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THE UNIVERSITY OF ALBERTA

PERSON DEVELOPMENT AND PATTERNS
OF TEMPORAL BEHAVIOR

by



JOHN McCURDY HINTZ

A THESIS

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The undersigned certify that they have read and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled PERSON DEVELOPMENT AND PATTERNS OF TEMPORAL BEHAVIOR submitted by JOHN McCURDY HINTZ in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

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To August and Dorothy, whose
faith is living as love.

Abstract

The purpose of this study was to investigate the relationship between personality and time by employing the theoretical "hierarchical model" of human development (Loevinger, 1966). Specifically, Kohlberg's (1963) Moral Development Scale was used to study time perspectives and duration experience of conventional and post-conventional moral types.

The time perspective variables were: (1) intensity of involvement with the past, present, and future as measured by The Experiential Inventory (Cottle, 1968), (2) the tendency to reflect or expect as measured by The Money Game (Cottle, 1969b), (3) the significance and extension of the distant past, near past, present, near future, and distant future as measured by The Duration Inventory (Cottle, 1969a), and (4) temporal relatedness and dominance of past, present, and future as measured by the Circles Test (Cottle, 1967). Preferred concepts of time were also studied using a measure developed by the author.

Utilizing Ornstein's (1969) conceptual and methodological approach, duration experience was studied by exposing subjects to two equivalent clock intervals varying in the number of stimulus events presented. One interval was experienced waiting in a sound proof chamber in the dark, and the other interval was experienced watching an experimental abstract film with an amplified electronic music sound track. Experienced duration of the film relative to the waiting was recorded as a ratio estimate. Verbal estimations of the film interval and the waiting interval were also recorded.

Holding aside the effects of sex, in general the results indicated

that the time perspective pattern of Kohlberg conventional subjects was linearly progressive, segmented, future dominant, and marked by fantasies of personal future foreknowledge and personal past recovery; the pattern basically reflected the dominant socialized temporal horizon of Anglo-American culture. Post-conventional subjects' time perspective pattern was characterized by a synthesized time horizon, centered on the present without excluding the past or future. While there was some tendency for post-conventionals to experience duration as shorter than conventionals, the differences were not significant.

It was concluded that the study supports the value of a hierarchic conceptualization of human development for comprehending human temporal behavior and experience.

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Introduction

Psychology and the Problem of Time

"...what Samuel Alexander said in respect of philosophy is similarly true of psychology, namely, 'that all the vital problems...depend for their solution on the solution of the problem what Space and Time are and more particularly how they are related to each other.'"

- Paul Swartz

Ancient and modern searchers of time - theologians, philosophers, scientists, and poets - have all felt the paradoxes and perplexities of time. These temporal puzzles reflect "the conflict between lived time apparently understood and the idea of time as an entity which when critically examined is found to be replete with obscurities and unsolved problems (Benjamin, 1966, p. 3)."

...the physicist's symbol t is a deceptively simple representation of 'what we mean by time'. It is useful in formal expressions and its meaning need not be questioned. If we ask, however, how it is supposed to relate to what we all intimately know as our experience in time, we shall be referred to psychology. Psychology, a science dealing mainly with mental processes, says hardly anything about the physicist's symbol t . Seeking something common to the psychologist's and the physicist's time, we might inquire what psychology says about how our feeling of continuous becoming relates to the crucial questions of the beginning and end of time. For an answer we are likely to be referred to religion. But religion and theology speak mainly of purpose and history and not about feelings of physical symbols. We may proceed to the philosopher and inquire about the relations, if any, between the feeling of duration, apparent purpose in nature and the useful time of the physicist. Philosophy, 'the most general science', has a great deal to contribute to the clarification of the problem of time. But, because of some unavoidable limitations, possibly intrinsic in the speculative method, it comes up against certain

antinomies which, so it seems, may not be resolvable without the aid of the specialist. Perhaps, by observing with Aristotle that time is the 'number of motion in respect of "before" and "after"', we may proceed to the people who make machines which measure time by motion. But the horologer is not interested in epistemology or the feeling of enduring and will probably send us back to the physicist (Fraser, 1966, p. xviii).

Philosophy and religion have thus addressed those aspects of time which relate to man's awareness of past, present, and future, to his sense of mortality and questions about immortality, and to the relation of man to natural ordering, natural change, and duration or infinity. The disciplines of science—physics, chemistry, astronomy, and biology—on the other hand, have explored aspects of time related to objective measurement and the relation of time to change and motion.

Yet what about the science and art of psychology's search of time? While the importance of time factors to any description or understanding of human behavior and experience have generally tended to be ignored or minimized within psychology, reviews of the psychological literature on time by Nichols (1890), Axel (1924), Sturt (1925), Weber, (1933), Gilliland, Hofeld and Eckstrand (1946), Woodrow (1951), Wallace and Rabin (1960), Fraisse (1963), Craik (1965), Cohen (1967), Ornstein (1969), Orme (1969), and Doob (1971) attest to the continuous efforts of psychologists to understand the diversity and complexity of human temporal experience and behavior.

Ernst Mach's report in 1865 on just noticeable differences in duration of short intervals was probably the first experimental publication on the psychology of time (Boring, 1942, p. 577); it also reflects the

3.

early preoccupation of time psychology with psychophysical problems, including the establishment of the indifference interval - that interval which is generally neither underestimated nor overestimated. Other studies attempted to determine what cues were utilized in estimating temporal durations. Time estimates were also investigated as a function of the type of stimulus presented (e.g., light or sound), activity of the subject, availability of kinesthetic cues, and accompanying physiological processes. While work on "time estimation", "time sense", and "time perception" has continued in experimental psychology in the area of sensation and perception, a number of psychologists have "moved away from the role of timekeeper to that of participant-observer in the individual's own organization and use of time (Kastenbaum, 1966, p. 9)." In their 1960 publication on temporal experience, Wallace and Rabin referred to the now accepted "new look" approach to the psychology of time. This approach has formulated such constructs as "time perspective" and "time orientation" and attempted to uncover their personality correlates. In emphasizing the cognitive aspects of temporal experience, it has stressed man's unique capacity to be aware of change and his ability to create memories and expectations that extend his range of activity beyond immediate reactions to the environment. The essence of this approach has been captured by Kümmel when he writes:

...although a great variety of temporal phenomena have a reality independent of man, man is nevertheless the only being on earth with an awareness of time, a being for whom the problem of time is not merely one of theory but one which is supremely and intimately related to the conduct of his life...This continual struggle of life against the destructive power of time causes us to forget, however,

that it also has a positive aspect, that it represents a sustaining power as well, without which life could not exist. In this profound ambiguity of time is rooted the antinomical nature of its determinations (1966, p. 32).

Over the past few years then, efforts by psychologists interested in time have been directed toward reintegrating the data of time psychology into a meaningful research area in perception and cognition (Fraisse, 1963; Ornstein, 1969). In general the feeling of these investigators has been that the psychological problem of time is not to know what time is or the nature of our notion of time. Rather, "it is to understand how man reacts to the situation imposed on him of living in time (Fraisse, 1963, p. 10)."

Fraisse's (1963) approach has been to study the different ways man adapts to the temporal conditions of his existence, that is, an individual's "temporally organized behavior". He considers three separate levels of temporally organized behavior in analyzing psychological time: the level of biological rhythms or keeping time, the level of direct experience of duration or perceiving and feeling time, and the level of conceptualizing or thinking time. Although interactions may exist among these three levels of change, they are not essential, and one level does not emerge from the preceding one. In short, Fraisse has tried to determine "what man does in order to know time and use it, locating himself in the universal change that carries him through life (p. 14)."

Following the orientation of Fraisse, Craik (1965) has noted that the "total and unique way a man lives in time is mediated by the

temporal aspects of a broad range of discrete forms of behavior (p.1)."

His strategy has been to completely specify temporal behavior and to develop psychological techniques for assessing individual differences along all dimensions of the full range of temporal behaviors. His incomplete taxonomy includes the following sorts of behaviors: (1) The temporality of personal events. The maintenance of a personal time perspective, including the uniqueness, coherence, completeness, and temporal extent of a person's sense of his own past and anticipated future; i.e., the individual's retrospections and projections upon the fate of his self. (2) The temporality of social, historical, and cosmic events. The individual's temporal perspective upon the non-self world of occurrences. (3) The temporality of fantasy. The action time spans (past, present, future) that characterize an individual's thematic productions. (4) The temporality of decision-making and choice-making. The individual's preference for relatively small immediate rewards as opposed to relatively large but temporally remote rewards. (5) The temporality of action. The planning and scheduling of behavioral acts and the personal tempo of activity. (6) The temporality of change. Reports and inferences concerning subjective experiences of duration and the estimation of time segments. (7) Conceptions of time, history, etc. Individual differences in the conception of time and time-related notions: e.g., cyclical vs. linear conceptions of time.

Ornstein (1969) has classified temporal experience into four modes: (1) The present, short-term time; this includes (a) the perception of short intervals and (b) rhythm or timing (the rhythmic-motor aspect of

time). (2) Duration, the past, long-term memory. (Duration is "our experience of time passing, of hours lengthening or shortening, or a recent event seeming 'a long time ago', or of one interval passing more quickly for one person at one instant than another; short time is continuing but always fading from view, duration has some permanence) (p.21-22)." (3) Temporal perspective-philosophical, social, cultural constructions of the world and their effects on the interpretation of time experience. 'Becoming', the future. (4) Simultaneity and succession.

Orme (1969), in his book Time, Experience and Behavior, acknowledges the important contribution Fraisse (1963) has made to the psychology of time, but he feels that Fraisse is "too prone to fit observations and experiments on time into the existing framework of psychology (p.6)." Orme contends that this framework is "inadequate" for a comprehensive understanding of the variety of time experience recorded by men, such as precognition, time alterations during hypnosis, and mystical states. He presents a theory of Space-time which postulates the extensive and transitory properties of time. There is "one world of time (the world of biological processes), changing within itself only with space, just as there is only one world of space, changing within itself only with time (p.181)." The theory is reminiscent of the ideas developed by Samuel Alexander (1920) in his highly descriptive metaphysic Space, Time and Deity.

Personality, Time Perspective and Duration Experience

Theoretical treatments of personality and time have been undertaken (Erickson, 1950; Fraisse, 1963; Freud, 1933; Kelly, 1963; Lewin, 1935; MacKinnon, 1954; Mowrer and Ullman, 1945; Murray, 1938), but empirical-

experimental studies on the relationship between personality factors, time perspective, and duration experience (time estimation) have made little progress (Fraisie, 1963; Wallace and Rabin, 1960). Perhaps in response to Wallace and Rabin (1960), investigations in the area have increased (Orme, 1969). However, the conceptual framework employed by theorists and researchers alike has not been the "hierarchic model" of personality development.

The hierarchic model. Jane Loevinger (1966) has related a number of cognitive developmental stage theorists (Harvey, Hunt, and Schroder, 1961; Sullivan, Grant and Grant, 1957; Peck and Havighurst, 1960; Kohlberg, 1963) and has claimed generality for their theories as fitting a common "hierarchic model" and as comprising the general theoretical area of ego development. In fact, she wrote:

The more deeply one becomes involved in this area the more it appears that impulse control, character development, interpersonal relations, and conscious preoccupations are indeed aspects of a single thing, so intimately intertwined that one can hardly define much less measure them separately (p. 200).

The basic structure of the hierarchic model stems largely from the structure of Piaget's theory of conceptual development. First, the hierarchic model implies developmental levels or stages. Each stage is not simply an addition to the previous stage along some quantitative dimension, but represents a restructuring of the relationship between self and environment. Thus each stage is qualitatively different from the preceding stage and represents a "structured whole". The concept of the structured whole implies consistency within each stage. It implies logical consistency between the different responses which characterize the

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stage, and it implies empirical consistency of the mode of response from situation to situation. Second, the stages of the hierarchic model form an invariant sequence in which movement over time is forward and in which the order of the stages is unchanging. The order of the stages is based on a kind of "inner logic", i.e., each succeeding stage implies the existence of preceding stages but not vice-versa. The stages are non-age specific--the age at which any stage is obtained varies from individual to individual, and an individual's progress may be arrested at any stage for indeterminate periods of time. Backward movement or regression is possible under extreme circumstances.

The amount of overlap among the hierarchic model theories in terms of stage descriptions and stage sequences is impressive. Among the theories mentioned, the Kohlberg (1963, 1969) theory seems to be the best representative in terms of conceptual clarity and empirical support.

The Kohlberg Theory. Kohlberg's work has specifically focused on the study of morality as one area of social-personality development which is subsumed within the cognitive-developmental approach to behavior. Kohlberg believes that the assumptions guiding his approach to moral behavior are ostensibly "in contrast to associationistic theories of cognitive learning (Kohlberg, 1969, p. 348-349)."

1. Basic development involves basic transformations of cognitive structure which cannot be defined or explained by the parameters of associationistic learning (contiguity, repetition, reinforcement, etc.) and which must be explained by parameters of organizational wholes or systems of internal relations.
2. Development of cognitive structure is the result of processes

of interaction between the structure of the organism and the structure of the environment, rather than being the direct result of maturation or the direct result of learning (in the sense of a direct shaping of the organism's responses to accord with environmental structures).

3. Cognitive structures are always structures (schemata) of action. While cognitive activities move from the sensorimotor to the symbolic to verbal-propositional modes, the organization of these modes is always an organization of actions upon objects.
4. The direction of development of cognitive structure is toward greater equilibrium in this organism-environment interaction; i.e., of greater balance or reciprocity between the action of the organism upon the (perceived) object (or situation) and the action of the (perceived) object upon the organism. This balance in interaction rather than a static correspondence of a concept to an object, represents "truth", "logic", "knowledge", or "adaptation" in their general forms. This balance is reflected in the underlying stability (conservation) of a cognitive act under apparent transformation, with development representing a widened system of transformations maintaining such conservation.

Application of the above assumptions to social-personality development are presumably made more concrete by Kohlberg's postulation of some social-emotional developmental assumptions. These briefly include the following: (1) Affective and cognitive development and functioning are parallel. (2) The ego, or self is a fundamental unit of personality organization and development. Various aspects of social development (e.g., psychosexual, moral, etc.) are united by a common reference to a single concept of self in a single social world. (3) All the basic processes involved in "physical" cognitions, and stimulating developmental change in these cognitions, are also basic to social development. Social cognition, however, always involves role-taking. (4) The direction of social and ego development is toward an equilibrium or reciprocity between the self's actions and those of others toward the self.

Some of the theoretical constructs utilized by Kohlberg (e.g., "equilibrium" and "cognitive structure") have been given an honorific status in the area of cognitive development. In spite of the need to further qualify and perhaps even change such constructs, some clarification is beginning to emerge from research efforts exploring the kinds of processes which contribute to moral development, as opposed to simply describing what exists. This trend in the area has been possible because of the empirical foundation laid by the use of Kohlberg's semi-projective test of moral development. Perhaps the real value of Kohlberg's work has been the development of a research tool.

Kohlberg (1963) began his investigation into moral development by interviewing 72 suburban Chicago boys of three age groups, 10, 13, and 16, with ten hypothetical moral dilemma situations which were stimulated by Piaget's interrogatories. Each situation posed two conflicting alternatives: either to obey legal-social rules and the demands of authority or to be concerned about the welfare of others and to help those in need. The following example is situation number three:

In Europe, a woman was near death from a special kind of cancer. There was one drug that the doctors thought might save her. It was a form of radium that a druggist in the same town had recently discovered. The drug was expensive to make but the druggist was charging ten times what the drug cost him to make. He paid \$200 for the radium and charged \$2000 for a small dose of the drug. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together about \$1000 which is half of what it cost. He told the druggist that his wife was dying and asked him to sell it cheaper or let him pay later. But the druggist said: "No, I discovered the drug and I'm going to make money from it." So Heinz got desperate and broke into the man's store to steal the drug for his wife. Should the husband have done that? Why? (Kohlberg, 1963, p. 19)

Kohlberg was interested in the reasons underlying the judgments, not simply the judgments themselves. He analyzed the choices made by the children and found them of little use developmentally. An analysis of the "child's reason for his choice and his way of defining the conflict situations did turn out to be developmentally meaningful, however (Kohlberg, 1963, p.12)." By examining carefully the children's responses to the ten situations, Kohlberg identified 30 different general aspects of morality and formulated the following typology according to the percentage of responses which were of a given type.¹

Level I. Pre-Moral

The control of conduct at this level is external insofar as the person is responsive to the physical or hedonistic consequence of an action, or insofar as he is responsive to the physical powers of those who set rules and standards of conduct.

Type I. Punishment and obedience orientation. Type I is characterized by a general set to avoid punishment by authority. Value judgments emphasize physical attributes (power, status, monetary worth) or physical consequences of the act. Authority is defined as someone having greater age, size or power, and thus having greater worth and special rights and privileges. Right and wrong are defined in terms of taboo rules and projective labels for deviant acts.

Type II. Naive instrumental hedonism. Type II is oriented toward instrumental satisfaction of the self's needs. Moral values are based on an orientation of hedonistic relativism. Right action is defined as relative to the individual's own needs regardless of conflicting demands. Authorities are thought to be self interested

¹ To be classed as a dominant type 50% of a subject's responding had to be at one stage with a 20% gap between that stage and any other stage. The typology thus represents a grouping by the ideal and does not necessarily indicate general behavioral personality predispositions.

like anyone else and to use their power to manipulate others for their own benefit. Rules are prudential directives to help one meet one's own needs.

Level II. Morality of Conventional Role Conformity

Morality at this level is defined in terms of performing good right roles and in terms of maintaining the conventional order and fulfilling the expectations of significant others. Control of conduct is external in that the standards conformed to are held by significant others or by those persons who occupy roles of authority. Motivations, however, are internal inasmuch as the role taking of the personal reactions of significant others results in cues with respect to anticipated censure or praise.

Type III. Social approval maintaining morality. Type III is oriented toward gaining social approval by pleasing, helping, and conforming to the expectations of significant others. There is an exaggerated need to maintain interpersonal relationships. Value judgments are based on a customary natural value orientation in which there are stereotyped conceptions of what most people prefer or what people "naturally" prefer. An authority is seen as having superior wisdom and virtue and is someone to be imitated. Right and wrong are defined in terms of stereotyped role expectations, conformity to what should gain approval. Rules prescribe positive virtues, motives, and goals--judgments are often made according to the "niceness" or "meanness" of the motive displayed.

Type IV. Authority and social order maintaining morality. Type IV is oriented toward meeting the expectations of legitimate authority and maintaining the given social order for its own sake. Right and wrong are defined categorically in terms of deontological rules which are perceived as part of the social order. This categoricalness implies a kind of realism in the evaluations of conduct (an act is wrong because it is wrong). Rules are obligatory behavioral prescriptions. There is an exaggerated concern with law and order and a general distrust of human nature in the absence of such order.

Level III. Post-Conventional Morality

Morality is defined in terms of conformity by the self to shared or shareable standards, rights or duties. Moral values are valid independent

of the authority or group which hold them. The possibility of conflict between two acceptable social standards is accepted. Control of conduct is internal, since the standards conformed to are self-accepted and the decision for a certain action is based on rational considerations of right or wrong.

Type V. Contractual legalistic orientation. Type V is oriented toward making rational choices and meeting contractual or legally defined obligations. In contrast to the categorical orientation of Type IV, the emphasis for Type V is on rationality. Consistent with the emphasis on rationality is the attribution of purposiveness to moral standards. There is a recognition that one's own welfare is linked to the welfare of the community. Legal rules are believed to function to maximize community utility. This general orientation is that of social relativism of values, i.e. values are the result of an initially arbitrary process of setting up a pragmatic and workable social unit to maximize utility. Rules have a pragmatic function and are changeable.

Type VI. Individual principled morality. Type VI is characterized by a high degree of internalization and the development of a value orientation which features the attribution of universality to principles of choice. The emphasis is teleological. Morality is seen as an individual matter--one is motivated to act in accordance with one's own moral principles. Frequently mentioned values are equality, mutual trust, human life, etc. There are well developed concepts of justice and often an orientation towards fighting injustice.

To support a developmental stage notion of morality, Kohlberg (1963) had to demonstrate sequentiality for stages as well as age trends. "While the age trends indicate that some modes of thought are generally more difficult or advanced than other modes of thought, they do not demonstrate that attainment of each mode of thought is prerequisite to the attainment of the next higher in a hypothetical sequence (p.15-16)." Guttman's (1954) quasi-simplex correlation matrix was used as an initial test of sequentiality. The rationale underlying the matrix is that the farther apart two types are in the sequence, the lower will be the correlations

between them. Correlation of the types of thought with each other indicated general agreement with the expectations, with the correlations tending to decrease with movement away from the diagonal entries. Support for the existence of three levels was also obtained as correlations between levels were lower than within levels.

Kohlberg (1969) reported more evidence for sequentiality from the completion of cross-cultural studies. Middle class urban boys in the United States, Mexico, Taiwan, and Yucatan followed the same invariant sequence with no reversal of order. The only differences were the ages at which certain modes of thought were attained. In other words, a given culture may retard development, but the sequence of stages progressed through remains constant over cultures.

Turiel (1966) also found direct evidence for sequentiality. After exposing subjects to stages of thought one above, two above, and one below their own, he observed that those subjects exposed to the stage of thought immediately above their own made significant use of it. Exposure to the stage of thought two above their own had little effect, while exposure to the stage one below had significantly less effect than the stage one above.

The developmental assumption of invariant sequence is further supported by the results from a semi-longitudinal study (Kohlberg and Kramer, 1969) on 54 of the original 72 Kohlberg subjects. One argument which

could be raised in this context is that age trends in moral judgment might simply be a matter of verbal learning rather than an invariant developmental sequence. Kohlberg (1964) was aware of this possibility when he stated:

If the age development of moral ideology and judgment were a matter of verbal learning, the age factor would presumably be largely a matter of verbal intelligence or verbal mental age. If broader factors of social experience were involved, age would be expected to be highly controlled. The latter expectation appears to be true. Moral judgment is moderately correlated with I.Q. ($r=.31$) but quite highly related to age, with intelligence controlled ($r=.59$) (p.404).

Evidence for construct validity of the Kohlberg test comes from Kohlberg's (in press) report that only 11% of a sample of college subjects at the level of moral principle cheated in a resistance to temptation situation, however 58% of the subjects at a level of conventional morality cheated. Kohlberg (in press) also reports that 75% of the morally principled subjects refused to give increasing levels of shock to an experimental victim when ordered to do so, while only 13% of the remaining subjects refused to do so. In another study Percival (1968) differentially motivated III's, IV's, and V's on a perceptual motor task by giving subjects the choice to maximize their own welfare at the expense of others or perform to maximize the choice of achieving distributive justice as an equal sharing of reward money. As expected post-conventional subjects were more inclined to perform for distributive justice than conventionals.

Hann, Smith, and Block (1968) obtained Kohlberg protocols from University of California and San Francisco State students and Peace

Corp volunteers. An index of student activism which formed the three categories of political activities, social service activities, and protest, was also obtained. (According to the theory, conventionals are more susceptible to the dictates of authority and the social order than by moral action when such action conflicts with authority). Summed over all activities, post-conventional Types V and VI and pre-conventional Type II subjects were more active than conventional subjects. However, the kind of activity engaged in differentiated between groups. While post-conventional subjects participated in both political and protest activities, the activism score for Type II's was largely a result of participation in protest activities by Type II males. Type II males may have been motivated to participate in protest activities as a result of "negativism" towards authority and not necessarily because of any positive social political concerns.

Subjects were also asked to select from a list of 63 adjectives those that described both their perceived and ideal selves. The general pattern of results was consistent with expectations. Type II's most frequently described themselves as "rebellious" and "individualistic", Type III's as "ambitious", Type IV's as "conventional", "ambitious", "forsightful", Type V and VI males as "idealistic" and "anxious", Type V females as "fair", "doubting" and "altruistic", and Type VI females as "guilty", "impulsive" and "restless" (only the results for Type VI females are surprising). Comparison of self and ideal self descriptions indicated much similarity, but there were notable exceptions. Type II ideals did not emphasize "rebellious" and "individualistic" as did their

self-descriptions, but Type VI's emphasized these ideals along with "sensitive" and "individualistic". Type III's idealized "ambitious" and "sociable" while Type IV's maintained the conventional ideals of "competitive", "practical", "conventional", "responsible", "foresightful", "orderly", etc. Percival (1971b) concluded that these results suggest greater generality for moral reasoning as an indicator of personality differences.

Percival, Gee and Blanchard (1971) have investigated the construct validity of the Kohlberg theory as a more general personality theory. In particular, the relationship between the Kohlberg types and authoritarianism and anti-semitism (Adorno *et. al.*, 1950), conscience orientations (McCord and Clemes, 1964), concrete-abstract thinking (Tuckman, 1966), internal-external control (Gurin *et. al.*, 1966), field dependence-independence (Witkin *et. al.*, 1962) and self-esteem (Janis and Field, 1966) was explored. In general, the results supported the construct validity of the Kohlberg theory as a more general personality theory. Predicted relationships between McCord's four types of conscience orientation and Kohlberg Types II, III, IV, and post-conventionals were partially supported. Post-conventionals were significantly higher than conventionals on the most abstract stage of thinking (System 4 scores - Tuckman test), but there were no significant differences between any of the Kohlberg types on the most concrete stage of thinking (System 1 scores - Tuckman test). Conventional subjects were more field dependent, authoritarian, and anti-semitic than post-conventional subjects. Insignificant results were obtained between self-esteem, internal-external control,

and the Kohlberg Moral Development Scale. The authors question these results, however, since a study by Percival (1971a) lends some doubt to the validity of the self-esteem measure (Janis and Field, 1966), and a small sample of internal-external control subjects contributed little power to their analysis. Conclusions drawn were similar to those of McCord and Clemes (1964) who argued that "individual differences in moral reasoning...far from being an irrelevant adjunct to personality, are an important key to understanding it...(p.18)."

Time perspective: literature review. Research on time perspective was pioneered by Israeli (1932, 1932, 1936, 1951). Some subsequent conceptual analyses (Frank, 1939; Lewin, 1939, 1948; MacKinnon, 1954) and research reports (Eson and Greenfeld, 1962; Farber, 1953; Teahan, 1958), reflected a Lewinian orientation, but other theoretical treatments (Fraisse, 1963; Ketchum, 1951; Mowrer and Ullman, 1945; Murray, 1951) have also been undertaken. Several time perspective dimensions have been defined, and studied, including emotional quality and reality level (Lewin, 1939; MacKinnon, 1944), coherence (Wallace, 1956), density (Kastenbaum, 1961), directionality and imagery (Knapp and Garbutt, 1958; Knapp, 1960), degree of differentiation (Lewin, 1939; Ezekial et. al., 1963), and relative emphasis on past, present, and future (Fink, 1959). The most thoroughly studied, however, is the extension of future time perspective (LeShan, 1952).

In a recent review of the literature, Hintz (1970) concluded that while conceptual clarity has improved in the area (Calabresi and Cohen, 1968; Craik, 1964; Fraisse, 1963; Goodman, 1966), diversification and

weakness of methodological instruments (Platt and Darbes, 1969; Ruiz, Reivich, and Krauss, 1967) continue to make the selection of an appropriate measuring instrument difficult.

Hintz (1970) also noted that investigators have only utilized the "unilevel model" of behavior in making experiments and interpreting results. Some recent studies have thus stressed personality and motivational factors as important time perspective determinants, e.g., flexibility versus anxiety (Calabresi and Cohen, 1968), anality (Pettit, 1969), time servant-master (Knapp, 1962), achievement (Knapp and Garbutt, 1958, 1965), achievement and anxiety (Cottle, 1969b), activity-passivity and effort-luck (Goodman, 1966), internal-external control (Platt and Eisenman, 1968) frustration-disappointment (Goldberg, 1966), optimism (Craik, 1964), and gratification delay (Klineberg, 1968). Other studies have emphasized sociocultural learning factors (Calvert, 1968; Cottle, Howard, and Pleck, 1969; Cottle and Pleck, 1969; Craik, 1964; Freeman, 1964; Halpern, 1967; Stein et. al., 1968). However, if we ask ourselves developmental "level" questions about the kinds of individuals whose time perspectives are different from the dominant socialized temporal perspectives of a given culture, we are largely left with only speculation. Hintz (1970) therefore recommended that a fruitful new approach to the area would be to study time perspectives within the hierarchic model of personality development. Consistent with this approach are the recommendations of Craik (1964) and Kastenbaum (1961) for further clarification of the relationship between level of general cognitive functioning and temporal perspective.

In a recent series of publications, Cottle (1967, 1968, 1969a, 1969b)

has developed a number of innovative paper and pencil techniques for measuring various aspects of an individual's time perspective. Since Platt and Darbes (1969) have questioned the unitary meaning of some of the most commonly used time perspective measures and emphasized the need for increased development of instruments to measure time perspective, Cottle's systematic efforts in the area warrant further exploration.

Duration experience: literature review. Studies on the experience of duration have been conceptualized and interpreted either within a sensory process or a cognitive, information processing (input register) approach. The former approach has resulted in attributing duration experience to numerous internal sensory chronometers (e.g., heart rate, alpha rhythm, brain oxidate metabolism, etc.), while input register theorists have maintained that more "images" (Guyau, 1890), "changes" (Fraisse, 1963), and "mental content" (Frankenhauser, 1959) lengthen duration experience. Experimenters representing both theoretical positions have used the standard accuracy oriented time estimation methods of verbal estimation, production, and reproduction, even though the validity and sensitivity of these methods remains questionable (Cahoon, 1969; Schiff and Thayer, 1970).

Ornstein (1969) has taken a new tack in adopting a "storage size" metaphor of duration experience which emphasizes long-term memory; the experience of duration becomes a construction formed from the "information remaining in storage of a given interval rather than simply the information input during that interval (p. 39)." He thus not only incorporates the work of input register theorists, but he can also account for time-order

effects as well as study phenomenal (immediate) and constructed (delayed) experienced duration. Ornstein has also completely rejected the utility of studying relationships between "objective" or "real" time and experiential time. Since he considers duration solely as a dimension of experience, "the duration experience of a given interval need be compared only to other experiences, and not to any other kind of clock, one of hours and minutes, or one of biology, or one of quantum mechanics or one of mathematics (p.105)." It is noteworthy that a number of reports on experienced duration from the University of Stockholm's Institute of Applied Psychology are also consistent with this approach, for example the work of Bratfisch (1970).

While Ornstein (1969) has verified the utility of the storage size metaphor for studying duration experience by experimentally demonstrating that increasing the number of events occurring within a given interval, or increasing the complexity of events, or reducing the efficiency in the way the events are coded and stored lengthens the experienced duration of that interval, he has not been directly concerned with the relationship between personality and duration experience, that is, the problem of individual differences.

Orme (1969) recently reviewed 182 psychological time studies with special reference to personality traits and the experience of time (see Table 1). However, he clarifies the complexity of the experimental findings in terms of a sensory process approach, emphasizing the importance of a fast or slow "internal clock" sensing a "real" external time.

TABLE 1
SUMMARY OF EXPERIMENTAL FINDINGS REVIEWED BY ORME (1969)

Internal clock slow Inner time units long with: (This means low verbal estimates or underestimation of fast external clock)	Internal clock fast Inner time units short with: (This means high verbal estimates or overestimation of slow external clock)
1. Filled time interval	Unfilled clock fast
2. Difficult tasks	Easy tasks
3. Subject interested	Subject bored
4. Stress, pain	Sensory deprivation
5. Passive attitude of subject	Active attitude of subject
6. Introversion	Extraversion
7. Authoritarian parents	Non-authoritarian parents
8. High academic achievement	Low academic achievement
9. Ability to inhibit behavior for a future reward	Inability to inhibit behavior for a future reward
10. Relatively more phantasy	Relatively less phantasy
11. Smaller 'dissociation' score	Larger 'dissociation' score
12. Rise in skin temperature under stress	Decrease in skin temperature under stress
13. More error on a vigilance task	Less error on a vigilance task
14. Slow, careful	Quick, careless
15. Longer spiral after-effect	Shorter spiral after-effect
16. Anxiety states, neurotic depressives	Hysterics, psychopaths, delinquents
17. Melancholics	Manics
18. Non-paranoid schizophrenics	Paranoid schizophrenics

In light of the foregoing considerations, it would seem worthwhile to further explore the relation between experienced duration and personality, utilizing Ornstein's (1969) conceptual and methodological approach within the hierarchic model of human behavior and experience.

The Present Study

The present study employed the theoretical "hierarchic model" of human development (Loevinger, 1966) to investigate the relationship between personality and time. Specifically, temporal behavior patterns - time perspectives and duration experience - of Kohlberg's (1963) conventional and post-conventional moral types were studied.

Five time perspective variables were measured with instruments developed by Cottle (1967, 1968, 1969a, 1969b). Two variables, intensity of involvement with the past, present, and future, and the tendency to reflect (fantasize about the past) or expect (fantasize about the future) were measured by the Experiential Inventory (Cottle, 1968) and The Money Game (Cottle, 1969b). Empirically, subjects' own location in time of reported significant life experiences and tendency to fantasize temporal recoverability and pre-knowledge were indicants of these variables.

The significance and extension of the distant past, near past, present, near future, and distant future was a third variable measured by The Duration Inventory (Cottle, 1969a). Cottle (1969a) assumes that a subject's attitude toward the importance of a particular time zone is represented by his perceived extension of that zone, even when the zones are defined in "objective" chronological units.

The fourth and fifth variables were measured by the Circles Test (Cottle, 1967) and dealt with perceptions of the relationship of past, present,

and future (relatedness), as well as the special significance of any one of the zones (dominance). Empirically, subjects' drawings of three circles representing the relationship of past, present, and future, as well as the relative size of the drawings were indicants of these variables.

Preferred conceptions of time, for example, cyclical vs. linear concepts of time, was a sixth variable studied, and the measuring instrument employed was developed by the author.

Utilizing Ornstein's (1969) methodological approach, duration experience was studied by exposing subjects to two equivalent clock intervals which varied in the number of stimulus events present. One interval was experienced waiting in a sound proof chamber in the dark, while the other interval was experienced watching an experimental abstract film with an electronic music sound track. Experienced duration of the film relative to the waiting was recorded as a ratio estimate. Verbal estimations of the film and waiting intervals were also obtained as additional measures of duration experience.

Due to the exploratory nature of the study, specific hypotheses relating Kohlberg types to temporal behavior patterns were not proposed à priori. However, on the basis of Kohlberg's (1969) postulation that higher stage persons are more cognitively and affectively developed, that is, more "differentiated" and "integrated", or "internalized" (Percival, 1968), it was generally speculated that conventional subjects, as less internalized and more externally dependent, would adopt the dominant socialized temporal perspective of Western culture which emphasizes the future and the linearity of time. The more internalized and less externally

dependent post-conventional subjects would emphasize the present in their time perspective and prefer non-linear concepts of time.

Ornstein (1969) has remarked that "in all the approaches to time, either cognitive, or those of the 'biological clock', there is one general finding which seems most clear: when any procedure results in an increase in the number of stimuli perceived (and presumably stored) duration is lengthened (p.43)." Therefore, it was expected that all subjects would experience the duration of the film interval as longer than the waiting interval. Beyond this general expectation, however, differences in experienced duration between conventional and post-conventional subjects are speculative and divorced from the experimental manipulation. The problem is one of individual differences in the registration and coding of information, since both processes affect the storage capacity of memory and consequently duration experience (Ornstein, 1969). Yet, differences in information processing and coding abilities among Kohlberg types have not been investigated.

In the present study recall of the number of eleven sequences comprising the film was employed as an indicator of both information processing and coding efficiency among Kohlberg types. This enabled the investigation of individual differences in experienced duration among Kohlberg types to be structured, independent of hypothesized results, along the following lines: Since higher Kohlberg types are more cognitively and affectively differentiated and integrated than lower Kohlberg types, it was assumed that post-conventional subjects would either (1) process more information in the film and waiting

intervals than conventionals, (2) code the information processed in the film and waiting intervals more efficiently than conventionals, (3) process more information in the film and waiting intervals and code such information more efficiently than conventionals, or (4) process and code information in the film and waiting intervals the same as conventionals. In the first and second cases post-conventional subjects would recall more film segments than conventional subjects, but differ respectively on measures of duration experience. In the fourth case no differences in recall or measures of duration experience would occur between conventional and post-conventional subjects. The third case, however, is confounded. Post-conventionals would recall more film segments than conventionals, but their duration experience could theoretically be either less than conventionals, as in the second case, or the same as conventionals. Processing more information and coding it more efficiently could be equivalent relatively to processing less information and coding it less efficiently (see Table 2).

Differences in recall and duration experience related to higher types processing less information and coding it less efficiently than lower types seemed unlikely according to the Kohlberg theory. Therefore, these possibilities have not been considered.

Table 3 presents the various patterns of temporal behavior expected for each temporal measure used in the study.

TABLE 2

A WORKING FRAME OF EXPECTED DIFFERENCES IN DURATION EXPERIENCE
 AMONG KOHLBERG CONVENTIONAL AND POST-CONVENTIONAL
 SUBJECTS BASED ON THE RECONSTRUCTION OF INFORMATION
 STORED IN MEMORY AS MEASURED BY THE NUMBER
 OF FILM SEGMENTS RECALLED

		Information Processing				
		PCS>CS		PCS=CS		
Coding Efficiency	PCS=CS	Case I:			Case IV:	
		Recall:	PCS>CS		Recall:	PCS=CS
		RE:	PCS>CS		RE:	PCS=CS
		VE film:	PCS>CS		VE film:	PCS=CS
		VE waiting:	PCS>CS		VE waiting:	PCS=CS
	PCS>CS	Case III:	A or B		Case II:	
		Recall:	PCS>CS	PCS>CS	Recall:	PCS>CS
		RE:	PCS=CS	PCS<CS	RE:	PCS<CS
VE film:		PCS=CS	PCS<CS	VE film:	PCS<CS	
	VE waiting:	PCS=CS	PCS<CS	VE waiting:	PCS<CS	

Note.--PCS represents post-conventional subjects, CS represents conventional subjects, RE represents ratio estimate, and VE represents verbal estimation.

TABLE 3
PATTERNS OF TEMPORAL BEHAVIOR

Temporal Measure	Conventional (Kohlberg Type III & IV)	Post-Conventional (Kohlberg Type V & VI)
Experiential Time Orientation (Cottle, 1968)	future oriented, emphasis on expected experiences	present oriented, emphasis on present experiences
Temporal Fantasy - Recovery and Preknowledge (Cottle, 1969)	more retreat to fantasy exploration of past and future	less retreat to fantasy exploration of past and future
Temporal Extension and Bracketing (Cottle, 1969)	Extension: primarily limited to future's present, near future, and distant future Bracketing: atomistic, continuity	Extension: all time zones-past, present, and future-with emphasis on past present and future present; Bracketing: continuity, overlapping
Temporal Relatedness and Dominance (Cottle, 1967)	Relatedness: atomistic Dominance: future	Relatedness: interpenetration projection Dominance: present
Concepts of Time (Hintz)	predominantly linear	predominantly non-linear
Duration Experience (Ornstein, 1969)		
1) Ratio Estimation of Film Relative to Waiting (F/W)	?	?
2) Verbal Estimation of Film Interval and Waiting Interval	?	?

Method

Subjects

Seventy-nine undergraduate and graduate students from the University of Alberta served as subjects. The undergraduates were drawn from a pool of students enrolled in an Introductory Psychology course. The graduates were drawn from students pursuing studies primarily in English, Anthropology and Philosophy. All subjects were preselected on the basis of their Kohlberg test scores to comprise four groups. The groups were: (1) Type III (n=20: 10 males, 10 females, mean age=18.7, S.D.=1.65); (2) Type IV (n=20: 10 males, 10 females, mean age=18.2, S.D.=1.24); (3) Type V (n=20: 10 males, 10 females, mean age=20.3, S.D.=2.59); and (4) Type VI (n=19: 10 males, 9 females, mean age=24.8, S.D.=2.41). Groups (1) and (2) were comprised exclusively of undergraduates, whereas group (4) was comprised only of graduates. Group (3) included both undergraduates and graduates.

Materials: The Paper and Pencil Tests

A version of the Kohlberg test of moral development and four tests of temporal behavior were employed.

The Kohlberg Test. The Kohlberg test was composed of four hypothetical moral dilemma situations about which respondents were asked relevant questions (see Appendix A). Although Kohlberg originally administered the test in tape recorded interviews, a paper and pencil form was utilized in the present study. The test is scored as three levels and six stages of moral development as described earlier.

Two basic methods of scoring the test have been devised: sentence coding and global rating. Global rating is less time consuming and may be assigned a "dominant type" (level x stage) or a "dominant type plus a sub-type" (level x stage x stage). Three points are allowed for each situation; if the situation is scored as manifesting one dominant type all three points are awarded this type. However, if the situation is scored

as manifesting a dominant type and a sub-type, two points are awarded the dominant type and one point the sub-type. By totalling the points for each of the six types over all situations, scores are assigned as the percent response at each type.

Kohlberg (1963) has reported high reliabilities for his scoring systems. Product moment correlations between pairs of judges range from .68 to .84. In addition, Nadeau (1967) reported a correlation of .91 between the two scoring systems, and Turiel (1966) reported an inter-judge reliability of .94 for global rating and a correlation of .78 between sentence coding and global rating scores of two judges.

Temporal behavior tests. Thomas Cottle (1967, 1968, 1969a, 1969b) has developed four tests to measure various aspects of an individual's temporal perspective. All the tests, however, require respondents to make similar spatial divisions of the time horizon.

The Experiential Inventory (Cottle, 1968) instructs subjects first to list the 10 most important experiences of their life, and then to locate them in one of five time zones: (1) distant past, (2) near past, (3) present, (4) near future, (5) distant future (see Appendix B). Since subjects presumably consider the entire temporal horizon in listing and locating experiences, zone frequencies signify an intensity of involvement with reflection (past orientation), experiencing (present orientation), or expectation (future orientation).

An experiential mean can be calculated by summing the numbers of the listed time zones and dividing the number of experiences by 10. This value indicates where the subject locates himself in time; i.e., the

higher the score, the more future oriented the subject. However, the mean is misleading, particularly in the center of the distribution of scores. For example, a mean of 3.0, theoretically a perfect present orientation, may result from locating all experiences in the present or from dividing experiences equally between the distant past and distant future.

The Money Game (Cottle, 1969) measures fantasies of temporal recoverability and preknowledge by first asking subjects to pretend they possess unlimited wealth and then to indicate how much money they would spend to purchase various allotments of time from their personal and historical pasts and futures. Historical corresponds to the periods before birth and after death. The subjects may select any hour, day, and year from all four periods. Prices listed are \$0, \$10, \$100, \$1,000, \$10,000, scored 1 to 5 respectively (see Appendix C).

For each period, scores are constructed by summing expenditures for all three allotments. Values thus range from 3 to 15, with higher values signifying larger payments. Scores of 3 mean that subjects have rejected the fantasy despite the premise of limitless wealth.

The Duration Inventory (Cottle, 1969a) inquires into the perceived extensions of the five zones treated in the Experiential Inventory (see Appendix D). In addition to the chronological meanings of nearness and distantness, variables are generated which refer to the relationships between time zone boundaries. Four time zone boundaries or bracketing regions, which represent border divisions of the time horizon, will be considered in the present study: distant past-near past, present's past

border-near past, present's future border-near future, and distant future-near future. The way extensions of the two temporal borders of each bracketing region are juxtaposed represents a bracketing design, which indicates the degree of overlap or interpenetration between temporal borders. Bracketing designs are thus determined by bracketing scores, which are computed at each of the four bracketing regions by subtracting the duration score for near zones from the duration score for far zones. Appendix E describes the bracketing designs and scores generated by The Duration Inventory.

The Circles Test (Cottle, 1967) instructs subjects to think of the past, present, and future as being in the shape of circles and then to draw these circles showing the relationships between zones (see Appendix F).

Relatedness scores, which signify the degree of zone interpenetration, are assigned to each circle on the following basis: No points are awarded a circle spatially separated from the other circles; this configuration is called discrete or atomic. Two points are given each time one circle is drawn tangential to another, and the configuration is called continuous. When circles intersect, four points are given and the configuration is called integrated. Finally, projection means that one circle lies within another circle, and six points are given for this configuration.

Total relatedness scores refer to the sum of individual circle relatedness scores; hence a scale is constructed ranging from 0 to 18. High relatedness scores designate integration or projection.

Circles are also rated according to relative size. Circles

receive two points for every circle they surpass in size, thereby providing measures of past, present, and future dominance. Previous research (Cottle, 1967) has indicated that size is equated more with a zone's perceived significance, potency, and evaluation than with simple chronological estimations of its duration.

Cottle (1969b) has reported that test-retest reliability coefficients for his time instruments range from greater than .73 to .91 on the pre-knowledge section of the Money Game. The test-retest interval was eleven weeks. He has also established some measure of face validity by asking subjects to describe their reactions to the temporal instruments and tell what they had intended to communicate. Cottle and Howard (1969) have reported "a very high stability" for 8 week and 14 week readministrations of The Duration Inventory. Post-test interviews and written reports confirmed "the alleged meanings behind bracketing designs" and the variable degree to which subjects "consulted answers to one statement in calculating answers to a second statement (p.603)."

Experimental Apparatus

A 16mm. projector (Bower) was used to present Around Perception, an abstract experimental film produced by the National Film Board of Canada, to each subject. The subject was seated in a chair with an adjustable head rest 3 ft. in front of a rear projection screen (23 1/2 in. x 29 1/2 in.) built into one side of an Industrial Acoustical Corporation (I.A.C.) chamber (inside dimensions 10 ft. x 11 ft. 4 in. x 6 ft. 6 1/2 in.). The projected image of the film was 21 in. x 27 in.. Two Armaco amplifiers, a 15 watt

TTSD and a 40 watt TTHG, were used to amplify the film's electronic music sound track. Each amplifier was wired in parallel to two Phillips 6 in., 8-ohm speakers (Model #AD-80-80). Each speaker was placed in one chamber corner. The amplifier powering the speakers behind the subject was wired to a 7 msec. Armaco reverberator. A sound level meter (Type No. 1400F, SER. No. 3836) was used to measure intensity during the film. At the "C" setting, intensity was measured over 75-90db with an average of 80db.

Procedure

Testing Sessions. All subjects were first administered the Kohlberg test in groups at various times. The majority of undergraduates wrote the test during a 50 minute Introductory Psychology Class, while the test sessions arranged for all other subjects had no time limits. In fact, all subjects had no problem in completing the test. Instructions for the Kohlberg test are included with the test in Appendix A. Only dominant Kohlberg types were selected for the study. To be classified as a dominant type 53% of a subject's responding had to be at one stage with a 20% gap between that stage and any other stage.

If a subject was selected, a second testing session was scheduled. Since Thor (1962) has shown that time perspective varies systematically with time of day, an effort to control for diurnality in time perspective responses was made by scheduling the second session for each subject at a time of day when he usually felt alert and awake. During this session The Experiential Inventory (Cottle, 1968), The Money Game (Cottle, 1969), The Duration Inventory (Cottle & Howard, 1969), and The Circles Test

(Cottle, 1967) were administered in the above order. Instructions for these tests are included with the tests in Appendices B, C, E, and F.

Instructions for Part II of the Experiential Inventory were given to each subject on a separate sheet of paper only after Part I had been completed. The purpose of this procedure was to minimize the influence of the two sets of instructions for the Experiential Inventory on each other. All subjects were allowed as much time as they required to complete the tests. The experimenter also tried to create a friendly and relaxed atmosphere during all testing sessions in order to reduce testing apprehensions on the part of the subjects.

Experimental Session. Since Thor (1962) has demonstrated the effect of diurnality on time estimation, each subject was scheduled to participate in the experimental session at a time of day when he usually felt alert. Before entering the laboratory, the subject was shown a list of anti-convulsive drugs and asked if he had ever used any of them (see Appendix G); if not, the subject was asked to "please remove any objects you are wearing such as pens, pencils, key chains, watches, necklaces, or rings which might distract you during the experiment." All items were locked in a box to assure the subject of their safety. The first instructions were given to eliminate any subject who might have had convulsions induced by the film's intermittent light stimulation. The second instructions were given to remove the subject's watch without his awareness. At this point, each subject was either instructed that he would be seated comfortably inside a sound proof chamber, blindfolded with opaque goggles, and asked to "remain seated and wait here in the dark for awhile until I

return", or the subject was instructed that he would be seated comfortably inside a sound proof chamber and shown a film produced by the National Film Board of Canada titled Around Perception. "I want you to sit back, relax, and watch the film. If you wish to leave this chamber at any time during the film please feel free to do so." Subjects who waited first were then asked to remove their goggles and given the film instructions, whereas subjects who saw the film first were then blindfolded and given the waiting instructions. The waiting interval and the film interval were each 14 min. 40 sec.. All subjects within each Kohlberg type were randomly assigned in equal numbers to one of the two conditions.

Upon completion of the experimental manipulation, each subject was administered a series of paper and pencil tasks. The ratio estimation task presented the subject with two parallel lines of unequal length on a piece of paper. The Standard shorter top line represented the duration of waiting, and the subject was instructed to mark off a segment on the bottom line representing how long the film seemed relative to the waiting (see appendix H). Each subject was then given two sets of 7-point scales to rate the film relative to the waiting and the waiting relative to the film for interest, pleasure, subjective speed, involvement, affective experience (feeling) and cognitive experience (thinking) (see Appendix I). Next, each subject estimated the number of sequences the film contained and verbally estimated in clock time the film and waiting intervals (see Appendices J and K). Finally, the subject was tested for his preferred concept of time (see Appendix L). Specific instructions for the tasks are given in the appropriate Appendices. In order to

minimize misunderstanding and response error associated with making relative judgments, the experimenter read aloud the ratio estimation and rating task instructions while each subject followed along. Upon completion of the above tasks the subject was asked for comments, offered \$3:00 for his co-operation, and dismissed.

Results

Time Perspective Data

A series of 4 x 2 (types x sex) unweighted means analyses were performed on the time perspective data. In cases where the original design called for equal cell frequencies, but where factors not relevant to the research design make this impossible, an unweighted means analysis is appropriate (Winer, 1962, p.222).

The experiential means in Table 4 indicate that Type VI subjects are less future oriented than the other three groups, but the results are complicated by a highly significant ($p < .005$) type x sex interaction depicted in Appendix M.

Multiple comparisons of all significant effects were analyzed with a programmed solution. Critical values for mean differences were developed from "Percentiles of Studentized Range" (Pachares, 1959) at alpha levels of .05 and .01. Critical values for mean differences were substituted for those suggested by Duncan's multiple range test to provide a constant confidence level of $1-\alpha$ over the $K(K-1)/2$ comparisons for K groups on one variable.

Multiple comparisons on the main effect means reported in Table 4 were nonsignificant. This finding is due to the conservativeness of the programmed solution which employs an experimentwise error rate. Orthogonal comparison of the experiential sums (Edwards, 1963, p.148) for Types V and VI was significant at $p < .01$ (see Appendix N). Multiple comparisons of the interaction means (Table 4) showed Type IV males and Type VI males and females to be significantly different from Type V females ($p < .05$).

TABLE 4

SUMMARY OF SIGNIFICANT FINDINGS FROM UNWEIGHTED MEANS
ANALYSIS OF KOHLBERG TYPES AND EXPERIENTIAL INVENTORY

Variable	Source	df	SS	MS	F	Group Means
Experiential Mean	Type	3	1.2568	.4189	3.068 **	K-3 = 2.322 K-4 = 2.171 K-5 = 2.345 K-6 = 2.034
	Type x Sex	3	2.1706	.7235	5.227 ****	K-3 male = 2.51 K-3 female = 2.135 K-4 male = 2.0 K-4 female = 2.341 K-5 male = 2.115 K-5 female = 2.575 K-6 male = 2.065 K-6 female = 2.00
Frequency Near Past	Type x Sex	3	31.8082	10.6027	2.4681 *	K-3 male = 4.35 K-3 female = 5.6 K-4 male = 5.5 K-4 female = 4.7 K-5 male = 4.35 K-5 female = 3.2 K-6 male = 5.5 K-6 female = 6.0
Frequency Distant Future	Type	3	8.6508	2.8835	3.5605 ***	K-3 = 1.25 K-4 = .95 K-5 = .60 K-6 = .368
	Sex	1	4.7684	4.7685	5.8881 ***	males = .55 females = 1.166

Note. - In this and the following analyses of time perspective data the error mean square has 71 df. K-3, K-4, K-5, and K-6 represent Kohlberg types.

*p<.10
**p<.05
***p<.025
****p<.005

It has previously been noted that the experiential mean can be misleading because a present orientation could result from locating all experiences in the present or from dividing experiences equally between the distant past and distant future (see p.31). To control for this Cottle (1969c, p.544) divided subjects into three experiential time orientation groups based on the frequency distribution of experiences in the five time zones. "Past-present orienters" were subjects reporting no near or distant future experiences. "Future orienters" were subjects listing three or more near and/or distant future experiences, while "Samplers" generally distributed their experiences throughout the five zones more readily than the other two groups. Following this precedent, the Experiential Inventory data were further analyzed by classifying subjects within each type according to one of Cottle's three time orientation categories. The results of a Chi Square analysis (Table 5) were nonsignificant ($\chi^2 = 5.809$, $df = 6$, $p < .50$).

When the data were collapsed to form two groups (Table 6), conventional subjects (Types III and IV) and post-conventional subjects (Types V and VI), the results showed a tendency for post-conventionals to be more past-present oriented than conventionals, but this effect remained nonsignificant ($\chi^2 = 4.427$, $df = 2$, $p < .20$).

Results of the time zone frequency data (Table 4) show that all subjects are less oriented toward distant future experiences than near past experiences. Orientation toward the distant future, however, is inversely related to type with the means for Type VI and Type III differing significantly ($p < .05$). On the other hand, males are significantly

TABLE 5

OBSERVED (f) AND EXPECTED (F) FREQUENCIES OF PAST-PRESENT ORIENTERS, FUTURE ORIENTERS, AND SAMPLERS AMONG KOHLBERG TYPES

Type	Frequency Past-Present Orienters		Frequency Future Orienters		Frequency Samplers	
	f	F	f	F	f	F
III	2	5.56	6	5.06	12	9.36
IV	5	5.56	5	5.06	10	9.36
V	7	5.56	5	5.06	8	9.36
VI	8	5.282	4	4.807	7	8.892

TABLE 6

OBSERVED (f) AND EXPECTED (F) FREQUENCIES OF PAST-PRESENT ORIENTERS, FUTURE ORIENTERS, AND SAMPLERS AMONG KOHLBERG CONVENTIONAL AND POST-CONVENTIONAL TYPES

Type	Frequency Past-Present Orienters		Frequency Future Orienters		Frequency Samplers	
	f	F	f	F	f	F
Conventional	7	11.120	11	10.120	22	18.720
Post-Conventional	15	10.842	9	9.867	15	18.252

less distant future oriented than females ($p < .05$). Appendix O presents the type x sex interaction results for near past means graphically; multiple comparisons for these data showed Type VI females differed significantly from Type V females, ($p < .05$).

The data presented in Table 7 indicate an inverse relationship between type and temporal fantasies of recoverability and preknowledge. While Types III and IV offer the greatest payments for the personal future, their payments for recoverability of the personal past surpass monies offered for preknowledge of the historical future. Post-conventional types, however, pay more to recover the personal past than to know the personal or historical future, although preknowledge of the historical future is more valued than preknowledge of the personal future, especially by Type V's. While personal future means for Types V and VI differ significantly from Types III and IV at the .05 and .01 confidence levels respectively, and the historical future means for Type VI and Type III differ significantly ($p < .05$), personal past mean differences were non-significant. Orthogonal comparison of the personal past sums for Types III and VI, however, was significant at $p < .01$ (see Appendix P).

Table 8 presents the only significant findings on temporal extension and bracketing. Males extend the near past less than females ($p < .01$).

Time relatedness data in Table 9 show that total integration of past, present and future generally increases with higher types, although Type IV's integrated past, present, and future less than Type III's. Means for Types III, IV, and V were all significantly greater than the Type VI mean ($p < .01$).

TABLE 7

SUMMARY OF SIGNIFICANT FINDINGS FROM UNWEIGHTED MEANS ANALYSIS
OF KOHLBERG TYPES AND TEMPORAL FANTASY (MONEY GAME)

Variable	Source	df	SS	MS	F	Group Means
Personal Past	Type	3	120.0991	40.033	2.888 *	K-3 = 8.5
						K-4 = 8.35
						K-5 = 7.85
						K-6 = 5.42
Personal Future	Type	3	320.8731	106.9576	6.3986 **	K-3 = 8.9
						K-4 = 8.95
						K-5 = 5.5
						K-6 = 4.421
Historical Future	Type	3	122.5648	40.8549	2.5819 *	K-3 = 8.35
						K-4 = 7.3
						K-5 = 6.9
						K-6 = 4.895

*p<.10
**p<.005

TABLE 8

SUMMARY OF SIGNIFICANT FINDINGS FROM UNWEIGHTED MEANS ANALYSIS
OF KOHLBERG TYPES AND EXTENSION AND BRACKETING DESIGN
(DURATION INVENTORY)

Variable	Source	df	SS	MS	F	Group means
Extension Near Future	Sex	1	4.688	4.688	4.2066 *	males = 5.5
						females = 6.0513

*p<.05

Future dominance (Table 9) was inversely related to type with higher types drawing the future as dominant less often than lower types. Multiple comparisons of future dominance means were nonsignificant, but an orthogonal comparison of future dominance sums for Types III and VI was significant at $p < .01$ (see Appendix Q). The present dominance sex effect reported in Table 9 indicates that females drew the present as dominant more often than males ($p < .05$).

Table 10 presents the frequency of subjects' observed and expected preferences for concepts of personal past, present, and future, historical past (before birth), and historical future (after death) time. The data, however, only represent 76 subjects. During the interim between the paper and pencil test sessions, and the experimental session which included the collection of these data, three Type VI females were unavailable for various reasons. The Chi Square test indicated that preferences among types were not specific to a common population ($\chi^2 = 29.723$, $df = 15$, $p < .02$). Preferences of subjects generally ranged across all response categories. Especially noteworthy, however, is the fact that 50% of the Type III's and 55% of the Type IV's preferred to conceptualize time as a line, while about the same percentage of Type V's and Type VI's respectively preferred to conceptualize time as a spiral or no spatial form.

Duration Data

As previously mentioned, only 76 subjects participated in the experimental session testing duration experience. Central tendency measures

TABLE 9

SUMMARY OF SIGNIFICANT FINDINGS FROM UNWEIGHTED MEANS
ANALYSIS OF KOHLBERG TYPES AND INTEGRATION AND
DOMINANCE (CIRCLES TEST)

Variable	Source	df	SS	MS	F	Group Means
Total integration	Type	3	501.189	167.0630	5.9154 ***	K-3 = 6.6 K-4 = 5.6 K-5 = 7.4 K-6 = 12.11
Present dominance	Sex	1	14.6271	6.5143	6.5143 **	males = 1.3 females = 2.154
Future dominance	Type	3	25.7918	8.5973	3.1464 *	K-3 = 3.1 K-4 = 3.0 K-5 = 2.1 K-6 = 1.79

*p<.05
**p<.025
***p<.005

TABLE 10

FREQUENCY OF OBSERVED (f) AND EXPECTED (F) CONCEPT OF
TIME PREFERENCES AMONG KOHLBERG TYPES

TYPE	Concept of Time Preference											
	line		circle		spiral		other spa- tial form		no spatial form		other alternative	
	f	F	f	F	f	F	f	F	f	F	f	F
III	10	7.64	4	3.42	4	4.48	1	.52	1	3.42	0	.52
IV	11	7.64	4	3.42	4	4.48	0	.52	0	3.42	1	.52
V	4	7.64	3	3.42	8	4.48	1	.52	4	3.42	0	.52
VI	4	6.112	2	2.736	1	3.584	0	.416	8	2.736	1	.416

and standard deviations of ratio estimates of the judged length of the film interval divided by the standard line length representing waiting are presented in Table 11. Numbers greater than 1.00 mean the film interval was judged longer than the waiting interval, while the obverse is true for numbers less than 1.00. While the average duration ratio for each type shows the film was judged longer than the waiting, the degree of judged duration is noticeably greater for Types IV and V than for Types III and VI. Medians and modes indicate more clearly the lack of difference among all types.

The only significant effect of a 4 x 2 x 2 (type x sex x order) unweighted means analysis (Winer, 1962, p.222) of duration ratios (Table 12) was order. Subjects who saw the film before they waited judged the film as longer (Mean = 1.2879; S.D. = .5200) than subjects who waited before they saw the film (Mean = 1.0263, S.D. = .3171), thus indicating a positive time-order effect. Orthogonal comparison of the treatment means (Edwards, 1963, p.140-143) was significant ($t = 2.6721$, $df = 60$, $t_{0.01}$ (2-tailed) = 2.660, $df = 60$).

Product moment correlations of ratings on two sets of rating scales (film relative to waiting (F/W) and waiting relative to film (W/F)) and duration ratios for all subjects are given in Table 13. Correlations using ratings of the F/W are largely nonsignificant, exceptions being ratings for speed and to a lesser extent cognitive experience; however, the direction of the correlations is negative indicating that duration of F/W increased as interest, pleasure, speed, involvement, positive affective experience (feeling) and cognitive experience (thinking) decreased. This finding is consistent with the result that correlations between ratings of W/F and duration ratios were largely positive and significant with the

TABLE 11
 MEAN, MEDIAN, MODE, AND STANDARD DEVIATION OF DURATION
 RATIOS AMONG KOHLBERG TYPES

Type	Mean	Median	Mode	S.D.
III	1.088	1.045	1.20 - 1.29	.470
IV	1.277	1.095	1.00 - 1.09	.482
V	1.22	1.145	1.00 - 1.09	.459
VI	1.078	1.052	1.00 - 1.09	.369

TABLE 12
 UNWEIGHTED MEANS ANALYSIS OF DURATION RATIOS
 AMONG KOHLBERG TYPES

Source	df	SS	MS	F
Type (T)	3	.4247	.1417	.7777
Sex (S)	1	.0061	.0061	.0335
Order (O)	1	1.3675	1.3675	7.5126*
T x S	3	.6985	.2328	1.2790
T x O	3	.8740	.2913	1.6005
S x O	1	.2281	.2281	1.2533
T x S x O	3	.5016	.1672	.9185
Error	60	10.9218	.1820	
Total	75	15.0224		

* $p < .025$

TABLE 13

PRODUCT MOMENT CORRELATIONS BETWEEN DURATION RATIOS
AND RATED VARIABLES (TOTAL SUBJECTS)

Scale	Rated Variables					
	Interest	Pleasure	Speed	Involvement	Feeling	Thinking
F/W	-.011	-.025	-.511***	-.058	-.07	-.224*
W/F	.282**	.261**	.526***	.293**	.033	.290**

df = 70; 2-tailed test

*p<.10
**p<.02
***p<.01

exception of ratings for affective experience.

Table 14 presents product moment correlations between duration ratios and the two sets of rating scales among types. While scattered significant r 's can be observed, for example, ratings for interest and cognitive experience, the data are largely heterogeneous. Correlations between duration and perceived acceleration are the exception and reflect the significant r 's reported in Table 13 between speed and duration on both sets of rating scales for all subjects.

Average verbal estimations in minutes of waiting and film intervals by each type are presented in Table 15. While both intervals were underestimated (<14 min. 40 sec.) by all subjects, the film was estimated as longer than the waiting by all subjects except Type VI's, who estimated the two periods as about equal. Yet, the degree of film underestimation decreased with increase in type. Average verbal estimates of waiting among types were more similar with estimates increasing across Types IV, V, and VI, all of which were less than Type III, however.

Table 16 presents the results of a $4 \times 2 \times 2$ (type \times sex \times order) unweighted means analysis (Winer, 1962, p.222) of verbal estimations of the film. All main effects and interactions were nonsignificant. The same factorial analysis of verbal estimations of waiting, however, resulted in significant order and type \times sex effects (see Table 17). However, the time-order effect is positive with subjects who waited before seeing the film estimating the interval as longer (Mean = 11.8186; S.D. = 4.4557) than subjects who saw the film first (Mean = 9.7324; S.D. = 4.6049). Orthogonal comparison of the treatment means for order was only significant at $p < .10$ ($t = 1.9731$, $df = 60$, $t_{0.10}$ (2-tailed) = 1.697, $df = 30$).

TABLE 14
 PRODUCT MOMENT CORRELATIONS BETWEEN DURATION RATIOS
 AND RATED VARIABLES AMONG KOHLBERG TYPES

Rated Variable	Scale	TYPE			
		III	IV	V	VI
Interest	F/W	.019	.212	.074	-.433*
	W/F	.487**	.066	.098	.595***
Pleasure	F/W	.227	.370	-.364	-.126
	W/F	.201	.037	.348	.461*
Speed	F/W	-.52 ***	-.594****	-.261	-.618***
	W/F	.543***	.538***	.310	.679****
Involvement	F/W	.137	.107	-.086	-.416
	W/F	.157	.343	.332	.372
Feeling	F/W	.145	-.064	-.081	-.323
	W/F	.016	.099	.097	-.139
Thinking	F/W	-.481**	.165	-.389*	-.093
	W/F	.456**	-.124	.506**	.351

df=70; 2-tailed test

*p < .10
 **p < .05
 ***p < .02
 ****p < .01

TABLE 15
 MEANS AND STANDARD DEVIATIONS OF VERBAL ESTIMATES
 IN MINUTES OF WAITING AND FILM INTERVALS
 AMONG KOHLBERG TYPES

Type	Mean		Standard Deviation	
	Wait	Film	Wait	Film
III	12.0665	12.5891	4.9984	4.4316
IV	10.0542	12.0163	5.0247	4.2452
V	10.6763	11.5908	4.5378	3.5433
VI	10.8125	10.5625	5.3568	3.5208

TABLE 16
 UNWEIGHTED MEANS ANALYSIS OF VERBAL
 ESTIMATIONS OF FILM INTERVAL

Source	df	SS	MS	F
Type (T)	3	37.0049	12.3350	.8559
Sex (S)	1	5.9498	5.9498	.4128
Order (O)	1	15.4238	15.4238	1.0702
T x S	3	67.0687	22.3562	1.5512
T x O	3	52.9923	17.6641	1.2256
S x O	1	2.3244	2.3244	.1613
T x S x O	3	121.2205	40.4068	2.8037
Error	60	864.7201	14.4120	
Total	75	1166.7047		

TABLE 17
UNWEIGHTED MEANS ANALYSIS OF VERBAL
ESTIMATIONS OF WAITING INTERVAL

Source	df	SS	MS	F
Type (T)	3	39.6661	13.2220	.6225
Sex (S)	1	2.6939	2.6939	.1268
Order (O)	1	124.6552	124.6552	5.8691*
T x S	3	232.9491	77.6497	3.6559*
T x O	3	56.9113	18.9704	.8932
S x O	1	3.0987	3.0987	.1459
T x S x O	3	99.2913	33.0971	1.5583
Error	60	1274.3623	21.2394	
Total	75	1833.6279		

*p<.025

TABLE 18
PRODUCT MOMENT CORRELATIONS BETWEEN DURATION
RATIOS AND ESTIMATED NUMBER OF FILM
SEGMENTS AMONG KOHLBERG TYPES

Type	r
III	.3285
IV	-.0271
V	.3907*
VI	-.2066

*p<.10

Appendix R displays graphically the type x sex interaction results.

Product moment correlations reported in Table 18 between the average duration ratio and the average estimated number of film segments recalled for each type varied in direction and were largely nonsignificant.

The average estimated number of film segments recalled tended to increase with higher types (see Table 19), but the results of a 4 x 2 x 2 (type x sex x order) unweighted means analysis (Winer, 1963, p.222) of these data were nonsignificant (see Table 20).

TABLE 19
 MEANS AND STANDARD DEVIATIONS OF NUMBER OF FILM
 SEGMENTS RECALLED AMONG KOHLBERG TYPES

Type	Mean	S.D.
III	7.2	2.3530
IV	7.65	2.8704
V	8.35	2.4121
VI	8.0	2.9212

TABLE 20
 UNWEIGHTED MEANS ANALYSIS OF NUMBER
 OF FILM SEGMENTS RECALLED

Source	df	SS	MS	F
Type (T)	3	37.6346	12.5448	2.0197
Sex (S)	1	3.6012	3.6012	.5798
Order (O)	1	13.6012	13.6012	2.1898
T x S	3	8.5576	2.8525	.4592
T x O	3	25.3884	8.4628	1.3625
S x O	1	4.7705	4.7705	.7680
T x S x O	3	31.3884	10.4628	1.6845
Error	60	372.6666	6.2111	
Total	75	497.6089		

Discussion

The findings of this study partially confirm the expected differences in patterns of temporal behavior between Kohlberg conventional and post-conventional subjects.

Patterns of Temporal Behavior: Time Perspective

Conventional subjects show a greater fantasy interest in foreknowing the future and recovering the personal past than post-conventional subjects. For conventionals the personal future > personal past > historical future, whereas the personal past > historical future > personal future for post-conventionals. Since it is assumed that a mean score of 3 on the Money Game (Cottle, 1969b) indicates that subjects have rejected the fantasy despite the premise of limitless wealth, the relatively low mean payments offered by Type VI's for future preknowledge and personal past recovery provide an interesting basis for speculation. For example, are VI's more accepting of passing time and less willing to try and capture the unknowable or retrieve the lost past than III's, IV's, and V's, or are they simply unwilling to engage in temporal fantasy? Since money and temporal fantasy are confounded in the Money Game, there is no way of knowing the degree to which playing with money influences the fantasy. A post-test interview might have helped clarify this point.

While conventionals relate the past, present, and future atomistically, draw the future as dominant, and most frequently prefer to represent time as a line, post-conventionals integrate the past, present, and future, draw the future as less dominant, and most frequently prefer to represent time as either a spiral (Type V's) or non-spatially (Type VI's). Post-conventional

subjects also locate significant life experiences in the distant future less than conventional subjects and tend toward a past-present orientation more than conventional subjects. All these findings for post-conventional subjects, however, are more characteristic of VI's than V's.²

Conventional and post-conventional subjects do not differ significantly in extension and bracketing of time zones with "objective" chronological units, although males extend the near future in weeks and females extend the near future in months. With the exception of this significant finding, all subjects generally extend the past present and future present in hours, the near past and near future in months, and the distant past and distant future in years. Bracketing designs for the present-near past region and present-near future region are atomistic. Type VI's tend to display more overlapping at the near past-distant past region and the near future-distant future region than all other types.

Percival, Gee and Blanchard (1971) found that Kohlberg conventional subjects were more authoritarian (Adorno *et. al.*, 1950) and field-dependent (Witkin *et. al.*, 1962) than post-conventional subjects. They also expected post-conventionals to demonstrate greater internal control than conventionals on Gruin's (1966) Scale of Internal-External Control, but the results obtained were nonsignificant. The researchers questioned this finding, however, since only a small sample of internal-external control subjects were employed. Studies by Rokeach and Bonier (1960), Jacoby (1969), Bonier and Rokeach (1957), Spotts (1964), and Platt and Eisenman (1968) have investigated the relationship between the personality constructs of dogmatism³, field-

2. It is noteworthy that the meaning of the time perspective tasks was the same for all subjects, that is, all subjects apparently obeyed the convention of language (see Appendix S).

3. Correlations between the D-Scale and the F-Scale have been reported to range from .54 - .77 (Rokeach, 1960); Pettigrew (1958) reported a correlation of .88 between the two scales.

independence, internal-external control, and time perspective extension. On the one hand, the findings of some of these investigations question the temporal extension results of the present study. On the other hand, the generality of these research findings is questionable, not only because The Duration Inventory (Cottle, 1969a) was not employed to measure time perspective extension, but also because Platt and Darbes (1969) found that the time perspective extension measuring instruments employed in these studies have little meaning in common. The possible exception is the time line measure employed by Rokeach and Bonier (1960) and Jacoby (1969), since this instrument was not studied by Platt and Darbes (1969). In addition, Platt and Darbes (1969) found that demographic and personality variables related differentially to the various time perspective extension measures.

Rokeach and Bonier (1960) hypothesized that broad time perspectives characterize open-minded individuals, while narrow future oriented time perspectives characterize closed-minded individuals who are theoretically believed to be dissatisfied with the present. Using a graphic projective measure involving a bisected six-inch line, they found no differences on extension into the future between 15 highly open- and 15 highly closed-minded undergraduates. Jacoby (1969) replicated these results using a sample of high school seniors, who spread out along the open-to-closed-minded continuum, and a projective measure of time span similar to the Story Completion Technique (Teahan, 1958; Wallace, 1956). The Story Completion Technique measures time extension as the duration of a story told by the subject. Bonier and Rokeach (1957), however, found that high scorers on the D-Scale gave significantly more future responses and fewer present responses to TAT cards than low scorers.

Spotts (1964) studied 15 field-independent, 15 field-neutral, and 15

field-dependent male undergraduates, matched for intelligence, and found that field-independents showed significantly greater extension than field-dependents on the Wallace Future Events Test of future time perspective (Wallace, 1956).

Platt and Eisenman (1968) studied time perspectives of 17 internal- and 15 external-control college students. Three different aspects of the time perspective dimension of extension were measured as part of the total study: Personal future extension (Wallace, 1956), Impersonal future extension (Thor, 1962), and Impersonal past extension (Thor, 1962). Each of these measures were obtained by presenting the subject with a list of 10 relatively ambiguous events and asking him how many years from the present each event would take place in the future, or had taken place in the past. Personal future extension, Impersonal past extension, and Impersonal future extension differentiated between internal and external subjects at the .005, .025, and .15 confidence levels respectively, indicating that internals had broader fuller extended time perspectives than externals.

The variable type x sex interactions for experiential means and frequency of near past significant life experiences, as well as sex differences in the time perspective data, obviously complicate the general pattern of temporal perspective differences between conventional and post-conventional subjects.

Findings of the present study that males placed significant life experiences in the distant future less frequently than females, extended the near future less than females, and drew smaller presents than females can be related to some results obtained by Cottle, Howard, and Pleck (1969) and Platt, Eisenman, and Gross (1969). Cottle *et. al.* (1969) found that

adolescent boys drew significantly smaller presents than adolescent girls, but he obtained no sex differences in distant future temporal orientation or near future extension. Platt *et. al.* (1969) found that female college students generated more answers to the questions "who will you be?" and "what will you do?" (Kastenbaum, 1961) and thus possessed greater future time perspectives than their male counterparts. In terms of the present study, it is assumed that answers to these life questions are related to an individual's location in time of reported significant life experiences, including significant life experiences in the distant future. Without using chronological units to measure time extension, Platt and Eisenman (1969) also found that Impersonal future extension (Thor, 1962) was greater for first born only child females than males. They obtained no differences between males and females for Personal future extension (Wallace, 1956), however.

The need for further clarification of sex differences in time perspectives has been observed by Hintz (1970), who found that the majority of time perspective studies have used subject samples of only one sex, and about 50% of the studies which employed both sexes obtained some differences.

Holding aside the effects of sex, the emergent time perspective pattern of Kohlberg conventional subjects can generally be described as linearly progressive, segmented (atomistic), future dominant, and marked by fantasies of personal future foreknowledge and personal past recovery. The pattern basically reflects the dominant socialized temporal horizon of Anglo-American culture (Smith, 1952; Hall, 1959; Kluckhohn, 1961; Fraisse, 1963; Priestley, 1964). While some conventional subjects preferred to represent time as either a circle or a spiral, 50% Type III's and 55% Type IV's preferred to represent time as a line. The explanations offered by this latter group of subjects for

their preference to conceptualize time spatially as a line tend to reinforce the dominant socialized time perspective pattern of conventional subjects. Typical examples are as follows: Type III's: "The line represents time and life to me. You start at one point (birth) and keep going on until you come to the end of the line (death)." "My life is moving--the small portion of the line is the past, the large portion the future. I am somewhere in the midst." "As I look back in my past, I am looking down hill, and my future is a hill to climb; my present is a level surface." "The line represents a movement toward the future--toward accomplishing something during the life span." Type IV's: "It's the way it happens--past, present, future." "A line is my picture." "A line actually has no beginning and no end; I will continue to progress in eternity." "I think of my life as a line because everyday I just get older and keep progressing."

The emergent time perspective pattern of post-conventional subjects, especially VI's, is generally characterized by a synthesized time horizon centered on the present without excluding the past or future. This pattern clearly does not reflect the fore-shortened time perspective characteristic of psychopaths and delinquents (Kohlberg Type II's), who are less able than "normals" to adequately plan for the future, inhibit motor impulses, engage in phantasy activity, or achieve academically (Orme, 1969, p.68). Also because post-conventionals integrate the past, present, and future, their time perspective pattern cannot be identified with the present centered time perspective of the "primary man" (Fraisie, 1963, p.188). While the primary man has a time perspective, it has little effect on him because the past and future "are submerged by the resonance of present impressions (Fraisie, 1963, p.189)." It is interesting to note in passing how closely

these cognitions of time parallel time cognitions attributed to North American "hippies", who are depicted as de-emphasizing the immediate future and the structure of time in favor of immediate experience arising out of the present situation. Consistent with this is the evidence Hampden-Turner & Whitten (1971) give that hippies are mostly Kohlberg Type II's with some stereotyped "beautiful" III's.

Interpretation of the time perspective pattern characterizing post-conventional subjects must grapple with the meaning they attribute to an integrated time horizon. We need to be clear about how time experience is conceptualized to make sure of their experience.

Fraisse (1963) suggests that a synthesized time horizon is the basis for the true control of time. Temporal control "demands of man a vision which covers all the experience he has acquired in the past and all the plans he can foresee in the future." Only then is man no longer the "plaything of unceasing change (p.189)." Ketchum (1951) likewise stresses the necessity of an integrated temporal perspective for adaptive human behavior.

For man, since he achieved self-consciousness, has always sought not only satisfaction in the present, but assurance for the future; he is forever trying to escape from the knife-edge of the present into a context that appears more stable and predictable. This goal seems to be unique to man and so is the method by which he attains it--his unique capacity for temporal organization. Through this he achieves... the binding together of past, present, and future into a single cognitive structure. The structure, because of its temporal extension, its forward and backward reference, possesses stability; like a 1000 foot liner, it spans many of the waves of change at once and so is relatively undisturbed by them (p.98).

Adopting one of the most commonly used metaphors for time in Western culture, the image of time as a river, we can describe what might be called the Fraisse-Ketchum view of temporal control as representing the spectator relationship to time, which is one of detachment, emphasizing the discursive rather than the transient aspects of time. In this relationship, the conscious being of the observer is stationary on the river bank of time, in some sense outside of temporality, watching events flow from the future into his line of vision and then beyond into the past. The observer's temporal horizon is determined by the limits of his vision.

. . .the broader the perspective of the river's course the spectator can gain, the wider his view of stable, fixed sequences of events and the less his action and flow as the horizons of the past and future become further separated (Craik, 1964, p.22).

The mystical experience of TOTA SIMUL is the extreme form of this relationship. In TOTA SIMUL there is no past, present, or future, but only a simultaneous full and perfect possession of interminable life. All events are laid before the observer in an unchanging arrangement, a horizontal eternity. The sense of experienced eternity is neither an endless duration nor a vertical eternity beyond time (Poulet, 1956).⁴

Another stance that may be taken by the conscious being in relation to the river of time transforms the spectator into the agent of action. In this case, "the conscious being in some way becomes united with the river of time, becomes a part of time itself, or as Merleau-Ponty puts it, he 'performs time' (Craik, 1964, p.23)." In this relationship

⁴ Emphasis on a timeless vertical now seems to reflect the concerns for "present centeredness" of Gestalt Therapist, Claudio Naranjo (1971). Naranjo maintains that while the empirical ego lives in time and identifies with memory and expectation and evaluates it, the essential Self-pure subjectivity as unmoved mirror awareness-lives outside of time in a timeless vertical now. The "living now" of Maurice Nicoll, a student of Gurdjieff, and the Buddhist idea of time are also consistent with this point of view.

which stresses the transient aspects of time, the agent moves with time, or as time, into the future (now) and away from the past. This stance, in general, has been taken by the phenomenologists and some existential philosophers, most notably Martin Heidegger. Heidegger has explored Dasein (Being in life, existence) in the flowing of time. "The 'past' originates from the 'future' so as to engender the 'present' (Heidegger, 1949, p.79)." Time is the temporality of Dasein. The importance of the present mode is imbedded in the unity of experiencing (now) future, past, and present (process) in the reality of one's own situation.

Dasein does not exist as the sum of the momentary actualities of Experiences which come along successively and disappear. Nor is there a sort of framework which this succession gradually fills up...Dasein does not fill up a track or stretch of 'life'--one which is somehow present-at-hand--with the phases of its momentary actualities. It stretches itself along in such a way that its own Being is constituted in advance as a stretching-along (Heidegger, 1962, p.426).

Man-in-time, perhaps in its most extreme form, is also the focus of Bergsonian time (*durée*). *Durée* is the immediate experience of pure duration (succession without distinction), of flow and transience. *Durée* is "the form which the succession of our conscious states assumes when our ego lets itself live, when it refrains from separating its present state from its former states (Bergson, 1960, p.100)." Real time to Bergson has no discursive characteristics at all.

Other concrete Western manifestations of Bergson's Time-flux philosophy include Samuel Alexander's philosophic work Space, Time, and Deity and the literary work of James Joyce, Marcel Proust, Gertrude Stein, and Ezra Pound (Lewis, 1957).

Emphasis on the present in the flow of time, the moving now as time lived, is found in the time concepts of some non-Western cultures.

For example, "Navajo time is like space-only the here and now is quite real. The future has little reality to it (Hall, p.23)." The Hopi Indians, whose language has no past or future tenses, are said to be generally present oriented. At least in their speech much of the fluidity of passing experience does not seem to be lost. "In Hopi the days are not totalled (e.g., 10 days). They are referred to in their order (e.g., by the 11th day) (Orme, 1969, p.46)." Another example is the Australian aboriginal's concept of the Dreaming world. "Here the creative past is continuous with the present and the future (Orme, 1969, p.45)."

Returning to the post-conventionals synthesized present centered time perspectives, we find a refutation of the Fraïsse-Ketchum point of view in the explanations offered by 20% V's and 50% VI's for their preference to represent time non-spatially. These explanatory reports lead one to conclude that there is a tendency for post-conventional time perspectives to express an agent relationship to time. Typical examples are: Type V's: "I am living only to the extent that I am aware. Consciousness as time cannot be represented spatially." "Any spatial representation of time has no significance for my time; it is what it is." Type VI's: "Lived time is a synthesis of both anticipation and memory. In what? Not a mere point; it is everything, but not spatially." "I do not think a spatial form corresponds in any way to what I know and feel about past, present, and future." "I find it difficult to place the diverse experiences of life into any coherent whole other than the whole represented by my own consciousness." "Time is probably not ultimately divisible so no (implicitly segmentable) spatial form can represent time-perhaps a Ganzfeld could (ultimate homogeneity). The

Since there is at least some tendency in the data for higher stages on the average to experience duration as shorter than lower stages, the failure of these results to significantly differentiate patterns of duration experience among Kohlberg types is likely attributable to weakness in the experimental manipulation, namely, the time period of waiting and the nature of the film Around Perception.

The time period wherein sensory input from the ambient environment was restricted was only 14 min. 40 sec. in the present study. Previous researchers reporting shortened duration experience during sensory deprivation have characteristically employed much longer time periods. For example, Banks & Cappon (1962) and Vernon & McGill (1963) studied time estimation of subjects who underwent sensory deprivation for periods of 8-96 hours and 1½ hours respectively, and Orme (1969) has observed that "possibly the more a sensory deprivation situation departs from the normal, the greater the disturbance of time judgment (p.66)."

Researchers who have used films as stimulus events in temporal studies have reported that subjects tend to verbally overestimate their duration. Fraisse and deMontomollin (1952) reported approximately equal overestimation (over 200%) for two films—a dramatic narrative (2 min. 42 sec.) and a news sequence (3 min. 14 sec.). They explained the unusual magnitude of overestimation in terms of the "spectator" character of film watching experiences, and maintained that the inverse relationship between duration experience and intensity of motivation (task involvement) is reversed for film watching experiences (Fraisse, 1963, p.228). Schiff (1970) used two films with moderate differences in style (educational

ideal: all time is copresent in the mind of 'god'."

Four additional post-conventional subjects who preferred to represent time spatially expressed similar notions of time. Both V's chose a spiral to represent time. "A spiral is a dizzy line. My life is more than a cut and dry row of statistics in a certain period of time. It is a twisting pattern now which appears to have no beginning and no end." "A spiral, since part of one's existence moves in and out of consciousness. One is aware only at times of his existence. These terms are represented by the height of the spiral and those of unawareness by the point of intersection and the two lines of the spiral." One Type VI chose a line, but wrote, "a non-linear line, that is, intensity of time dependent on now." The other Type VI subject explained his concept of time as a point-finite or infinite-that stands for the now, my awareness of my existence in this instant."

Patterns of Temporal Behavior: Duration Experience

Average ratio judgments for Types IV, V, and VI and average verbal estimations of the film by each type indicate a tendency for post-conventional subjects to experience duration as shorter than conventional subjects. However, the lack of invariance within each type for these data, as well as the results for verbal estimations of waiting, fail to confirm any significant empirical differences in experienced duration between conventional and post-conventional subjects.

film vs. experimental film in black and white) and content (10 min. space perception vs. 8 min. pop art) and found that about 55% of the subjects tended to verbally overestimate both films only by about 10%.

In the present study the film (14 min. 40 sec.) tended to be underestimated by all subjects. Only about 32% overestimated the film. Although verbal estimates were not made immediately after viewing the film, the delay period was only about 10 min.. Schiff (1970) found that the magnitude and accuracy of time estimations made of his two films one week after they were shown failed to produce significant differences when compared to estimates made immediately after viewing the films. While these data indicate the ineffectiveness of the film Around Perception to lengthen duration experience, a more complete explanation of the findings can be related to the specific style and content of the film. Most subjects verbally reported that the first sequence of the film aroused feelings of stress and anxiety. While the majority of subjects adapted and reported the overall film experience as positive, about 20% of the subjects within each type did not adapt and reported the film experience as negative. In all cases feelings of stress were associated with 7 of the 11 film sequences, which presented cacophonous rhythms of colored geometric forms synchronized with electronic music and produced intense stroboscopic sensations and optical illusions. The fact that duration experience shortens with increased stress (Orme, 1969)⁵ suggests why most subjects underestimated

⁵ We usually think that pain and stress make time seem long, but experiments suggest the opposite (Sturt, 1925; Henrickson, 1948; Hare, 1963). Pain and stress become one way of 'filling' the interval; however, if stress is anticipated during the interval then time does seem longer than the clock period (Frankenhaeuser, 1959; Falk and Bindra, 1954; Hare, 1963; Langer et. al., 1961), but negative results have been reported (Cohen and Mezey, 1961).

the film, even though 4 sequences of the film consisted of a simple line form gyrating in smooth rhythm which tended to neutralize any stress effects.

General weakness of the experimental manipulation of duration experience is further attested to by positive time-order effects for duration ratios and verbal estimations of waiting, as well as the lack of time-order effects for verbal estimates of the film. The storage size approach to duration experience (Ornstein, 1969) predicts negative time-order errors, that is, the first of two intervals equivalent in clock time is judged shorter than the second. This prediction is based on the assumption that with elapsed time less information remains stored in the first interval than the second. While Ornstein (1969) demonstrated a negative time-order error in one experiment which manipulated the effect of coding efficiency on duration experience, in another experiment which investigated the effect of stimulus complexity on experienced duration, he obtained no time-order errors. In addition, positive time-order errors have been reported for ephemeral intervals (Doob, 1971, pp. 120-121).

The type x sex interaction for time estimates of waiting also present interpretive problems which likewise might indicate weakness of the experimental test.

While the significant correlational findings for all subjects on both rating scales (F/W and W/F) confirm results relating psychological duration with the variables rated in this study (Fraisse, 1963), the general lack of significant correlations between the duration ratios and the rated variables within each type might be interpreted as further support for weakness of the experimental manipulation. Alternatively,

however, these data can be explained in terms of complexity of the rating task which encouraged intransitivity (Tversky, 1969). For example, subjects would rate the F/W as very interesting and then also rate the W/F as very interesting instead of very uninteresting, or subjects would rate the F/W as moderately engrossing and then rate the W/F as very engrossing. When various transformations of the rating data using difference scores for each rated variable were correlated with duration ratios, however, correlations did not change significantly.

Finally, since correlations between duration ratios and the average number of film segments recalled were not consistent among types, and the average number of film segments recalled did not differ significantly among types, no conclusions can be drawn regarding the relationship between information and coding processes of conventional and post-conventional subjects and their experience of duration.

In conclusion, the results of this study generally support the relevance of a hierarchic conceptualization of human development for comprehending the richness and complexity of human temporal behavior and experience. Yet, we must remain cognizant that "overly simplistic temporal typologies may be more dangerous than instructive (Cottle, 1967, p.71)." To avoid misleading simplification and to further understand human time, experience, and behavior, a cross-cultural replication of this study using a stronger experimental test of duration experience and a broad range of age groups would be productive. While it is arguable that "there are no clear trends with age of time experience in the general population" (Orme, 1969, p.75), age has been observed as an important influence on the development of time perspectives (Fraisie, 1963). Kohlberg (1969) has also recorded quite a high correlation

70.

($r=.59$) between age and his moral development stages, although he reports that stabilization of moral development occurs by age 25.

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APPENDIX A
THE KOHLBERG TEST: A SHORT VERSION

Instructions

Decision Stories and Questions

On the following pages you will find several stories each of which are followed by some questions. The purpose of these stories and questions is to get at your opinions and ideas. Please write down all the ideas or feelings they bring to mind rather than giving "Yes" or "No" answers. Just writing "Yes" or "No" is definitely not an adequate answer. You should always give your reasons for your answer.

You are to write your answers in the spaces provided following each question. If you need more space you may write on the back of the page, but if you do make sure you specify which question you are answering. You should be able to answer most of the questions in the space that is provided.

Remember that this is not a test in the usual sense. There are no right or wrong answers. There can only be different ideas and opinions about these stories. So, do not spend a long time thinking about how to answer any one question, but simply write down what your opinions and ideas are about it.

Format

The test was printed so that each situation and the questions about that situation could be put on one page with plenty of space for the subjects to write their answers. For the purpose of this Appendix, each situation will be written and followed by a list of the questions asked.

In Europe a woman was near death from a special kind of cancer. There was one drug that the doctors thought might save her. It was a form of radium that a druggist in the same town had recently discovered. The drug was expensive to make, but the druggist was charging ten times what the drug cost him to make. He paid \$200 for the radium and charged \$2,000 for a small dose of the drug. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together about \$1,000 which is half of what it cost. He told the druggist that his wife was dying and asked him to sell it cheaper or let him pay later. But the druggist said, "No, I discovered the drug and I'm going to make money from it." So Heinz got desperate and broke into the man's store to steal the drug for his wife.

Should Heinz have done that? Was it actually wrong or right? Why?

Is it a husband's duty to steal the drug for his wife if he can get it no other way? Would a good husband do it?

Did the druggist have the right to charge that much when there was no law actually setting a limit to the price? Why?

Answer the next question only if you think he should steal the drug.

If the husband does not feel very close or affectionate to his wife, should he still steal the drug? Why?

Heinz was sentenced to ten years in jail for breaking in and trying to steal the medicine. But after a couple of years, he escaped from the prison and went to live in another part of the country under a new name. He saved money and slowly built up a big factory. He gave his workers the highest wages and used most of his profits to build a hospital for work in curing cancer. Twenty years had passed when a tailor recognized the factory owner as being Heinz, the escaped convict whom the police had been looking for back in his home town.

Should the tailor report Heinz to the police? Would it be right or wrong to keep it quiet? Why?

Is it a citizen's duty to report Heinz? Would a good citizen? Why?

If Heinz was a good friend of the tailor, would that make a difference? Why?

Should Heinz be sent back to jail by the judge? Why?

Joe is a 14 year old boy who wanted to go to camp very much. His father promised him he could go if he saved up the money for it himself. So Joe worked hard at his paper route and saved up the \$40 it cost to go to camp and a little more besides. But just before camp was going to start, his father changed his mind. Some of his friends decided to go on a special fishing trip, and Joe's father was short of the money it would cost. So he told Joe to give him the money he had saved from the paper route. Joe didn't want to give up going to camp, so he thought of refusing to give his father the money.

Should Joe refuse to give his father the money? Why?

Does his father have the right to tell Joe to give him the money? Why?

Does giving the money have anything to do with being a good son? Why?

Which is worse, a father breaking a promise to his son or a son breaking a promise to his father? Why?

In Korea a company of Marines was way outnumbered and was retreating before the enemy. The company had crossed a bridge over a river, but the enemy were mostly still on the other side. If someone went back to the bridge and blew it up as the enemy were coming over it, it would weaken the enemy. With the head start the rest of the men in the company would have, they could probably then escape. But the man who stayed back to blow up the bridge would probably not be able to escape alive; there would be about a 4 to 1 chance he would be killed. The captain of the company has to decide who should go back and do the job. The captain himself is the man who knows best how to lead the retreat. He asks for volunteers, but no one will volunteer. If he goes himself, the men will probably not get back safely and he is the only one who knows how to lead the retreat. The captain finally narrowed his decision down to three alternatives. He could go himself or he could order one of two other men in his company. The first man he thought of was one who had a lot of strength and courage but he was a bad trouble maker. He was always stealing things from the other men, beating them up and wouldn't do his work. The second man he thought of had gotten a bad disease in Korea and was likely to die in a short time anyway, though he was strong enough to do the job.

Should the captain: (a) go himself; (b) send the trouble maker; or
(c) send the sick man? Why?

Does the captain have the right to order a man if he thinks it best to?
Why?

Which alternative would be the best for the survival of all of the men in
the company?

APPENDIX B

THE EXPERIENTIAL INVENTORY

Instructions (Part I)

Please list the 10 most important experiences of your life. These may be experiences you have had, you are having, and experiences you expect to have. You only need to write a few words for each experience and you may list your experiences in any order you wish. (Two blank pages were provided for the subjects to write their answers).

Instructions (Part II)

Now that you have listed 10 experiences please study the time zones shown below:

Time Zones

1. Distant Past
2. Near Past
3. Present
4. Near Future
5. Distant Future

Now take each experience and decide if it has occurred, is occurring or will occur. Then choose the number of the time zone that best represents the time of the experience and write this number in front of the experience. Do this for all 10 experiences.

APPENDIX C
THE MONEY GAME

Instructions

Pretend that you had a lot of money, more money than you could possibly use. Pretend also that someone had the power to sell you time, any time that you would want, and you would have this time given to you right now, knowing what you now know. And, once you had this time, you could do whatever you wanted with it. Now look at the following amounts of money: a) \$0.00, b) \$10.00, c) \$100.00, d) \$1000.00, e) \$10,000.00. For each of the questions below, circle the letter that represents the amount of money that you would pay. Make certain that you answer all twelve questions.

How much would you pay right now to bring back:

- | | |
|--------------------------|-----------|
| 1 hour of your own past? | a b c d e |
| 1 day of your own past? | a b c d e |
| 1 year of your own past? | a b c d e |

How much would you pay right now to know all about and do whatever you wanted with:

- | | |
|----------------------------|-----------|
| 1 hour of your own future? | a b c d e |
| 1 day of your own future? | a b c d e |
| 1 year of your own future? | a b c d e |

How much would you pay right now to bring back any:

- | | |
|------------------------------|-----------|
| 1 hour before you were born? | a b c d e |
| 1 day before you were born? | a b c d e |
| 1 year before you were born? | a b c d e |

How much would you pay right now to know all about and do whatever you wanted with any:

1 hour that will occur after your death?

a b c d e

1 day that will occur after your death?

a b c d e

1 year that will occur after your death?

a b c d e

APPENDIX D
THE DURATION INVENTORY

Instructions

In the sentences below fill in the blank spaces with one of the words listed below. Indicate your choice by placing the number of the word in the blank space. 1. Seconds, 2. Minutes, 3. Hours, 4. Days, 5. Weeks, 6. Months, 7. Years.

1. The PRESENT as I think of it extends from ____ ago to ____ from now. 2. As I think of it, the DISTANT PAST includes things and events which occurred ____ ago while the NEAR PAST includes things and events which occurred ____ ago. 3. As I think of it, the DISTANT FUTURE includes things and events which will occur ____ from now, while the NEAR FUTURE includes things and events which will occur ____ from now.

APPENDIX E

BRACKETING DESIGNS AND SCORES

Interval Continuity or Continuity. (Score: values=1)

One zone originates where the preceding one concluded by beginning one time unit (e.g., weeks) higher or lower, depending on which side of the present the boundary falls.

Atomicity. (Score: values>1)

At least one interval is skipped between the conclusion of one zone and the beginning of the second. (Given the nature of the inventory, this design may be recorded only at the present near-past and present near-future regions, since only here are zone beginnings and endings discretely marked.)

Extended Continuity. (Score: values>1)

Refers to the two regions of distant past-near past and distant future-near future where intervals of more than one time unit do not imply with certainty a loss of the sense of continuity.

Overlapping. (Score: values=0 and negative values)

The zone closest to the present extends beyond the far zone. For example, a present extending forward in months and a near future extending in hours. (While both extension and bracketing variables derive from perceptions of so-called linear time, the overlapping design communicates a sense of time zones existing simultaneously.)

Note: In the present study bracketing scores were treated as a scale: the higher the score the more atomistic, or continuously extended the

design, depending on the bracketing region analyzed; the lower the score, the more overlapping. This scale, although not an equal interval scale, has been used by Cottle and Howard (1969) as a short-inspection of relationships between bracketing designs and between designs and extensions of individual zones.

APPENDIX F
THE CIRCLES TEST

Instructions

Think of the past, present, and future as being in the shape of circles. Now arrange these circles in any way you want that best shows how you feel about the relationship of the past, the present and the future. You may use different size circles. When you have finished, label each circle to show which one is the past, which one the present and which one the future.

APPENDIX G
LIST OF ANTI-CONVULSIVE DRUGS

Dilantin
Gardenal
Meberal
Mebroin
Mesantoin
Mypoline
Nozinan
Celontin
Milontin
Phelantoin
Zarontin
Paradione
Peganone
Phenurone
Trimedone

APPENDIX H
RATIO ESTIMATION TASK (FORM B)

Instructions

You have just experienced two time intervals. During the first interval you saw a film, and during the second interval you waited in a room. On this sheet of paper, given a line which represents the length of the second interval of waiting, please indicate how long the first interval of film watching seemed to you relative to the second. The length of the second interval is represented by the top line. If you felt that the first interval was longer than the second, mark off a line segment on the bottom line which is longer than the top line. If you felt that the first interval was shorter than the second, make the mark on the bottom line shorter than the top. If you felt the two intervals were the same length, make the lines equal in length.

Second interval of waiting _____

First interval of film watching _____

APPENDIX H
RATIO ESTIMATION TASK (FORM A)

Instructions

You have just experienced two time intervals. During the first interval you waited in a room, and during the second interval you saw a film. On this sheet of paper, given a line which represents the length of the first interval of waiting, please indicate how long the second interval of film watching seemed to you relative to the first. The length of the first interval is represented by the top line. If you felt that the second interval was longer than the first, mark off a line segment on the bottom line which is longer than the top line. If you felt that the second interval was shorter than the first, make the mark on the bottom line shorter than the top. If you felt the two intervals were the same length, make the lines equal in length.

First interval of waiting _____

Second interval of film watching _____

APPENDIX I
RATING TASK (FORM A)

Instructions

Compare the time interval of film watching relative to the time interval of waiting on the 7-point scales below. Each scale ranges from extremes at both ends to neutral in the middle. For example, on the first scale if the second interval of film watching relative to the first interval of waiting was moderately boring then check (✓) the appropriate point as follows.

1	1	1	1	1	1	1
very interesting	moderately interesting	slightly interesting	neither interesting nor boring	slightly boring	moderately boring	very boring

1. My experience of the second interval of film watching relative to the first interval of waiting was:

1	1	1	1	1	1	1
very interesting						very boring
1	1	1	1	1	1	1
very pleasant						very unpleasant

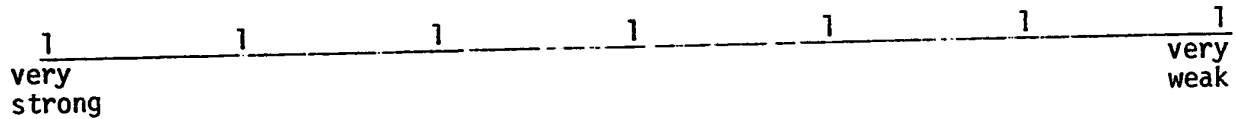
2. My experience of the second interval of film watching relative to the first interval of waiting seemed to pass:

1	1	1	1	1	1	1
very quickly						very slowly

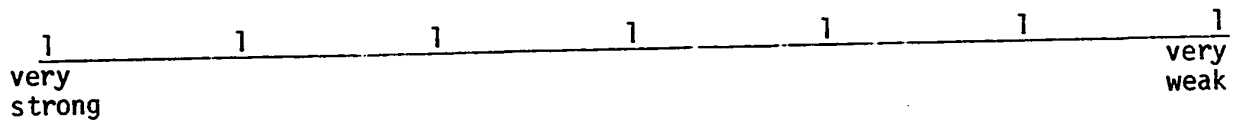
3. My experience of involvement with the second interval of film watching relative to the first interval of waiting was:

1	1	1	1	1	1	1
very engrossing						very non-engrossing

4. My experience of the second interval of film watching as a feeling experience relative to the first interval of waiting was:

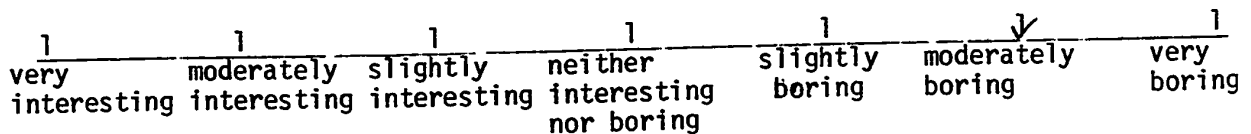


5. My experience of the second interval of film watching as a thinking experience relative to the first interval of waiting was:

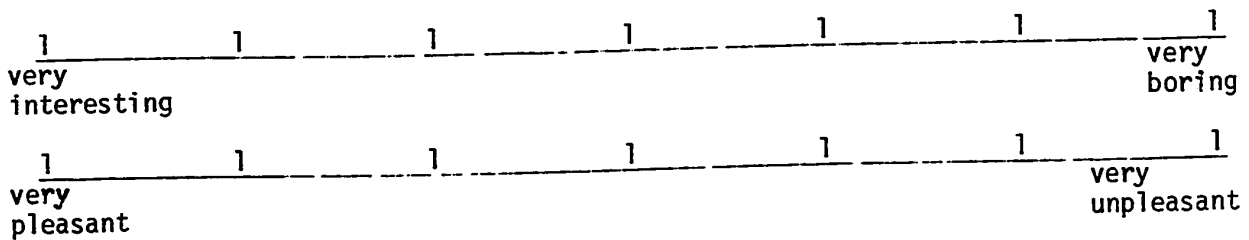


Instructions

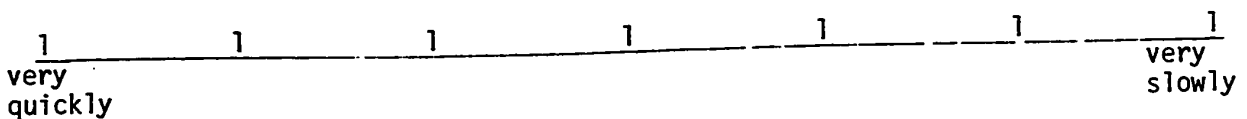
Compare the time interval of waiting relative to the time interval of film watching on the 7-point scales below. Each scale ranges from extremes at both ends to neutral in the middle. For example, on the first scale if the first interval of waiting relative to the second interval of film watching was moderately boring then check (✓) the appropriate point as follows:



1. My experience of the first interval of waiting relative to the second interval of film watching was:



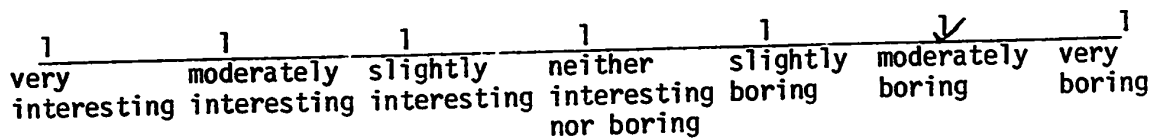
2. My experience of the first interval of waiting relative to the second interval of film watching seemed to pass:



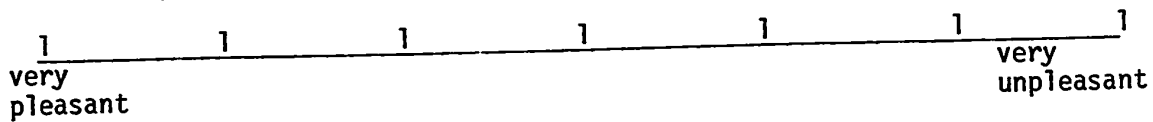
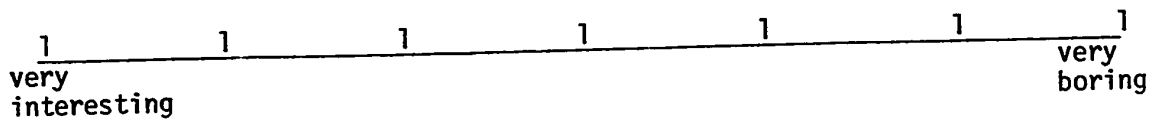
APPENDIX I
RATING TASK (FORM B)

Instructions

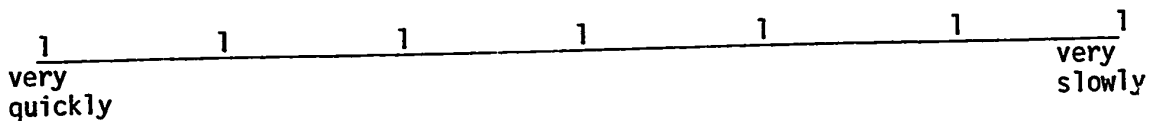
Compare the time interval of film watching relative to the time interval of waiting on the 7-point scales below. Each scale ranges from extremes at both ends to neutral in the middle. For example, on the first scale if the first interval of film watching relative to the second interval of waiting was moderately boring then check (✓) the appropriate point as follows:



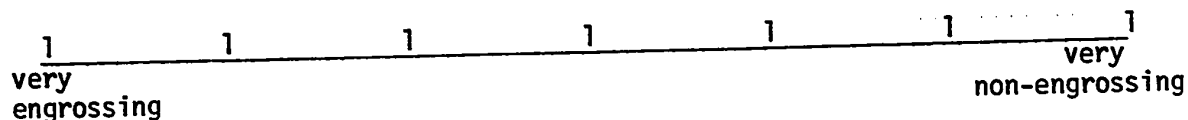
1. My experience of the first interval of film watching relative to the second interval of waiting was:



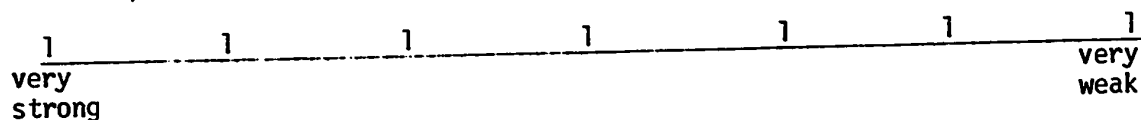
2. My experience of the first interval of film watching relative to the second interval of waiting seemed to pass:



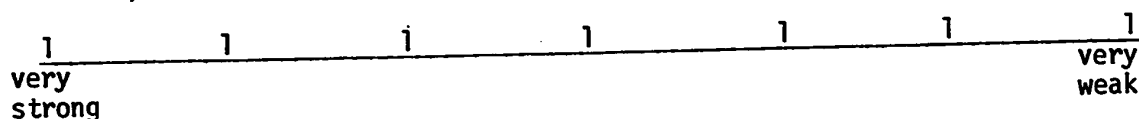
3. My experience of involvement with the first interval of film watching relative to the second interval of waiting was:



4. My experience of the first interval of film watching as a feeling experience relative to the second interval of waiting was:

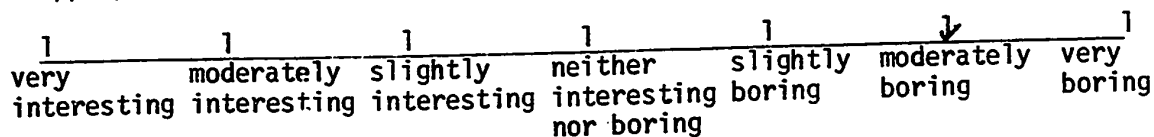


5. My experience of the first interval of film watching as a thinking experience relative to the second interval of waiting was:

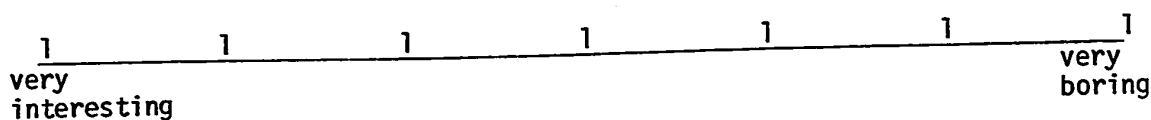


Instructions

Compare the time interval of waiting relative to the time interval of film watching on the 7-point scales below. Each scale ranges from extremes at both ends to neutral in the middle. For example, on the first scale if the second interval of waiting relative to the first interval of film watching was moderately boring then check (✓) the appropriate point as follows:



1. My experience of the second interval of waiting relative to the first interval of film watching was:



APPENDIX J
ESTIMATION OF THE NUMBER OF FILM SEGMENTS

Instructions

Please answer the question below.

Including the "line" segments, the film you saw consisted of several segments. How many?

Answer _____

APPENDIX K
TIME ESTIMATION TASK

Estimate in clock time

1) Interval of waiting

minutes _____ seconds _____

2) Interval of film watching

minutes _____ seconds _____

APPENDIX L
PREFERRED CONCEPT OF TIME

Instructions

In response to the question below, indicate your preference by circling the appropriate letter. Also give the reasons for your choice under Explanation.

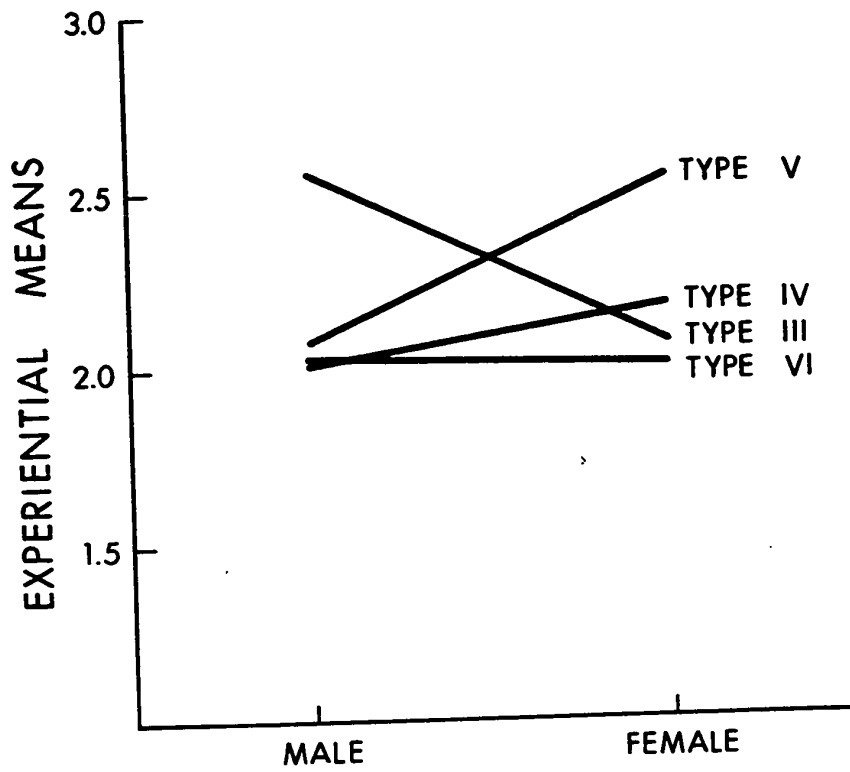
I prefer to think of the time of my life's past, present, and future as well as the historical past (before my birth) and the historical future (after my death) as

- a) a line
- b) a circle
- c) a spiral
- d) some other spatial form
- e) no spatial form
- f) some other alternative

Explanation

APPENDIX M

GRAPHIC DISPLAY OF MALE AND FEMALE EXPERIENTIAL MEANS FOR EACH KOHLBERG TYPE



APPENDIX N
 ORTHOGONAL COMPARISON OF EXPERIENTIAL
 SUMS FOR TYPES V AND VI

Types	Coefficients a.i	$\Sigma X_{k.}$	Products a.i $\Sigma X_{k.}$
III	0		
IV	0		
V	+1	46.9	46.9
VI	-1	38.646	-38.646
$\Sigma a.i$	0	D	8.254
$\Sigma n_k a.i^2$	39	MS_D	1.747

Calculation of F:

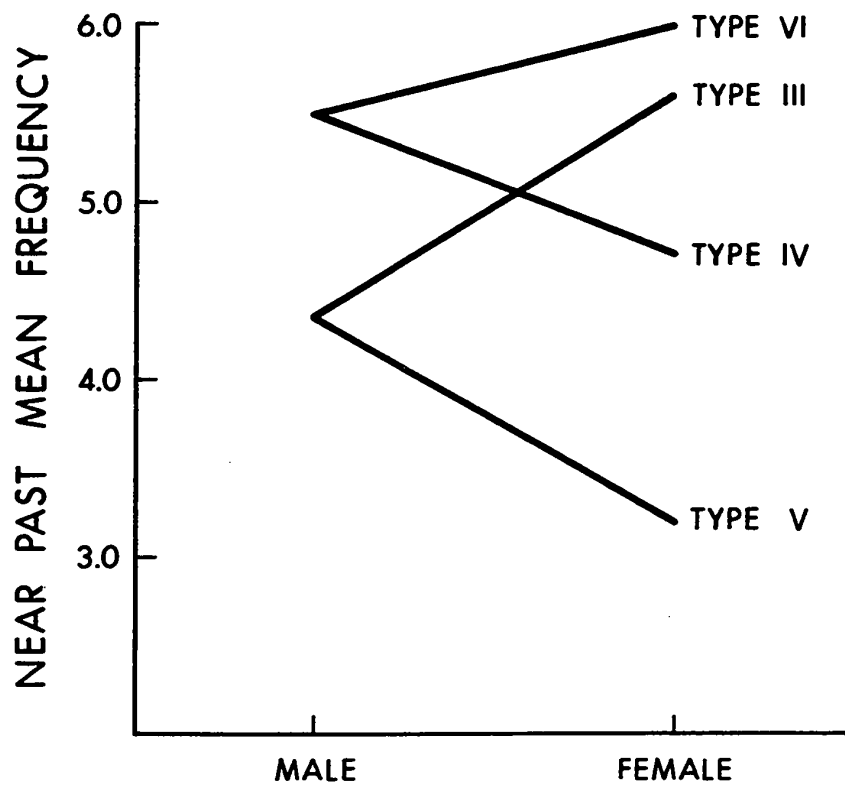
$$F = \frac{MS_D}{MS \text{ error}}$$

$$F = \frac{1.747}{.1384}$$

$$F = 12.623, \text{ df} = 1 \text{ and } 71, p < .01$$

APPENDIX 0

GRAPHIC DISPLAY OF MALE AND FEMALE NEAR PAST MEAN FREQUENCY FOR EACH KOHLBERG TYPE



APPENDIX P
 ORTHOGONAL COMPARISON OF PERSONAL
 PAST SUMS FOR TYPES III AND VI

Type	Coefficients a.i	ΣX_k .	Products a.i ΣX_k .
III	1	170	170
IV	0		
V	0		
VI	-1	102.98	-102.98
$\Sigma a.i$	0	D	67.02
		D ²	4515.840
$\Sigma n_k a.i^2$	39	MS _D	115.791

Calculation of F:

$$F = \frac{MS_D}{MS \text{ error}}$$

$$F = \frac{115.791}{16.0852}$$

$$F = 7.199, df = 1 \text{ and } 71, p < .01$$

APPENDIX Q

ORTHOGONAL COMPARISON OF FUTURE DOMINANCE
SUMS FOR TYPES III AND VI

Type	Coefficient a.1	$\Sigma X_{k.}$	Products $a.1\Sigma X_{k.}$
III	1	62	62
IV	0		
V	0		
VI	-1	34.01	-34.01
$\Sigma a.i$	0	D	27.98
		D^2	782.88
$\Sigma n_k a.i^2$	39	MS_D	20.074

Calculation of F:

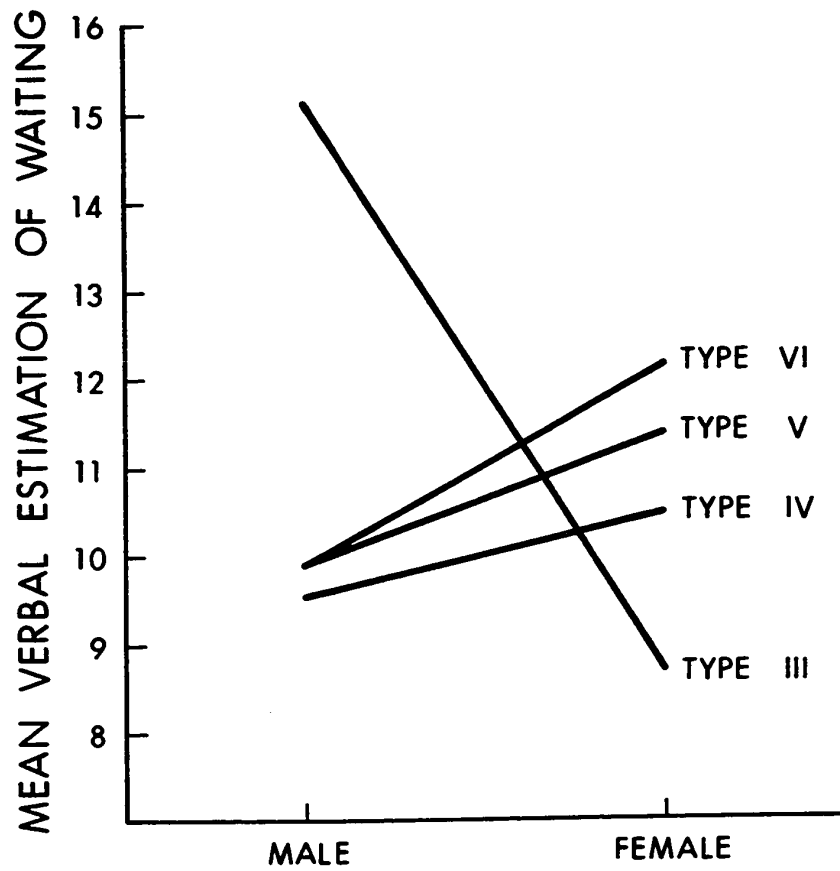
$$F = \frac{MS_D}{MS \text{ error}}$$

$$F = \frac{20.074}{2.7323}$$

$$F = 7.347, df = 1 \text{ and } 71, p < .01$$

APPENDIX R

GRAPHIC DISPLAY OF MALE AND FEMALE MEAN VERBAL ESTIMATIONS OF WAITING INTERVAL FOR EACH KOHLBERG TYPE



APPENDIX S

DISCUSSION AND INTERPRETATION OF INTERCORRELATIONS AMONG
TIME PERSPECTIVE MEASURES ACROSS SUBJECTS AND BETWEEN TYPES

Only those time perspective measures which differentiated type main effects were considered. When the measures were intercorrelated independent of type and the correlations were tested for significance, all measures were above chance ($p < .01$).

When the data were broken down by type and the same operations performed, 30 of the 60 correlations relating different dependent measures (i.e., correlations of the measures with themselves excluded) remained reliable. Inspection of these correlations showed that all combinations except Total Intergration X Frequency of Distant Future had at least 1 measure reaching $p < .05$. Of those combinations of measures which had more than 1 reliable correlation, totaling 11 in number, the correlations were all in a consistent direction in 8 cases involving 20 correlations. In the 3 cases where correlations of dependent measures were in a conflicting direction, only a total of 7 correlations were involved. Thus, the exceptions to expectations were too few to accept an argument for different internal structuring of time perspective judgment between types. The structure of subjective interdependencies appeared quite similar for groups.

Details of the data showed that groups reliably related Personal Future Foreknowledge to Personal Past Recovery in the same way. The correlations were significant and positive for Types III, V, and VI.

Significant positive correlations were also true for Historical Future Foreknowledge with Personal Future Foreknowledge for III's, IV's, V's, and VI's, Future Dominance with Personal Past Recovery for IV's, V's, and VI's, Historical Future Foreknowledge with Frequency of Distant Future for III's and V's. Significant negative correlations characterized IV's and VI's on Future Dominance with Frequency of Distant Future. The 3 instances where Kohlberg types were in disagreement involved Types III vs. V and VI with respect to Frequency of Distant Future and Personal Past Recovery (III's related these measures positively); Type III vs. Type VI with respect to Personal Future Foreknowledge and Total Integration (III's judgments were negatively related); Type IV vs. VI with respect to Historical Future Foreknowledge and Total Integration (VI's correlated these negatively).

In balance, very limited evidence exists for a hypothesis that the subjective structure used by subjects to interrelate the dependent measures per se differed between types. In assessing the obtained differences between types on the mean measures of Future Dominance, Total Integration, Personal Past Recovery, etc., we seem to have subjects sampling from different portions by the same overall scheme of relationships. Therefore, it appears appropriate to apply a single rationality in interpreting differences in mean judgments between groups. The evidence is that subjects interpreted the relational directions between dependent measures similarly. With the exception of 3 cases in which reliable correlations for some groups were in different directions, the meaning of the time perspective

tasks was the same for all subjects. Albeit, of course, the time perspective measures in many instances had different motivational importance for III's as contrasted with IV's, V's, and VI's as contrasted with V's and VI's, etc. The scales themselves, however, did not differ between subject groups. What differed was the location of a particular subject group on the scales. The scales had a mutual meaning. Consequently, subjects apparently obeyed the convention of language.