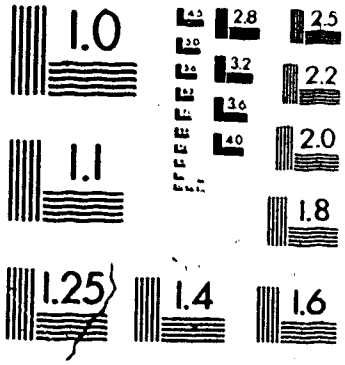
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THE UNIVERSITY OF ALBERTA

THE EFFECT OF TIME CONSTRAINT ON INTRINSIC MOTIVATION

by

ALAN JOHN LAW

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled THE EFFECT OF TIME CONSTRAINT ON INTRINSIC MOTIVATION submitted by ALAN JOHN LAW in partial fulfilment of the requirements for the degree of MASTER OF ARTS in RECREATION.

.....

Supervisor

.....

Thomas L. Burton

.....

Date..... January 29 1987

DEDICATION

To my parents, Allan and Pam.

ABSTRACT

Sebastian de Grazia conceptualized leisure as *an enduring state of being, free from the necessity of labour, where activity is undertaken for its own sake.* de Grazia suggests that the temporal interaction of social institutions disrupts and therefore destroys leisure by inducing a perception of time constraint. This approach to leisure conceptualisation is consistant with cognitive evaluation theory which postulates that intrinsic motivation to do activity is adversely affected by external constraint on activity. Based upon de Grazia's and Deci's theorizing, the present study was designed to investigate whether or not intrinsic motivation (representative of leisure) is adversely affected by a perception of time constraint. Subjects were assigned to either a high, medium or low constraint condition and then tested for subsequent intrinsic motivation. In the high constraint condition, subjects were given no choice pertaining to the tempotal points of transition between one activity and another and constraint indicators (a large clock and time limit cards) were made highly salient. In the medium constraint condition, subjects were given no choice pertaining to the temporal points of transition between one activity and another but no constraint indicators were present. In the low constraint condition, subjects were given some choice pertaining to the temporal points of transition between one activity and another and no constraint indicators were present. Analysis of variance of behavioral and verbal measures of intrinsic motivation indicated that differences in intrinsic motivation displayed by subjects between treatment conditions were not statistically significant at the 95% level of confidence. The findings are discussed in the context of cognitive evaluation theory and de Grazia's conceptualization of leisure.

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Finally, I would like to thank my parents for their uncompromising love and support during the course of my studies. Although they were 10,000 miles away they remained close to me.

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1. Introduction, the Problem and its Significance

> like everything else, I lived in a house bricked up with seconds and minutes, weekends and New Year's Days, and I never went outside until I died, because there was no other door. Now I know that I could have walked through the walls. Beagle (1968, p. 199)

Sebastian de Grazia (1962) uses a sociological rationale to construct a concept of leisure derived from the classical Aristotlian position. de Grazia believes that leisure is an *enduring state of being* in which activity is undertaken for its own sake. de Grazia suggests that as a result of the *complexity* of western industrialized society, members of that society are deprived of a leisurely life. One reason developed by de Grazia to account for this is the mobilization of objective time structures by social institutions to synchronize a complex of interactions. This position is supported by Banks (1983), Zerubavel (1982) and Sorokin and Merton (1978), who argue that the regulation of time in modern society both enables and restricts human activity. By adhering to an objective temporal structure, people are able to co-ordinate activities in a highly efficient manner. However, the price paid for this utilitarian mechanism is a perception of being constantly pushed, harried and externally controlled. The implication is that, when activity is perceived as highly constrained by time, it is perceived as being done according to the demands of some external agent. In this case, the activity of an individual can be said to be extrinsically motivated rather than intrinsically motivated (which is activity done for its own sake).

The purpose of this study is to address empirically a psychological assumption underlying de Grazia's concept of leisure as presented in broad sociological terms. That is, it will investigate the proposition that a salient, functionally irrelevant time constraint attached to activity will reduce intrinsic motivation for that activity. To the knowledge of the author, no attempt has been made to test this basic assumption. If it is accepted that intrinsic motivation is

a central component of leisure as a state of being (Iso Ahola, 1981; Neulinger, 1974), and if evidence is obtained to indicate that intrinsic motivation is adversely affected by a perception of time constraint, support will be provided for de Grazia's observations on leisure as an *enduring* state of being. It may then be desireable to proceed with a more direct analysis of sociological phenomena associated with leisure as an *enduring state of being*. The 'Rationale' section will elaborate on de Grazia's sociological concept. The review of related literature will address this concept in psychological terms for the purpose of formally constructing an empirically examinable hypothesis. For a discussion of the validity of such an interdisciplinary approach, see Appendix A.

2. Sociological Rationale

2.1 de Grazia's Leisure as an Enduring State of Being

" the life of leisure was the only life fit for a Greek. " (de Grazia, 1964, p. 21)

de Grazia (1964) draws on Aristotle's *Politics* and *Ethics*, and on Plato's *Republic* to construct the idea that leisure is a state of mind, descriptive of the whole of life rather than an activity or a state of mind descriptive of a period of time. According to de Grazia, leisure is an *enduring* condition, a state of mind, and not an activity[1]. According to de Grazia, play is not synonomous with leisure if it is done in order to recuperate from occupation, because it is done according to the demands of occupation. Leisure is freedom from the *necessity* that is characteristic of labor. A person may be at leisure whilst washing dishes, or playing golf or installing a tatoo. Leisure is by no means inactive, as it is "the basis of the free man's whole life" (de Grazia, 1964, p. 16).

If leisure is not an *activity* or a lack of activity, how then can it be identified? de Grazia cites Aristotle, in *Politics*, describing leisure as "having in itself intrinsic pleasure, intrinsic happiness, intrinsic felicity. Happiness of that order does not belong to occupation, it belongs to those who have leisure". Clearly leisure may be identified by the existence of certain metaphysical features characteristic of a particular state of mind. For Aristotle in *Republic* and Plato in *Laws*, the making of music is worthy of the term leisure because it is done in order to liberate the mind and for no utilitarian reason. Aristotle also refers to contemplation as the purest form of leisure because it is truly done simply for its own sake. Contemplation is leisure because it enables a person to disregard worldly activity as generally utilitarian. Although the

[1] The Concise Oxford Dictionary describes activity as 'exertion of energy: quality of being active'.

making of music and contemplation are activities that may be isolated by concrete temporal, behavioral and physical boundaries, they are referred to for illustrative purposes, indicating the features of experience that mark leisure.

This is a far cry from a simple 'free time' interpretation of leisure. If leisure is the "basis of a free man's whole life", then contemplation as activity done for its own sake is *not* an isolated activity, but is characteristic of *all* activity. de Grazia demonstrates this in describing what Aristotle means by *an end in itself*:

> When referring to leisure, an end in itself is a final end, and clearly not all goals are final goals, though the chief good evidently is. Therefore, if there is only one final goal, this will be what we seek; if there are more than one, what we shall seek is the most final among them. Now that which is in itself worthy of pursuit, we call more final than that pursued for the sake of something else, and that which is desirable not for the sake of something else we should say is more final than things that are desired partly for themselves and partly for the sake of some other thing, and *we call final without reservation that which is always desirable in itself and never for the sake of something else. Leisure stands in the last class by itself.* (de Grazia 1964, p. 15, emphasis added)

It seems clear that leisure in this sense is not restricted to an *activity* labelled contemplating. If contemplation is characteristic of a state of mind in which all activity is pursued for its own sake, leisure can assume an *enduring* characteristic, where *all* activity is done according to an underlying principle of freedom from necessity. That is, contemplation can be accomplished while eating or walking in a forest. Leisure as an *enduring* state of being may exist as long as all activities are bound together by the single characteristic of intrinsicality - activity done for its own sake. 'Free time', as a residual of work, does not fit into this definition because of its dependence on labour for its very existence. In this sense, free time is not free of labour. If activity that is done for activity's sake is undertaken according to the demands of an external agent, it cannot be leisure. de Grazia states that 'leisure is freedom from the necessity of being occupied. This includes freedom from the necessity to labor, but it could also embrace *any activity one finds necessary to perform* but would fain be free of" (de Grazia, 1964, p. 14-15,

emphasis added). This indicates that if one *finds it necessary* to shift from one activity to another, according to the demands of an external agent (even if each activity itself was done for its own sake), leisure as an *enduring* state of being does not exist

It seems that de Grazia distinguishes two characteristics of leisure as an enduring state of being. The first is that activity in isolation must be done for its own sake. Secondly, the transition between activities must be done for its own sake to enable an enduring characteristic. For *true leisure* to exist, one does not move into and out of this state; rather, leisure is a state of mind that pervades the whole of life and relates to a way of living.

2.2 de Grazia and the Philosophy of Time

> It is impossible to meditate on time and the creative passage of nature without an overwhelming emotion at the limitations of human intelligence (Whitehead, 1920, p. 73)

As this quotation indicates, the idea of time is complex and fraught with conceptual difficulties. Angeles defines time as

> ... a non spatial medium (realm, order) in which things change and events take place; that which is distinguished by the relationships of before and after, beginning and end, and which is inseparable from change; The measurable aspect of duration - a particular point, moment, period, portion or part of duration or of what endures.(1981, p. 297)

Common to all themes is that time is real (whether subjectively or objectively) and that people exist with or in time. Germane to the present discussion is the duality of a subjective and an objective time. It is argued here, that when subjective and objective notions of time are

imposed upon each other, de Grazia's enduring state of being is vanquished.

Henri Bergson in Time and Free Will (1910) holds the conceptual spatialization of time to be responsible for the denial of the possibility of a free will [1]. If time as it is experienced, can be divided into small equal units each representing a piece of existence and when added together make up the whole of a life, then there is no room for novelty. Each temporal experience is an appendage of the last, and therefore determined by it. We can only conceive of an objective time if we represent our perception of reality as being capable of division into juxaposed, spatialised homogeneous units that are external to us and uncontrollable. Such is an *objective* conceptualisation of time. In contrast to this, a *subjective* conceptualization of time is a perception of time as a whole inner duration, which allows the idea that existence can be a perpetual state of differentness, a heterogeneity that can be changed by the spontaneous exercise of a free will. A heterogeneous as opposed to a homogeneous duration is characterised by an uninterupted swirling of 'psychic states' as opposed to a juxtaposition of psychic states represented as homogeneous units.

A subjective conceptualization of time is compatible with de Grazia's view of leisure because an *enduring* state of being is admitted: If time exists as an uninterrupted swirling of 'psychic states' and duration is 'a heterogeneous simultaneity', then a 'state of being' per se, can be nothing but enduring from one inner moment to the next. Although activity itself may be obligated, the transition between one activity and another cannot be done according to some objective simultaneity (point in time). Using de Grazia's analogy, an artisan may sculpt a particular statue because she was commissioned to do so, but she may wish to stop sculpting for awhile and ride a surf board or bake bread or make love, and then, return to sculpting. On the other hand, an American executive may find herself unemployed if she were to undertake such activities during the course of the day while constructing a corporate finance package. The artisan recognizes no time other than inner duration, but the executive recognizes no time other

[1] For further discussion of Bergson (1910) and the philosophy of time generally, see Appendix C.

than objective duration and simultaneity. The artisan has complete control over time, the executive has little control over time. Both people may or may not have control over transition between one activity and another, as each may be required to fulfill an obligation such as an insistent spouse demanding to be spoken to, 'now'! However, for the artisan, transition between one activity and the other cannot be regulated *by an objective duration*, because it does not exist in relation to her perception of the temporal structure of her own activity. In the case of the executive, where activity duration exists in relation to an objective criterion (clock time), life is structured within it. According to de Grazia's reasoning, the artisan has leisure but the executive does not.

Mere knowledge of objective time is not detrimental to leisure. Piaget (1969) demonstrates that an understanding of objective time develops with general cognitive development.[3] It seems likely that even Aristotle developed cognitively along similar lines. However, when actions are allowed to be determined according to the temporal demands of others, the salience of objective time increases and choice regarding the temporal position of activity transition decreases. The activity *within* recreation duration may be undertaken 'for its own sake', but because a significant segment of life is regulated by others (work), the person undertaking this activity is not at leisure. The temporal obligation that is implicit in the designation of time intervals for activity makes leisure, as an *enduring state of being impossible*, irrespective of the *content* or nature of activity, or in what manner *specific* activity is perceived. If a person feels controlled in respect to the activity of *transition* between activities, then clearly leisure, as a state of being where activity is done for its own sake, *cannot* be enduring. The clock and its use to regulate the activity of people is the nemesis of leisure.

de Grazia laments the death of leisure in an industrialized society, and places part of the blame on time itself. The time he speaks of is the mechanized time used to co-ordinate people with machines, and people with people. In the chapters "Time Free of Machines" and "Leisure's Future", de Grazia demonstrates that time itself, if conceptualized in an objective

[3]See Appendix C.

manner, irrespective of the type of or intent of activity undertaken within it, is destructive of leisure. He states that:

> Technology, it seems, is no friend of leisure. The machine, the hero of a dream, the bestower of free time to men, brings a neutralized idea of time that makes it seem free, and then chains it to another machine, the clock. If we but say, "Free clocked time", the illusion vanishes. Clocked time cannot be free. (p. 325).

The problem with conceiving time as simply mathematical, flowing uniformly, embracing all objects and phenomena, linear and unidirectional, independent and universal, is that a sense of freedom is lost within it. de Grazia identifies two sources of obligation related to the way people live, inherent in the oppression of subjective time by an objective conceptualization of time. The first is a giving up of a personal or subjective time to some measurement of reality that bears little or no meaning to personal experience of duration, simultaneity or sequence. de Grazia's leisure, as a state of being, can only exist if a person's natural rhythm is allowed to direct activity. de Grazia says this may have been the reason for the identification of music by the Greeks as activity indicative of leisure.

The second source of obligation, inherent in conceiving of time as merely an objective reality, arises from the first. That is, the possibility that control over the transition between activities may lie in the hands of machines and/or other people. If time is an objective reality, (an hour is an hour and 6:30 p. m. is not 6:45 p. m.), subjective duration and simultaneity give way to spatialized, concrete chronicity. It is thus possible to mesh the gears of complex social interactions with precision, regularity and certainty.

> 'A man may claim, "I time myself to others for a second that I may be free later". He owns thus to giving up a part of his freedom as much as if he gave up part of his sovereignty. He can then argue about how much a part he gives up, but he cannot deny that clocks are everywhere in America and time referrals constant.' (p. 314)

de Grazia identifies perception of being obligated by time as an over-riding factor that distinguishes a leisurely life from an unleisurely life, by comparing the 18th century European farmer and artisan to the modern industrial American. He says, "The European farmer and artisan always worked hard, but with a fluctuating rhythm capable of taking wide variations within the beats. Clock or machine rhythm is different" (p. 315). The Europeans are considered to have exhibited leisure to a greater extent than the Americans because the Europeans experienced less pressure to do activity according to externally regulated schedules structured by objective time. In their case, *transition* between activities was done more for its own sake (or freely chosen) than is the case for modern day Americans who tend to move from one activity to another because the clock indicates that it is time to do so.

2.2.1 Summary

de Grazia used leisure as a term to describe a condition of the whole of life. He suggests that it is ridiculous to speak of 'leisure time' because a compartmentalized notion of time is envoked thus implying a sense of obligation in the transition between 'work time' and 'leisure time'. According to de Grazia, North Americans today do not experience leisure because their lives are led in a compartmentalized manner. Leisure relates to all of life and not just various segments of it. Compartmentalisation relates to the temporal structure of activity transition. Leisure cannot be enduring as a 'state of being' if transition from one activity to another is undertaken according to the requirements of a schedule which is externally regulated and structured by objective time.

Although each activity may be undertaken for its own sake (the fundamental characteristic of leisure), because the specific point in time of engagement in activity is externally determined, the *way* activities are combined must invoke a sense of obligation involving life's temporal structure. The temporal regulation of modern society may be held directly responsible for this sense of obligation. The type of time obligation that is imposed by

society and involves an individual's interaction with other individuals and society in general, is labelled 'socio-cultural time' (Sorokin, 1964).

2.3 Socio-cultural Time

Socio-cultural time embodies temporal concepts such as duration, succession and simultaneity as defined and embued with meaning *by* society and culture. Doob (1978) says that temporal judgments are made in every society because men are always confronted with certain conditions that *demand*, or at least facilitate, such judgments. In primitive societies, one is unlikely to find a conception of time that takes into account the rhythms of atomic matter as a benchmark of change. Rather, biological processes may be more prominent, or simply the attachment of regularity by a recognition of night and day, asleep and awake [4]. Associated with natural changes are social events or institutions which most or all persons within the society must observe. When the sun sets, when the rainy season begins, when the child reaches adolescence, when the adult is considered old, when someone dies, not only the natural fact, but also custom requires some alteration of behavior such as a prayer, a wake or perhaps the wearing of some garb for a particular duration.

Sorokin (1964) recognizes the major functions of socio-cultural temporal orientation to be the synchronization and co-ordination of one socio-cultural phenomenon with others and the *facilitation* and *reflection* of the interactive rhythms necessary for the functioning of any social system. Socio-cultural phenomena require adherence to some agreed upon rhythms that enable society to function efficiently in its own management. A society is made up of people and in order for interaction to occur *effectively*, a sense of socio-cultural time is developed by members of a society. However, this varies from one culture to another and even from one part of a culture to another (Valadez & Clingnet, 1984; LaRossa, 1983; O'Rand and Ellis, 1974). To be part of a society, people will be *bound* to its temporal conventions and rhythms.

[4]See Appendix B for a discussion of time as differentiated from socio-cultural time.

Zerubavel (1981) constructed a paradigm of the *structure* of temporality in the social milieu and identified four socio-temporal parameters in the way we organize situations and events. They are: sequence structure, duration, temporal location and rate of recurrence. His central thesis is that the social milieu has formed artificial temporality as a means of control and regulation.

Zerubavel indicates that some events have a logical sequence such as food preparation preceding eating, that are irreversible from a logical or technical standpoint. However, some patterns are reversible, and only occur in a particular sequence because the sequence has been artificially imposed. Why is it that we eat soup before a meal rather than after or during? Why is it that marriage follows rather than precedes courtship? The concepts of fast and slow are often applied to the skipping of these artificially imposed steps. A person is considered to be fast if he/she has taken only three years to complete a four-year degree program by studying through summer and thus skipping traditional holiday breaks. A young man is considered fast if he has proceeded to sex on the first date.

The idea of fixed duration is also artificially imposed, except in the physio and biological temporal reference patterns. For example, a pregnancy is of a fairly fixed duration. What about the *length* of time we spend at a friend's house? How do we know that we have been there too long? Convention would tell us that perhaps a few hours might be adequate. If we leave before an *appropriate* period has elapsed then we are leaving too early. If we leave after an appropriate period has elapsed, then we are leaving too late. In both these cases, the duration of interaction is inappropriate to the interaction. Although duration is felt to be somehow intrinsically associated with an activity, it is, in most cases, simply conventional association.

Temporal location is the concept of a time of day, or the time of year such as summer time or winter time. Except for broad physiological patterns, such as seasonality or night and day, the act of fixing temporal locations around activity is arbitary. Fixing locations allows us

to schedule and plan activities, and occurs in connection with sequence and duration. The locations of after and before refer to the sequence of events. The location of 6:00 a.m. is meaningless except in relation to its sequential implication. Six o'clock is three durations of one hour before 9:00 a.m. at which point work activity is scheduled to commence. Duration is simply the concept to describe the interval between two temporal locations. By using a clock to determine temporal location it is possible to use an interval level of measurement to regulate the sequence and quantity of activity. Of course, it is not necessary to use a clock for this purpose. A canoeist may decide that eight hours of paddling a day will be required to cover a certain distance. These eight hours may be calculated by reference to the stars or the position of the sun. The designation of eight durations each of an hour, implies the specification of at least two temporal locations -- a beginning and an end. In the case when the canoeist varies the duration of activity, temporal locations are *still* implied by the concept of start and stop, beginning and end.

Temporal location is independent of its calculation and designation. It only exists in perception, by its reference to activity sequence. By using standard methods of temporal location specification, we are able to project activity sequence and quantity, cognitively overriding a subjective experience of time. That is, we eat at *dinner time* which is at 6.00 p. m. and not necessarily when hungry. We go to bed when it is late and not because we are tired. The proper times are socially defined, we can be too late or unpunctual only in relation to a social expectation. Eight o'clock in the evening may be an agreed upon convention to allow an interaction to take place. If it is missed, the interaction will be affected by too late or too early.

Moore (1970, p. 15) says that the imposition of temporal location on infants' activity is one of the first processes of socialization that people undergo. Moore notes in his consideration of temporal location that the distinction between time as a *boundary condition* and time as a flow of events, is meaningful in social interaction. It is temporal location, as a boundary condition, that allows a work/leisure dichotomy to exist within *one* life style. It allows us to allocate *segments* of our existence to competing interests such as family, education,

factory and other institutions.

Temporal conventions in society involve a rhythmicity or regularity. Temporal regularity helps us to develop a sense of orderliness and enables us to plan and anticipate. The complexity and sheer size of modern society has made it necessary to base these rhythms on something that *all* can at least adhere to if not understand. Cohen (1966) comments:

> Industrialized societies need a finer measure than can be given by social events or by bodily rhythms such as the growth of hair or nails or the menstrul cycle. It is not enough to say: "I need a haircut, so it must be time to pay my rent". Hence, the need for a calendar subdivided into equal units regardless of social or private rhythms. (p. 273)

The calendar is an expression of rhythm and is responsible for the creation of most of the temporally regular patterns through which groups manage to introduce orderliness. The Benedictine Monks invented the honourarium to regulate daily activity. Essentially, this was a littergical rule that placed artificial temporal structure, regularity, recurrence and location into daily activity. The first monastic clock was essentially horalogical, that is, to tell the hour of the day in order to ring the bell. The word *hour* is derived from the latin word *hora* and is thus conceptually directly linked to the honourarium convention. The hour, the day, the week are all artificially imposed concepts to give schedule its shape:

> Try to represent what the notion of time would be without the processes by which we divide and measure it. .. This is something unthinkable! Now what is the origin of this differentiation (of time into days, weeks, years)? It is not so much our personal experience because it is not *my time* that is arranged; it is time in general. .. That is enough to give us a hint that such an arrangement ought to be collective. The divisions into days, weeks, months, years, etc. correspond to the periodical recurrence of rites, feasts, and public ceremonies. A calendar expresses the rhythm of the collective activities, while at the same time its function is to assure their regularity.(Durkheim, 1915, page reference not obtained)

These qualitative aspects of time are not admitted in a linear mathematical calculation per se

but are made possible and given greater precision by application of an interval level of time measurement. Sorokin (1964) identifies several inadequacies of time conceptualized as purely mathematical and quantitative. Chopping human existence into minutes and hours divides "indivisible durations of process and through dissolving the living unities of socio-cultural time in the ocean of mechanically identical units of mathematical time" the quality of activity is diminished and emphasis is turned to a *quantity* of activity. Ian Robertson (1975) related a situation where mathematically, quantitatively calculated time was ignored in order to maintain the *wholeness* of experience. The context is sport in Australia and the culture is that of the Pitjantjatjara Aboriginal people.

> In considering sport played by the adults, the popularity of one game in particular is most apparent Australian Football. The game is played Pitjantjatjara style, a bone dry earth oval, bulldozed and graded out of the scrub. Four posts are implanted at either end and the scene is then set for a game. The weekend becomes a family outing and cars head off towards the venue. However, stops are more the rule than the exception and mechanical breakdowns become a feature of the hundred mile or so journey. Any unlucky kangaroo to be caught between the sights of a .22 rifle would also affect the arrival time of the group. Such delays en route preclude any regular starting time for the matches. In any case, the basic reason for the game is not one of competition or sport but socializing again with relatives and friends.

When temporal locations are fixed by a clock rather than mere sequentiality of events, restrictions are placed on the type of activity that can be undertaken. For example, if Wendy only had one hour in which to practice her piano before leaving the house to catch a bus, she may choose a piece of music that will require one hour's worth of attention. On the other hand, if there was no requirement to catch a bus, she may not fix a particular temporal location by the clock to begin a new activity. Although some event may be planned to begin after piano practice, its temporal location is not set by the clock, allowing perhaps several pieces to be played. Although mechanical time may simply be an artifact used to regulate events, there is a quality of experience that is lost by mechanical time regulation. Consider the difference between a student writing an examination about intrinsic motivation in comparison

to the contemplator sitting alone on a beach musing about the nature of undertaking activity for its own sake. Both people are possibly thinking of the same thing, yet one is stringently required to do so in the space of three hours. The 'duration profile' (Zerubavel, 1981, p. 45) of each will be different, one will be more spontaneous than the other. The student will not be able to leave the examination room until at least one hour has elapsed, and *must* leave the examination room when three hours have elapsed. The contemplator, on the other hand, may leave the beach whenever he wishes, to walk amongst the woods or simply sleep. Zerubavel (1981) summarized this position:

> Whether it is imposed on individuals from without or within, the schedule obviously represents an interference with one's spontaneous wishes regarding when to do things, how often, how long, and in what order. The rigid planning that it involves often does not leave much room for improvization. The pre-arranged balance among our activities in terms of time entails a general rigidification of the proportions of our involvement in each of them. Even if we prefer playing with our children to working, our daily schedules simply do not allow that. (p. 49)

Adoption of conventions to efficiently regulate large scale social interaction is accomplished at a price. Gioscia (1972) depicts a political paradigm of temporality. He astutely notes that there is something about the nature of time that has a profound effect on the way humans perceive the world. Time is commonly represented to us as a unidimensional characteristic of change in a deterministically constructed homogeneous medium. When this concept of time is imposed by society it is alienated from our own life synthesis as it becomes carved up into a saleable quantity. Gioscia recognizes the existence of a reality of time apart from a traditional linear concept and sees its destruction to be resultant from reactionary, bourgois materialism:

> ... when the workers time is measured by a production schedule over which he has no control he is alienated from his "natural" time. When the norms no longer or too suddenly define "normality", anomie appears. (p. 84)

The placement of time linearity on experience leads to an oppressor - oppressed dichotomy. The oppressed are those whose condition is described as 'Catachronic' or below time. They perceive themselves unable to escape the yoke of temporal frames surrounding experience. On the other hand, the 'Epichronic' consider themselves to be timeless and change is simply a manifestation of whimsical desire. They have power over machinery and 'the silly movements of the clock are quite irrelevant'.

The second temporal condition, described by Gioscia is 'Anachronism'. Anachronism is the state of dissynchrony with expectation. That is, 'Anachronistic' people feel themselves to be perpetually behind the pace, and 'Metachronistic' people perceive themselves to be perpetually ahead of the pace - usually in order to avoid slipping behind. Of course, this distinction implies a further category, of 'Synchronicity' - the right pace. Gioscia argues that synchronicity only exists at all because of the imposition of an objective measurement procedure inherent in clock time and further, the existence of a 'right pace' implies the existence of a 'wrong pace' which is inherently oppressive. The third condition is the rate of movement within each of the previous two. Gioscia asserts that religion and the appeal to the mystic offers a method of *temporarily* escaping the enforced drudgery of catachronism. His suggestion is however that religion may simply be a tool ~~of~~ the establishment to allow slaves a temporary respite from temporal chains in order to avoid the possibility of revolution. He notes that 'acid trippers' also vent their frustration by chemically climbing to epichronia.

Banks (1983), in his illustrative commentary on social regulation by temporal parameters, discusses the 'drop-out' subculture. His thesis is similar to that of Gioscia in that people appear to be opting out of hectic temporalized society (climbing out of catachronia) and lead a more spontaneous existence (epichronically) in small rural settings where an Anachron/Metachron dichotomy becomes irrelevant. The clock has no place in this subculture.

There are many institutions that act systematically to schedule lives. Moore (1969) comments on one of the most significant institutions, the administrative organization:

> The temporal features of administrative organizations as in other social systems, include time as a finite supply or condition and the various aspects of sychronization, sequence, and rate of activities. (p. 87). .. " Synchronization and sequence of action's are intrinsic and prominant elements in any system of co-ordinated specialization. The extreme case of finite time, or at least the extreme case that affects large numbers of workers, involves the intermeshing of human and mechanical processes. Since, in the total ogranization, each action is indispensable and must be performed at the right time, sequence and rate, failure on any score is disruptive of the whole process. (p. 93)

The idea being developed to this point is that de Grazia's leisure as an enduring state of being is not possible for people living in a society that requires the sychronization of events according to a clock The reason for this is that all activity must be undertaken in reference to the activity and demands of other people. *Recreation* experience may be entered into, but when it is terminated due to the expiration of a time interval set according to the synchronization of other events, the experience is *not* part of leisure. If temporal conventions are closely related to natural rhythms and do not override a personal sense of change, then de Grazia's leisure is possible. In this case the *transition* from one activity to another may be undertaken for its own sake. The temporal transition itself has real meaning and value according to conventions that are reflective of personal rhythms. Any specification of temporal points of reference for the purpose of interaction are likewise linked to experience that is common to the interacting parties, yet personally significant. Living in such a temporally liberal manner admits leisure as an *enduring* state of being. All activity, including transition between activity may be done for its own sake. On the other hand, when social interaction is so complex that an abstraction of thought to encompass an objective phenomenon (that is common to all but personally real to none) is required for temporal co-ordination, then de Grazia's leisure is easily vanquished. Activity is regimented to some external rhythm and transition from one activity to another is accomplished according to this rhythm ... not for its own sake.

2.4 Summary

de Grazia's leisure is prevented by a *perception* that the temporal characteristics of activity (namely the duration and simultaneity or temporal location that are implicit in all activity) are externally regulated, enabled by the dominance of an objective sense of time over a subjective sense of time. This perception is termed *time obligation* and does not relate to the content or type of activity undertaken within time, but relates to the way time itself is perceived.

The relationship of time obligation to de Grazia's leisure as an enduring state of being where activity is undertaken for its own sake, is to be found principally by reference to the term *enduring*. Leisure cannot be separated from work, because it pervades work. If the activity referred to as work is done purely because it is enjoyable and activity outside of work is undertaken in a similar manner, leisure would *seem* to be a pervasive state of being. However, if this fictitious (and fortunate) person is required to work for eight or even four hours a day, it is obvious that transition between one activity and another is *not* done for its own sake, but rather according to the demands of some external agent. Leisure cannot be *enduring* while transition between activities is not done for its own sake.

It would appear evident that social institutions can act systematically to prevent leisure as an enduring state of being. However, this rests on the assumption that when objectively structured time schedules are placed around activities, the desire to do those activities and to move between those activities is not done for its own sake. This is often stated but never empirically supported. The following review of literature is undertaken in order to construct a hypothesis employing operational variables that are compatible with de Grazia's concept, for the purpose of empirically testing the above assumption.

3. Review of related literature

3.1 The Relationship of Intrinsic Motivation to Leisure

> Leisure has one and only one essential criterion, and that is the condition of perceived freedom. Any activity carried out freely, without any constraint or compulsion, may be considered to be leisure. (Neulinger 1974, p. 15)

Neulinger (1974) takes the approach adopted by de Grazia and then attempts to place "leisure as a state of being" into the framework of a psychological construct utilizing perceived freedom as the central tenet. Neulinger views intrinsic motivation to do activity as a central component of perceived freedom (and hence leisure), but makes little attempt to further clarify the characteristics of intrinsic motivation itself. He states that:

> Within the context of leisure, intrinsic motivation relates to the ideal of leisure in the classical sense: an activity done for its own sake. Extrinsically motivated behavior has less the flavour of leisure, as it may not even be perceived as completely free behavior. It is done *in order to*, and, in that sense, it loses some of the quality of *perceived freedom*. (Neulinger 1974, p. 17)

Neulinger recognizes that intrinsic motivation is not the only characteristic of perceived freedom as related to leisure. Leisure as de Grazia (1964) and Peiper (1963) described it, has higher intellectual and spiritual qualities. However, as a variable to be utilized in a scientific study of leisure, intrinsic motivation is a suitable characteristic of leisure to be examined.

Mannel (1980) agrees with Neulinger that intrinsic motivation is central to the experience of leisure as a "state of being" and adds that intrinsic/ extrinsic *motivation*

processess are independent variables that can facilitate or extinguish the *characteristics* of leisure. To Mannel, leisure experience is:

> ... a transient psychological state, easily interrupted, and characterized by a decreased awareness of the passage of time, decreased awareness of the incidental features of physical and social surroundings and accompanied by positive affect. (Mannel 1980, p. 76)

Other writers specifically attempting to organize the characteristics of leisure for the purpose of operational definition and measurement have mixed intrinsic motivation with affects and cognitive perceptions. Shaw (1984) lists enjoyment, freedom of choice, relaxation, intrinsic motivation, other evaluation and self-evaluation as characteristics of leisure, specified in in-depth interviews with Halifax residents regarding "free time" activities. These factors were seen to be highly *correlated* with each other and discriminant analysis showed "Freedom of Choice" and "Enjoyment" to be factors most able to predict a situation described as leisure as opposed to non-leisure. Witt and Ellis (1984) view freedom of choice and enjoyment as separate from intrinsic motivation, rather than as conditions emerging from intrinsic motivation. Witt and Ellis (1984) developed a battery of questionnaire items for the purposes of measuring "leisure functioning", utilizing perceived freedom as leisure's central component. Perceived freedom was operationalized as consisting of four factors. Perceived competence, perceived control and playfulness were measured by one scale each while intrinsic motivation was measured by two scales - a 'Leisure Needs Scale' and a 'Depth of Involvement Scale'. The development of the latter two scales reflects the view that intrinsic motivation is the extent to which individuals engage in certain behaviors for intrinsic reasons such as pleasure, curiosity or relaxation. Witt and Ellis attempted to address cognitive, affective, need (tissue deficiency related drive) and behavioral aspects of perceived freedom. By using the term "intrinsic motivation" to describe the affective and need components of perceived freedom, they have

conceptually separated intrinsic motivation from the components of perceived control and perceived competence.

Graef, Csikszentmihalyi and Gianino (1981) considered that an attempt to equate an experience of leisure with intrinsic motivation was valid[5]. They designed their study using the Experience Sampling Method [6] to investigate when and where in daily life people tend to experience intrinsic motivation and to explore the relationship between a person's frequency of engaging in activities for their own sake, and his or her sense of well-being as indicated by level of happiness and by feelings of competence. In this study Graef et al. examine the relationship between perceived competence and perceived happiness, and intrinsic motivation, thus separating the former concepts from the latter for the purpose of clarifying the relationship. Here it is evident that perceived competence and happiness were considered to be *criteria* of intrinsic motivation.

Attempts to use intrinsic motivation as an operational parameter of leisure experience have been varied and often contradictory. Is intrinsic motivation an "umbrella process" reflecting a perception of competence, freedom from constraint and pleasure, which are all characteristics of leisure? Is intrinsic motivation an affect or perception in itself set side by side with other affects and perceptions to represent leisure? Is perceived freedom a characteristic of intrinsic motivation or vice versa? In order to relate intrinsic motivation to leisure for the purpose of this paper, a review of various conceptualizations of intrinsic motivation as an operational research variable will be presented.

Intrinsic motivation has been thought of as relating to a class of behavior, which displays the central characteristic of being rewarding in itself. Intrinsic motivation has also been said to relate to the task, the situation and even an innate characteristic that disappears with

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[5] The term "leisure" was separated from intrinsic motivation for the purpose of conceptual clarity because common conceptions of leisure usually involved reference to *recreation* activity rather than to life activity in general.

[6] A transmitter emitting signals at random time intervals, activated a "beeper" carried by respondents who, at that time, recorded responses to questionnaire items.

age. Deci (1975) and Lawler and Hall (1970) focus on rewards that accrue as a result of behavior. Such rewards are the perception of self-determination and competence. Florey (1969) considers an individual to be intrinsically motivated if the task itself provides satisfaction and pleasure. "Play," is described by Florey (1971) as behavior that may qualify as being intrinsically motivated if it is self rewarding, selective and persistent *and* if the play task itself is the source of these characteristics. Although Florey (1971) and Deci (1975) both focus on intrinsic motivation as represented by behavior and the rewards which that behavior itself provides, they differ fundamentally as to the origin of intrinsic motivation. Deci asserts that intrinsic motivation " ... is a basic motivational propensity which is continually present and will be the primary motivator of behavior unless some other factor interrupts the process."(p. 100). In this case, all people are intrinsically motivated and the nature of a task and its context may serve to either continue, disrupt or re-instate intrinsic motivation. Florey on the other hand, sees all people as potentially intrinsically motivated, but this is not realized until contact is made with a catalyst task.

Attribution theory, takes the position that people *decide* whether or not they are intrinsically motivated according to the situational context of behavior. An endogeneous attribution is made when the reason for an action is "attributed to itself". Further, an *endogeneous* attribution will infer the existence of subjective freedom whereas an *exogeneous* attribution will promote the inference of compulsion attendent on the action's performance (Kruglanski, 1978, p. 88). If an action's *reason* or goal is separated from its identity then an exogeneous attribution is likely to occur. For example, if the goal of an activity were defined as "to play" and an identification of activity were made "walking" then the identification is instrumental and *separate* to the goal. If the activity had been similarly described as playing, the goal would match the identity of the activity and an endogeneous attribution made: that is, activity done for its own sake. An action's reason or goal is formed by reference to instantial and historical evidence. Although the attachment of a reason to an an action is clearly associated to its endogeneity, identification must take place before an attribution is made.

Consider the following example. Wendy meets Alan walking along the street and says "what are you doing here? " -- a request to identify the goal of the action of walking on the street. Alan replies "I'm walking along the street". Wendy would make an endogeneous attribution based on 'instantial evidence', Alan's remarks, her own visual observation and historical interpretation (knowing that Alan does occasionally walk on the street in order to simply walk on the street). The goal is inseparable from the identification of the activity. Alan's attribution of his own behavior would also tend to be endogeneous at the time of recognition of goal, and activity identity. If Alan had replied "I'm going to buy some cheese", the attribution made would be an exogeneous one as the reason is separate from the goal.

Although *both* Deci and Kruglanski concentrate on a class of behavior termed intrinsically motivated behavior, *and* on cognition of that behavior, they differ fundamentally as to the operation of that cognition. Deci and Ryan (1980) note that "the general attribution approach ... suggests that people make post behavioral, cognitively determined inferences about their motivational or affective states after observing their actions" (p. 44). Cognitive evaluation theory describes behavior in a different manner. The addition of rewards "calls into play different motivational subsystems" (p. 44), and behavior *results* from this. Extrinsically motivated behavior is evident when "the given behavior becomes instrumentally linked to the reward and tends not to be performed for its own sake". The fundamental variation in Deci's cognitive evaluation theory is that motive precedes cognition and cognition directs behavior. Cognition does not direct motive and behavior does not direct cognition.

Other approaches emphasize characteristics of experience rather than interpretation of behavior. Graef et al. (1981) take the position that "intrinsic motivation must be identifiable through *people's* reports of their subjective experience". Koch (1956) focuses on a description of how a person would feel while intrinsically motivated; a person would be able to tolerate thirst and hunger (that is, these would *not* be salient) and the affective state of the individual should be described as mild to strong euphoria, energized but peaceful. There must also be absorption in the activity, commitment to the activity and little perceived anxiety.

This description of experience is remarkably similar to Csikszentmihalyi's (1975) concept of Flow. Flow is an experiential state which occurs when task challenges match an individual's skills. At this point, anxiety and boredom are absent. Flow is characterized by absorption in an activity to the point where the external environment is ignored and a sense of objective time is lost. Flow is also characterized by the experience of immediate feedback from the activity, and the presence of generally positive affect. If intrinsic motivation is analogous to Flow then intrinsic motivation is an experiential state.

Suchman (1971) equates the term 'opensure' with intrinsic motivation. Opensure in opposition to 'closure' is a motivation system operating during motivation to "experience, to sense, feel, think, explore, or play" and operates in the absence of physical pressures, socio-ego pressures, or cognitive-closure pressures (pressure to make sense of or achieve solution to incongruity). Intrinsic motivation is a desire to do something simply because it is interesting and stimulates curiosity. Berlyne (1958) states that a desire for stimulation *partly* explains intrinsic motivation, but only as a motivation that leads to the attainment of rewards inherent in the task. Here curiosity motivation has two forms, it may refer to the specific attributes of the task or to a more general desire for diversity and variety. Cooper (1973) defines a desire for stimulation as one of three major motivations representative of intrinsic motivation. A desire to maintain consistency of attitude and behavior and a desire to initiate a significant impact on the environment (effectance) are also cited as intrinsic motives. In order for a person to be intrinsically motivated while performing a task, the task must bear characteristics that can satisfy the requirements of each motive. According to this perspective, interest initiated *within* the individual, rather than within the task, is of primary importance to intrinsic motivation.

Several writers have examined intrinsic motivation as something that varies with psychological development. It has been noted that as people grow older, the propensity for intrinsic motivation decreases. Elkind (1971) attempts to explain the disappearance of intrinsic motivation in adults by using a 'content of thought' and 'form of thought' dichotomy. The content of thought refers to memory content facilitated by thought *form* structures. The

development of thought form structures such as linguistic, perceptual and psycho-motor abilities is accomplished by "cognitive growth cycles, intrinsic motivation and the formation of mental structures". Elkind differentiates between the simple acquisition of knowledge "which is concerned with extrinsic motivation and with the acquisition of mental images" and learning resultant from curiosity which is intrinsic in nature and aids the development of cognitive processes (1971, pp. 26-27). The idea is that when cognitive *structure* growth slows or ceases (in reaching maturity) intrinsic motivation as a growth catalyst is no longer needed and therefore no longer present.

A further point should be made regarding a developmental approach to intrinsic motivation. Some individuals will be at a different developmental level than other individuals of the same age, sex, social class and shoe size. Therefore, one individual may appear to be more intrinsically motivated than another to do a task at any given time. This implies that intrinsic motivation is a rather stable personality trait rather than a motivational subsystem that can be interupted by the presence of salient external factors. Harter (1982) conceived motivation as a stable orientation that may be either intrinsic or extrinsic and related to various "domains of experience". In her orientation, she placed major emphasis on the importance of the desire for perceived competence which was based upon White's (1959) "effectance motivation". A motivational "orientation" may be general or related to specific classes of behavior (domains). Harter identified five domains in an educational context: (a) learning motivated by curiosity versus learning in order to please the teacher; (b) incentive to work for one's own satisfaction versus working to please the teacher and get good grades; (c) preference for challenging work versus preference for easy work; (d) desire to work independently versus dependence on the teacher for help; and (e) internal criteria for success versus external criteria.

3.1.1 Summary

It is clear that there exists little commonality in approaches to the definition of intrinsic motivation The most outstanding points of similarity gleaned from this literature are that

intrinsic motivitation refers to "activity done for its own sake" and that extrinsic motivation refers to activity done for some other reason. Intrinsic motivation is also consistently described as a process that leads to perceived self-determination and various other perceptions and affects, and that the operation of an intrinsic motivation process arises *with* interaction with an environment. However, there are divergent views as to whether the motivation process is initiated by an individual's innate sense of curiosity or whether characteristics of the task itself stimulate intrinsic motivation. Opinion is also divided as to whether intrinsic motivation is a stable "orientation" or whether it might be disrupted by salient external factors.

The various concepts of intrinsic motivation may be represented graphically as displayed in figure I. The relevent question for the current discussion is, what conceptualization of intrinsic motivation would be most suitable to address an assumption relating to de Grazia's " leisure as an enduring state of being"? More specifically, what conceptualization of intrinsic motivation would be most suitable for use in a study of perceived time obligation?

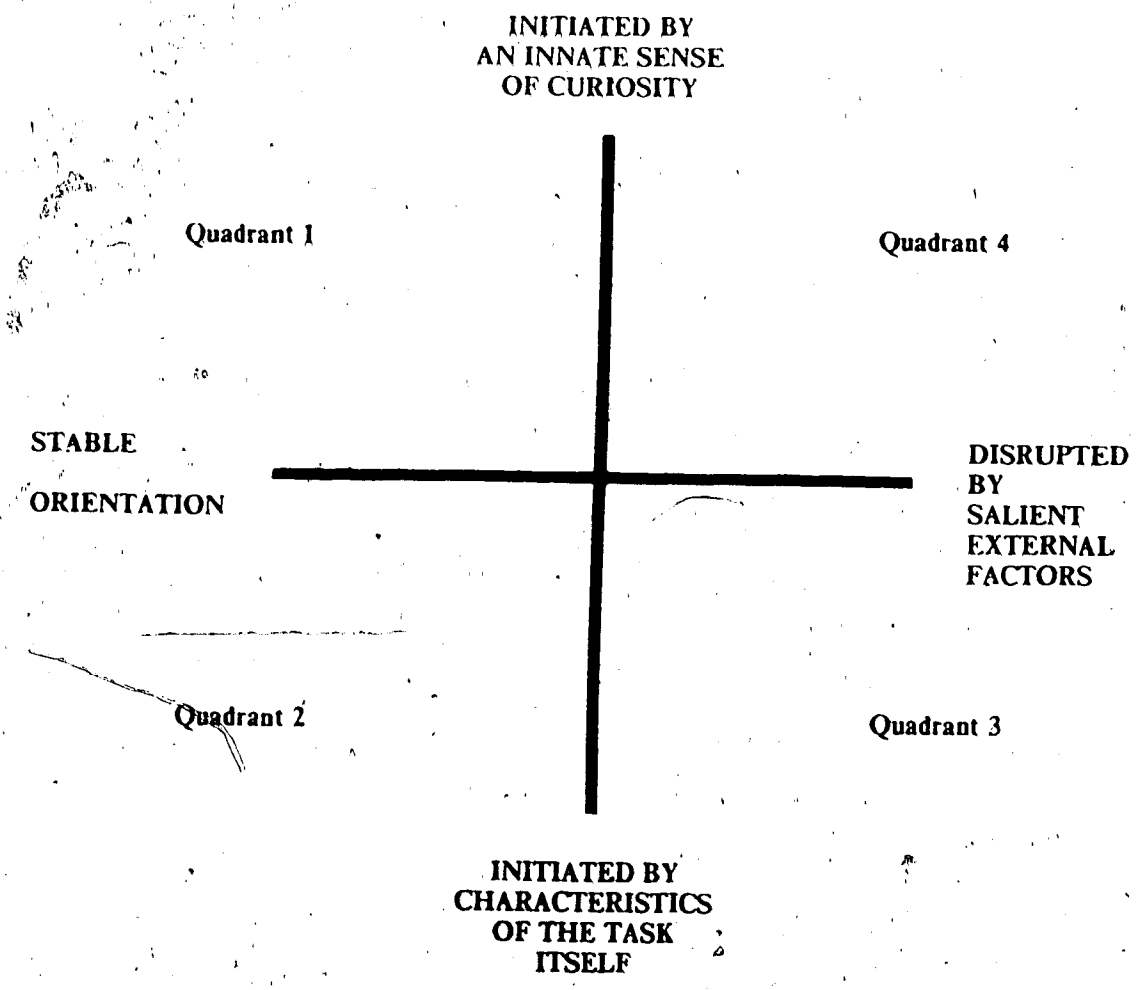
Perceived time obligation is conceptualized as resulting from the temporal arrangement of the socio-cultural environment. That is, when the temporal arrangement of activities is perceived as objective, externally regulated and salient, perceived time obligation is present. Because perceived time obligation arises from external sources, any effect that it may have on intrinsic motivation must be considered to have arisen from *external factors*. Leisure as an enduring "state of being" requires that activity be done for its own sake" constantly, irrespective of the type of tasks that are undertaken. This indicates that a concept of intrinsic motivation to be used in an operational definition of leisure should be characterized by *self initiation* rather than task initiation.

With reference to figure I, the concept of intrinsic motivation selected for the purposes of this study should bear characteristics represented in quadrant '4': that is, where intrinsic motivation is dependent on the salience of external factors, and is a process that leads to various perceptions and affects of which self-determination is central. Deci's (1975) cognitive

evaluation theory of intrinsic motivation has these characteristics and research using cognitive evaluation theory has developed effective research methods. Before proceeding to a discussion of the present study in terms of Deci's analytical framework, a broad outline of Deci's cognitive evaluation theory in general will be presented.

Figure 1.

Concepts of Intrinsic Motivation



3.2 Cognitive Evaluation Theory

Cognitive evaluation theory and its relationship to intrinsic motivation was initially formulated by Deci in his 1975 book entitled "Intrinsic Motivation". This publication followed years of research centered around the effects of external rewards on intrinsic motivation. After completing two experiments and one field study, Deci (1971) reported that after money was used as a reward, intrinsic motivation tended to decrease; yet following verbal reinforcement, intrinsic motiviation tended to increase. In order to reconcile the apparent inconsistency between these results and equity theory (which posits that people will work harder if overpaid in order to bring about consistency between effort and reward) Deci (1972) further examined the effects of externally mediated rewards. His conclusion was that rewards can have both a controlling and an informational aspect. The controlling aspect of a reward will act as an external motivator. The informational aspect of a reward will act simply as a performance feedback mechanism possibly leading to a confirmation of autonomous activity. Ross (1975) manipulated reward salience and found that the greater the salience of an externally mediated reward the greater the detrimental effect on intrinsic motivation.

Deci (1975) attempted to account for the destructive effect of rewards on intrinsic motivation in his theory of cognitive evaluation. He briefly summarizes the cognitive evaluation aproach:

> This approach asserts that humans process information and make choices about what behaviors to engage in. Implicit in this is the assumption that cognitions are causal determinants of behavior--an assumption which contradicts behavioral theories. People will choose behavior that will lead them to a desired end state. (p. 95)

Deci asserts that stimuli input to the cognitive process that directs behavior, come from the "external environment, memory and internal factors such as blood sugar level etc. " (p. 96). He also asserts that an awareness of potential satisfaction must be possessed before a

behavior is undertaken. For example, while walking through downtown Sydney, Wendy saw an ice-cream parlor (environmental stimulus). An expressed desire to eat an ice-cream would represent an awareness that a positive experience could be obtained from such an act. Alternatively, if Wendy had just eaten six ice creams, such an environmental stimulus may interact with internal factors such as nausea, and a cognitive process taking this into account would probably not perceive eating another ice cream to be a source of future satisfaction. Once an awareness of potential satisfaction is established, a goal is established from a set of alternatives. This is followed by goal-directed behavior and finally a cognitive evaluation of goal achievement-satisfaction or lack of satisfaction.

According to Deci, intrinsically motivated behavior is undertaken in order to obtain and *maintain* a perception of self-determination and competence. Extrinically motivated behavior, on the other hand, is undertaken in response to a primarily homeostatically oriented "drive". Deci asserts that the difference between intrinsically and extrinsically motivated behavior also lies in the perpetual nature of intrinsic motivation and the interceptive nature of extrinsic motivation. Intrinsic motivation:

> "is a basic motivational propensity which is continually present and will be the primary motivator of behavior unless some other factor interrupts the process." (1975, p. 100)

Affect holds an important role in Deci's model as it does in McClelland's (1953) affective arousal theory. Deci views affect to be both a causal antecedent to an expected future affect or satisfaction *and* a disruptive influence to ongoing behavior. McCelland, however, sees emotion or affect to be a direct cause of behavior. The basic variation lies in the omission of higher cognitive processes from McClelland's model, while Deci gives them a central role in explaining motivational behavior. Simon (1967) notes that interruptive affect must be sufficiently salient to operate.

To construct the process of goal selection, Deci draws on two models of expectancy. Atkinson's (1957, 1964) theory asserts that the tendency to approach an achievement situation, related to a motivation for competence, is the result of tendencies to approach success and to avoid failure. Definition of failure and success is drawn from an internalized standard of excellence. The motivation to achieve is a stable personality characteristic, and the probability of success, or one's *expectancy* of achieving a goal is based on past experiences and is inversely related to the incentive value or "pride" value of success. The same terms relate to each other for failure when a particular tendency toward a goal is examined or calculated. Fear of failing to achieve a goal in a given situation takes on a negative characteristic countering the positive success tendency characteristic.

The concentration above is on a cognitive evaluation of a desired future state. That is, action is cognitively calculated and goals evaluated for probability of achieving success or avoiding failure. Activity is undertaken according to goals set to experience competence. Deci asserts that the basis of this desire is a neurologically located need.

In contrast, Vroom's model (1964) is used to determine the relative valences of different actions for achieving further outcomes. Expectation is simply a summation of probability estimation that first-order outcomes will lead to the attainment of expected second-order outcomes. Here focus is primarily placed on valence determination for second order outcomes and mere probability assigned to the first order outcomes. That is, first order outcomes are not considered in *valence assignment* indicating that they are of secondary consequence compared to the objectives contained in second order outcomes. The motivation to action is that we *do* in order to *have*. ***The motivation to action is other than the experience derived from that action.*** Deci uses this approach to explain the operation of an extrinsic motivation subsystem. Intrinsic cognitive evaluation would place valence and probability on first order outcomes, and not even recognize the reality of second order outcomes. However there is an apparent contradiction in the way Deci describes "extrinsic motivation". On the one hand, he speaks of a dichotomy between "behavior motivated by intrinsic needs" and behavior

motivated by primary drives or extrinsic needs -- e.g., food, water, which "replace deficits in non-nervous system tissues" (1975, p. 101). On the other hand he speaks of "extrinsic motivation" (1975, p. 114) relating to a concentration on the instrumentality of one goal to another, and "intrinsic motivation" relating to the expectation of achievement affect. The solution to this apparent contradiction lies in the nature of reward. A goal is seen as distinct to a reward via the mechanism of instrumentality. A goal is pursued to obtain a reward. In the former case above, activity is seen to be extrinsically motivated due to the pursuit of a reward *outside of the individual* driven by tissue deficiency. Goals are set to achieve external reward. In this case, activity is undertaken in response to a goal set to achieve an *external* reward, i. e. another goal. Deci himself says that "extrinsic rewards are the external consequences of goals".

From this discussion, it is apparent that extrinsic motivation is motivation related to goal setting for rewards that are extrinsic to the behavior undertaken to achieve such rewards, while intrinsic motivation is motivation related to goal setting for rewards that are intrinsic to behavior undertaken for reward achievement. The focus is on the nature of reward, inward rather than vice-versa. Deci states that goals take on valence in accordance with the rewards *either affective or extrinsic* -- which accrue from the attainment of the goal (1975, p. 119). If affective rewards are more valent, then a goal will be established from an intrinsic motivational sub-system. If extrinsic rewards are sought, then a goal will be established from an extrinsic motivational subsystem. Goal selection will precede behavior. However, goal directed behavior will change with a changing awareness of potential satisfaction (shifting the goal focus and possibly the intrinsic/extrinsic valence of reward), attainment of a goal (leading to a new goal formation), rationalization of potential satisfaction by satisfying, and negative affect (such as discouragement and impatience) caused by performance feedback. The awareness of potential satisfaction is the cognitive element in continued behavior sequence. If more satisfaction for an activity is perceived then behavior will continue. If further satisfaction is not perceived, then behavior will discontinue.

Intrinsically motivated behavior will exhibit a pattern of shifting satisfactions. As one satisfaction is gained, attention will either shift to an activity offering further satisfaction or change some element of the present activity to increase its potential satisfaction. Termination of behavior does not necessarily indicate termination of an awareness of potential satisfaction. Extrinsically motivated behavior will, however, terminate upon extinction of awareness of potential satisfaction and further potential would not be sought as the reward had already been obtained. This argument is deficient in at least one sense. What is the difference between a continuing sequence of external rewards and a continuing sequence of internal rewards that leads to the awareness of potential satisfaction? The answer lies in the nature of goal setting. Atkinson's model suggests that motivation would be at a maximum when the goal was of moderate difficulty (incentive is the inverse to probability of attainment). However, Vroom's model suggests motivation is an inverse function of difficulty. That is, motivation will be low when a task is perceived to be difficult, and high when the task is perceived as easy. Because second order outcomes are desired as results of first order outcomes, the first order outcomes will be undertaken efficiently, maximizing outcome and minimizing input (the root of profit-making activity). Behaviour involved with extrinsic rewards will be preceded by easiest path goal setting. Because a feeling of competence increases with goal difficulty, when intrinsically motivated, goals will constantly be set to provide an optimal challenge.

This distinction is different from the cognitive dissonance approach espoused by Festinger (1957). The implication in the latter theory is that inactivity or quiescence is the preferred state and that action is aimed at inaction. Incongruity or dissonance is seen to exist in order to be reduced rather than to be expressed.

To this point, intrinsic motivation has been said to relate to a desire for competence and self-determination, yet only competence has been discussed. Deci (1978) refers to the work of DeCharms (1968) to provide insight into the concept of self-determination. DeCharms (1968, p. 269) postulates that man's *primary* motivational propensity is to be effective in producing changes in his environment. Man strives to be a causal agent, to be the primary locus

of causation for, or the origin of, his behavior; he strives for personal causation. Although this is a rather strong statement, it is somewhat qualified:

> We have assumed that some behaviors are apparently done for their own sake, and that *one class* of behavior that appears to be done for its own sake is behavior resulting from striving for personal causation, behavior that results in environmental change that is *controlled* by the actor.(p. 328)

DeCharms sees the "crux" of the intrinsic/extrinsic motivation distinction to be in a perception of personal causation. Intrinsically motivating behaviors are said to be those that accompany "feelings" of free choice. Clearly, in relation to Deci's cognitive evaluation theory, personal causation operates in a similar way to the concept of competence. Goals are set to achieve the rewards associated with personal causation. Deci (1978) distinguishes between personal causation and competence in one sentence:

> Intrinsically motivated activities are ones in which people engage to experience a sense of competence and self-determination -- that is, to feel good about themselves as *effective causal agents*. (p. 159, emphasis added)

Competence relates to perception of effectiveness and self-determination relates to causality locus.

There has been a great concentration in the literature relating to a change in locus of causality from internal to external by the mediation of rewards. As discussed earlier, Deci (1971) found that the introduction of monetary reward to originally intrinsically motivated activity will reduce intrinsic motivation as measured by the amount of time freely chosen to undertake an activity. The reason given for this change is a change in perceived locus of causality from internal to external. In a study by Benware and Deci (1975) involving the introduction of an aversive noise, the threat of punishment was seen as another factor capable

of changing perceived locus of causality.

The destructive effect on intrinsic motivation of externally mediated rewards contingent upon activity is caused by a change in the locus of causality. In Deci's framework this would be explained by a shift in motivational subsystems from intrinsic to extrinsic. The given behavior becomes instrumentally linked to the reward and tends not to be performed in its absence (Deci and Ryan, 1980). The process operating is simply one of goal directed behavior. As the nature of the reward changes, that is external reward as compared to internal affect, a cognitive evaluation is made regarding the salience of an anticipated reward. If an external anticipated reward is of greater salience than internal rewards, then an instrumental approach to activity will be adopted. Thus, the operation of an extrinsic motivation subsystem comes into play.

Lepper, Greene and Nisbett (1973) conducted an experiment to see whether the expectation versus non-expectation of a reward would adversely affect intrinsic motivation. Their reasoning was that an overjustification effect (an *inference* that actions are motivated by the "external contingencies" or constraints of a given situation rather than by intrinsic interest in the activity should only be operative when the subject knows of a reward or goal before performance in activity. The activity is done in order to achieve the reward or goal. If a reward is not expected, then the activity is not done in order to achieve the reward, as the reward is not perceived as a *goal*. To test this, Lepper et al. divided nursery school children into one of three conditions: an expected reward condition, a non-expected reward condition and a no-reward control condition. All subjects were asked to draw pictures with felt tipped markers for the experimenter and rewards were administered according to the relevant experimental condition. As predicted, the children in the expected reward condition displayed significantly less subsequent intrinsic motivation for drawing with felt-tipped markers than both the no-reward and non-expected reward conditions. There was no significant difference between the non-expected reward and no-reward conditions. Therefore, it has been demonstrated that in order for an external reward to be detrimental to intrinsic motivation, it must be seen as a *goal* of activity and therefore, must be perceived at least before activity has ended. Although it

would seem that an unexpected reward does not have a detrimental effect on intrinsic motivation, Deci and Ryan note that, if "one were to receive "unexpected" rewards several times, this could easily begin to establish an instrumental relationship between the activity and the reward" (1980, p. 49).

The question of whether or not rewards relate to quality or quantity of *performance* of activity, has been examined in several studies. Karniol and Ross (1977), in an experiment involving four to nine year old children, assigned subjects to performance contingent reward (reward administered according to task performance level), performance non-contingent reward (reward administered simply for participation in the task) and no-reward conditions. The task was a game that involved 20 trials of the selection of a visual stimulus that would cause a green light to come on. The results indicated that subjects in the performance non-contingent condition indicated less subsequent intrinsic motivation for the task than subjects in the performance contingent and no-reward conditions. Karniol and Ross explained this finding in the following manner. "... a performance-irrelevant reward undermines interest because it de-emphasizes the importance or significance of one's success and the intrinsic satisfactions that accrue thereby."

Harackiewicz (1979) conducted an experiment using 'Nina' puzzles with 93 high school students to examine the effects of performance contingency and positive feedback on intrinsic motivation as opposed to task contingency (the reward is not contingent on performance but simply on completion of the task), and no feedback. Subjects were assigned to one of the following conditions:

a. No reward - no feedback
b. No reward - positive feedback
c. Task contingent reward - no feedback
d. Task contingent reward - positive feedback
e. Performance contingent reward - positive feedback with performance norms supplied.

f. Performance contingent reward - positive feedback without performance norms supplied.

The positive feedback was "we've found that the average student usually finds 4 Ninas, so you did better than the average high school student on these puzzles". For the purpose of the present discussion, the relevant findings were that the performance contingent rewards were found to undermine subsequent intrinsic motivation more than task contingent ones, which produced decrements in intrinsic motivation relative to control conditions of no reward. Harackiewicz's finding regarding performance contingency is in direct conflict with Karniol and Ross (1977). Karniol and Ross found that task contingent rewards were more deleterious to intrinsic motivation than were performance contingent rewards.

A solution to this conflict may be found in the control versus informational aspect of a reward distinction (Deci and Ryan, 1980, p. 63). Ryan (1982) suggested that performance contingent rewards can be interpreted as either informational or controlling. If feedback, either implicitly or explicitly associated with a reward, is perceived in a controlling manner, it is perceived as pressure to achieve a particular outcome. Feedback with a controlling aspect, that is a 'should' type obligation may reduce intrinsic motivation. On the other hand, if a performance feedback is perceived in a manner that conveys positive competence information without any incumbent pressure to achieve a particular outcome, then intrinsic motivation may be enhanced. In an experiment involving 128 introductory psychology students and employing a 2 x 2 x 2 factorial design, Ryan (1982) investigated the effects of informational performance feedback versus controlling performance feedback, the effects of self administered feedback versus other (experimenter) administered feedback, and the effects of ego involvement versus task involvement. Subjects were assigned to one of the following conditions for both task involvement and ego involvment.

a. Informational - self administered feedback

b. Informational - other administered feedback

c. Controlling - self administered feedback

d. Controlling - other administered feedback.

The task involved in the study was a set of Nina puzzles. Feedback was provided either by self comparison of performance with printed task norms or was verbally provided by the experimenter. A controlling feedback was in the form of one of five evaluative statements that the subject either self-selected or received verbally from the experimenter:

a. "Excellent. You (I) *should* keep up the good work.

b. Good. You're (I'm) doing as you (I) *should*

c. Fair. You're (I'm) performing just *adequately*

d. Poor. You (I) *should* do better

e. Very Poor. You *should* try much harder."

Informational feedback was administered by a comparison of actual performance with what was said to be average and maximum performance.

The ego-involvement condition included task instructions that stressed that performance on this task was commonly used as an indicator of creative intelligence and was sometimes included in I.Q. tests. As predicted, controlling feedback resulted in lower intrinsic motivation than information feedback, and ego-involvement resulted in lower intrinsic motivation than task involvement. There was no significant self/other feedback administration effect. Unfortunately, the study did not include a control condition regarding the control/information feedback aspect. Thus, it is impossible to tell whether the control/information feedback manipulations both resulted in an increase in intrinsic motivation, or a decrease in intrinsic motivation, or whether the information feedback manipulation resulted in an increase in intrinsic motivation and the control feedback manipulation resulted in a decrease in intrinsic motivation. It may well have been that comparison of an actual score to an average score provided an inherent self-administered 'should' type behavior feedback. However, an earlier study by Enzle and Ross (1978) found that "contingent rewards may *either* decrease or increase intrinsic interest, depending on whether the control aspect or the competence information aspect of the reward is made

salient". This study employed a task contingent reward condition, a performance contingent condition *and* an unexpected reward condition. An unexpected reward condition was demonstrated by Lepper et al. (1973) to have no effect on intrinsic motivation and is therefore an effective control condition in Enzle and Ross' study.

Enzle and Ross (1978) also found that a highly *salient* reward ($1.50 versus 45¢) led to a decrease in intrinsic motivation in the task-contingent condition and that a reward with low salience actually led to a slight increase in intrinsic motivation in the task-contingent condition. This finding is supportive of Ross's work (1975), in which nursery school children participated in two experiments examining the effect of reward saliency on intrinsic motivation. Reward saliency in the first experiment was manipulated by showing or not showing a cue, reminding subjects of the forthcoming reward. Reward saliency in the second experiment was manipulated by asking the subject to either think about the forthcoming reward or think about an unrelated topic. Results of both experiments indicated that subsequent intrinsic motivation for the experiment task was lower for subjects in the salient reward conditions.

Fisher (1978) demonstrated that intrinsic motivation for activity will only be affected either positively or adversely by performance feedback *if* there exists personal responsibility for achievement outcome. That is, if self-control is non-existent, as in the case of chance or a lack of task parameters amenable to personal effectance, then competence feedback will not be considered as personally relevant. Seventy two subjects with a mean age of 21 years, who answered an adverstisement for part-time clerical help were assigned to one of four treatment conditions.

a. performance contingent - constrained
b. performance contingent - unconstrained
c. performance non-contingent - constrained
d. performance non-contingent - unconstrained.

The experimental task was a set of three puzzle packages. The contingency manipulation involved payment according to performance on the puzzles (low, medium or high levels of performance). The constraint manipulation involved altering the difficulty of the puzzle packages. In the unconstrained condition, '20 minute' puzzle packages contained two 10 minute puzzles and one five minute puzzle. In this condition the subject could control the level of performance by expending various levels of effort. Subjects in the constrained condition received one of three '20 minute' puzzle packages that were actually of either low, medium or high difficulty to solve in 20 minutes. The high difficulty package contained three 15 minute puzzles and the low difficulty package contained three five minute puzzles. As predicted, the constraint condition showed less intrinsic interest than the non-constraint condition. Although the pay contingency manipulation did not yield a statistically significant result, correlation of self reported competence with self reported intrinsic motivation showed that when personal control is high, competence is positively related to intrinsic motivation and when personal control is low, competence is negatively related to intrinsic motivation. This suggests that the impact of perceived competence on intrinsic motivation is mediated by personal control.

3.2.1 Summary

Cognitive evaluation theory suggests that the presence of a salient external reward or constraint can induce a shift in perceived locus of causality from internal to external, resulting in decreased intrinsic motivation. (Deci, 1975; Deci and Ryan, 1980; Ryan, 1982). Conversely, the absence of external rewards and constraints and the presence of choice can result in an increase in intrinsic motivation. External rewards and constraints have two functional aspects, control and information. A controlling aspect is one that provides a perception of pressure for a particular behavioral outcome. Rewards and constraints serve an informational function by providing behaviorally relevant information in the absence of pressure for a particular outcome. Performance feedback which results in a decrease in perceived competence reduces intrinsic motivation; conversely, performance feedback which results in an increase in peceived

competence increases intrinsic motivation. Performance feedback carrying an information aspect regarding competence only affects intrinsic motivation if locus of control is perceived as internal (self-determination). The principal characteristic of intrinsic motivation is self-determination or internal locus of control. If a person feels controlled by an external agent in regard to any particular activity, competence feedback may not be seen as indicative of personal investment in the activity and thus will be powerless to increase or maintain intrinsic motivation. If locus of control is perceived as external, intrinsic motivation will decrease irrespective of competence feedback (Fisher, 1978). Positive feedback does not necessarily carry an informational aspect and may be perceived as controlling if some 'should' type obligation is implied (Ryan, 1982).

3.3 Perceived Time Constraint in Intrinsic Motivation Theory

As mentioned earlier, the deleterious effect that a tangible reward has on intrinsic motivation is attributable to that reward being perceived in a controlling, as opposed to an informational, manner. Ryan (1982) demonstrated that verbal feedback, if perceived in a controlling manner can also serve to reduce intrinsic motivation. This indicates that *intangible* rewards may serve to reduce intrinsic motivation. Lepper, Sagotsky, Dafoe and Greene (1982) demonstrated that social *constraints* if perceived in a controlling manner can reduce intrinsic motivation. The social constraint employed in this study was the withholding of one activity from the subject until another activity had been completed. The activity performed first was perceived to be externally constrained and hence intrinsic motivation for that activity decreased.

The present study addresses another type of intangible constraint. That is, time constraint levied by another person.

A time constraint may be distinguished as functionally *irrelevant* or functionally *relevant*. A functionally irrelevant time constraint is a time constraint that is unrelated to the achievement of a goal inherent in the task or activity. A *functionally relevant* time constraint is

a time constraint that is directly linked to a goal inherent in the task or activity. For example, a two hour period set for an examination is a *functionally relevant* time constraint. Here the goal of *completing* the examination must be achieved within the two hour deadline. This time limit will affect the performance rate of activity. Because there is a knowledge of a desired end result required of the task (examination completion) performance rate becomes a function of the time limit. Functionally relevant time constraints also occur when time limits are used for competitive comparison or performance feedback. For example when an olympic swimmer is training, an attempt will be made to beat previous personal or other athletes' times'. These times are benchmarks of performance, current performance is evaluated according to temporal comparison. A *functionally irrelevant* time constraint may be perceived in the case of a rigidly controlled coffee break. The task or activity within the time constraint has no goal to be achieved, so the specification of a temporal interval is functionally unrelated to any part of the activity itself.

Deadlines are generally considered to be *functionally relevant* as demonstrated by a description of deadlines provided by Amabile, Dejong and Lepper (1976, p. 92).

> Deadlines are a pervasive fact of life in American society, exerting coercive power over the allocation of time and our expenditure of effort. We not only have an April 15 deadline for filing tax returns but also a time limit for filing forms to request extension on the original deadline. Although it is generally accepted that deadlines are often an unavoidable safeguard against procrastination, the external imposition of a deadline may have unintended consequences for future task enjoyment.

It is clear that a deadline is set for the achievement of some goal. In the discussion by Amabile, Dejong & Lepper (1976) the deadline is *functionally relevant* to the preparation of a taxation return. Whether externally-imposed or self-imposed, these deadlines provide performance feedback as they are inexorably linked to the achievement of a goal. For example, consider the following experimental manipulation created by Enzle (1986).

Subjects were divided into externally-imposed and self-imposed deadline treatment groups. Each group was presented with a Lego construction set comprised of three distinct components of a horse and chariot model. Subjects were instructed to build the entire model and a 15 minute deadline was set for the task. The treatment conditions related to the building of each component of the model. The self-imposed deadline group was given no further instructions and was left to divide the time between each component as deemed necessary by the subject to complete the model in 15 minutes. The externally-imposed deadline group was instructed to build one section at a time and that 5 minutes will be spent on each section.

In the case of the externally-imposed deadline condition, each 5 minute deadline was a temporal marker by which the objective of model section completion was to be achieved - a *functionally relevant* time constraint. In the case of the self-imposed deadline condition, each individual subject allocated a temporal marker by which the objective of model completion was to be achieved - once again, a functionally relevant time constraint.

Mossholder (1980) also investigated the effect of externally mediated goal setting on intrinsic motivation using time limits as the goal criteria. In an experiment involving 80 male college students, subjects were assigned to one of four experimental conditions:

a. low task interest - task goals externally set

b. low task interest - no task goals externally set

c. high task interest - task goals externally set

d. high task interest - no task goals externally set

The externally set goals were made more salient by explaining to the subject that task goals were 'derived though work with other persons similar to the subject'. This information may have provided the subject with a 'should' type obligation, that is 'you *should* perform at the rate required of you'. Mossholder's hypothesis, germaine to the present discussion, was that subjects working on an interesting task without externally mediated goals would manifest higher subsequent intrinsic motivation than those working on this task with goals. This is consistent with the rationale that if competence feedback via a functionally relevant time

constraint can be indicated in an informational manner *within* the context of high personal control, then intrinsic motivation will be higher than participation within the context of lower personal control (Fisher 1978), and feedback with a controlling aspect.

The experimental task was the construction of a model car during three 14 minute periods. Subjects in the 'no externally imposed goal' condition were told to proceed at their own pace, thus leaving it up to each subject to form his/her own construction goals during each period. Subjects in the externally imposed goal condition were given specific performance criteria to achieve within the time limits set. The results showed that intrinsic motivation was higher for the no externally set goal condition, than for the externally set goal condition.

The effects of functionally *relevant* time constraints on intrinsic motivation have been examined in several other studies. Amabile et. al. (1976) examined the effect on intrinsic motivation of imposing a *deadline* structured by objective time on *an* activity. Subjects were divided into 'explicit deadline', 'implicit deadline' and 'no deadline' conditions, and all subjects were asked to solve a set of 'Ad-Lib' word puzzles. Subjects in the 'no deadline' condition were asked to "play with the cross-word puzzles as long as (they) wished". Subjects in the 'implicit deadline' condition were told to work as fast as possible and that 15 minutes was the amount of time allotted to the task as this had proved "sufficient for most Stanford students". Subjects in the 'explicit deadline' condition received the same instructions as the subjects in the 'implicit deadline' condition and in addition were told that they must complete all five puzzles within the "allotted time period for their data to be of any use in the experiment". After completing the required activity, subjects were taken to another room in which a soma puzzle and an 'Ad-lib' crossword puzzle were placed. The subjects were then left alone for 15 minutes and observed to record the number of minutes that subjects played with the 'Ad-Lib' game. The results indicated that intrinsic motivation (as measured by number of minutes spent on the 'Ad-lib' crossword puzzle during the 'free play' period) was significantly higher for subjects in the 'no-deadline' condition than for subjects in both deadline conditions. No significant differences were found between subjects in the 'implicit deadline' condition as compared to the

explicit deadline condition. This indicates that the additional instruction involved in the 'explicit deadline' condition had little or no effect and that the difference between no deadline and deadline conditions is due to the instruction that "most Stanford students" were able to complete these puzzles in 15 minutes. This result was explained in terms of the 'overjustification' hypothesis (Lepper, Greene and Nisbett, 1973), 'which suggests that imposition of a means-end relationship between an activity and an external constraint may undermine intrinsic interest in activity'. This explanation does not take into account that time constraints may be perceived as a boundary condition of activity or as a performance criterion of activity or as both. An alternative interpretation based upon Deci's (1975) cognitive evaluation model, might be that the time constraint was perceived as a performance feedback criterion. According to Ryan (1982) and Ryan, Mims and Koestner (1983), if performance feedback is perceived in a 'should' or controlling manner, intrinsic motivation will decrease. A subject's perception that he/she 'should' perform in a manner similar to Stanford students may have allowed the time deadline to be perceived in a controlling manner thereby reducing subsequent intrinsic motivation.

Reader and Dollinger (1982) investigated the effect of deadlines and intrinsic/extrinsic self perception (motivation orientation as a personality trait) on the intrinsic motivation to do an activity. A ten-minute deadline was imposed on the activity undertaken by the treatment group and no deadline was imposed for the control group. Subsequent intrinsic motivation (as measured by number of minutes that subjects undertook the test activity during a 'free play' period) was found to be less for the treatment group than for the control group. This finding was interpreted as being 'consistent with Amabile et. al. (1976) and with Deci's cognitive evaluation theory'. Little explanation is offered regarding the operation of theoretical mechanisms involved. One interpretation may be that the manner in which the deadline was imposed and made salient (subjects told to work as *quickly and accurately as possible* after setting a kitchen timer for ten minutes) resulted in the deadline being perceived as feedback with a controlling aspect. That all subjects were told that they "typically perform better than

others" serves to support the above interpretation as the subjects may have been performing against the deadline in order to live up to being "better than others". The performance requirement in the deadline condition coupled with the experimentally induced high performance expectation (a 'should') may have resulted in the observed reduction in intrinsic motivation.

Dollinger and Reader (1983) investigated the effect of an interaction of deadlines and attribution statements on intrinsic motivation to undertake an activity. Subjects aged between 3 years 6 months, and 5 years 4 months were divided into two groups, a 'deadline' group and a 'no-deadline' group. The two groups were further divided into relevant and irrelevant attribution groups (the experimenter made attributional statements to the subject which were either relevant e.g. "I'll bet you like puzzles more than most kids here", or irrelevant to the subjects interest in the task, e.g. " I'll bet you really like ice cream".). The deadline condition group was encouraged verbally to " try to beat the timer" and then told "you beat the timer". 'Puzzle Rank Scores' were used as a measure of intrinsic motivation and represent the ranked position on a post experimental interest scale. A low Puzzle Rank Score for the experimental puzzle indicates high intrinsic motivation for that puzzle. Subjects in the relevant attribution-deadline condition reported a mean score of 5.0, subjects in the relevant attribution-no deadline condition reported a mean score of 4.4, subjects in the irrelevant attribution-deadline condition reported a mean score of 4.1, and subjects in the irrelevant attribution-no deadline condition reported a mean score of 5.0.

Analysis of variance indicated that subjects in the 'irrelevant attribution - deadline' condition showed significantly greater puzzle interest than subjects in the 'relevant attribution - deadline' condition and the irrelevant attribution -no deadline condition. This was interpreted as being consistent with Deci's cognitive evaluation theory, in that the timer provided the means for competence feedback. However the relevant/irrelevant attribution configuration displayed in the results was difficult to explain. Dollinger and Reader offered the explanation that when a relevant attribution was made the child perceived the experimenter's interest to be

focussed on the task rather than the child, and that this was sufficient to reduce intrinsic motivation. An alternate explanation is that the deadline may have provided competence feedback but the relevant task interest attribution statements (children were *told* that they were interested in the task) may have been sufficient to cause perception of the deadline to aquire a controlling aspect and hence reduce intrinsic motivation.

In summary, Amabile et. al. (1976) and Reader and Dollinger (1982) reported that an imposition of deadlines reduced intrinsic motivation to do an activity. Both studies indicated that intrinsic motivation may be reduced by deadlines being perceived as controlling performance feedback. The study by Dollinger and Reader (1983) may be interpreted to reveal that even though deadlines may not decrease intrinsic motivation if they are perceived as providing positive informational feedback, perception of other external control related to the task at hand may reduce intrinsic interest in activity. The possibility that externally imposed time limits may be sufficient to reduce intrinsic motivation if perceived as a *boundary condition of activity* (in the absence of performing a competence feedback role) has not been explored. The present study is concerned with the impact of an externally imposed, objectively structured time schedule perceived as a boundary condition of activity, on intrinsic motivation to do activity. The primary purpose of the present study is to examine the effect of a functionally superfluous time constraint (time constraint perceived as a boundary condition) on intrinsic motivation. A time constraint (for the purpose of this discussion) is a perception of constraint arising from the specification of a set time interval for the undertaking of an activity.

As stated previously the present study examines the effect of *functionally irrelevant* time constraint. Time constraint experienced as a result of the synchronization of social institutions may have a decremental effect on intrinsic motivation when time limits are simply oppressive rather than indicative of performance. In order to study functionally irrelevant time constraint, time constraint must be unrelated to any goal a task may have. That is completion of a task should not be required in any specific time interval. There should be little or no opportunity for performance feedback.

4. Statement of the Problem

The purpose of the study was to investigate the effect of functionally irrelevant time constraint on intrinsic motivation for performing an activity set.

4.1 Hypotheses

To facilitate this investigation the following hypotheses were tested:

1. Intrinsic motivation for an activity set experienced after a perception of a low level of functionally irrelevant time constraint is higher than intrinsic motivation for an activity set experienced after a perception of a medium or high level of functionally irrelevant time constraint.
2. Intrinsic motivation for an activity set experienced after a perception of a medium level of functionally irrelevant time constraint is higher than intrinsic motivation for an activity set experienced after a perception of a high level of functionally irrelevant time constraint.

4.2 The Delimitations

The study was delimited as follows:

1. To males and females enrolled in Physical Education, Recreation and Education, Spring Term courses at The University of Alberta .
2. To males and females who did not indicate knowledge or suspicion of the experiment's objective or of the purpose underlying the experimental instructions or its materials.
3. To the experimental game 'card-dice' (the production of a crossword puzzle according to the letters available in a photograph of alaphabetic die).

4.3 The Limitations

The study was limited as follows:

1. By the representativeness of the individuals who volunteered for the experiment.
2. By the reliability and validity of the Mayo (1977) questionnaire and the 'materials contact during free play' unobtrusive observation method of intrinsic motivation measurement.
3. By the effectiveness of the treatment manipulations.

4.4 Definition of Terms

4.4.1 Functionally Irrelevant Time Constraint

Functionally irrelevant time constraint is defined as time constraint which is unrelated to an objective inherent in its incumbent activity.

4.4.2 Level of Functionally Irrelevant Time Constraint

(a). A high level of functionally irrelevant time constraint is operationally defined as comprising

1. Absence of choice in selection of temporal transition points between activities.
2. Presence of salient cues to indicate external control - a large clock, a card indicating a time limit and an instruction to adhere to the time limit.

(b). A medium level of functionally irrelevant time constraint is operationally defined as comprising

1. Absence of choice in selection of temporal transition points between activities.
2. Absence of salient cues to indicate external control.

(c). A low level of functionally irrelevant time constraint is operationally defined as comprising

1. Presence of choice in selection of temporal transition points between activities.
2. Absence of salient cues to indicate external control

4.4.3 Activity set

Activity set refers to three repetitions of the word game 'card-dice'.

4.4.4 Intrinsic Motivation

Intrinsically motivated behavior is theoretically defined as behavior "which a person engages in to feel competent and self determining" (Deci, 1975, p. 61). A person spending time on an activity in absence of external contraint is said to be *demonstrating* intrinsic motivation for that activity. Intrinsic motivation is operationally defined as:

a. the score obtained the behavioral measure of intrinsic motivation,

b. the score obtained on the 'Intrinsic' scale of the verbal Mayo Intrinsic Motivation Test regarding the test activity set.

The behavioral measure of intrinsic motivation is the number of observed seconds of hand contact with the experimental materials during the 9 minute (540 second) free-play period. The verbal Mayo Intrinsic Motivation Test is a battery of items directly addressing self-determination and perceived competence as elements of intrinsic motivation.

4.5 The Assumptions

In conducting the research, the following assumptions were necessary:

1. That the respondents honestly and accurately answered the Mayo (1977) Intrinsic Motivation Questionnaire.
2. That the subjects had no prior knowledge of the objective of the experiment.

5. Methodology

5.1 The Subjects

The sample consisted of twenty one (21) male and fifty one (51) female undergraduate students attending Spring Session courses in the Physical Education, Education Psychology, Education Foundations and Recreation and Leisure Studies Departments of The University of Alberta.

5.2 Experimental Design

Subjects were assigned to one of three treatment conditions: a low time constraint condition, a high time constraint condition and a medium time constraint condition.

Table 1 indicates that each treatment group was comprised of an equivalent number of males and females, but that age varied somewhat between treatment conditions.

5.3 The Setting

The experimental room was a small gymnasium/play area designed for programs involving learning disabled children. The room was full of brightly coloured and interestingly arranged play equipment and featured large painted drawings on the walls. The *experimental area* was partitioned off from the rest of the room and situated adjacent to a one way mirror [7]. The one way mirror was disguised with a gauze curtain to which was attached several large children's play posters, compatible with the larger room. A large table and chair was facing the entrance to the experimental area and located at the end furthest away from the entrance. On the table was a blue table cloth, a placemat, a tape player containing taped instructions, ten game cards in a stack face down and an example of a game using the die.

[7] See Figure II

Table 1

Descriptive Statistics Regarding the Age and Gender of the Sample

Subject characteristics	Experimental condition		
	Low constraint	Medium constraint	High constraint
	N (%)	N (%)	N (%)
Gender			
Male	7(29%)	7(29%)	7(29%)
Female	17(71%)	17(71%)	17(71%)
Age (years)			
range	19-56	19-33	19-41
mean	26.4	23.8	25.8
s.d.	9.82	4.41	3.35

5.4 The Materials

The task used in this experiment is called 'Card-Dice' and is a derivation of the 'Ad-Lib' word game used by Amabile et al. (1976). Several combinations of the upturned faces of 21 die displaying a letter of the alphabet on each face, were photographed, and the enlarged photographs were mounted on multi-colored cards measuring 22 x 28 cm[1].

Using 24 die that were provided (the original 21 used in the photograph and an additional 3, all taken from the commercially available game of 'Spill and Spell'[2]), a crossword puzzle was made.

5.5 Yoking

To ensure that subjects from each experimental condition received approximately the same amount of exposure time to each game of the task, subjects in treatment groups '1' and '3' were yoked to subjects in treatment group '2' according to the amount of time spent on each game.

5.6 The Instruments

Intrinsic motivation was measured using two methods. The primary method was behavioral observation, while the secondary method involved the use of a questionnaire. The behavioral observation method entailed counting the number of seconds that a subject maintained physical (hand) contact with task materials during the 'free - play' period of five hundred and forty (540) seconds. The experimenter was responsible for making and recording all observations. Similar behavioral measures of intrinsic motivation have been used in most research employing Deci's (1975) theoretical framework, and have been considered to provide valid, reliable and unambiguous measurement of intrinsic motivation.

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[1] See Figure III

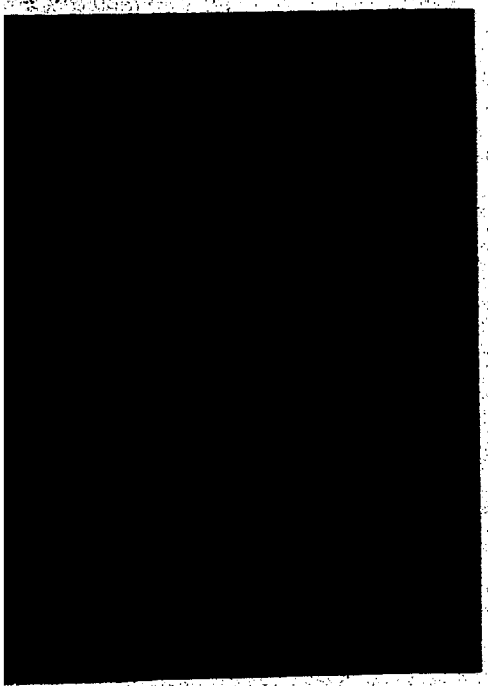
[2] Copywrite Parker Brothers.

re II

ntal Area

e III

l Materials



The secondary instrument, reproduced in Appendix A, is a questionnaire taken directly and without substantial alteration from the Mayo (1977) 'Task Reaction Questionnaire' (T.R.Q.). It was administered to all subjects post-experimentally. The only alterations performed on the questionnaire were the separation of Mayo's 'Intrinsic scale' from the 'Extrinsic scale' leaving twenty three (23) of fifty one (51) items, and the inclusion of three additional items. The Mayo (1977) questionnaire was developed specifically to measure intrinsic motivation. The initial validity testing of the questionnaire utilized Deci's (1975) theoretical framework in an experiment examining the effect of monetary rewards on intrinsic motivation.

> The major thrust of this study was an assessment of the ability of the IM scale to measure experimental effects resulting from the manipulation of a variable possessing theoretical implications regarding the intrinsically motivated state. (Mayo, 1976, p. 42)

The intrinsic motivation component of the T.R.Q. is comprised of items that meet at least one of the following criteria:

a. There is an inherent appeal in the task.

   The task is seen as stimulating, challenging, novel etc.

b. Positive feelings such as zest and pleasure are experienced while completing the task.

   Feelings of achievement, competency, esteem, etc. are associated with working on the task.

c. The task allows utilization of valued abilities.

   The task allows the development of potential abilities.

   The task allows expression of important values.

d. The person feels in control of such things as work pace and the way the task is accomplished.

   The person feels as if he has the freedom to do as he likes on the task.

e. The person is curious or inquisitive about the task.

The person feels the task is provocative or unusual.

Each item on the scale is phrased so that a response of "strongly agree" will indicate high positive association for the aspect of intrinsic motivation addressed by the item. Each item is presented as a statement and the subject responds by selecting a position on a seven point Likert Type scale: 1. Strongly agree. 2. Moderately agree, 3. Slightly agree. 4. Neither agree nor disagree. 5. Slightly disagree. 6. Moderately disagree. 7. Strongly disagree. The sum of responses to all items on the intrinsic motivation scale (items 1 to 23 on the experimental questionnaire) represents a subject's intrinsic motivation score. A numerically high score represents low intrinsic motivation and a numerically low score represents high intrinsic motivation. Mayo (1976, p. 29) reported internal consistency reliability using Chronbach's alpha coefficient as .93.

The Mayo 'T.R.Q.' has been used in several recent studies addressing a variety of questions related to intrinsic motivation. Vallerand and Reid (1984) used the Mayo Intrinsic Motivation Scale to determine whether the effects of verbal feedback on intrinsic motivation are mediated by perceived competence. Fisher (1978) used the Mayo Questionnaire to examine the effects of varying levels of personal control, and the interaction of personal control and perceived competence on intrinsic motivation. Lopez (1981) used the Mayo Questionnaire to examine the effects of a contingent reward program on employees' performance and intrinsic motivation in an organizational setting. In addition to being applicable to a wide range of experimental contexts, the instrument appears to consistently demonstrate high reliability. Lopez (1981) reports a Chronbach reliability alpha of 0.91 and Fisher (1978) reports a split-half reliability of 0.96.

Each of the above studies yielded significant results consistent with Deci's cognitive evaluation theory suggesting that the Mayo Intrinsic Motivation Scale is a valid instrument for measuring intrinsic motivation.

The three additional items included in the questionnaire used in the present study were simply appended to the Mayo items. The first extra item (item number 24 on the questionnaire[10]) addressed interest in word games generally and was included to indicate whether or not a stable disposition toward word games would systematically bias both measures of intrinsic motivation across conditions. Unfortunately, the bracketed statement explaining the rating scale for this question was incorrectly stated and should have read "(with 1 meaning that you really like them)" instead of "(with 1 meaning that you really liked it)" The latter statement tends to direct the respondent's attention to the word game just played during the experiment, whereas the former statement directs attention toward a more generic set of experiences. One other methodological oversight is that the item was administered post-experimentally. This opens the question of whether or not response to the item was influenced by the experimental manipulation *and* by response to the specific *task-related* intrinsic motivation scale. These errors render the question unreliable as an indicator of a general disposition.

Questions 25 and 26 were included as independent, one-item measures of intrinsic motivation. This was done to ascertain whether one item indictators are useful as measures of intrinsic motivation. Two batteries of 'mood state' items were both administered as soon as the subject was seated and again after the completion of the Intrinsic Motivation Questionnaire. This was done in order to camouflage the real intent of the study[11].

5.7 Procedure

After being seated in the experimental area each subject was given a 'mood state' questionnaire to complete. The following instructions were issued:

When you have filled in the questionnaire, please press the play button on the tape

[10] See appendix 'D'
[11] See Apendix 'D'

player and you will hear the instructions for your task. Please listen to them carefully and switch the tape player off when you are instructed to do so. I will be sitting just over here (behind the partition) going through some questionnaires. If you have any questions at that point, raise your hand and I'll try to answer them. If you don't have any questions you may carry on with the task.

All subjects received the following taped instructions:

On the upper right hand side of the table is an example of your task. The yellow die were used to make a crossword puzzle from the letters shown on the card after *all* the letters were found. This represents one game of the task. There are several photographs turned upside-down on your table and each is a new game of the task. For each game, turn one photograph up, find all the letters in the photograph using the yellow die, and then make a crossword puzzle out of those letters. There are some spare die on the table that are included to make it easier to find all the letters in the photograph.

There is no requirement to complete a puzzle, you are not being evaluated and there is no objective completion point. The purpose of the task is simply to engage in the activity.

Do three games of the task starting with the first photograph on the stack, then move to the next.

Subjects in treatment group '1' (low constraint condition) [12] were given the following instructions in addition to the standard instructions:

You may take between three and five minutes per game as indicated by the clock in front of you (Clock is 2'3" in diameter and is situated twelve feet in front of the subject). You have complete freedom between 3 and 5 minutes to change games, and you may change games for any reason whatsoever. Please keep an eye on the clock so that you know when your discretionary period has begun and when it is over. I will repeat this. You have complete freedom ... .
When you are ready to change games, please indicate to me that you are ready to do so, so that I may reset the clock. You may turn the tape off now and if you have any questions, I will try to answer them. If you don't have any questions, you may begin the first game.

[12] See Figure IV.

Subjects in treatment group '3' (medium constraint condition) [13] were given no additional instructions other than "You may turn the tape off now ... ." The large clock was not present in this condition and at the game intervals set by treatment condition '1' (low constraint) the following instruction was issued:

> I'd like you to change games now. Thank you.

Subjects in treatment group '2' (high constraint condition) [14] were given the following instructions, in addition to the standard instructions:

> You *MUST* do each game for the amount of time specified on the white card beside you. That is, you *MUST* continue in each game for that amount of time and must change games at the end of each specified period.
> *PLEASE* keep a close eye on the clock in front of you (A 2'3" diameter stopclock is placed five feet in front of the subject at face level as indicated in figure VII) To ensure compliance with this condition, I will repeat this. You *MUST* ... .
> You may turn the tape off now and if you have any question ... etc.

After participation in the third game, subjects in each condition were told:

> Well, that's it! The only thing you have left to do now is a 28 item questionnaire. Except, I just realized that in my rush to get over here to meet you, I left the questionnaire blanks in my Professor's office following a meeting we just had. Stay here, I'll just duck back and pick them up. You may do anything you like while I'm gone.

The experimenter then left the experimental room and entered the one-way mirror room. During a nine minute (540 second) 'free play' period, the number of seconds that each subject

[13] See Figure V.
[14] See Figure VI.

made physical contact with the task materials was counted as the behavioral measure of Intrinsic Motivation. Physical contact is defined as touching either or both die and game cards with the hands. Eye contact or physical contact with the tape recorder is *excluded* for measurement purposes.

At the end of the nine minute 'free-play' period, the experimenter re-entered the experimental room and administered the post-experimental '28-item' questionnaire. The questionnaire was comprised of 26 items scaled from one to seven and two batteries of 'mood state' items. The first 23 items were the "Intrinsic scale of Mayo's (1976) Task Reaction Questionnaire. Items 24, 25 and 26 were single item measures of interest[13]

When the questionnaire was completed, each subject was debriefed and escorted from the experimental room.

[13]See 'Instruments' section above.

Figure VI

High Constraint Experimental Condition

5.8 Analysis of the Data

Upon completion of the testing, all data obtained from the questionnaires and the behavioral observations were directly key punched from the source documents. The Statistical Package for the Social Sciences (SPSSx) was used for all analyses. Descriptive statistics were obtained from the SPSSx program FREQUENCIES.

One-way analyses of variance were performed on the behavioral and verbal measures of intrinsic motivation using the SPSSx program ONEWAY. An alpha level of .05 was established for acceptance or rejection of the null hypothesis rejection of the null hypothesis was $p < .05$.

A post hoc two-way analysis of variance using the SPSSx program ANOVA was performed to investigate the effects of sex across experimental condition. The dependent variable was intrinsic motivation according to both behavioral and verbal measures of intrinsic motivation. The independent variables were gender and experimental condition.

6. Results and Discussion of Results

6.1 Results

6.1.1 The Instruments

The reliability of both measures of intrinsic motivation proved to be very high. Experimenter and blind observer's measures on the behavioral measure of intrinsic motivation over a total of 19 cases yielded a Pearsen r^2 of .98. Chronbach's alpha co-efficient of reliability for the verbal measure of intrinsic motivation was .94.

Correlation between scores on the verbal and behavioral measures of intrinsic motivation was very low (Pearson r of -.20 [16]). Tables 2 and 3 display the results for each measure of intrinsic motivation. Intrinsic motivation is highest in the low constraint condition for behavioral ($\underline{M}$ = 358.50) and verbal ($\underline{M}$ = 61.52) measures of intrinsic motivation, but the relative positions of the high and medium constraint conditions are reversed for the two measures. For the behavioral measure of intrinsic motivation ,the medium constraint condition resulted in a higher score of intrinsic motivation ($\underline{M}$ = 263.42) than the high constraint condition ($\underline{M}$ = 252.75). [17] For the verbal measure of intrinsic motivation the *high* constraint condition resulted in a higher score of intrinsic motivation ($\underline{M}$ = 64.52) than the medium constraint condition ($\underline{M}$ = 74.91). [18] These differences between experimental conditions were not statistically significant as discussed in the following section.

6.1.2 Analyses of Variance Between Treatment Conditions

One-way analysis of variance of the behavioral measure of intrinsic motivation did not reach significance at the 95% level of confidence, $F(2,69) = 2.44$, $p < .09$. One way analysis

[16] A negative correlation was expected as the measures of intrinsic motivation were scaled in opposite directions.
[17] A high score represents a high level of intrinsic motivation.
[18] A high score represents low intrinsic motivation.

of variance of the verbal measure of intrinsic motivation also did not reach significance at the 95% level of confidence, $F(2,69) = 2.68$, $P < .07$. Several data transformations were performed to negate the effects of heterogeneity of variance and abnormal within group distribution of scores [19]. Appendix E contains bar-charts of the distribution of behavioral and verbal scores for each experimental condition. For the behavioral measure, the distribution in the low constraint condition is negatively skewed. This is due to the high number of subjects reaching the upper ceiling of the measurement. The distribution in the medium constraint group is also negatively skewed, but to a lesser extent. The high constraint condition displays a bipolar distribution with the largest frequencies concentrated at opposite ends of the distribution. Analyses of variance of transformed scores of both measures of intrinsic motivation, did not reach significance at the 95% level of confidence.

6.1.3 Post-Hoc examination of Gender effect

A two-way gender by treatment analysis of variance of scores on the behavioral measures of intrinsic motivation indicated that neither gender nor gender by treatment interaction effects were significant at the 95% level of confidence ($F(1,66) = 0.26$, $p<0.61$ and $F(2,66) = 2.07$, $P<0.13$ respectively).

A two-way gender by treatment analysis of variance of scores on the verbal measures of intrinsic motivation also did not indicate significant gender or gender by condition interaction effect ($F(1,66) = 0.07$ $p<0.78$ and $F(2,66) = 0.24$, $P<0.78$ respectively).

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[19] $\text{Log}(x+1)$
$\sqrt{x} + \sqrt{x+1}$
$2 \arcsin (\sqrt{x}/540)$

Table 2

Descriptive Statistics for the Scores Obtained by Subjects in Each Treatment Group on the Behavioral (free-play) Measure of Intrinsic Motivation (seconds).

	Experimental condition		
	Low constraint	Medium constraint	High constraint
Mean	358.50	263.42	252.75
S.D.	179.77	151.95	210.91

Note. A high score represents *high* intrinsic motivation.

Minimum score is 0

Maximum score is 540

Table 3

Descriptive Statistics for the Scores Obtained by Subjects in Each Treatment Group on the Verbal Measure of Intrinsic Motivation (Mayo TRQ sum of items).

	Experimental condition		
	Low constraint	Medium constraint	High constraint
Mean	61.52	74.91	64.52
S.D.	22.10	21.57	21.57

Note. A high score represents *low* intrinsic motivation.

Minimum score = 23

Maximum score = 161

6.2 Discussion of Results

6.2.1 The Instruments

The low Pearson correlation ($r = -.20$) between measures of intrinsic motivation indicates that the instruments are in a large part measuring different intrinsic motivation phenomena. However, Tables 2 and 3 demonstrate that the pattern of results is roughly similar between measures. The low constraint condition demonstrates higher intrinsic motivation than the medium and high constraint conditions for each measure.

Although the behavioral measure of intrinsic motivation indicates that intrinsic motivation in the medium constraint condition is higher than intrinsic motivation in the high constraint condition, the mean scores of intrinsic motivation for these conditions are very close. This indicates that intrinsic motivation was low for both the medium and high constraint conditions. The verbal measure of intrinsic motivation indicates that intrinsic motivation in the medium constraint condition is *lower* than intrinsic motivation in the high constraint condition[20]. Viewing these results together, it is apparent that the experimental manipulation involved in the medium constraint condition was as detrimental to intrinsic motivation as the experimental manipulation involved in the high constraint condition. One interpretation of this unexpected result is that the subjects in the medium constraint condition perceived the personal appearance of the experimenter and the instruction to "change games now" as *salient* a constraint as the experimental manipulation involved in the high constraint condition. Two reasons may be advanced to explain this.

The large clock and time indicator cards in the high constraint condition may have been perceived as constraint *mechanisms* controlled by the experimenter, but removed by one step from the *direct* control of the experimenter. The appearance of the experimenter and the instruction to "change games now" may have been a more salient indication of time constraint.

[20]These differences are not statistically significant.

due to the *direct* involvement of the experimenter.

Another reason why the salience of constraint may have been as high in the medium constraint condition as in the high constraint condition is the unpredictability of the administration of the instruction to change games. The subjects' inability to predict the exact point at which they would be required to change games, may have induced anxiety or frustration related to the appearance of the experimenter. This together with the possibility that the subject may not have been able to 'complete' the task may have led to the heightening of the salience of the constraint.

The low correlation between measures (Pearson r = -.20), indicates that each measure *may* have addressed different components of intrinsic motivation. The behavioral measure of intrinsic motivation (number of seconds of physical contact with task materials during the free-play period) is representative of continued interest. Continued interest in task materials is indicative of intrinsic motivation. Because intrinsic motivation for activity is said to exist in the absence of a salient external reward or constraint (Deci, 1975, p. 100), activity undertaken after the experimenter says "you may do anything you like while I'm gone " and then leaves the room, can be considered relatively constraint free and therefore intrinsically motivated. The verbal instrument was designed to directly measure self-determination and competence, that is, the theoretical components of intrinsic motivation that are outwardly represented by continued interest. It is possible that the behavioral measure of intrinsic motivation reflected a factor or factors in addition to perceived self-determination and perceived competence. For example, there may be an aesthetic factor involved, whereby motivation for activity is enhanced or reduced by aesthetic qualities of elements of participation in 'card-dice' and that the aesthetic value of each treatment condition varied. If such a third factor exists, the behavioral measure would take it into account whereas the verbal measure principally designed to measure perceived competence and perceived self-determination would not.

Another reason why the two instruments may be measuring different phenomena is that the free-play period separating the experimental manipulation and the administration of the questionnaire may have served as enough temporal space to allow forgetting of past perceptions related to the experimental task. It may have been difficult to *remember* perceptions that were dominant ten minutes before administration of the questionnaire. Because of interruptions by the experimenter, annoyance at having to wait for the experimenter to return with the questionnaire and, possible saturation of interest due to continued involvement in task materials, the questionnaire *may* have been measuring a state of mind altered from the state of mind caused by the experimental manipulation.

6.2.2 The Hypotheses

The hypotheses tested were that:

1. Intrinsic motivation for an activity set experienced after a perception of a low level of functionally irrelevant time constraint is higher than intrinsic motivation for an activity set experienced after a perception of a medium or high level of functionally irrelevant time constraint.
2. Intrinsic motivation for an activity set experienced after a perception of a medium level of functionally irrelevant time constraint is higher than intrinsic motivation for an activity set experienced after a perception of a high level of functionally irrelevant time constraint.

None of the hypotheses was supported for either the behavioral or verbal measures of intrinsic motivation.

There are at least two alternative explanations of why the verbal measure of intrinsic motivation failed to indicate *statistically significant* differences between treatment conditions.

One explanation is that the Mayo (1976) questionnaire has low discriminatory power. That is, the instrument is incapable of effectively discriminating between various levels of intrinsic motivation. The items in the questionnaire may not have provided the opportunity to indicate whether high, low or medium intrinsic motivation with respect to the experimental task, is experienced. For example, if an item were worded "I found this task to be absorbing" and response to it was measured on a five-point Likert scale, a strong negative correlation (using only the high and low points of the Likert scale) to an item worded "I was easily distracted while participating in this task" would indicate a high discrimination between levels of intensity of involvement. That is those respondents definitely intensely involved would agree strongly to the first item and disagree strongly with the second item. If a respondent agreed strongly with the first item and agreed strongly with the second item it is impossible to tell whether the respondent was intensely involved or not. In the present study, respondents from all conditions tended to show high intrinsic motivation as indicated by the cluster of mean treatment group scores around the high end of the scale. Unfortunately, all items in the instrument were constructed to elicit a level of agreement with a statement implying high intrinsic motivation. As there are no statements implying low intrinsic motivation the discriminatory power of the instrument cannot be examined.

Another explanation is that there is simply no difference in intrinsic motivation between treatment groups in respect to the elements of intrinsic motivation that were measured by the instrument. The following discussion is centered on a reason for the non-significance of the differences between treatment conditions with respect to the behavioral measure of intrinsic motivation.

6.2.3 The Bi-Polarity of Scores in the High Constraint Condition

The bi-polarity of scores obtained in the high constraint condition may be held partly responsible for the non-significant results obtained on the main analysis. The bipolar distribution indicates that most of the subjects in the high constraint condition reacted in one

of two ways. Either they showed extremely little interest in the task as evidenced by free-play contact with the materials or they showed extremely high interest in the task materials. One explanation for these divergent reactions is that some subjects were able to perceive an objective in the task indicated by the example used to introduce the task, and ignored the explicit instruction that there was no objective inherent in the task. In this case, the explicit time constraint may have been interpreted as a performance criterion and therefore perceived as a *functionally relevant* time constraint. As no comparison was available in respect to another person or group of people, the functionally relevant time constraint may have been perceived as performance feedback with an *informational* rather than controlling aspect (Ryan 1982), contributing to perceived competence and increasing intrinsic motivation or at least preventing a dramatic decrease in intrinsic motivation. Some support for this interpretation is provided by the pattern of responses to the post-test scale item "At various times I felt like I was achieving something while working on the puzzles". For the high constraint condition, 50% of those who indicated perceiving an objective to the task revealed high as opposed to medium or low intrinsic motivation behavioral scores. The comparable percentage was only 22% for those in the medium constraint condition. If "Felt I was achieving something" can be considered indicative of a perception of some objective inherant in the task, then it is suggested that the high intrinsic motivation scores in the high constraint condition were at least partially a result of the high constraint treatment condition stimulating feelings of performance evaluation pertinent to one's competence. On the other hand, the lower intrinsic motivation scores in the medium contraint condition might reflect the less salient performance evaluation cues (e.g., the less salient time cues) under those treatment conditions.

Although 50% of the subjects in the low constraint condition who indicated perceiveing an objective in the task, also scored high as opposed to medium or low on the behavioral intrinsic motivation measure, this result would be expected for this condition which was expected to result in the highest level of intrinsic motivation. This result is consistant with the responses to most items in the questionaire for this treatment group.

It is apparent that subjects in each experimental condition perceived *some* criteria of competence, as negative response to the above post-experimental item accounted for a mere 9-12% of total reponses.

6.2.4 Alternate Interpretation and Summary

The non-significance of the results obtained in the present study may indicate that functionally irrelevant time constraint does not affect intrinsic motivation. It may also indicate that the experimental manipulations employed in the present study did not adequately represent functionally irrelevant time constraint. The example of the game used to aid comprehension of the task instructions may have provided the task with a goal, enabling the time constraint to be perceived as functionally relevant. If this were the case, the non-significant result could be explained by the fact that none of the experimental conditions involved a '*should*' type obligation. Thus, intrinsic motivation was not reduced by feedback (provided by comparison of actual performance with the goal of *completing the task*) with an informational aspect. Amabile et al. (1976) demonstrated that functionally relevant time constraint when perceived as performance criteria, may reduce intrinsic motivation if the performance criteria were perceived in a *controlling* manner, that is, when a '*should*' type obligation is salient (Ryan 1982, Ross 1975). Dollinger and Reader (1983) demonstrated that functionally relevant time constraint does not reduce intrinsic motivation when perceived as an *informational* performance feedback.

It is possible that functionally irrelevant time constraint does not adversely affect intrinsic motivation. It may be that, in order for a time constraint to affect intrinsic motivation, it must be linked to competence such as the time constraint employed by Amabile et al. (1976). de Grazia constantly refers to the *rigidity* of functionally superfluous time constraints as the root of the destruction of leisure in contemporary North American society. If in fact intrinsic motivation is a necessary component of leisure *and* that intrinsic motivation is not adversely affected by functionally irrelevant time constraint, then de Grazia's reasoning is faulty. This would indicate that if leisure were an enduring state of being, it is not disrupted or

prevented by the manipulative time constraint imposed on us simply by the temporal interactions of social institutions. However, if temporal parameters set by society are seen as performance indicators with a 'should' type obligation, evident in Gioscia's (1972) anachronic/catachronic distinction, then intrinsic motivation for all activity, and thus leisure, may be adversely affected. A more likely interpretation is that the design and methods employed in the present study were inadequate to yield *statistically* significant results.

Although the results are statistically non-significant, the pattern of results for both measures of intrinsic motivation *suggests* that intrinsic motivation is lower when a high level of time constraint is perceived than when a low level of time constraint is perceived. The following section discusses this possibility in terms of de Grazia's theory.

6.2.5 Implications for de Grazia

The attitudes that, leisure is free time and that work cannot be considered in a leisure context serve to perpetuate the structural mechanisms such as time obligation, that continue to prevent de Grazia's leisure from being realised by many people. In order to reap the benefits of a productive society (such as a dish-washing machine, a second car *and* mortgage, a house on the river valley or simply the college fees for offspring), people are forced into Giocsia's catachronia. The institutions of which we are proud founders *and* products, do not wish to hand over control of time to those who must live within them. de Grazia's leisure is not necessarily productive and a society based upon it would certainly take on a form different from the one in which we live. It would be most inconvienient if the worker in charge of throwing the power switch for a massive turbine system at a power generating station were to wander off to collect sea shells at a crucial moment in the power generating sequence.

Some people *do* opt out of the unleisurely way of life that industrialized society would have them lead. They live a *relatively* leisurely existence, free of the temporal chains of complex social institutions, free of the material and social *benefits* of that society. de Grazia's leisure may be encountered and is sought in a "*leisure-oriented society*". Sessoms (1974) describes this

society as "incompatible with our present western civilization concept of order and organisation." (p. 15). The rhythms required for the type of integration necessary for leisure as an enduring state of being, cannot exist in an industrialised society:

> Our concept of civilization is based upon the notion of obligation and interdependence. Life is structured, broken into time periods in which specific sets of activities - work, play, family - are pursued. It does not allow for personal freedom in the sense of ... the pre-industrial society man. (p. 15)

The 'leisure oriented society' may be found in 'contra-cultures'. A 'contra-culture' is a subculture of a society that exhibits as its main tenet, a rejection of some fundamental characteristic of the mainstream society. The members of this subculture will exhibit values that are different to the values held by members of the larger society. In the present context, such a subculture may be characterized by an 'anti-structure' ethic that dominates relationships within the subclture and between members of the subculture and members of the larger society. The elements of social structure that are rejected would be of the most fundamental type - time and space.

Farina (1980) suggests that the clock was the most important instrument of the industrial revolution and that the:

> " ... American Attitude includes enslavement by the clock. (This is related) directly to economic attitudes characteristic of the Protestant Ethic" (p. 21)

The *overwhelming* structuredness of industrial society and its incumbent "Protestent Ethic" has been blamed for the development of contra-cultures. The reason why an individual may choose a contra-culture as an appropriate oasis from industrial society, may be one of at least two alternatives. One reason is to *escape* from temporal oppression and the other reason is to positively embrace a more liberal state of being, viewing the time-bound industrial society as an

alternative lifestyle rather than vice versa. Pearson (1979) differentiates between surfboard rider and surf lifesaver subcultures by degree of deviance from dominant social time structures:

> The life saver's orientation toward competive sport pre-disposes him towards a very instrumental time orientation. A timetable of training habits is aquired to suit a daily routine. Training , meals, work, patrols, more training, all must be fitted in; disciplined schedules, themselves requiring a close adherence to timed performances are a part and parcel of the physical conditioning of the athlete. ... Many board riders consider their performance as a more natural rhythm in which the body flows in a manner more finely attuned to the pulsations of nature; the circadian rhythm of the body, the ebb and the flow of the tide, dawn and dusk, light and dark, morning calm and afternoon wind, meals when hungry or when the surf chops up - these are the time categories which are significant to the board rider. (p. 126)

The board rider is considered to be a member of a contra-culture due to the acceptance of a radically different temporal orientation and structure, compared to the surf-lifesaver whose regimen is closely aligned to to that of mainstream industrial society.

Banks has observed that the 'alternative lifestyle' approach to living is characterised by a high degree of integration of diverse activity into "more natural rhythms" (p. 151). The rural environment that is often adopted, provides an opportunity to simultaneously work, play, and maintain family obligations. The aquisition of the time orientations within the sub-cultures described by Banks and Pearson is not characterized by a headlong unthinking flight from an oppressive reality, but *is* characterized by a deliberate selection of a less oppressive reality - a leisure reality. Banks (1983) describes the 'hippie sub-culture' of the 1960's as hedonistic in its attempt to flee from the reality of temporal destinations to a world of extended 'nows'. The use of music and drugs to effect such a transition is indicative of the tempoary *refugee* status of the hippie's flight. Evident here is *fleeing from* a fragmented way of life, not a conscious movement toward a total way of living in which activity is done for its own sake. Clearly it may be *possible* to live a leisurely life free of the constraints of modern life, but the journey to such an existance may involve more giving up than most mortals are prepared to do.

The interaction of social institutions may be described and explained in historical, functional and dynamic terms. The means by which society controls and homogenizes its members may be discussed in broad terms in the formation of taxonomic classifications of groups of people to explain institutional and ideological relationships and phenomena. Although such relationships and phenomena may be concretely demonstrated to be real and pervasive, any impact that they may have on any real person is hypothetical. Such hypotheses are often accepted as *given* or as *inevitable* resultant assumptions. In the area of leisure research, Deci's framework offers an opportunity to penetrate the mystery of an individual and to provide concrete behavioral and attitudinal foundations that may be built upon for further research.

7. Summary, Conclusions and Recommendations

7.1 Summary

The purpose of the study was to investigate the effects of a perception of a high level of functionally irrelevant time constraint versus medium and low levels of functionally irrelevant time constraint on intrinsic motivation.

The 51 female and 21 male subjects were students enrolled in Spring courses at the University of Alberta. Each subject was introduced to the word game 'card-dice' and then one of three levels of functionally irrelevant time constraint (low, medium and high) was induced. Intrinsic motivation was measured by a 'free play' behavioral measure and a 23 item questionnaire administered post experimentally.

The primary analyses focussed on differences between intrinsic motivation scores attributable to each experimental condition. Analyses of variance scores on the behavioral and verbal measures of intrinsic motivation indicated that the differences between treatment conditions were non-significant at the 95% level of confidence.

Correlation between measures was seen to be very low with a Pearson r of .20. One explanation for such a low correlation is that although both measures may have been related to intrinsic motivation, different aspects of intrinsic motivation were measured.

Post-hoc two-way analysis of variance of the behavioral measure of intrinsic motivation according to experimental condition and gender revealed no significant main effect of gender and no significant interaction effect.

7.2 Conclusion

Based on analyses of variance of the behavioral and verbal measures of intrinsic motivation, functionally irrelevant time constraint did not have a *significantly* detrimental effect on intrinsic motivation. However, the *pattern* of results suggests that functionally

irrelevant time constraints do have *some* detrimental effect on intrinsic motivation. Results from both measures of intrinsic motivation suggest that perception of a low level of functionally irrelevant time constraint on a sequence of activity leads to a level of intrinsic motivation higher than intrinsic motivation experienced after a perception of a higher level of functionally irrelevant time constraint.

7.3 Recommendations

7.3.1 Methods

The methods employed in the present study may be held responsible for several problems encountered by the researcher. Further research on the effects of functionally irrelevant time constraints on intrinsic motivation should incorporate the following methodological recommendations.

1. The high standard deviations observed in each treatment condition for both measures of intrinsic motivation (especially the behavioral measure), *may* have been reduced by the pre-testing and screening of all subjects for pre-experimental attitude toward the task. This may have reduced the impact of a generally stable unfavourable disposition toward the experimental task. Only subjects demonstrating a high level of intrinsic motivation for the experimental task or a task bearing similar characteristics would then be admitted to the study. This would enhance the assumption that only the experimental treatment was responsible for an observed level of post-experimental intrinsic motivation, and reduce the effects of individual differences.
2. When attempting to construct an experimental task that does not bear an objective completion point, or when attempting to de-emphasize any objective completion point that an experimental task may possibly have, an example of the task, in what could appear to be a completed form, should not be used. The example of the task utilized in the present study for the purpose of clarifying the experimental instructions to the

subject, may have been responsible for the bi-polar distribution observed in the response pattern in the behavioral measure of intrinsic motivation of subjects in the high constraint condition.

3. To ensure that the effects of gender are eliminated from the study, task materials and measuring instruments should be thoroughly tested for homogeneity of gender response. Alternatively, if both males and females are to be included, an equal number of each should be utilized. Also, males and females should be equally represented in order to draw concrete conclusions regarding the existence of a significant effect of gender.

7.3.2 Experimental Design

A study of functionally irrelevant time contraint may test the following propositions by including a control or 'zero constraint' condition.

1. Intrinsic motivation is reduced by a perception of a high level of functionally irrelevant time constraint.

2. Intrinsic motivation is reduced by a perception of a high level of functionally irrelevant time constraint *and* increased by a perception of a low level of functionally irrelevant time constraint.

3. Intrinsic motivation is reduced to a large extent by a perception of a high level of functionally irrelevant time constraint and is reduced to a lesser extent by a perception of a low level functionally irrelevant time constraint.

4. Intrinsic motivation is increased to a small extent by a perception of a high level of functionally irrelevant time constraint and is increased to a greater extent by a perception of a low level of functionally irrelevant time constraint.

Subsequent intrinsic motivation, measured in a zero constraint condition may be used as a 'base line' against which level and direction (increase or decrease) of comparison of intrinsic motivation between experimental conditions could be made. A zero constraint condition in the present study would have involved subjects being given the standard instructions, with the additional instruction:

> "When you wish to change games simply turn over the next card and begin a new game."

A zero constraint condition was not employed in the present study in order to ensure that subjects in each treatment condition received the same amount of playtime with the task materials. The requirement for subjects in the zero constraint condition to adhere to a time *interval* may be avoided by pre-testing the task. Pre-testing would allow adjustment to parameters of the task such that interest in each game would naturally expire within a narrowly defined time interval without explicit mention of that time interval having to be made to the subject.

7.3.3 Intrinsic Motivation in the Context of Leisure Research

Deci's cognitive evaluation framework, provides efficient and effective means of supporting necessary assumptions inherent in de Grazia's conceptualization of leisure. The pattern of results suggests that when transition from one activity to another is regulated by externally set and functionally irrelevant time constraints, intrinsic motivation is diminished. Many other questions arising from de Grazia's concept of leisure are potentially answerable in terms of Deci's framework. For example:

a. Is the decrement in intrinsic motivation resultant from time obligation mediated by

the type of relationship that the subject has with the external agent perceived as responsible for the imposition of the time constraint? For example, do temporal obligations accruing from a family decrease intrinsic motivation more or less than temporal obligations related to employment?

b. Is the decrement in intrinsic motivation resultant from time obligation mediated by the *number* of externally regulated temporal transition points within a certain time period? For example, do six temporal transition points within an hour affect intrinsic motivation to a greater extent than three temporal transition points within an hour?

c. Is the decrement in intrinsic motivation resultant from time obligation mediated by the severity of sanctions imposed for disregarding time constraint? For example, does a coffee break deadline reinforced with a threat of employment termination for deadline violation, reduce intrinsic motivation more than a coffee break deadline that is not reinforced at all?

~~Deci's~~ cognitive evaluation framework, with its focus on self-determination and perceived competence, in relation to a *single activity*, provides great potential for future research in recreation. If intrinsic motivation is viewed of as a central component of enjoyment, and if the investigator's mandate is to examine parameters relevant to the enjoyment of a specific activity, Deci's theoretical framework may be useful. It can be well applied to easily defined activities, and recreation activities are often well defined conceptually, spatially and temporally.

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Appendix A: The Linkage Between Psychology and Sociology

The Linkage Between Psychology and Sociology

The question to be asked when making the macro-sociological to micro-sociological (social psychological) link is: can a macro-sociological theoretical proposition be empirically examined indirectly, by examining a limited micro-sociological hypothesis that is related to the macro proposition? According to Knor-Cetina and Cicourel (1981, p. 156), the role of the sociologist is to:

> " hypothesize that there are macro structures with certain generalized dispositions through which influences are exerted on the flux of daily action. "

This suggests that macro phenomena may have micro implications. Before directly discussing the stated question, two criticisms of using micro techniques per se in relation to the present study must be noted. The first relates to generalizability. A controlled laboratory experiment is generalizable only to the population from which subjects involved in the experiment are drawn. Further, any psychological experiment that is designed specifically to test human tendencies that are theoretically operative in real life situations or 'the flux of daily action' may find its task quite difficult due to: the artificiality of a laboratory setting; the general inadequacy of operationalized theoretical constructs; and, the measurement of the components of the constructs. The present study does not attempt to generalize to any wider population than that which bears similar characteristics to those people directly involved in the actual experiment. Generalization directly to a real life situation of any of the study's artificial constructs must be done with extreme caution. The study is undertaken for the purpose of testing a necessary, although not sufficient, assumption upon which rest propositions for use in the broader context. That is, if intrinsic motivation *can* be reduced by perceived time constraint then de Grazia's leisure *may* be affected by social-mechanisms capable of inducing such a perception.

The second criticism is that micro-sociological studies ignore the macro-sociological context of human interaction. By having its origin in a sociological rationale, this criticism is

directly addressed by the present study. The present study is limited in its generalizability but not in its utility to theoretical explanation. By attempting a linkage to larger sociological phenomena, background context can be established.

Another criticism of examining micro-processes in order to make macro-sociological inferences is that the quality of minute interactions "presume to stand for the complex social structures identified in macro-theory, such as large scale political, economic, demographic, and stratificational patterns" (Knorr-Cetina and Cicourel, 1981, p54). Durkheim (1965) argues that psychological explanations of social behavior do not recognize that an individual is constrained by the entire structure of interaction. For example, a person's location in a particular category of labour is a constraining force on the individual.

Just as physiology is an independently organized level of analysis above chemistry, sociology is a level of organization above psychology. The relationship between psychology and sociology can be considered as relating to the valid unit of analysis.

Positivistic (usually associated with structural-functionalist sociology) and critical sociologies are concerned with the operation of human interaction in an abstract sense. These 'sociologies' identify supra-individuals as groups classified as such due to some structural institutional relationship and taxonomic-individuals as groups thus classified as an artifact of the researcher. Psychology, on the other hand, concentrates very specifically on the individual and his/her mental mechanisms. Durkheim (1965) differentiates sociology as a science independent of psychology even though both sciences study human behavior. Durkheim asserts that social facts can be legitimately studied as resultants of the interactions of many people, and that a resultant is not attributable to any particular individual who contributed to its existence. The dynamic nature of a functional-structural approach is its focus on the changing character of the relationship between parts and the form of parts of an organic social whole. The synthesis of individuals or characteristics of individuals, in institutional organs "liberates

social life from the limitations imposed upon it by the characteristics of its constituent parts[21]". However, a close relationship of psychology to sociology is not denied by Durkheim, but is seen to lie in the focus of analysis. The following passage clearly illustrates this point.

> When we said elsewhere that social facts are in a sense independent of individuals and exterior to individual minds, we only affirmed of the social world what we have just established for the psychic world. Society has for its substratum the mass of associated individuals. The system which they form by uniting together, and which varies according to their geographical disposition and the nature and number of their channels of communication, is the base from which social life is raised. The representations which form the network of social life arise from the relations between the individuals thus combined or the secondary groups that are between the individuals and the total society. If there is nothing extraordinary in the fact that individual representations, produced by the action and reaction between neural elements, are not inherent in these elements, there is nothing surprising in the fact that collective representations, produced by the action and reaction between individual minds that form the society, do not derive directly from the latter and consequently surpass them. The conception of the relationship which unites the social substratum and the social life is at every point analogous to that which undeniably exists between the physiological substratum and the psychic life of individuals; if, that is, one is not going to deny the existence of psychology in the proper sense of the word. The same consequences should then follow on both sides. The independence, the relative externality of social facts in relation to individuals, is even more immediately apparent than is that of mental facts in relation to the cerebral cells, for the former, or at least the most important of them, bear the clear marks of their origin.
>
> If the characteristics of obligation and constraint are so essential to these eminently social facts, it is to be expected that they will be found, if less obviously, in other social facts. It is impossible for phenomena of the same nature to differ to the extent that some penetrate to the individual from without and others are the result of a different process.
>
> We should like here to correct a false interpretation that has been put upon our thought. When we said that obligation and constraint are the characteristics of social facts we had no intention of giving a summary explanation of the latter. We wished simply to point out a convenient sign by which the sociologist can recognize the facts falling within his field.
>
> While one might perhaps contest the statement that all social facts without exception impose themselves from without upon the individual, the doubt does not seem possible as regards religious beliefs and practices, the rules of morality and the innumerable precepts of law - that is to say, all the most characteristic manifestations of collective life. All are expressly obligatory, and this obligation is the proof that these ways of acting and thinking are not the work of the individual but come from a moral power above him, that which the mystic calls God or which can be more scientifically conceived. The same law is found at work in the two fields. Furthermore, it can be explained in the same way in the two cases. If

[21]From the introduction to Durkheim (1965) by Peristiany, J. G. .

> one can say that, to a certain extent, collective representations are exterior to individual minds, it means that they do not derive from them as such but from the association of minds, which is a very different thing. No doubt in the making of the whole each contributes his part, but private sentiments do not become social except by combination under the action of the *sui generis* forces developed in association. In such a combination, with the mutual alterations involved, *they become something else*. A chemical synthesize results which concentrates and unifies the synthesized elements and by that transforms them. Since this synthesize is the work of the whole, its sphere is the whole. The resultant surpasses the individual as the whole the part. It is *in* the whole as it is *by* the whole. In this sense it is exterior to the individuals. No doubt each individual contains a part, but the whole is found in no one. In order to understand it as it is, one must take the aggregate in its totality into consideration. It is that which thinks, feels, wishes, even though it can neither wish, feel, nor act except through individual minds. We can see here also how it is that society does not depend upon the nature of the individual personality. In the fusion from which it results all the individual characteristics, by definition divergent, have neutralized each other. Only those more general properties of human nature survive, and precisely because of their extreme generality they cannot account for the specialized and complex forms which characterize collective facts. This is not to say that they count for nothing in the resultant, but they are only its mediate conditions. Without them it could not emerge, but they do not determine it.

As the central distinction between psychology and sociology can be seen in the light of Durkheim's analysis, the way is paved for a legitimate linkage of the two social sciences. Homans (1964) believes that some explanation of social process may be found by placing assumptions upon which functional theory is based, in psychological terms. At the base of functionalist sociological theory 'roles' and norms are central. Homans (1964) believes that functionalists place much reliance on basic concepts such as internalization of roles and norms but fail to explain how or why such internalization occurs:

> The question remains why members of a particular society find certain of the results of their actions rewarding and not others, especially when some of the results seem far from "naturally" rewarding. This is the real problem of the "internalization" of values. The explanation is given not by any distinctively sociological propositions but by the propositions of learning theory in psychology. The functionalists were much interested in the interrelations of institutions, and it was one of the glories of the school to have pointed out many such interrelations. But the job of a science does not end with pointing out interrelations; it must try to explain why they are what they are. " . . . . "What is the lesson of all this? If the very things functionalists take for granted, like norms, if the very interrelationships they empirically discover can be explained by deductive systems that employ psychological propositions, then it must be that the general explanatory principles even of sociology are not sociological, as the functionalist

> would have them be, but psychological, propositions about the behavior of men, not about the behavior of societies. On the analogy with other sciences, this argument by itself would not undermine the validity of a functional theory. (p. 815)

To conclude

In terms of the present study, the macro-theory presented is far from a well constructed set of functional propositions. The theory covered is a-historical and limited in scope with reference to other social mechanisms that may operate to negate or intensify the effect of time obligation. The study does not even address the dynamics of *how* various institutions may interact to bring about time obligation. All that is proposed is that industrialized society, through its institutions' reliance on objective time for synchronization, imposes time obligation on its members and therefore, by definition, negates leisure as an *enduring state of being* within such a society. With leisure defined as consisting of at *least* intrinsic motivation of action, the above proposition rests on the assumption that perceived-time constraint can adversely affect intrinsic motivation.

Appendix B:Socio-Cultural Time Versus Other Types of Time

Appendix B

Socio-cultural time differentiated from other types of time

Sorokin (1964) delineates 'socio-cultural' time from 'physio-mathematical', 'biological' and 'psychological' time to further emphasise the distinctiveness of socio-cultural time. Physio-mathematical time is the measure of motion of an entity in relation to the motion of another entity. This is objective, mechanical clock time. Physio-mathematical time is tied to the movement of whole solar systems, atomic systems and geo-physical systems. Physical entities move and change with reference to other physical entities. Man is only able to observe and comprehend such change and movement if the notion of time is permitted.

Physiological (or Biological) time seems to be quite independent altogether of mechanical time. The notion of change is still present but the operation of the system is distinct. People of the same age, as measured by clock time, display different developmental stages even though they *should be the same*. A girl of twelve may be as ready as a girl of eighteen to bear a child. A boy of fifteen may be as tall as a boy of twenty. Human or biological development surely involves a process of change, but one that does not necessarily correspond to that of whole solar systems. Wounds in young children take less clock time to heal than do wounds in young men which take less time to heal than in old men. Biological time does not move in a uniformly continuous manner. Development, growth and change vary in rate from organism to organism. Some people 'age' faster than others, physical metamorphosis of species speed up and slow down with little consistency or regularity. Physiological or biological time is a granular, variable, individual time, differing from continuous, integral universal time (Sorokin, 1964). It is however linked to physio-mathematical time by the attribute of rhythmicity and its existence as an observable process of change *in* time. Hammer (1966), in his examination of evidence for a 'biological clock', shows that most living organisms display a 'circadian rhythm' that is partially unassailable. He discusses plants that maintain an apparently photo-sensitive operation in absence of photostimulus. [22]

[22] This is known as an 'endogeneous circadian rhythm'. He notes that some

Psychological time is a term used to describe an individual's personal experience of time, that is: "Ways man uses to represent the changes to himself, to orient himself within them, and also to control them " (Sorokin 1964, p. 16).

Psychologists study time from several perspectives (Cohen 1966). They attempt to discover a time interval to which people are optimally sensitive termed the 'indifference zone' which may correspond to some endogeneous rhythm or relate to a very precise and common range. Psychologists are also concerned with the measurement of attention span, estimates of elapsed time, the development of a future perspective and its length, environmental stimulus leading to rhythm reproduction such as auditory and light calibration (Ornstein 1969), effects of psychological distortions such as those caused by hypnosis, drugs, pathologies and illnesses, on all the above aspects of temporal experience. Fraisse (1963) and Sorokin (1974) cite

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[22](cont'd) rhythms seem quite independent of a normal 24 hour day: "Some individual animals have periods in their rhythm of more than twenty four hours and some periods of less than twenty-four hours, while others may be almost exactly 24 hours in duration. " Although biological rhythmicity has been widely observed in lower and higher order organisms, its conclusive explanation remains undiscovered. As Cloudsley-Thompson (1966) points out, there is in the literature regarding this phenomena, a 'nature/nurture' debate. Rhythms of animals do apparently continue in absence of night day and other environmental rhythmic phenomena such as earth rotation (in the case where organisms continue geographically located rhythms when far removed from place of origin - followed by the development of a localized rhythm), but tend to lose this in prolonged environmental separation. This lends support for the existence of an exogeneous acquisition of rhythm, i. e. , environmentally induced. The persistance of rhythm is explained exogeneously by the 'imprinting theory'. That is, organisms are born 'arhythmic' and learn rhythmic behavior from parents or other environmental stimulus until 'imprinting' takes place (just where, biologically, this imprinting occurs is uncertain). Cloudsley - Thompson, however, believes tht such rhythmicity is a genetically inherited sense and accounts for the falling away of rhythmicity under stimulus change with the following idea:

> "Suppose that an animal is controlled not by one clock but by a number of inherent cellular clocks kept in synchronization by an environmental factor like changes in light intensity. Deprived of this sychronization, the clocks will gradually go wrong and get out of step, just like a collection of wristwatches that are never reset by a time signal. " (1966, p. 302).

hundreds of experiments in these diverse areas.

Most of the material in the psychology of time is concerned with the cognitive functioning of a sense of objective time. Factors affecting the accuracy of temporal functioning seems to be the central focus. For the purpose of this study, examination of the psychology of time is limited to discussion of Piaget's developmental theory and and to discussion of time in motivation theory [23].

Socio-cultural time is the human experience of change within a socio-cultural context and is conditioned by each of the above elements.

[23]See Appendix C

Appendix C The Philosophy of Time

Appendix C

The Philosophy of Time

In order to firmly establish the esential duality of subjective and objective notions of time, it is worthwhile to examine these concepts as they relate to each other in philosophy. This section is not intended to be a comprehensive discussion of time in western philosophical thought as philosophy is not the central focus of this study. One of the most influential works addressing divergent perspectives on time is J. T. Frazer's (1966) *'The voices of time'*. This volume contains commentary on topics ranging from 'Time in Christian Thought' to 'Time and Synchronicity in Analytic Psychology'. The following discussion is drawn principally from an article entitled 'Ideas of Time in the History of Philosophy' by A. Cornelius Benjamin in Frazer (1966).

Benjamin presents the philosophical controversy on the nature of time as vesting in three areas. Firstly, time appears to be relational. We are aware of time by the idea of things or events happening *in* time. On the other hand, we can experience fast and slow, so there must be some objective time in our realm of existence. Secondly, the before/after concept implies that one instant cannot be simultaneous with another even though events can be. This is a unidirectional ordering characteristic of time. Its opponent lies in the past, present, future distinction. What is the nature of now? Is it simply a cognitive link between expectation and memory or is it more anologous to a saddleback on which past and future are positioned at either end? The ~~third~~ controversial characteristic of time is the perception of being. Do things or events arise in a novel manner or does change occur against a universal background in a constantly becoming manner? Fourthly, is time a cognitive construction of objective reality existing only in relation to velocity and space, or is it a subjective experience of the heterogeneous flow of consciousness? Is it either one, or can both exist simultaneously *and* harmoniously?

Pre-Socratesian debate centered mainly around the nature of being. That is, becoming versus novel performance. Using the analogy of fire, Heraclitus held that all things in time were simply our perception of change. As a fire burns, it becomes smoke and is either *perpetually* replaced by another flame or its potential (fuel) remains in its previous form until it rots. Thus all things in time are simply extensions of the past, a denial of spontaneity. Permenides and Zeno, on the other hand, used the same analogy to refute Heraclitus. As a flame exits, it passes out of existence as a flame and into existence as smoke, thus, it ceases to be a flame and smoke comes into being. When the relationship between being and time is conceptualized in this manner, novel existence and hence spontaneity is admitted.

Plato made some attempt to reconcile these positions by introducing the idea of form separate from object. For example, Alan Law is an object bearing the form of humanity. Even though Alan may change his characteristics, he will still bear the form of humanity. Here, change and permanency are one. Benjamin cites Plato's explanation of this idea in Timaeous, where the creator is explaining how he transformed the original chaos into a lawful universe:

> But he resolved to make a moving image of eternity, and as he set in order the heaven he made this eternal image having a motion according to number, while eternity rested in unity; and this is what we call time.

Following Plato, Aristotle's concentration was on the measurability of time and it was his view that time was the number of motion in respect to 'before' and 'after'. In this way, time cannot exist without change, and change cannot exist without time, so time and change are perceived together. Aristotle sees the 'now' as an identity belonging to an object and also not belonging to an object. That is, insofar as an object is perceived in motion and succession (one instant following the next), the 'now' exists as different to the object or in other words the same object but lots of different nows. When, however, an object's substratum or contextual motion background is examined, the object assumes an identity of 'now' or in other words, the same background but lots of object nows.

Locke saw the human mind as a blank sheet upon which a perception of time itself is novel as opposed to pre-existing and innate. He says that a *conception* of time comes from a reflection of a succession of ideas which is a second order of mental abstraction. Duration comes from an identification of succession *distinctiveness* and thereby, homogeneity. That is we must be able to identify sameness in order to recognise distinctives. When only one idea exists in our mind, this is known as an instant and is 'now'. Because a perception of mental images is immeasurable spatially; the only way to measure time objectively, is to set our perception of distinctiveness to some homogeneous medium such as the motion of the earth on its axis or around the sun. In any case, there is no way to conceive of time independently of events happening in time.

Newton believed time to exist in relation to a succession of perceptual events, but also believed in an objective universal time, or absolute time. Newton argued that an object has its greatest quantity in a constant velocity. If an object can have absolute rotational motion, there must be an absolute homogeneous space in which it moves, *and* an absolute homogeneous time during which it undertakes its motion.

Arising now are the concepts that Bergson (1910) refutes. That is: (1) Time can be thought of as a homogeneous quantity; (2) The impression of simultaneity and duration arises from distinct psychological images; (3) Time contains and *is* a constant state of becoming. These conceptions imply a deterministic approach to existence and, according to Bergson, exclude the possibility of free will. Due to the centrality of Bergson's views to the present study his position will be returned to and amplified.

Leibnitz held that time and space were both innate ideas. He conceives of an ideal time and space irrespective of its content; but its *perceptual reality* exists in successive psychological states. He sees the past-present-future distinctions as quite irrelevant, there simply exists 'is' and 'was'. Here Leibnitz introduces the possibility that time can be *conceived* of in an objective manner and *perceived* of in a subjective manner.

Kant was unable to conceive of time outside the reality of perception and saw it as part of intuition. Intuition is the process by which the nature of a *thing* is perceived as distinction between its form or content and its sensory representation. Time cannot be an empirical conception since we need time to *perceive* co-existence and succession as part of the perception, not as a characteristic of an object. Kant's view of time as an intuition is so well portrayed by Benjamin that it deserves direct quotation here:

> Time is not a property of things but a property of the instrument by which we view things. And since we have no instrument other than the mind for observing them, we are compelled to see the world as temporal. It provides time with an objective status with reference to all objects that can ever be presented to our senses, yet it saves its subjectivity because apart from the mind, time is nothing.

Henri Bergson also believed that time was the key to understanding reality. He argued in his great work 'Time and Free Will' (1910) that time *is not* best exemplified in spatial movements of the outer world but in man himself, in the overlapping or merging of characteristics comprising mental states as *we experience* the passing of time. Bergson believed that psychic states are 'intensive' or qualitative, and when looked at in multiplicity, (many merging into one), they form duration. When we consider the idea of *unity in multiplicity*, it becomes simple to see how many divergent psychic states may swirl and merge in determination of one another. If the concept of space is dispensed with when considering the perpetuality of psychic state movement, we are left with some interesting relationships among these concepts. If different psychic states are considered different because different qualities of experience are perceived, these various qualities are considered *intensities*. Often these intensities are regarded as resultant from a quantitative 'extensity' situated in space: for example, a perception (bearing a certain intensity) of a wooden chair that has quantitative characteristics. Various intensities are considered magnitudinally, but really only exhibit a particular representative qualitative state. For example, if two lights, one brighter than the other are presented together, one is perceived as different to the other. Although one may be emitting more light than the

other, the *perception of more* as a characteristic of the object perceived is not the same as *more perception* of light in one object than another.

With concepts of quantity and number (being the basis of a concept of multiplicity and extensity), there must exist the notion of a homogeneous medium. In order for a multiplicity to exist, units must be distinct from one another to be added together - thus requiring a spatial concept of unit. If we look at states of psychic consciousness, how can one state be *added* to another to form a further state? If this were possible, a permutation of states would cause each former state to be *present in form* in the later state which is a whole in itself and quite different. Bergson holds that psychic states are not homogeneous things and, in fact, are probably pure heterogeneity if it at all exists. If we accept that psychic states are not homogeneous units, then intensity has at last shed its extensive characteristics and numeracy is irrelevant to the purely qualitative. Bergson describes 'Duration' as "a pure heterogeneity within which there are no distinct qualities. In short, the moments of inner duration are not external to one another" (1910, p. 238). Duration is a concept to describe being, people exist within their own perception of duration. Inner or experiential duration is merely living a continuous heterogeneous existence. External duration is simply simultaneity without succession, that is, a continuously moving point of presently occurring events - mutual externality. Internal duration is a simultaneity of succession without mutual externality.

The idea that external simultaneities succeed one another *for our consciousness*, leads us to attribute a distinct succession and homogeneity to those simultaneities and thus to our own psychic states. This misconception leads us to take time into space and externalize our own successive duration into distinctives. Thus, physical phenomena, simultaneous and absolutely distinct (in that as one simultaneity becomes another the former is no longer in existence), slice up into portions, internal simultaneities which imply interpenetration and a successive indistinctive. In this way, time is mistaken as a homogeneous space and a succession. A perception of time is obscured by a conception of time. Bergson sees this mistake as a reason for prevention of the development of true free will: " Inner phenomena in their developing,

make up by their interpenetration, the continuous evolution of a free person" (1910, p. 229).

The failure to consider duration as a wholly qualitative continuous succession causes mistakes in the conceptualization of freedom. Those that deny the existence of freedom are determinists, and assert that an act is determined by its conditions. This leads to the conception of a totality of conditions *and* the homogeneity of duration. The conservation of energy principle is also applied in linking the operation of the physical world to the inner world. The mistake is made in equating the idea of time as duration with that of space. Bergson believes we have two different selves, one is our social and spatial representation with identities and names, the other is our inner selves discovered by deep introspection to be in a constant state of flux. Our conscious states are not amenable to measurement or explanation and stand in juxtaposition with homogeneity and distinctive apportionment and identification:

> We live for the external world rather than for ourselves; we speak rather than think; we "are acted" rather than act ourselves. To act freely is to recover possession of one's self and to get back into pure duration. (1910, p. 231).

Only when time is expressed in space, does it assume the quality of a homogeneous whole. Under Kant's reasoning, we represent time spatially because we can only understand conscious states in juxtaposition to themselves, set side by side. Bergson agrees with this notion and offers the following analogy:

> We can carry ourselves back in through to those moments of our life when we made some serious decision, moments unique of their kind, which will never be repeated anymore than the past phases in the history of a nation will ever come back again. We should see that if these past states cannot be adequately expressed in words or artificially reconstructed by a juxtaposition of simpler states, it is because in their ***dynamic unity and wholly qualitative multiplicity***, they are phases of our real and concrete duration, a heterogeneous duration and a living one. (1910, p. 239)

One of the most prominent exponents of time as an *objective* reality in relation to human experience, is Piaget. Piaget (1969) holds that time is *perceived* in a subjective manner and therefore, in relation to a personal experience of it, the reality of time is subjective in nature, ultimately controllable and amenable to the functioning of a free will. However, Piaget also believes that people develop an ability to *conceptualize* time as an objective homogeneous medium. Time *does* exist in the objective real and further, the relationship between space and velocity can be conceptualized as a length, analogous to space:

> Psychologically, time depends on velocity, that time is a coordination of velocities, or better yet, of movements with their speeds, even as space is a coordination of changes of place, that is to say, of abstract motion made up of velocities. (Piaget, 1966, p. 202)

Piaget (1966, 1969) demonstrates that the aquisition of an ability to correctly conceive of time as the relationship between space and velocity occurs in three stages. Through these stages, the phonomena of objective duration, succession and simultaneity are combined to form the mature time concept. Piaget believes it is the development of a reversibility of thought that helps the child unfold successions and asymmetries, to construct a general grouping of qualitative and quantitative temporal relations. Thus, the movement of a clock across the dial is understood to represent time - by cognitive invention - not by intuitive understanding. This does not detract from the Bergson explanation, but adds to it. A short description of Piaget's stages of development of objective time conceptualization will aid in showing the difference between objective and subjective notions of time.

At the operational stage (mature stage), an ability exists to concretely link velocity and space and to demonstrate an understanding of homogeneous duration. At this stage of development, homogeneity is *invented*. Piaget recognizes that "durations unlike distances, cannot be applied to one another, a duration must be defined as an interval between two events, not only in terms of content (succession differentiation), but also in terms of a motion

covering a given distance with a given velocity *and* this motion must be reproduced by a new spatial displacement.

The pre-operational stage is characterized by the child's inability to separate the content of an event from its temporal charcteristics. Children at this stage, equate a longer distance with a longer duration, and/or a larger velocity with shorter duration. Thus, if object 'A' moves with greater velocity than object 'B', even though they started simultaneously, 'B' will be perceived as having moved for a greater amount of time. Here it is obvious that a synthesize between space/motion and succession has not been achieved and concentration is still on duration content, that is, number of events equals time. Piaget calls this stage 'Articulated Intuition' where time as duration is intuitively articulated as a simple spatial function, a tall tree is an old tree, etc. Piaget blames this stage on ego-centrism, where the child is unable to project itself from a concentration on personally impacting realities. However, as a spatial link is made, the way is paved for decentration (a recognition of externality). It also provides a start to the recognition of a *link* between duration, succession *and* motion.

The most basic stage in the progression toward operationalization is the perceptual stage. The only temporal skill possessed by the child is a recognition of ordinal succession. The child is able to distinguish between past and future and can recognize that one duration is somehow different than another, but space and velocity are unconnected. In effect, time at stage 1 is simply the order of succession and the colligation of durations of a single series of linear events, irrespective of its own velocity or its intersections with other series with different velocities.

Time in this stage is completely lived and generalizations about faster/slower longer/shorter are not even intuited. There is a complete inability to understand several event sequences in relation to one another. Parts of single sequences can be understood differentially but only insofar as they are internaly related and usually specially organized. An example is the 4 year old girl who says she is younger than her sister because her sister is bigger than she is.

but she doesn't know who was born first. Here there is a spatial representation of succession but duration is not inferred. The difference between stages one and two is that during stage one, velocity/duration/succession relationship is not noticed at all and at stage two, it is intuited simplistically but easily confused. By stage three, it can be calculated.

Appendix D Questionnaires Used in the Study

1. Mood State Questionnaire
2. Task Reaction Questionnaire

1. Mood State Questionnaire

Describe your mood RIGHT NOW.

	Very	Quite	Some	Neither	Some	Quite	Very	
Alert	___	___	___	___	___	___	___	Drowsy
Happy	___	___	___	___	___	___	___	Sad
Irritable	___	___	___	___	___	___	___	Cheerful
Strong	___	___	___	___	___	___	___	Weak
Angry	___	___	___	___	___	___	___	Friendly
Active	___	___	___	___	___	___	___	Passive
Lonely	___	___	___	___	___	___	___	Sociable
Detached	___	___	___	___	___	___	___	Involved
Free	___	___	___	___	___	___	___	Constrained
Excited	___	___	___	___	___	___	___	Bored
Confused	___	___	___	___	___	___	___	Clear

Mark the answer which seems to describe your feelings at this very moment.

	Not At All	Somewhat	Moderately So	Very Much So
I feel calm	_____	_____	_____	_____
I feel relaxed	_____	_____	_____	_____
I am worried	_____	_____	_____	_____
I feel sure	_____	_____	_____	_____
I feel rested	_____	_____	_____	_____
I feel scared	_____	_____	_____	_____
I am nervous	_____	_____	_____	_____
I feel pleasant	_____	_____	_____	_____
I am jittery	_____	_____	_____	_____
I feel frightened	_____	_____	_____	_____

2. Task Reaction Questionnaire

TASK REACTION QUESTIONNAIRE

Listed below and on the sheets that follow are a series of statements relating to the group of puzzles that you have just completed. Please take your time and respond thoughtfully and honestly to these statements by indicating the extent to which you agree with each by circling the number corresponding to the appropriate response. Thank you.

1. There are several important abilities of mine that were required in order to work effectively on the puzzles.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

2. I like the idea that I had enough freedom and responsibility to do the puzzles the way I wanted.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

3. The challenge posed by these puzzles really aroused my interest in them.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

4. My feelings while completing the puzzles could best be described by the word *excitement*.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

5. At various times I felt like I was really achieving something while working on the puzzles.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

6. There is something about solving these puzzles that I find very appealing.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

7. I enjoyed using what I consider to be a strong natural ability when it comes to these puzzles.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

8. The nice fueling associated with working these puzzles certainly was a determinant of how well I did.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

9. I really became absorbed with the puzzle task while working on it.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

10. These puzzles gave me the opportunity to learn something new and interesting.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

11. The freedom I had to work at my own pace led me to really work hard on the puzzles.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

12. The unpredictable qualities of the puzzle task were quite intriguing.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

13. These puzzles gave me the opportunity to develop new skills.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

14. After working on these puzzles for a while, I felt like a pretty competent individual.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

15. My talents were effectively utilized in solving these puzzles.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

16. I liked the opportunity I had to decide for myself how I would solve the puzzles.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

17. I would describe my time with these puzzles as a pleasant experience.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

18. There was plenty of opportunity to exercise my ingenuity and inventiveness on these puzzles.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

19. After working for a while, I had the feeling that I was really good at those types of puzzles.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

20. I felt considerable pride in knowing that I was doing well on the puzzles.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

21. The puzzles could accurately be described as fun.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

22. One source of motivation was the opportunity for independent thought and action while working the puzzles.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

23. The puzzles really held my attention from the very beginning.

Strongly agree	Moderately agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Moderately disagree	Strongly disagree
1	2	3	4	5	6	7

24. On a scale from 1 to 7 (with 1 meaning that you realy liked it), rate how much you enjoy word games in general.

Enjoy them very much						Do not enjoy them at all
1	2	3	4	5	6	7

25. On a scale from 1 to 7 (with 1 meaning that you realy liked it), rate how much you enjoyed this word game in particular.

Enjoyed it very much						Did not enjoy it at all
1	2	3	4	5	6	7

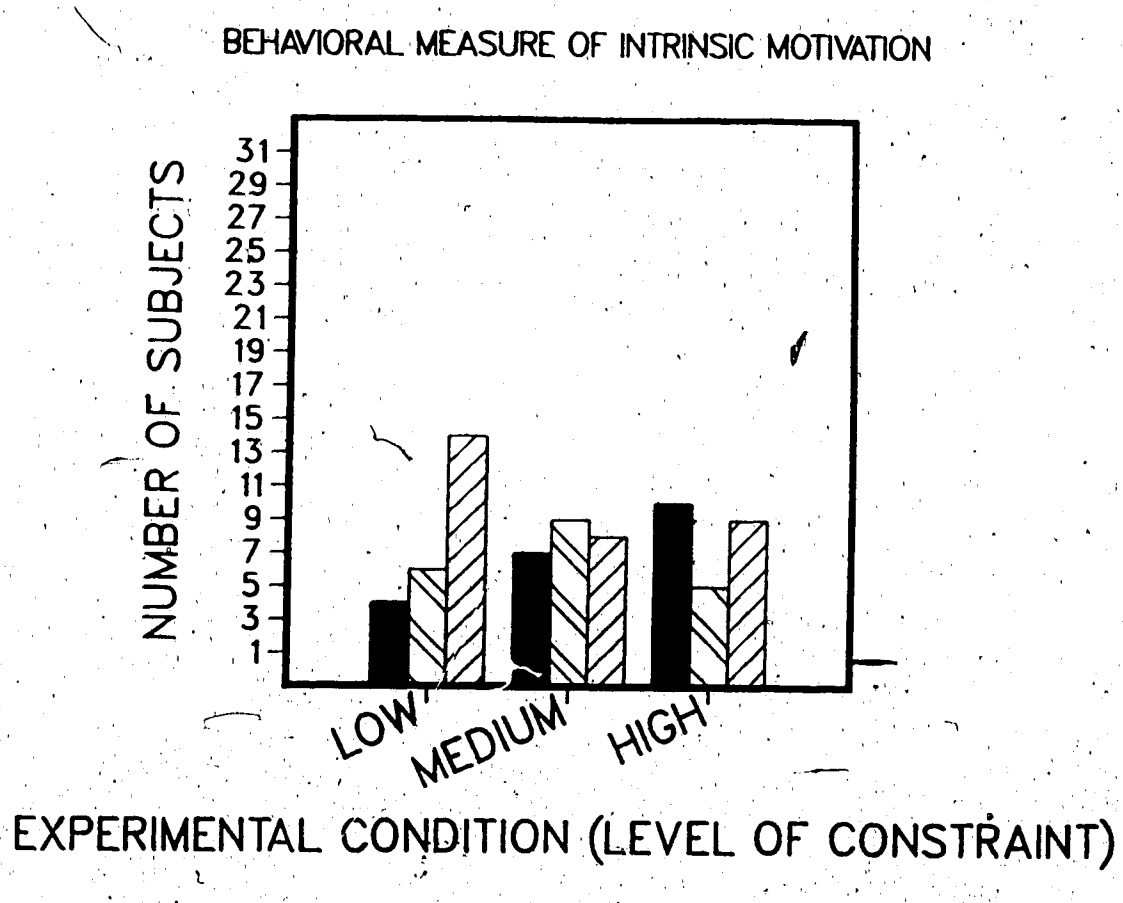
26. On a scale from 1 to 7 (with 1 meaning that you would definitely play this word game again if it were presented to you as an alternative amoung similar games) rate the probability that you would play this game again.

definitely play it again						never play it again
1	2	3	4	5	6	7

Appendix E Within Condition Distributions

Appendix E
Bar Charts of Within Condition Distribution of Scores on the Behavioral Measure of Intrinsic Motivation

(Each bar represents a range of intrinsic motivation scores. A high score represents *High* intrinsic motivation.)



Bar Charts of Within Condition Distribution of Scores on the Verbal Measure of Intrinsic Motivation

(Each bar represents a range of intrinsic motivation scores. A high score represents *low* intrinsic motivation.)