when told had cancer	10
One had more support from family	2
One denied early warning signs	1
One had stronger physical constitution	7
One had a death wish	3
One had more frequent checkups than the other	7
One was under more stress	2
One was more ambitious and driven	2
One did more exercise and took better care of self	1

Table 10 (continued)

Responses	Frequency
One was in better health than other	4
Had different types of cancer	2
Don't know	3

Summary of Results

The results may be summarized as follows: on the repeated measure analysis of variance performed on all dependent variables, a significant main effect was found for similarity on the stability/instability and internal/external dimensions of the Causal Dimension Scale and on the diet item of the Causal Interview. Subjects who were similar to victims were more likely than dissimilar subjects to view the cause of cancer as external, unstable and as a consequence of poor diet, partially confirming and partially disconfirming the second hypothesis. No significant effects were found for the personal concern variable, disconfirming the first hypothesis, and no significant effect was found for the psychology major variable. There were two significant interaction effects: similarity x psychology major on the control item of the Causal Interview and personal concern x psychology major on the genetics item of the Causal Interview. Psychology majors who were similar to victims were more likely to see them as being in control of getting cancer than subjects who were either psychology majors or similar. Subjects who were psychology majors and personally concerned about getting cancer were less likely to see the cause as due to genetic factors than either of these two groups alone.

The results of the correlation coefficients computed for each dependent variable indicated that controllability scores on the Causal Dimension Scale were positively related to control, personality, stress/lifestyle and personal responsibility scores on the Causal Interview and negatively correlated with environmental factors scores on the Causal Interview. Subjects who viewed victims as getting cancer for highly controllable reasons on the Causal Dimension Scale saw them

as getting cancer due to factors related to their personalities, stressful lifestyles, and viewed these factors as being within their control and personal responsibility. Stability scores on the Causal Dimension Scale were positively related to genetics and negatively correlated with diet and environmental factors on the Causal Interview. Subjects who saw victims as getting cancer because of causes which were stable, also saw them as getting cancer due to genetic factors, and were unlikely to see them as getting cancer because of dietary and environmental factors. Internality scores on the Causal Dimension Scale were positively related to genetics scores, and negatively correlated with dietary and environmental factors on the Causal Interview. Subjects who viewed the cause of cancer as internal, also saw it as being due to genetic factors and tended not to see dietary and environmental factors as being instrumental in causing it.

Results of *t* tests done to ascertain whether there were any sex differences indicated a significant sex difference on the personal concern measure with females being more personally concerned than males about cancer. In addition, there was a significant sex difference on the stability dimension of the Causal Dimension Scale, with females scoring higher on stability (i.e., seeing the cause of cancer as more stable) than males.

Chapter V

Discussion

The results presents a complex picture of the relationship between similarity and causal beliefs about cancer. While the findings confirmed hypotheses 2c and 2e, which predicted that when subjects were similar to victims the cause would be seem as unstable and as a function of diet, they disconfimed hypothesis 2a, which predicted that subjects who were similar to victims would view the cause as internal. The latter finding, that subjects viewed external causes as responsible for victims getting cancer, in addition to being contrary to expectations, was difficult to interpret. As it is derived from the internality/externality dimension of the Causal Dimension Scale, this dimension will be examined in order to illuminate the results.

The internality/externality dimension consists of the following three items (which are rated on a nine-point Likert Scale): the cause is a function of an aspect of the person (e.g., personality, genetic make-up/the cause is a function of an aspect of the external situation; the cause was something inside of the person/the cause was something outside of the person; and the cause was something about the person/the cause was something that had nothing to do with the person. A review of the items indicates how vague they are. A respondent could view the cause as an aspect of the person and be referring to genetics, or could be referring to personality (each of which implies a totally different role to responsibility) and score the same. In a similar vein, a subject could say the cause was something outside of the person and be referring to diet (a cause for which the individual is highly responsible), and be scored as external (which would imply that the

subject thought the victim had very little personal responsibility for the outcome). Because a dimension as broad as internality/externality collapses these differences, the results are somewhat confounded. However, since the other finding on this condition was that diet was viewed as a cause, and because the results of the interrelationship between the measures (p. 61) indicate that internality is negatively correlated with diet ($r = -.21$, $p < .05$), it is tentatively concluded that the results are in line with Walster's (1966) and Lerner's (1980) claims that victims who are similar to subjects are held responsible for negative outcomes. Holding victims responsible for outcomes for which they have little or no control has been defined in this study as subjective causal thinking. Objective causal thinking, on the other hand, acknowledges the role of chance or randomness as crucial to outcomes in which victims have little or no control. According to Lerner (1980), blaming similar victims for outcomes for which they have little or no personal responsibility is seen as primarily motivated by a need for security: if the victim is held responsible for the outcome, the subject feels that it wasn't random and that if he or she were in a similar position it would be preventable. (It should be noted here that the researchers cited above seem to use the terms "responsibility" and "blame" interchangeably, while their subjects were only asked about "responsibility." It remains for future research to determine the relationship between these two concepts). It should also be noted that these findings seem to contradict the literature on perceived similarity which explores the effect of this variable on intergroup perceptions (Rokeach, 1968; Wilder, 1981). While traditionally, perceived similarity had been regarded as mediating

intergroup hostility (i.e., people are hostile to groups to which they are dissimilar), Brewer (1979) has concluded that "similarity-dissimilarity of the outgroup had no effect on degree of ingroup bias" (p. 318). The findings of this study are in keeping with the traditional view of perceived similarity as mediating ingroup bias, but in the opposite direction than has previously been found; subjects blame people they are similar to, and exonerate people to whom they are dissimilar. In addition, the findings are in a similar vein to those of Tversky and Kahneman (1981) about behavior in decision-making situations. They describe how the decision-makers's "frame" (i.e., how one formulates a problem in terms of acts, outcomes, and contingencies) determines the decision; if the frame is altered, decisions are also changed. In this study the frame which determines subjects' decisions is the similarity variable.

Since the conclusion that similar subjects view victims as responsible for getting cancer is tentative (due to the vagueness of the externality finding), future research might find out exactly how subjects interpret the items on the internality/externality dimension.

The fact that similarity did not affect subjective casual thinking on the controllability dimension of the Casual Dimension Scale (CDS) (as had been predicted), although it did not approach significance on the control item of the Casual Interview, might be indicative of a lack of precision of the CDS. The controllability dimension consists of three questions, one which asks about responsibility, one about control, and one about intention. The Causal Interview, on the other hand, consists of one question "how much control did the victim have for the outcome?" There are three problems with the range of questions

on the controllability dimension of the CDS. In the first place, responsibility and intention are not the same; a person could accidentally break something and be responsible for the damage although he or she did not intend it to happen. Similarly, control and responsibility are not necessarily equivalent; parents may be responsible when their child does damage to a neighbor's property, but they did not control their child's actions. Thirdly, there is no differentiation between conscious and unconscious intention; some respondents might say that the person did not intend to get cancer even though they think he or she unconsciously intended it, others might say that the person did intend it when they think the intention is unconscious. The concept of unconscious intention (i.e., intentions of which the person is not aware) also affects judgments about personal responsibility. Expressions reflecting awareness of these different meanings of "intention" and personal responsibility are commonly heard. For example, people frequently say "he must be suicidal" to describe a person who takes great physical risks (e.g., skydiving or drunk driving) or "she was asking for it" as an explanation for an undesirable consequence that befalls a person (e.g., getting mugged). These explanations imply that the person intended the outcome and was responsible for it, although he or she was not aware of the intention. The concept of unconscious intention is particularly relevant to the study of how people view cancer victims, according to Sontag (1977), who finds that explanations of cancer tend to blame victims for unconsciously willing it on themselves.

While similarity approached significance on the control item of the Causal Interview, there was also an interaction effect between similarity and pscyhology major on this item (i.e., psychology majors who were similar to victims saw them as controlling getting cancer). Although there is no precise way of knowing whether this difference has to do with greater awareness of unconscious intention in psychology majors than in non-psychology majors, responses on the Causal Interview seem to indicate that psychology majors were more inclined to include factors like unconscious motivation into their thinking about control. One psychology major reported "Some people can't ask to be taken care of directly, so they make themselves sick...It's the result of certain psychic needs we have. Cancer is a disease where the body eats itself up; maybe its the result of some very deep-seated self-destruction." Another psychology major said "I really believe that people make themselves sick and better. How we feel about ourselves and stress and how we incorporate stress and anger can make us sick or healthy." Thus psychology majors who are similar to victims appear to blame unconscious factors for their getting cancer, as opposed to non-psychology majors who did not cite unconscious motivation.

What is most striking about the findings discussed above is the fact that psychology majors appear to be more inclined to utilize their theories about unconscious motivation when victims are similar to themselves than when they are dissimilar. Analagously, all respondents are more inclined to use theories about the relationship between diet and cancer when victims are similar to themselves than when they are dissimilar. An explanation for this may be found in Labouvie-Vief's (1978) view that external equilbria (cultural or theoretical beliefs)

serve to make certain causal theories available, while internal equilibria (i.e., personal factors like similarity) determine which theory an individual will utilize in a particular context. When similarity is high, psychology majors seem to utilize theories with which they are familiar in order to exclude awareness of chance factors. Along the lines of Labouvie-Vief's theory, such an exclusion might enable them to feel that victims had control over the outcome. Psychology majors use theories of unconscious motivation while non-psychology majors do not use these theories. By believing that similar victims contracted cancer due to unconscious intention, psychology majors might be able to maintain the illusion that they can avoid getting cancer by being self-aware (Sontag, 1977). By utilizing theories about the relationship between cancer and diet when similarity is high, all subjects might be able to maintain the belief that they can avoid getting cancer by eating well.

The correlations between the Causal Dimension Scale and the Causal Interview revealed that there is no relationship between any of the attribution dimensions and the chance item on the Interview. It appears that concepts of chance, which have been shown to be pivotal in causal thinking (Piaget, 1975), are not being tapped by the CDS. While correlations between controllability and personal responsibility, personality and stress; stability and diet, genetics, and environment; and internality and genetics, diet and personality give vital information about what underlies the attribution dimension, they also speak to the danger in using global dimensions. The lack of specificity of the attribution dimensions make data about them very tentative and interpretations from these data limited.

It should be noted that there were some limitations in the sample employed in this study. The large age range (i.e., 22 to 60 years) might have somewhat confounded the results; older subjects might have been more concerned about cancer than younger subjects.

In contradistinction to the first hypothesis, which predicted that subjects who were personally concerned about cancer would have higher subjective causal thinking, personal concern did not significantly effect causal thinking. It did significantly interact with psychology major on genetics, however. There are two possible explanations for the general lack of significance: firstly, that there is no relationship between personal concern about cancer and causal thinking, and secondly, that personal concern cannot be adequately measured by using an objective measure like the Health Questionnaire. While there was high variability on the Health Questionnaire, it is possible that people aren't always aware of their own personal concern about cancer and that concern might manifest itself indirectly.

The data also indicate that women are more personally concerned about cancer than men. It is possible that men might be more stoic and "macho" in their reactions to cancer, scoring lower than women on personal concern, while women might be more open to their feelings, and consequently more aware of their personal concern about cancer than men. Another explanation is that there has been a great deal of media attention in recent years to female forms of cancer and that this might have made women more concerned about cancer.

The hypothesis that severity would effect causal thinking was not confirmed, contrary to Walster's (1966) findings. This variable approached significance on the stress-lifestyle item of the Causal

Interview; when the outcome was severe, subjects blamed the victim's stressful lifestyle. The fact that severity wasn't significant on the other measures may be a testament to the severity of cancer itself, regardless of outcome, or it may not be a factor in causal thinking about cancer.

Responses to Question Five, "How do you explain the difference between what happened to Victim 1 and Victim 2?" were quite noteworthy. This question most clearly revealed subjects' subjective beliefs. Of ninety-six respondents, only three said they couldn't explain the difference. Ninety-three gave explanations, quite often changing the information given or creating a new scenario. For example, two respondents said that the two victims had different types of cancer (although the case histories clearly state that they were the same), two said the victims' different ages caused one to get better and the other to die (although they were only two years apart), and one said he didn't believe that one really survived the cancer. The following is an anecdotal example of how one person struggled to make sense of this discrepancy: "Wanda had regular checkups and was an active person. When she did go to the doctor she gave them a good history about her stomach pains and weight loss. I think she was persistent about treatment. (Interviewer: "So all these factors contributed to her getting better?") Yes, and she was only 28, she was a younger person than Mary...(Note: there was only a year age difference.) My close friend had cancer. When she went to the doctor she gave complete histories...they got everything out...she goes for regular checkups and examines herself a lot. It's been fifteen years and she has no problems. I do believe that sometimes if a person doesn't prolong

things it helps...especially with Wanda. I think she was more on top of things than Mary." Another respondent reported "Frank took care of himself better than Joe. They dealt with cancer differently. Frank dealt with it in a more positive way, sharing with his family. Joe was very goal-oriented, and may not have been able to deal with being struck down."

The high frequency of responses to Question Five which explained discrepancy between the outcomes as a function of the victims' responsibility, might be an artifact of the way the question was phrased. By requesting subjects to explain the differences in outcomes, the interviewer might have implied that an explanation existed, and that the difference wasn't random. Such an instruction might have manipulated subjects into giving responses that they might not ordinarily have given. Another explanation is that subjects felt freer to give answers which implicated the victim in causing cancer on this question because they weren't directly asked about the victim's personal responsibility. Many subjects felt angry during the Causal Interview when asked if the cancer victim was personally responsible for getting cancer, but then gave indirect evidence of thinking this was so on Question Five.

While some of the findings discussed above lend credence to Sontag's (1977) observations that modern explanations of cancer put the onus on the victim, other findings do not. While Sontag found that people blame cancer victims by invoking theories of unconscious motivation, the findings in this study indicate that viewing cancer victims as responsible for their illness is more likely to occur when victims are similar to observers. In addition, contrary to Sontag's

(1977) findings, not all people were found to see victim's unconscious motivations as responsible for their getting cancer. While psychology majors (who are more familiar with theories of unconscious intention) were found to believe that similar victims had more control over getting cancer than did non-psychology majors, and seemed to implicate unconscious motivations in the cause, non-psychology majors were not found to do this. All subjects were found to view similar victims as getting cancer due to poor diets. While scientific evidence about cancer seems to indicate that diet and personality are both implicated in its etiology, this study seems to point out that people use this information differently, depending on whether victims are similar or dissimilar to themselves. It appears likely that under conditions of similarity people use whatever theory of cancer etiology they are most familiar with. Both psychology and non-psychology majors might utilize theories about diet and unconscious motivation as subjective causal thinking in order to feel that they won't contract cancer themselves, if they take dietary and psychological precautions. This is in line with Lerner's theory (1980) which states that when victims are held responsible for serious outcomes, subjects feel that if they themselves were in a similar situation they would be able to prevent the outcome. As one of the subjects in the study put it "I like to believe that Mary did something to cause her cancer. It's comforting to think it was her personality and that she caused it. If its just chance and environment, it's like roulette. It's very emotional finding out that Mary died; it takes over your rationality."

Implications for Future Research

The discussion has emphasized that subjects tend to give victims of cancer more responsibility when they are similar to themselves than when they are dissimilar. There are two possible explanations for how this perception is manifested in behavior vis a vis cancer preventions. Firstly, Brody (1984) points out that believing that car accidents only happen to those who deserve them leads people to the conclusion that they don't have to take safety precautions themselves, e.g., using seat belts. Thus, believing that cancer victims are responsible for getting the disease might lead similar subjects to continue to smoke or eat carcinogenic foods. An alternate explanation is that by believing that similar victims have control over getting cancer, subjects might feel more inclined to take precautions against getting cancer themselves. Thus, feelings of self-control may enhance perceptions of self-efficacy (Bandura, 1986) and promote healthful behavior. Future research should determine the relationship between holding others responsible for getting cancer, and beliefs about one's own ability to avoid getting cancer.

Future research should also determine the relationship between holding similar victims responsible for getting cancer and actual behavior towards cancer victims. Hersh (1982) has reported that people tend to exhibit negative behavior towards cancer victims, which range from firing or not hiring them, to neighborhoods not letting a cancer victim buy a home, to shunning association with them (be they friends or strangers). Blaming and derogating victims and shunning associations with them in order to avoid cognizance that certain events occur at random, is harmful to victims. There is considerable evidence

that perceived social support is an important predictor of the ability to cope successfully with a variety of stressful life events, including physical disability, malignant disease, bereavement, and rape. Social isolation increases the likelihood of deterioration of victims (Coates, Wortman, Abbey, 1979).

Implications for Education

These findings have relevance to public education about cancer. When information is published about the links between diet, stress and cancer it appears that people might utilize it in ways which enable them to blame victims and promote illusory feelings of control in themselves. Brody (1984) points out that believing that car accidents only happen to those who deserve them leads people to the grandiose conclusion that they don't have to take safety measures themselves, e.g., the use of seat belts. This type of subjective causal thinking might also be implicated in why people continue to smoke, abuse drugs and alcohol, as well as the difficulties encountered in getting teenagers to use birth control and to not drive while drunk. A recent news article (1985) pointed out that only two schools in the entire state of New Jersey had applied for federal funds to remove asbestos from schools, despite reports of its carcinogenic properties. This study suggests that one of the reasons behind the difficulties of educational programs designed to change people's behavior in the situations cited above is that they have overlooked the role and tenacity of subjective causal beliefs. Adults appear to be motivated to avoid disturbing aspects of reality by imbuing themselves and victims with greater control and power than they in fact possess.

In addition to stressing cancer symptoms, etiology and prevention, public education should begin to inform people about the subjective causal belief systems they use to understand cancer. Such a program would illuminate the public's distortion of attributions about the disease, and help people understand why these distortions occur. This should lead to more realistic prevention behavior and enhance empathy for victims. Towards these ends an educational intervention which uses both similar and dissimilar victims should be designed. By pointing out to subjects how their causal attributions differ across these two conditions, self-reflective thought would be promoted.

This study also has implications on both epistemological and pedagogical levels, both of which will be discussed below. Adherence to a model which views development as impelled towards the telos of formal thought tends to derogate the contributions of both contextual and personal factors. Because of this bias, even the Piagetian literature in the social domain has focused on the objective aspects of cognition at the expense of its subjective aspects. Such a lauding of the formal and the abstract leads to an inattention to the role which subjective meanings play in the cognitive process. In addition, commitment to a unilinear model of development gives one a narrow view of mature thought. Werner's (1948) view that development is both unilinear and multilinear, on the other hand, such that diverse forms of thought can be seen to follow their own developmental lines, allows for rich and varied strands of thinking to coexist within each adult. Price-Williams (1975) also argues for a multilinear approach. The multiple spheres of human activity require different types of thought with their own sets of rules. Flavell (1969) has suggested that

primative structures become elaborated and refined on their own and may then alternate with logical structures in the everyday functioning of the adult.

This study emphasizes the role that subjective thought plays in the life of the mature adult. An appreciation of the fact that adult thought is not purely logical should inform educators' understanding and behavior towards both child and adult pupils. A view of adults as purely logical ignores aspects of their functioning which should be included in both theoretical and pedagogical accounts.

APPENDIX 1

CAUSAL DIMENSION SCALE

1. The cause is a function of an aspect of the person (for example, personality, genetic make up).	9	8	7	6	5	4	3	2	1	The cause is a function of an aspect of the external situation.
2. The person had control over the cause.	9	8	7	6	5	4	3	2	1	The person had no control over the cause.
3. The cause is a function of a permanent characteristic of the person.	9	8	7	6	5	4	3	2	1	The cause is a function of something temporary about the person.
4. The cause was intended by the person.	9	8	7	6	5	4	3	2	1	The cause was not intended by the person.
5. The cause was something outside of the person.	9	8	7	6	5	4	3	2	1	The cause was something inside the person.
6. The cause was something that could have been different at another time.	9	8	7	6	5	4	3	2	1	The cause was something that could not have been any different at another time.
7. The cause was something about the person.	9	8	7	6	5	4	3	2	1	The cause was something that had nothing to do with the person.
8. The cause was something that could have been changed.	9	8	7	6	5	4	3	2	1	The cause was something that could not have been changed.
9. The cause was something for which the person was responsible.	9	8	7	6	5	4	3	2	1	The cause was something for which the person was not responsible.

APPENDIX 2

Instructions: Please circle yes or no for each of the questions below. If you are not sure about an item, please circle an answer that seems slightly more to fit your views. It is important to answer every item.

Name: _____

Health Questionnaire

Instructions: Please circle the number which bests expresses how you feel.

1. Do you worry about the possibility of your getting cancer?

   Yes No

2. Do you worry about the possibility of people who are very close to getting cancer?

   Yes No

3. Do you avoid eating foods which are thought to contain cancer-causing substances in them?

   Yes No

4. Would you chose not to move to an area that is near a nuclear power plant for fear that you would get cancer?

   Yes No

5. Do you pay attention to ads on television which warn against the cancer-causing effects of certain substances (e.g., cigarettes)?

   Yes No

6. Do you fear that you will get cancer from pollutants in the air?

   Yes No

7. If you moved into a new house would you take out any asbestos used for insulation for fear that you would get cancer?

   Yes No

8. Do you avoid eating specific types of fish which are thought to come from polluted waters?

Yes No

9. Do you watch programs on television which pertain to cancer and cancer research?

Yes No

10. Do you make donations to cancer charities?

Yes No

11. Do you discuss topics pertaining to cancer with your friends?

Yes No

12. Do you think that the City should spend money to remove asbestos from all schools?

Yes No

13. Do you think that the government should regulate industries where workers are exposed to cancer-causing substances?

Yes No

14. Do you think that the government should regulate industries which put pollutants into the environments?

Yes No

15. Do you worry about the water system being contaminated by acid rain?

Yes No

16. Do you consider eating organically grown foods in order to avoid chemical fertilizers?

Yes No

17. If you had a friend who contracted cancer, would you fear its being contagious?

Yes No

18. Do you have periodic checkups at the doctor as a means of cancer prevention?

Yes No

19. Do you ever examine your own body to see if you have any lumps or growths?

Yes No

20. Do you spend a lot of time thinking about cancer and cancer prevention?

Yes No

21. Have you ever had any symptoms of cancer which turned out to be benigh?

Yes No

22. Have you had what you thought was a symptom of cancer which turned out to be something else?

Yes No

23. Has anyone you are close to had cancer?

Yes No

24. If anyone in your immediate family died of cancer, would you be concerned about your having a genetic tendency towards cancer?

Yes No

The Health Questionnaire was scored by finding the median score and using it as a mark-off point; any score above it was denoted High Personal Concern and anthing below it Low Personal Concern.

APPENDIX 3

Case History: Severe Condition

Mary _____, a thirty year old Caucasian female graduate student was admitted to the hospital in 1979. She was married and the mother of a young child. Up until her admittance into the hospital she had been in excellent health. She watched what she ate, jogged every day, and had frequent check-ups at the doctor. She was to graduate in 1981, and was planning an active career. When she was at the hospital it was determined that she had cancer of the colon and, over the course of the next six months, the cancer spread despite treatment. Mary died in 1980.

Case History: Non-Severe Condition

Wanda _____, was admitted to the hospital in 1980. She was a 28 year old married Caucasian and the mother of two children. She took excellent care of her health; she played tennis, watched her diet, and had yearly check-ups at the doctor. She worked part-time while going to school, and still had time to devote to her children and husband. When Wanda _____ was admitted to the hospital she complained of stomach pains and weight loss. Tests revealed she had cancer of the colon. Treatment was successful and in follow-up calls in the past few years it was determined that Wanda is in excellent health and has had no reoccurance of the cancer.

Case History: Severe Condition

Joe _____, a thirty year old black graduate student, was admitted to the hospital in 1979. He was married and the father of a young child. Up until his admittance into the hospital he had been in excellent health. He watched what he ate, jogged every day, and had frequent check-ups at the doctor. He was to graduate in 1981 and was planning an active career. When he was at the hospital it was determined that he had cancer of the colon and, over the course of the next six months, the cancer spread despite treatment. Joe died in 1980.

Case History: Non-Severe Condition

Frank _____ was admitted to the hospital in 1980. He was a 28 year old married black and the father of two children. He took excellent care of his health; he played tennis, watched his diet, and had yearly check-ups at the doctor. He worked part-time while going to school and still had time to devote to his family. When Frank _____ was admitted to the hospital he complained of stomach pains and weight loss. Tests revealed that he had cancer of the colon. Treatment was successful and in the follow-up calls in the past few years it was determined that Frank is in excellent health and has had no reoccurence of the cancer.

Case History: Severe Condition

Joe _____, a thirty year old Caucasian graduate student, was admitted to the hospital in 1979. He was married and the father of a young child. Up until his admittance into the hospital he had been in excellent health. He watched what he ate, jogged everyday, and had frequent check-ups at the doctor. He was to graduate in 1981 and was planning an active career. When he was at the hospital it was determined that he had cancer of the colon and, over the course of the next six months, the cancer spread despite treatment. Joe died in 1980.

Case History: Non-Severe Condition

Frank _____ was admitted to the hospital in 1980. He was a 28 year old married Caucasian and the father of two children. He took excellent care of his health; he played tennis, watched his diet, and had yearly check-ups at the doctor. He worked part-time while going to school and still had time to devote to his family. When Frank _____ was admitted to the hospital he complained of stomach pains and weight loss. Tests revealed that he had cancer of the colon. Treatment was successful and in follow-up calls in the past few years it was determined that Frank is in excellent health and has had no reoccurence of the cancer.

Case History: Severe Condition

Mary _____, thirty year old black graduate student, was admitted to the hospital in 1979. She was married and the mother of a young child. Up until her admittance into the hospital she had been in excellent health. She watched what she ate, jogged every day, and had frequent check-ups at the doctor. She was to graduate in 1981 and was planning an active career. When she was at the hospital it was determined that she had cancer of the colon and, over the course of the next six months, the cancer spread despite treatment. Mary died in 1980.

Case History: Non-Severe Condition

Wanda _____, was admitted to the hospital in 1980. She was a 28 year old married black and the mother of two children. She took excellent care of her health; she played tennis, watched her diet, and had yearly check-ups at the doctor. She worked part-time while going to school and still had time to devote to her children and husband. When Wanda _____ was admitted to the hospital she complained of stomach pains and weight loss. Tests revealed she had cancer of the colon. Treatment was successful and in follow-up calls in the past few years it was determined that Wanda is in excellent health and has had no reoccurence of the cancer.

APPENDIX 4

Table 3

Repeated Measure Analysis of Variance For All Dependent Variables Between Subject Variables.

Source	Dependent Measure	df	MS	F	p
Similar/Dissimilar					
	Controllability/Non-Controllability				
		1	0.61	0.02	.90
	Stability/Instability	1	148.53	4.33	.05*
	Internality/Externality	1	289.77	6.43	.01**
	Causal Interview:				
	a. Genetics	1	2.92	1.61	.21
	b. Diet	1	11.16	8.10	.005**
	c. Control	1	2.75	2.73	.10
	d. Environmental Factors	1	0.10	0.04	.84
	e. Personality	1	3.09	1.70	.20
	f. Stress/Lifestyle	1	1.55	1.34	.25
	g. Chance	1	3.32	1.51	.22
	Personal Responsibility	1	0.85	0.49	.49

*p <.05

**p <.01

Table 3 (continued)

Source	Dependent Measure	df	MS	F	p
Personal Concern					
	Controllability/Non-Controllability				
		1	2.19	0.06	.81
	Stability/Instability	1	0.00	0.00	.10
	Internality/Externality	1	25.79	0.57	.45
	Causal Interview				
	a. Genetics	1	0.04	0.02	.89
	b. Diet	1	0.08	0.06	.81
	c. Control	1	0.02	0.03	.87
	d. Environmental Factors	1	1.20	0.50	.48
	e. Personality	1	4.03	2.21	.14
	f. Stress/Lifestyle	1	0.57	0.49	.49
	g. Chance	1	1.30	0.59	.44
	Personal Responsibility	1	0.33	0.19	.66
Psychology Major					
	Controllability/Non-Controllability				
		1	87.85	2.36	.13
	Stability/Instability	1	50.75	1.36	.25
	Internality/Externality	1	4.52	0.10	.75
	Causal Interview				
	a. Genetics	1	0.00	0.00	.97
	b. Diet	1	0.20	0.14	.71
	c. Control	1	2.58	2.56	.11

Table 3 (continued)

Source	Dependent Measure	df	MS	F	p
Psychology Major (continued)					
	d. Environmental Factors	1	5.37	2.22	.14
	e. Personality	1	2.67	1.47	.23
	f. Stress/Lifestyle	1	0.82	0.71	.40
	g. Chance	1	1.60	0.73	.40
	Personal Responsibility	1	0.09	0.05	.82
Similar/Dissimilar x Personal Concern					
	Controllability/Non-Controllability				
		1	2.65	0.07	.79
	Stability/Instability	1	6.25	0.17	.68
	Internality/Externality	1	33.18	0.74	.39
	Casual Interview				
	a. Genetics	1	0.15	0.08	.77
	b. Diet	1	0.24	0.17	.68
	c. Control	1	0.36	0.36	.55
	d. Environmental Factors	1	0.25	0.10	.75
	e. Personality	1	0.00	0.00	.98
	f. Stress/Lifestyle	1	0.01	0.01	.91
	g. Chance	1	0.00	0.00	.98
	Personal Responsibility	1			

Table 3 (continued)

Source	Dependent Measure	df	MS	F	p
Similar/Dissimilar x Psychology Major					
	Controllability/Non-Controllability				
		1	4.88	0.13	.72
	Stability/Instability	1	79.25	2.13	.15
	Internality/Externality	1	70.32	1.56	.22
	Causal Interview				
	a. Genetics	1	3.76	2.08	.15
	b. Diet	1	1.92	1.39	.24
	c. Control	1	5.60	5.57	.02*
	d. Environmental Factors	1	4.56	1.89	.17
	e. Personality	1	0.30	0.00	.98
	f. Stress/Lifestyle	1	0.34	0.29	.59
	g. Chance	1	1.25	0.57	.45
	Personal Responsibility	1	0.00	0.00	.99
Personal Concern x Psychology Major					
	Controllability/Non-Controllability				
		1	0.36	0.01	.92
	Stability/Instability	1	32.96	0.88	.35
	Internality/Externality	1	0.02	0.00	.98
	Causal Interview				
	a. Genetics	1	7.99	4.41	.04*
	b. Diet	1	0.03	0.02	.88
	c. Control	1	0.00	0.00	.98

Table 3 (continued)

Source	Dependent Measures	df	MS	F	p
Personal Concern x Psychology Major (continued)					
	d. Environmental Factors	1	1.11	0.46	.50
	e. Personality	1	1.94	0.17	.31
	f. Stress/Lifestyle	1	2.30	1.98	.16
	g. Chance	1	0.36	0.16	.69
	Personal Responsibility	1	0.38	0.22	.64
Similar/Dissimilar x Controllability/Personal Concern x Uncontrollability x Psychology Major					
	Controllability/Non-Controllability	1	22.51	0.06	.44
	Stability/Instability	1	34.31	0.92	.34
	Internality/Externality	1			
	Causal Interview				
	a. Genetics	1	0.10	0.06	.81
	b. Diet	1	0.76	0.55	.46
	c. Control	1	0.05	0.05	.82
	d. Environmental Factors	1	0.07	0.03	.87
	e. Personality	1	0.00	0.00	.98
	f. Stress/Lifestyle	1	1.19	1.02	.31
	g. Chance	1	0.44	0.20	.66
	Personal Responsibility	1	0.85	0.49	.49

Table 3 (continued)

Source	Dependent Measures	df	MS	F	p
Error	Controllability/Non-Controllability				
		88	37.23		
	Stability/Instability	88	37.28		
	Internality/Externality	88	45.07		
	Causal Interview				
	a. Genetics	88	1.81		
	b. Diet	88	1.38		
	c. Control	88	1.01		
	d. Environmental Factors	88	2.42		
	e. Personality	88	1.82		
	f. Stress/Lifestyle	88	1.16		
	g. Chance	88	2.20		
	Personality Responsibility	88	1.72		

APPENDIX 5

Table 4

Repeated Measure Analysis of Variance For All Dependent Variables-Within Subjects Variables.

Source	Dependent Measure	df	MS	F	p
Severity	Controllability/Non-Controllability	1	5.76	0.96	.33
	Stability/Instability	1	3.48	0.54	.46
	Internality/Externality	1	8.00	0.67	.42
	Causal Interview:				
	a. Genetics	1	0.01	0.03	.87
	b. Diet	1	0.00	0.00	.96
	c. Control	1	0.27	0.93	.34
	d. Environmental Factors	1	0.17	1.43	.24
	e. Personality	1	0.01	0.05	.82
	f. Stress/Lifestyles	1	0.36	3.61	.06
	g. Chance	1	0.05	0.20	.66
Severity x Similarity/Dissimilarity					
	Controllability/Non-Controllability	1	4.45	0.74	.39
	Stability/Instability	1	0.02	0.00	.96
	Internality/Externality	1	11.68	0.98	.33
	Causal Interview:				
	a. Genetics	1	0.11	0.42	.52
	b. Diet	1	0.08	0.47	.49
	c. Control	1	0.10	0.34	.56

Table 4 (continued)

Source	Dependent Measure	df	MS	F	p
Severity x Similarity/Dissimilarity (continued)					
	d. Environmental Factors	1	0.07	0.58	.45
	e. Personality	1	0.00	0.02	.89
	f. Stress/Lifestyle	1	0.24	2.34	.13
	g. Chance	1	0.00	0.00	.98
Severity x Personal Concern					
	Controllability/Non-Controllability				
		1	6.70	1.12	.29
	Stability/Instability	1	0.01	0.00	.96
	Internality/Externality	1	10.52	0.88	.35
	Causal Interview				
	a. Genetics	1	0.08	0.31	.58
	b. Diet	1	0.20	1.18	.28
	c. Control	1	0.10	0.35	.56
	d. Environmental Factors	1	0.04	0.36	.55
	e. Personality	1	0.04	0.40	.53
	f. Stress/Lifestyle	1	0.12	1.17	.29
	g. Chance	1	0.15	0.21	.65

Table 4 (continued)

Source	Dependent Measure	df	MS	F	p
Severity x Psychology Major					
	Controllability/Non-Controllability				
		1	1.52	0.25	.62
	Stability/Instability	1	2.19	0.34	.56
	Internality/Externality	1	0.08	0.01	.94
	Causal Interview:				
	a. Genetics	1	0.21	0.78	.38
	b. Diet	1	0.06	0.35	.56
	c. Control	1	0.29	1.01	.32
	d. Environmental Factors	1	0.02	0.16	.69
	e. Personality	1	0.05	0.46	.50
	f. Stress/Lifestyle	1	0.00	0.01	.50
	g. Chance	1	0.15	0.61	.44
Severity x Similarity/Dissimilarity x Personal Concern					
	Controllability/Non-Controllability				
		1	12.62	2.11	.15
	Stability/Instability	1	2.66	0.42	.52
	Internality/Externality	1	12.42	1.04	.31
	Causal Interview				
	a. Genetics	1	0.02	0.07	.79
	b. Diet	1	0.49	2.98	.09
	c. Control	1	0.44	1.54	.22
	d. Environmental Factors	1	0.014	0.12	.73

Table 4 (continued)

Source	Dependent Measure	df	MS	F	p
Severity x Similarity/Dissimilarity x Personal Concern (continued)					
	e. Personality	1	0.11	0.46	.59
	f. Stress/Lifestyle	1	0.10	1.03	.31
	g. Chance	1	0.17	0.68	.41
Severity x Similarity x Psychology Major					
	Controllability/Non-Controllability				
		1	8.37	1.40	.24
	Stability/Instability	1	3.50	0.55	.46
	Internality/Externality	1	45.03	3.76	.06
	Causal Interview:				
	a. Genetics	1	0.00	0.00	.94
	b. Diet	1	0.00	0.00	.96
	c. Control	1	0.01	0.04	.84
	d. Environmental Factors	1	0.04	0.36	.55
	e. Personality	1	0.12	1.09	.30
	f. Stress/Lifestyle	1	0.35	3.50	.06
	g. Chance	1	0.01	0.04	.84
Severity x Personal Concern x Psychology Major					
	Controllability/Non-Controllability				
		1	10.22	0.04	.85
	Stability/Instability	1	7.88	0.76	.39
	Internality/Externality	1	15.90	1.33	.25

Table 4 (continued)

Source	Dependent Measure	df	MS	F	p
Severity x Personal Concern x Psychology Major (continued)					
	Causal Interview:				
	a. Genetics	1	0.07	0.25	.62
	b. Diet	1	0.03	0.02	.66
	c. Control	1	0.01	0.04	.84
	d. Environmental Factors	1	0.28	2.27	.14
	e. Personality	1	0.06	0.56	.46
	f. Stress/Lifestyle	1	0.00	0.03	.87
	g. Chance	1	0.08	0.30	.58
Severity x Personal Concern x Similarity x Psychology Major					
	Controllability/Non-Controllability				
		1	3.70	0.62	.43
	Stability/Instability	1	0.00	0.00	.99
	Internality/Externality	1	3.70	0.31	.58
	Causal Interview:				
	a. Genetics	1	0.03	0.10	.75
	b. Diet	1	0.20	1.18	.28
	c. Control	1	0.01	0.03	.86
	d. Environmental Factors	1	0.18	1.43	.24
	e. Personality	1	0.14	1.24	.27
	f. Stress/Lifestyle	1	0.01	0.08	.77
	g. Chance	1	0.12	0.48	.49

Table 4 (continued)

Source	Dependent Measure	df	MS	F	p
Error	Controllability/Non-Controllability				
		88	5.99		
	Stability/Instability	88	6.41		
	Internality/Externality	88	11.97		
	Causal Interview:				
	a. Genetics	88	0.27		
	b. Diet	88	0.17		
	c. Control	88	0.29		
	d. Environmental Factors	88	0.12		
	e. Personality	88	0.71		
	f. Stress/Lifestyle	88	0.10		

APPENDIX 6

Table 11

Reliability Analysis of Health Questionnaire Means, Standard Deviations, and Ranges of Each Item.

	Mean	Standard Deviation
Item 1	1.41	.50
Item 2	1.31	.49
Item 3	1.50	.51
Item 4	1.14	.35
Item 5	1.21	.42
Item 6	1.71	.46
Item 7	1.43	.50
Item 8	1.55	.50
Item 9	1.50	.51
Item 10	1.71	.46
Item 11	1.60	.50
Item 12	1.14	.35
Item 13	1.05	.22
Item 14	1.02	.15
Item 15	1.45	.50
Item 16	1.64	.49
Item 17	1.88	.33
Item 18	1.71	.46
Item 19	1.24	.43
Item 20	1.86	.35

Table 11 (continued)

	Mean	Standard Deviation
Item 21	1.86	.35
Item 22	1.83	.38
Item 23	1.79	.42
Item 24	1.29	.46

APPENDIX 7

Table 12

Correlation Matrix For Health Questionnaire

Item	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6
1	1.00					
2	.60	1.00				
3	.24	.05	1.00			
4	.36	.17	.27	1.00		
5	.04	.15	.29	.45	1.00	
6	.31	.08	.11	-.04	.07	1.00
7	.07	-.16	-.10	.06	.25	.12
8	.17	.09	.24	.37	.13	-.05
9	.34	.05	-.15	-.14	-.17	.11
10	.09	.08	.00	-.04	-.18	.07
11	.38	.13	-.05	.20	.19	.55
12	.36	.02	.00	.22	.12	.11
13	.04	.09	.00	.23	.16	-.11
14	.19	-.11	.16	-.06	-.08	.10
15	.13	.12	.24	-.10	-.01	.36
16	.21	.28	.25	.16	.27	.30
17	.15	.09	.22	.15	.01	.26
18	.31	.31	.21	.11	.20	-.05
19	.34	-.01	.00	.09	.12	-.02
20	.34	.27	.00	.17	-.12	.04
21	.20	-.02	.00	.17	.05	.19

Table 12 (continued)

Item	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6
22	.24	.02	.32	.18	.08	.14
23	.19	.22	-.29	.05	-.01	-.07
24	.12	.03	.11	.19	.06	.05

Table 12 (continued)

Correlation Matrix For Health Questionnaire

Item	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12
1						
2						
3						
4						
5						
6						
7	1.00					
8	.21	1.00				
9	.29	-.05	1.00			
10	-.09	-.05	.21	1.00		
11	.32	-.07	.24	.02	1.00	
12	.47	.37	.14	-.09	.34	1.00
13	.26	-.02	.00	-.11	.18	.23
14	.18	-.17	.16	.10	.13	-.06
15	-.11	.15	.05	-.06	.17	.18
16	.24	.32	.15	-.14	.30	.16
17	.17	.26	-.07	-.07	.15	.15
18	-.09	.06	.00	.18	.23	.11
19	.31	-.05	.34	.11	.23	.51
20	.22	.31	.27	.49	.22	.17
21	.22	.18	.27	-.11	.36	.17

Table 12 (continued)

Item	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12
22	.26	.36	.19	.00	.28	.18
23	-.02	-.01	.06	.06	.40	.05
24	.30	.26	.11	-.07	.09	.50

Table 12 (continued)

Correlation Matrix for Health Questionnaire.

Item	Item 13	Item 14	Item 15	Item 16	Item 17	Item 18
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13	1.00					
14	-.04	1.00				
15	-.20	-.14	1.00			
16	.17	.12	.08	1.00		
17	.08	.06	.19	.34	1.00	
18	-.11	-.25	.05	-.03	-.23	1.00
19	.14	.28	-.06	.07	.03	.11
20	.09	.06	.10	.26	.06	.19
21	.09	.06	-.04	.26	.27	-.11

Table 12 (continued)

Item	Item 13	Item 14	Item 15	Item 16	Item 17	Item 18
22	.10	.07	.02	.47	.63	.00
23	.12	.08	.01	-.03	-.01	.31
24	.11	.10	.06	.25	.07	-.18

Table 12 (continued)

Correlation Matrix For Health Questionnaire.

Item	Item 19	Item 20	Item 21	Item 23	Item 23	Item 24
19	1.00					
20	.07	1.00				
21	.23	.03	1.00			
22	.25	.18	.55	1.00		
23	.16	.28	.28	.23	1.00	
24	.51	.11	.11	.28	-.18	1.00

APPENDIX 8

Table 13

Pearson Correlation Coefficients of Items on the Causal Dimension Scale.

	Uncontrollability/ Controllability	Instability/ Stability	Internal/ External
Uncontrollability/ Controllability	1.00	-.25	.15
Instability/Stability	-.25	1.00	.56
Internal/External	.15	.56	1.00

APPENDIX 9

Table 14

Pearson Correlation Coefficients of Items on Causal Interview.

	Genetic Factors	Diet	Control	Environmental Factors	Personality	Stress	Chance
Genetic Factors	1.00						
Diet	-.31	1.00					
Control	-.21	.39	1.00				
Environmental Factors	-.13	.06	-.02	1.00			
Personality	-.15	.07	.18	-.17	1.00		
Stress	.04	.02	.12	-.15	.51	1.00	
Chance	-.13	.05	.11	-.09	-.11	.03	1.00

APPENDIX 10

Table 15

Pearson Correlation Coefficients on the Personal Concern Measure and Causal Interview.

	Personal Concern
Controllability/ Uncontrollability	.051 (p = .31)
Stability/Instability	.021 (p = .42)
Internality/Externality	-.053 (p = .30)
Genetic Factors	.061 (p = .28)
Diet	.018 (p = .43)
Control	.123 (p = .12)
Environmental Factors	-.075 (p = .23)
Personality	.199 (p = .03)
Stress	.119 (p = .13)
Chance	-.017 (p = .43)

APPENDIX 11

Table 16

Means, Standard Deviations, and Ranges For Each Dependent Variable.

	Mean	Standard Deviation	Range
Controllability	16.80	8.47	34.00
Stability	29.09	8.76	45.00
Internal/External	31.64	9.69	52.00
Genetic Factors	3.81	1.93	6.00
Diet	1.39	1.69	6.00
Control	1.51	1.46	6.00
Environmental Factors	2.26	2.17	6.00
Personality	1.60	1.92	6.00
Stress	.90	1.51	6.00
Chance	2.38	2.06	6.00
Personal Concern	14.01	3.68	16.00

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