INDEXING ADOLESCENT ADJUSTMENT PROBLEMS: A COMPARISON OF FOUR RELATIVE SCORING PROCEDURES

by

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Abstract

An attempt was made at developing an adjective check list of externally weighted items to index adolescent adjustment problems. Study I found that there were difficulties with having adolescent Ss assign weights to a set of items selected to index adjustment using a Thurstone scaling procedure. Ss were unable to consistently indicate the degree of problem each item indexed. Thus, weights were found to be distributed across the entire scale for each item. Several alternate methods were suggested and compared in the Main Study for indexing adjustment utilizing individual and group frames of reference. The four methods were a normative-self contrast, an ideal-self contrast (the two traditional methods), a self-worst contrast, and an ideal-self-worst contrast. Generally it was found that the method taking into consideration both directions of the personal frames of reference (ideal-self-worst contrast) performed as well if not better than the other three methods in terms of item selection, maintenance of an a priori factor structure, internal consistency, content validity, and concurrent validity. The ideal-self contrast, a traditional method for assessing therapy success, did not show as good results, particularly with respect to validity comparisons. The constituent parts of the ideal-self contrast were analyzed. It was found that ideal ratings generally show lower variance and higher association with normative ratings than self ratings or worst ratings. Furthermore, it was suggested that where an index is desired to measure adolescent adjustment problems, S's full frame of reference should be taken into account by that index.

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Background to the problem of assessing adolescent adjustment

In the psychological literature there has been a prolific amount of writing devoted to adolescence. Of central importance in much of this research has been the problem of adjustment during this phase of life. During the development of the present study an attempt was made to define some of these adjustment problems.

Adolescence is generally considered to involve the years between puberty and adulthood, a period which may be described as transitional. Prior to puberty a child normally has the security of full dependence on his family but after adolescence society demands of the adult considerable independence and self-support. Through this period the individual must make some adjustments, the success of which may determine his ability to cope with the complex adult role he must play for three quarters of his life. The transition from childhood to puberty is normally marked by the first signs of pubic hair which occurs between the ages of thirteen and fifteen for boys (McCandless, 1967) and a year or two earlier for girls, whereas the transition from adolescence to adulthood is less marked physically. Probably the clearest index of adulthood in western society is superimposed by that society onto the individual - the age at which he is legally responsible for his actions. This arbitrary age usually ranges between eighteen and twenty-one. It would appear then that legally most of adolescence occurs during the last four to six years of public school in western society while psychologically adolescence may last into the middle twenties and for some, mature adulthood may never be achieved. Adolescence itself may be divided into two phases, early and late adolescence. Early adolescence generally involves the problems of relinquishing many of the attitudes, beliefs, and social structures of childhood while late adolescence involves more the structuralizations of what will become adult.

> It is during this second phase that adult neurotic or healthy patterns of adaptation take shape.
>
> With this working through chaotic feelings to some solution he formulates a self-identity. Each aspect of his struggle for this identity must, in some fashion, be answered during this period. (Josselyn, 1971, p. 2, 185)

The employment of counselors in virtually every high school in this country would attest to the problem of adjustment during this transitory phase. It would seem logical then that a reasonably clear understanding of these problems is needed before effective counseling could proceed. A second consideration which is inextricably tied to a clear understanding of these problems is the ability to measure them. On close scrutiny of this relationship one is struck by an argument which seems circular. That is before one can measure a construct, one needs a clear understanding of the problem but a clear understanding can be gained by an instrument validly indexing the problem. What we have here is not a circular argument but an iterative process. A reasonably lucid understanding of the problem must exist before one can measure it but once one has attempted to measure it the problem may be better defined, and so on. The initial question for a researcher interested in research in this area would seem to be where in this iterative process should he begin? It was therefore assumed that a reasonably valid index of adjustment should be sought which might aid the researcher in the understanding of the complex process of adjustment.

Measures of adjustment

During the past several decades there have been many tests and scales developed and used to measure and index adjustment such as the Bell's Adjustment Inventory, the Mooney Adjective Check List, the California Personality Inventory, and the M. M. P. I. While many of these instruments have been developed on a college sample, few have been developed specifically

for the adolescent, taking into account the specifics associated with adolescent adjustment problems although many have been extended to adolescent populations. Many of these tests have been personality inventories and anxiety scales, maladjustment being inferred from deviant scores. When several of these techniques have been applied to the same population, very low intercorrelations have been found between these measures of adjustment. In one study, Tindall (1955), a median correlation of .228 was found between sixteen indices of adjustment which included such tests as the California Test of Personality, Heston Personal Adjustment Inventory and the Rotter Incomplete Sentence Test. Fiedler, Dodge, Jones, and Hutchins (1958) intercorrelated eleven indices of adjustment including the General Army Adjustment Scale and the Taylor Manifest Anxiety Scale using four different military samples and found median correlations between .10 and .16.[1.] Tindall (1955) concluded:

> The area known as adjustment apparently needs more careful definition. If meaningful concepts could be delineated, then more valid measuring devices might be constructed. More refined statistical techniques might then be applied.

Watley (1965), while investigating the relationship between adjustment and achievement found results which contradicted earlier results by Anderson and Spencer (1963). He attributed this contradiction to a difference in test and definition. Watley used the Guilford-Zimmerman Temperment Survey whereas Anderson and Spencer used the M.M.P.I. Watley

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1. It should be noted that the lack of significant and high intercorrelations between different measures of adjustment does not necessarily lead to the firm conclusion that these measures are not indexing a common construct. It may be that similarly named subscores within some of these measures would not intercorrelate because they were sampling different subdomains of a common domain. The argument here then is a canonical one. It was felt that before one could conclusively state that these various measures of adjustment were not indexing a common construct, a canonical analysis as outlined by Cooley and Lohnes (1962) should be performed with some index of canonical redundancy such as that given by Stewart and Love (1968).

claimed that the M.M.P.I. uses a definition of adjustment as the degree of psychiatric disturbance in an individual, inferred from the clinical population the M.M.P.I. was constructed on. For G.Z.T.S. adjustment was defined or inferred from a set of positive and negative personality qualities developed from a normal population. One might easily generalize Watley's and Tindall's criticism to some of the other studies attempting to establish whether previous indices of adjustment are measuring the same construct. It would appear that since the intercorrelations are very small a common definition of adjustment has been generally lacking. But is this suggested lack of common definition difficult to obtain in this area or has there been little attention paid to it? One answer may be that adjustment should be defined in different ways taking into account the specific nature of the group of people in which the investigator is interested. Childhood adjustment may be quite different from adolescent adjustment which may be different again from adult adjustment. Are adjustment problems faced by Indians similar to ones Anglo-saxons encounter? Are adjustment problems of women similar to those for men? It may be that an instrument developed on one "population" should not be used on a different "population" of people.

Theories of Adolescence

The immediate problem was with adolescent adjustment. Can a definition of the dimensions of adolescent adjustment be formed? The most immediate source of these dimensions should be the theories of adolescent personality which have been carefully developed over the last century. In the past, theories of adolescence have been of three general types: biological, sociological, and cognitive.

G. Stanley Hall was probably one of the first more contemporary theorists to consider adolescence. His theory was totally biological in nature with very little room for environmental factors. The theory might

be described as a recapitulation theory - the ontogenetic development of the adolescent as analogous to the phylogenetic development of the human species. Hall viewed the adolescent phase as a period of "storm and stress", turbulent and transitional in nature but biologically determined. Hall suggested that human development occurs in five stages, infacy, childhood, youth, adolescence, and adulthood. He further suggested that the behavior of each stage was genetically determined and that the individual would naturally mature from one stage to the next. Expressed in these terms, the apparent "abnormal" behavior of the adolescent is not necessarily indicative of problems but simply behavior expected during this period. When the person matures out of the adolescent stage his behavior would naturally change accordingly. Hall's theory has been severely criticized as being too extreme and many cross-cultural studies have supplied information contradictory to his thesis (Muuss, 1968).

Sigmund Freud considered adolescence in terms of genetically determined stages relatively independent of environmental factors. Freud stressed sexual awakening as the prime force during adolescence which increased nervous excitement, anxiety, and personality disturbances. The adolescent is seen as passing through a fourth stage of development, the genital stage. Just as Hall suggested that the individual passes through biologically determined stages so does Freud but with one very major difference. Hall implies that the person will naturally pass through each stage independent of the environment, whereas Freud places more emphasis on environmental factors. For Freud, the occurrence of the stages in a particular order is very independent of the environment but the success of resolving the specific problems of each stage is determined very much by the environment. Freud saw the individual struggling with primitive impulses which developed with his sexual awakening and the degree to which his ego could control these

impulses determined the success he would have in passing through this stage. The well adjusted individual has a strong and flexible ego capable of inhibiting these impulses, sublimating the energy, or expressing the impulse directly, dependent upon the existing appraised reality (Lazarus, 1969). The importance of the environment then is in allowing the development of a strong, flexible ego.

Arnold Gesell viewed adolescence as comprised of normalized genetically determined stages. Gesell's theory was so rigid as to describe distinguishable expected behavior patterns for each year of life during the adolescent period. Gesell, like Hall and Freud, placed great emphasis on biological factors in determining stages of development. Actually Gesell was closer to Hall than Freud in terms of the relative importance of nature and nurture suggesting that whereas such factors as home, school and culture have an effect on the developing individual, environmental factors can never transcend these maturational stages. In terms of biological factors Freud placed more emphasis on instinctual impulses disrupting the individual but Gesell "believed that biology controls not only changes in growth, glandular secretion, and the development of primary and secondary sex characteristics, but also abilities and attitudes." (Muuss, 1968; p. 117) Thus one may assume that Gesell would suggest that little can or need be done for the adolescent except to determine his particular growth pattern and ensure its natural fulfillment. For Gesell, the adolescent's central task, to find himself, progresses quite naturally and more efficiently given a nutrient environment.

Erikson, a Neo-Freudian theorist, viewed the establishment of ego identity of prime importance during adolescence. For Erikson, role diffusion during the aquisition of ego identity is a stage during adolescence which must be resolved to form a healthy adult ego, and of great concern during

this period is the question of vocational identity. This stage of ego identity might be considered successfully resolved by "total integration of vocational ambitions and aspirations, along with all those qualities acquired through earlier identification..." (Muuss, 1968; p. 52)

> ...what I call their accruing ego identity gains real strength only from wholehearted and consistent recognition of real accomplishments, that is, achievement that has meaning in their culture. On the other hand, should a child feel that the environment tries to deprive him too radically of all the forms of expression which permit him to develop and to integrate the next step in his ego identity, he will resist with the astonishing strength encountered in animals who are suddenly forced to defend their lives. (Erikson, 1959; p. 89-90)

Thus it appears that Erikson is suggesting that an adolescent who has successfully passed through all his previous stages stands at a threshold where he must discard his identity as a child and form a new identity as a mature adult without losing the essence of what he has already established. He then has two sources from which to build or continue this identity, his continuing self as he appraises it as well as his expectations and "real" accomplishments as reflected by the important people in his life. Thus we have a two-part system, an ego able to appraise its own accomplishments and an 'outside-self' with the same appraisal capabilities. Where there is congruence, one has a complimentary system operating in a unified way to establish a firm identity but where the two appraisals differ there is stress and a danger of role diffusion. The importance of occupation is seen in conjunction with accomplishment. Where real and meaningful accomplishments are recognized by both the adolescent and his significant others vocation selection and a firm identity may proceed in a regular way, but where accomplishments are recognized as significant when in reality they are not both vocation and identity become a matter of uncertainty.

Other Neo-Freudians (Adler, Sullivan, Fromm, and Horney) consider

the establishment of some form of self-concept in relation to social variables such as family, cultural, and peer groups as important. Adler placed much emphasis on birth order and the compensatory effects of inferiority during the development of personality. Adler suggests that man innately strives to fulfill himself in terms of future aspirations and that identity or style of life is guided in a creative way by the self. Since Adler sees this style of life formed very early in life one may assume that problems during adolescence may arise when this forward moving force is disrupted either by internal changes or external restraints. Inextricably tied to this, especially during adolescence, is the acceptance and development of a masculine or feminine role.

Sullivan has particularly stressed the importance of the family in the formation of the adult personality. Sullivan suggests that what should be studied is not personality as a separate entity but the interpersonal relations which give the illusion of a personality (Hall and Lindzey, 1970). The self for Sullivan is a protective device developed out of anxiety resulting from inter-personal relations, a mechanism for reducing this anxiety. The more anxiety a person experiences, the stronger the self-system becomes and the more remote the person becomes from reality. Sullivan suggests that the main problem of early adolescence is the establishment of heterosexual relationships. Two sexual orientations exist during this time, the erotic orientation and the need for intimacy. If these two do not become divorced homosexual attitudes may develop. During late adolescence the establishment of cultural and mature personal relations in terms of adult privileges and responsibilities are very important. In summary then the important dimensions of late adolescence is the size of the self-system related to the individual's perception of reality, his sexual orientation, and the problems of forming "correct" mature interpersonal relations.

Cultural anthropologists such as Margaret Mead generally cite other cultures which show relatively few adjustment problems during adolescence and attribute adjustment problems found in Western Society to factors such as conflicting social taboos and expectations, complexity of social expectations, and general incongruities between childhood, adulthood, and adolescence.

European theorists such as E. Spranger seem to integrate their Gestalt background into their theoretical considerations of adolescence, the resulting theory being very cognitive in nature. Spranger considers development during adolescence as occuring in three patterns. The individual may go through a period of storm, stress, strain and marked personality change; a slow continuous growth process with little or no personality change or; a process in which the individual participates in a goal-directed manner to his development. Spranger views adolescence as "the age during which the relatively undeveloped and undifferentiated mental structure and psyche of the child reaches its full maturity" (Muuss, p. 58). Spranger suggests that adulthood is achieved through a form of cognitive equilibrium, self acceptance, and ego unity. Finally, Spranger emphasizes the individual's perception of his situation rather than the objective nature of it.

Kurt Lewin also stresses the phenomenological nature of adolescent development. "How a child perceives his environment depends upon the stage of his development, his personality, and his knowledge." (Muuss, p. 89)

Rogers suggests that a realistic self concept is very important to the development of a well adjusted adult. Where there is incongruity between one's self-concept and one's organismic experience there is conflict. The conflict is usually resolved by alliance to the self-concept

leading to maladjustment in terms of denial of reality. Rogers, therefore, sees a well adjusted individual as one who shows congruence between his self-concept and his organismic experience.

The above overview of theories is by no means complete but even among these twelve well known theorists one finds very little common ground for comparison. Each theorist emphasizes different biological, social, or cognitive dimensions as important in the adjustment of the adolescent. It appears then that little clarity can be gained except to suggest that adjustment is probably a multi-dimensional phenomenon rather than some uni-dimensional construct. To further confound the problem, many theorists use nominally the same constructs with different conceptual meanings! (Hall and Lindzey, 1970) If one takes a more global view of these theories, two very general features appear to be common to most. First, that adolescence is a time during a person's life when adjustment is rapidly occurring predicated on the assumption that the individual is experiencing considerable change to which he must adapt. Whether it be change in physiology, social expectations, self-concept, or cognitive structures, these changes do occur, and where there is change, there must be some form of adjustment or adaptation. Secondly, most theories emphasize some construct of the self. Freud, Erikson, and Spranger emphasize the 'ego'; Adler, Fromm, Horney, Sullivan, and Rogers use 'self' as their central concept, while Lewin talks about the 'person'. Furthermore, this self-construct appears to be an enduring system around which adjustments during adolescence are made.

Self Concept

Recently, many investigators have taken self-concept, self-regard, self-acceptance, or some other construct involving the phenomenal self as the central structure around which they have investigated the dynamics of

adjustment (Wylie, 1961; Richter et. al., 1971; Brookover and Thomas, 1963; Cowen et. al., 1967; Josselyn, 1971; Bachman et. al., 1969; Coopersmith, 1967; Rosenberg, 1965). The major problems with these studies have been the inexactness of self-concept constructs as well as the multitude of measures of these self-structures using varied methods and assumptions without sufficient evidence as to how they relate to one another or to which may be the most optimal or valid method of measurement (Wylie, 1961).

> The instruments which have been applied thus far have tried to cover too much too soon, in a fashion parallel to the premature overinclusiveness of the theoretical constructs. Microanalysis of newly devised indices is badly needed. ...It is particularly important to avoid the use of complex two-part indices until the component parts have been thoroughly explored. (Wylie, p. 322)

Wylie (1961) has reported nineteen studies attempting to relate diagnosed pathologies to some measure of self-regard. Nine studies showed that neurotics and/or mixed patient groups indicated significantly lower self-regard than normals. Two studies found significantly lower self-regard among psychotics than normals. Another study found a nonsignificant lower self-regard among psychotics than normals while three studies found no significant difference with no apparent trend. Finally one study found significantly higher self-regard among paranoid schizophrenics than normal Ss.

> Certainly as one goes from normals through neurotics to psychotics a clear linear downward trend is not found. In fact, two investigators report significantly greater self-regard in psychotic groups than in neurotic groups, while one reports a nonsignificant trend opposite to this. (Wylie, p. 216)

Taken as a group, these studies appear to show a curvilinear relationship between expressed self-regard and degree of pathology. This finding may be interpretable in terms of defense mechanisms. Psychotics may be described as the group least in contact with reality where defense mechanisms are very strong and behavior very rigid. Because the defense

mechanisms are strong, expressed self-regard would be high. With neurotics, defense mechanisms are not so well consolidated, the neurotic being comparatively more in contact with reality. Since the person is experiencing problems and is in contact with reality, one would expect self-regard to be low. With respect to the sample group used in the present study one normally finds a truncation of the pathological continuum at the neurotic group and from neurotic to normal there does appear to be a definite positive linear relationship between self-regard and degree of pathology. With normal Ss Wylie reports positive results obtained between self-regard and degree of adjustment when extreme groups are used, but when finer discriminations of adjustment are developed no consistent positive trend is observed.

These results may be explained in at least three possible ways. The finer discriminations of adjustment may not be reliably discriminable therefore leading to insignificant findings when related to self-regard.

On the other hand, instruments currently used to assess self-regard may not be capable of fine enough discriminations to show a relationship with fine discriminations of adjustment.

Self-regard may be behaving similar to a threshold. When self-regard is reduced to some critical level, adjustment problems are experienced whereas above this level adjustment problems generally are minimal for the individual. In all probability an interaction of the first two explanations has been occurring due to the crude state of measuring devices being used in this area.

Finally, Wylie notes that where degree of adjustment has been reported by Ss themselves, positive correlations are typically found between self-regard and self-reported adjustment. She also points out that most of these studies used essentially the same items to index both

adjustment and self-regard which does not rule out the possible influence of measurement artifacts as the determining factors in the obtained correlations.

In many therapy programs, particularly those based on self theories such as Rogers' theory, a measure of change in self-regard is obtained over therapy. Q-sorts are generally used with a sort on a sample of items for ideal-self and another sort for real-self. A correlation between item placements under the two conditions for each person is computed. This correlation then represents S's real-ideal congruence. Self theory predicts that real-ideal congruence is related to adjustment and therefore a shift to a more congruent relationship between real-self and ideal-self has been taken as an index of therapy success. On the whole, Wylie found that the better controlled studies tended to show a trend in support of self-concept theory.

A brief overview of self-concept measures as they have been related to various criteria was thought to be necessary and important for the construction of a valid index of adolescent adjustment problems given the close association between self-concept and adjustment. Much of this overview was taken from an excellent summary of research on self-concept by Ruth Wylie (1961). There have been numerous studies reported in the psychological literature attempting to tie self-concept or some other form of a self-construct to various theory-relevant criteria such as school grades, happiness, underachievement-overachievement, adjustment pathologies as noted above, delinquent behavior, experimentally induced failure, physical health, reports of psychosomatic illness, and I. Q. Each of these will be considered in turn.

Brookover (1963) found significant positive correlations between self-concept of ability and grades attained ($r = .5$ to $.6$) with I. Q.

effects partialed out in seventh grade subjects. Coopersmith (1967) found in ten to twelve year old Ss a correlation of .30 between subjective self-esteem and academic achievement. Wylie (1961) reports one study showing a correlation of .39 between ideal-self and achievement, but also reports two other studies which found no significant relationship between self-esteem and school achievement and between self-ideal discrepancy and school achievement although the trends were in the positive direction. Overall there does appear to be a trend towards a positive association between measures of self-concept and school grades but the results are not consistently significant. It was hypothesized that a valid index of adjustment as related to self-concept will show a small but positive association with school grades.

Bachman et. al. (1969) found a significant positive relationship between self-esteem or subjective personal competence and expressed satisfaction with life in tenth grade boys. Wylie (1961) does not report any studies which explored the relationship between a self-concept measure and satisfaction but did cite a study by Golding which found that self-reported happiness correlated significantly with peer ratings of happiness in the Bachman et. al. (1969) study. It was therefore hypothesized that a valid index of adjustment should correlate significantly with self-report measures of happiness.

Jahoda (1959) has suggested that underachievement-overachievement as measured by the discrepancy between expected grades based on I. Q. and obtained grades may be an empirical measure of self-actualization, a construct related to positive self-regard. Jahoda warns that other factors such as physical fatigue or teacher variables may be responsible for the discrepancy. With a large number of Ss, physical fatigue as a factor in underachievement would probably be very insignificant but teacher

variables may still be very significant even when the sample size is large. Therefore care should be taken to sample from a large group of classes within a school when using this measure. Wylie reports a study which demonstrated a relationship between a self-regard measure and underachievement. This study found that underachievers showed less self-regard in pursuing their own interests, acceptance as a family member, and expressing their own feelings. It was therefore hypothesized that a valid index of adjustment should show a positive association with a measure of expected grade minus real grade in school. Also, adjustment related to home should prove most significant in the association.

Wylie reports two studies which have investigated the relationship between delinquent behavior and self-concept. These studies involved boys from a high delinquency area. Teachers were required to rate each boy on probability of becoming a delinquent. The studies found that 'potential delinquents' had lower evaluations of home life and that there was some suggestion that self-concept was related to the rating an individual received on probable delinquency.

Bachman (1969) in a comprehensive study of tenth grade boys found that positive school attitudes were related to good family relations, and rebellious behavior was negatively related to good family relations. Adler (1960) has suggested that birth order may be very important to the development of delinquency. Adler has found that the oldest child has the greatest problem with adjustment.

> In my experience in Europe and America I have found that the greatest proportion of problem children are oldest children (p. 110)

It was therefore hypothesized that a valid index of adjustment should be negatively related to degree of delinquency and further that home adjustment will be found to contribute significantly to the association.

There have been several studies attempting to determine how far self-concepts would shift in the face of experimentally induced failure. Very weak associations were found between induced failure and self-regard and where an association was found, lasting changes were not demonstrated. (Wylie, 1961) Possible crucial factors which have limited the findings of these studies may have been the artificiality of the experimental procedure and the negligible effects a 'one shot' exposure should theoretically have on an attitude, particularly one concerning the self. Possibly, where failure can be observed to be occurring over an extended period of time changes in self-regard may be greater and more permanent. If one makes the assumption that individuals in Western Society regard achievement in Academic-Technical programs as more indicative of success than achievement in Vocational programs one may also assume that where an individual has taken the Vocational program some prolonged sense of psychological failure will be experienced. If these assumptions are valid, self-regard should be significantly related to program in school. It was therefore hypothesized that a valid index of adjustment should show a strong association with school program - Vocational students showing a lower degree of adjustment and self-regard.

Inability to participate in normal daily activities has also been related to poor adjustment in adolescents. "Hypochondrial symptoms may also occur as a face-saving way of avoiding certain activities. While in some cases this may be malingering, it is not safe to assume that this is the case. This is seen, for example, in some school absenteeism explained by physical illness; it is not recognized as primarily a school phobia." (Josselyn, 1971) In other words, these symptoms are not the result of some irrational fear of school itself, but are simply a way of avoiding failure where self-appraised ability is low and self-regard is concomitantly

low as well. Wylie reports three studies, only one of which was significant but all in the positive direction associating self-regard with physical health. Two other studies reported high self esteem was significantly related to a low incidence of psychosomatic illnesses. Senn and Solnit (1968) made a similar observation:

> While it is true that the adolescent tires easily, and has reason to be fatigued because of the kind of life he leads, his organism is remarkably resilient and sturdy. Therefore, chronic fatigue, oversleeping in the morning and failing to keep appointments, resorting to bed frequently during the daytime hours, are symptoms of emotional upset, sometimes genuine depressions. Tiredness may be an unconscious defense which gives temporary gain but in the long run works to the detriment of the adolescent. If the condition is recognized for what it is, and management directed not only toward alleviating the symptom, but also the basic problem, much immediate benefit will come to the teenager and will also help to prevent future trouble. (p. 130)

In all, then, it appears that self-concept is negatively related to the incidence of illness possibly caused by anxiety around a low self-concept. Possibly low self-concept will be related to absenteeism, as Josselyn suggested, in high school populations. It was therefore hypothesized that a valid index of adjustment should be negatively related to absenteeism in school.

Finally, three studies were found which explored the relationship between I. Q. and self-concept. Bachman (1969) found a small positive correlation between a measure of self-esteem and I. Q. in grade ten boys and also that intelligence was a good predictor of school attitudes and future plans. Coopersmith (1967) found a correlation between I. Q. and subjective self-esteem of .28. Wylie (1961) reports one study which found a correlation of .33 between I. Q. and ideal-self. Taken together, these three studies suggest a small but consistent positive association between I. Q. and self-concept measures. These correlations do not suggest

a causal relationship between the two variables of course and it possibly only reflects the ability of intelligent Ss to 'fake' their self-concept scores in the direction of social desirability. On the other hand, intelligent individuals would presumably be more capable of achievement in various areas of endeavor and Self theory would predict that success compiled over several years would tend to result in a more positive self-concept. High I. Q. should therefore be shown to be related to positive adjustment and self-regard by a valid index of adjustment with adjustment concerning school and S's future contributing significantly to the association.

To summarize to this point, it would appear that adolescence is a period of rapid adjustment for many. Furthermore, past measures of adjustment when applied to the same sample showed very little inter-measure association probably due to different definitions of adjustment and/or the uniqueness of the populations each measure was constructed on. Therefore it was suggested that a good measure of adolescent adjustment should be constructed on a sample of adolescent subjects. Since a fairly clear understanding of the dimensions involved in adolescent adjustment problems may be both important and necessary for the construction of a valid index, theories of adolescence were consulted with the assumption that they would define these dimensions. Upon review of several theories it was found that there was little overlap in terms of specific dimensions of adjustment although most theories suggested that adjustment during this period revolves around a concept of self. Studies of self-concept as it has been related to various criteria were reviewed and specific hypotheses concerning a good index of adjustment were suggested. To this point then, the original problem of defining specific areas of adolescent adjustment has remained unresolved.

STUDY I

The development of a sample of items indexing adolescent adjustment

It was felt that both dimensions of adjustment and the specific items used to index those dimensions should be selected empirically from a sample of adolescent high school students. A three stage study was then conducted several months before the main validating study to provide an item pool selected directly from high school students as well as to provide expectations as to possible factors in adjustment. Furthermore, it was assumed that items selected in this way would have more 'meaning' for the Ss to be used in the main study, a point Tryon (1966) made earlier:

> We believe these opinions are significant information about any child because they describe relationships between him and his group which are difficult or impossible to duplicate from adult sources. (p. 1)

Development of initial pool of items From a pragmatic view, there appeared to be two general methods of securing a large item pool directly from adolescent subjects. One method involved extensive interviews with individual subjects focusing on areas of particular concern for that individual and having him describe his attitudes towards them. This method was immediately rejected on several grounds. A single interview on a one to one basis between two strangers seemed not likely to lead to any real understanding of the subject being interviewed. This of course seems only common sense and is further supported by the various therapy techniques which employ an interview technique. Resistance is a phenomenon which has been accepted as an inevitable process during psychotherapy where the patient tends to protect himself from revealing any significant areas of real concern for him. This resistance has been found to partially collapse only after several interviews with the client. Most psychotherapists suggest that the lowering of this resistance occurs

after a transference relationship has been established, that is an emotional bond has been formed between the client and the therapist which has been thought to be similar to the emotional attachment the client, as a child, had to his parents. Only after this relationship has been established is real significant information expected. (Lazarus, 1969) For this reason, traditional psychotherapy usually extends over a considerable length of time. Rogers suggests that this resistance may be lowered much sooner if the interviewer puts the client completely at ease and accepts him totally with unconditional positive regard (Hall and Lindzey, 1970). But even using this method, resistance is lowered only after several sessions.

The second method one might employ would involve selecting several subjects who were known to one another and having the group discuss problems they have observed in other adolescents. It was felt that this method would have several advantages over the direct interview technique. The problem of resistance would be less likely to occur since ostensibly the subjects would not be describing themselves. The researcher could take advantage of the dynamics of a close group where inter-personal barriers would presumably be minimal. Group consensus could be obtained increasing the reliability and validity of the descriptions. In this situation the researcher would need only to put the subjects at ease and intervene only when discussion was digressing from the topic of concern.

Selection of unambiguous items Since I was working with pre-established groups, descriptions unique to those groups would presumably exist. Problems with items being ambiguous or too specifically referenced have been recognized in the past.

> In many situations, the use of ratings..., involves extreme demands upon the quality of the ratings. Ratings from different raters in different situations

> should be really equivalent since they are almost always treated as if they were so. This demand for comparability means that interpretation of the rating must not deviate too widely from rater to rater or occasion to occasion.... (Smith and Kendall, 1963)

An objective method for eliminating such items has been employed. Kendall and Hilton (1965) used such a method in constructing a scale to evaluate graduate business students and Smith and Kendall (1963) employed it in construction of a scale for performance evaluation of nurses.

> The basic procedure for scale construction resembles that employed to ensure that translations from one language to another adhere to the connotations as well as to the denotations of the original. Material is translated into a foreign language, and then, by an independent translator, retranslated into the original. Where "slippage" occurs, translations are corrected. Similarly, we required that examples or expectations, be classified as indicative of a given dimension of nursing performance, and that independent judges indicate what dimension is illustrated by each.
>
> The submission of examples and subsequent reallocation by the raters' peers seems to ensure a high degree of content validity for the items and the scales. (Smith and Kendall, 1963)

An adoption of this procedure would involve removing descriptive items from the area they originally described and having a second group of subjects attempt to reallocate those items back into the areas. This procedure then should greatly increase the reliability of the final index since considerable assurance that most subjects will interpret the descriptions similarly would have been established.

Assigning scale values to items The final problem in construction of an index would be to obtain some information concerning the relative scale values which should be assigned to the items. Each descriptive area of an index should contain items which represent different points along a continuum of increasing severity. A Thurstone scaling procedure appeared to be most appropriate for assigning values to a scale of this

type. Thurstone and Chave (1929) suggested that reliable interval scale values could be achieved for an attitude instrument by having a group of subjects assign each item to a certain value category. Items were then given the value of the average category they were assigned to. If the distribution of category assignments was small the item was regarded as a good unambiguous item and the item was assigned the value of the average category to which it was originally assigned. If the distribution was large, the item was thrown out. Once several items were selected in this way, a sample of these selected items were chosen which represented the entire range of categories.

Method

Subjects

A total of 150 Ss, high school students representing several high schools in the Vancouver Metropolitan Area, Canada, were used in the development of the items.

Development of initial pool of items 25 Ss from grades 10-12 were used for this phase of the study. The group of 25 Ss was divided into six subgroups according to sex and grade of S. The subgroups were as follows: four grade ten females; five grade ten males; four grade eleven females; four grade eleven males; four grade twelve females; four grade twelve males. Each subgroup was composed of four Ss with the exception of grade ten males which contained five Ss. Each of these subgroups formed a complete unit for interviewing purposes. Within each of these subgroups Ss were friends.

Selection of unambiguous items 100 grade 11 & 12 students from a single high school were used as Ss for this phase of the study. The sample was composed of 50 females and 50 males.

Assigning scale values to items Ss used for this phase of the study

were 25 grade 11 and 12 students; 13 of them females and 12 males.

Procedure

Development of initial pool of items During the first phase of the study an estimation of the factors involved in adolescent adjustment as well as a large pool of items describing those factors were sought. Each of the six groups of Ss were interviewed separately in observer's home living room. Sessions lasted approximately from two to four hours. Ss were asked to seat themselves in any position they felt comfortable in and observer attempted to place Ss as much at ease as possible. A Uher 2000 tape recorder was positioned in the room in such a way that conversation from any one S was recordable. Ss were aware that they were being recorded. Observer observed by the increase in conversation that the effect of the presence of the recorder began to disappear approximately 30 minutes after the start of the session for most of the groups. Observer instructed Ss to discuss problems they have observed other students of their age were having and to describe those problems as best they could. Observer allowed Ss to use any colloquial speech they chose and only interjected into the conversation whenever there was a long pause or when the conversation digressed from the topic for more than five minutes. Written transcriptions of the tapes were then prepared and all areas of problems as well as the adjectives and adjective phrases used to describe those areas were reproduced. All the adjectives and adjective phrases were reproduced on individual cards for use in the second phase of the study.

Selection of unambiguous items The second phase of the study consisted of having Ss allocate the descriptions to the problem areas. All of the descriptions obtained during phase I of the study were divided in such a way that ten Ss would allocate each item. Each S was given a

sample of approximately 50 items which were a stratified random sampling from the total item pool. Stratification was used to ensure that each judge received approximately an equal number of items intended for each of the four areas. After the assignment of a subset of approximately 50 items for the first judge was completed, these items were replaced into the item pool. Another set of approximately 50 items for the second judge was then assigned. There was an additional constraint, that once an item was assigned to ten judges it was no longer replaced. The net result was that each judge received a set of approximately 50 different items, no two judges received the same set of items, and each item was assigned to ten judges.

Envelopes were prepared with the problem area clearly marked on the outside of the envelope. An additional envelope was included for descriptions which S could not place into any of the pre-determined problem areas. Each S then received a set of items, envelopes designated to each of the pre-determined problem areas, an an envelope for ambiguous items. Ss were seated in a large school cafeteria with one or more chairs between each S. Ss were asked not to talk to one another during the allocation procedure. Ss were told that a group of high school students had described problems others of their age were experiencing and that the problem areas were printed on their envelopes while the descriptions of those areas were typed on the cards. Ss were instructed to read each card carefully and to place that card into the envelope they thought corresponded to the original area the card described. Ss were also instructed to place any item which they felt did not describe any of the areas on the envelopes into the envelope for ambiguous items. The entire procedure lasted approximately 50 minutes. A frequency count was then taken for each item in each area. Items were only retained when 60%

or more Ss correctly allocated that item. The items which showed the highest consensus during allocation were then used in phase III of the study.

Assigning scale values to items Phase III of the study involved having 25 Ss assign scale values between 1 and 10 to the items selected during phase II. Each S was given all of the retained items placed in their respective areas. Ss were told that the items were descriptions of these areas given by another group of students of their age. Ss were instructed to place each item within each factor on a 10-point scale indicating degrees of problems the descriptions may involve for most students of their age. Ss were cautioned not to rate items in terms of personal problems, but with respect to how they regarded it for adolescents in general. To aid Ss in reordering the items, individual items were typed onto cards. '10' was designated as most troublesome while '1' was designated as no problem what-so-ever. To further aid Ss in their rating task Researcher instructed them to select three items from the area being rated which suggested the greatest problem, the least problem, and some average problem. Ss were then instructed to assign a value to each of these items and use them as anchor points for rating the remaining items in the area. Since most factors contained more items than there were points on the scale, decimal numbers were permitted. Once all items were rated by each S experimenter then selected items with means distributed across the continuum with low standard deviations to be used for the validating study.

Results and Discussion

Development of initial pool of items During phase I of the study, eight general areas of problems for adolescents were found; School, Teachers, Home, Parents, Father, Mother, Future, and Self. 532 different

adjectives and adjective phrases were found which Ss used to describe these areas. 58 items were used to describe school, 43 items to describe teachers, 19 items to describe home, 64 items to describe parents, 43 items to describe father, 41 items to describe mother, 52 items to describe future, and 212 items to describe self. Approximately 40% of all the items were used to describe self. This may be significant in that most theories of adolescence have suggested that much of adjustment during this phase involves the self-concept. It was also noted that both of the institutions within which individuals of this age spend most of their time were selected. This result would be particularly important for those theories of adjustment which stress environmental factors. Also noted was the fact that the most probable "significant others" were also selected as sources of problems, these being the parents and teachers, while age-mate sources of problems such as siblings and peers were not mentioned. This result appears to concur with identification theories of development (Bandura, 1963), where one of the important variables determining a relevant model has been found to be the appraised 'power' of that model. Could it be that during adolescence the individual while trying to establish his own independent identity, finds problems with those he has so closely identified with in the past? Finally, the area of future should not be overlooked since it may be an empirical conformation of theorists such as Adler, Allport, and Rogers who suggest in one way or another that not only the past is important in personality formation but also the future in terms of hopes, plans, and aspirations. Hall and Lindzey (1970) summarize Allport:

> A full understanding of the adult cannot be secured without a picture of his goals and aspirations. His most important motives are not echoes of the past but rather beckonings from the future. (p. 276)

Selection of unambiguous items The allocation phase of the study reduced the number of items from 532 to 99. A distribution of retained items within factors has been presented in table 1 along with the average percentage of Ss who assigned those items to their respective areas. It can be seen that the allocation procedure reduced the items describing teachers, home, and parents to almost zero. Since there remained too few items in these areas to form a valid sub-factor of an index several of the areas with few items were combined with other apparently related areas. When this was done, the item was prefixed with the original area name. Thus if the item "responsible" was selected for parents it was prefixed by the word parents to become "parents responsible". The eight areas were then collapsed into four areas; School, Home, Future, and Self. This procedure then left 8 items for school, 18 items for home, 11 items for future, and 62 items for self. A summary of item totals within the four areas as well as the average percentage of Ss assigning those items to the areas has been presented in table 2. The greatest percentage of items over the allocation procedure was retained by the two theory relevant areas, future and self. School retained approximately 8% of its items, home 11%, future 21%, and self 29%.

Assigning scale values to items This phase of the study was completely unsuccessful in terms of retaining good items for the scale or conversely it may have been too successful in rejecting bad items. Whichever way the procedure is evaluated the absolute results of the procedure showed that virtually all of the items should have been rejected. Table 3 presents the range of means and standard deviations for the items in each area as well as the average means and standard deviations. It can be seen that whereas the range of means for all areas with the possible exception of future was good, the standard deviations were much too large indicating a

Table 1: Number of items retained in each area and mean per cent modal allocation of those items for each area after allocation.

	School	Teachers	Home	Parents	Father	Mother	Future	Self
Number of items	7	1	2	3	8	5	11	62
Mean % Modal Occurance	80.0	80.0	90.0	68.33	72.0	68.72	72.27	66.72

Table 2: Number of items retained in each combined area and mean per cent modal allocation of those items for each area after allocation.
*School composed of School and Teachers.
**Home composed of Home, Parents, Father, and Mother.

	School*	Home**	Future	Self
Number of Items Retained	8	18	11	62
Mean % Modal Occurance	80.0	66.06	72.27	66.72

considerable overlap in item values. The smallest standard deviation found was 1.43 which suggested that given a normal distribution of values, 68% of all the values for that item were spread over 2.86 points of the 10-point scale. The sample was then split by sex with the assumption that items may have been interpreted differently by males and females and within each of these sub-groups good items with small variances would be found. Again, by referring to table 3 one can see that this was in fact not the case. The results for males and females were as discouraging as the results for the total group. It was then felt that by lowering the variance criterion to a standard deviation of 2.00 or less, sufficient items might be retained to continue with the selection of valued items. Table 4 shows the number of items retained as well as the ranges and means of both the standard deviations and means for items within each area for the total group and each sex-divided sub-group. Only 4 items were retained for the total group, 14 items for females only, and 7 items for males only using this relaxed criterion. Furthermore, it was felt that only the area of self for females contained a minimum number of items for a reliable index. Since standard deviations are very sensitive to extreme scores, the mere inclusion of several extreme scores may have inflated these variances confounding the statistical interpretation of the data. Item value assignments were therefore graphed for each item and it was found that the values assigned to any one item spread fairly evenly throughout the value domain. This therefore confirmed the statistical interpretation.

Taken as a whole, it was found that the results for the scaling procedure indicated that reliable values could not be assigned to individual items as they had been selected. The important question then became why could not values be assigned to these items using a procedure which

Table 3: Means and ranges for standard deviations and means obtained for item scale-valuations. Arbitrary scale range was fixed at 10.

			Area			
			School	Home	Future	Self
Total Group	Means	Range	3.23-7.37	2.58-6.04	4.13-7.33	2.46-7.06
		Mean	5.02	4.33	5.55	4.81
	Standard Deviations	Range	1.98-2.88	1.87-3.09	2.05-3.40	1.43-3.42
		Mean	2.53	2.72	2.77	2.70
Females Only	Means	Range	3.28-6.75	1.93-6.13	4.38-8.24	2.26-7.50
		Mean	5.08	4.31	5.84	4.93
	Standard Deviations	Range	1.85-3.20	1.06-3.33	1.61-3.41	1.23-3.52
		Mean	2.61	2.75	2.67	2.57
Males Only	Means	Range	3.17-8.04	2.32-6.62	3.71-6.74	1.73-7.21
		Mean	4.95	4.35	5.26	4.69
	Standard Deviations	Range	1.76-2.92	1.66-3.35	2.25-3.50	1.08-3.75
		Mean	2.34	2.56	2.74	2.67

Table 4: Means and ranges for standard deviations of 2.00 or less with their corresponding means obtained for item scale-valuations.

			Area			
			School	Home	Future	Self
Total Group	Number of Items		1	1	0	2
	Means	Range	-	-	-	2.46-6.76
		Mean	7.37	2.58	-	4.61
	Standard Deviations	Range	-	-	-	1.43-2.00
		Mean	1.98	1.87	-	1.71
Females Only	Number of Items		2	1	2	9
	Means	Range	3.28-6.75	-	6.98-8.24	2.26-7.50
		Mean	5.02	2.04	7.42	5.38
	Standard Deviations	Range	1.85-1.97	-	1.61-1.89	1.23-1.96
		Mean	1.91	1.66	1.75	1.64
Males Only	Number of Items		1	2	0	4
	Means	Range	-	2.32-3.16	-	1.73-7.13
		Mean	8.04	2.74	-	3.49
	Standard Deviations	Range	-	1.66-1.92	-	1.08-1.59
		Mean	1.76	1.79	-	1.37

had reliably worked in the past (Thurstone and Chase, 1929) for attitude scales? One obvious answer was that possibly all of the items were too ambiguous for reliable value assignments. This was not likely since great care was taken through the allocation procedure to select only those items which were unambiguous. A second possibility was that adolescents might find it very difficult to assign values to items which are tapping their own adjustment problems without introducing their own frame of reference. Taken as it stands this explanation still does not fully account for these results. Kretch, Crutchfield and Ballachy (1962) have cited studies which have shown that the Thurstone valuation procedure will work for such scales as the F-scale even when extreme groups are used as judges. Surely one would expect some form of individual prejudices to enter these results. The apparent anomaly here may stem from the fact that these other studies were exploring attitudes toward outside stimuli whereas this study attempted to investigate a self-directed attitude. It may be that even when two individuals who have attitudes of opposite valence toward an identical outside stimulus are asked to weight a set of items tapping that attitude they tend to assign to those items relative weights (relative to the other items) not directed by their personal attitudes but by some form of group attitude. Each person might anchor the entire valuation domain to his own attitude system before assigning relative values. Thus what we have here is not a shift in value assignment for particular items, but a shift in the entire value domain such that a value of '1' for one person has a totally different meaning than the value of '1' has for the second person. Once a S has anchored the entire domain of values, the particular assignment of a value to a particular item becomes relative to the other items, the relativity of the items being largely determined by group attitudes.

This would be very analogous to a linear transformation of test scores where the mean of the distribution changes but the distribution of scores relative to one another remain the same. When the attitude is directed toward oneself such as the attitude toward self-adjustment, individual differences resulting from unique frames of references may affect individual items resulting in large variances of item values.

Large item variances may have resulted from differences between raters in terms of location and distance between anchors. To check to see whether this was in fact happening, the item data was ipsatized for each person. That is, the scale values assigned to the items were standardized within each S's ratings. To re-scale the ipsatized standard deviations to the same scale on which the raw data was reported, each ipsatized item standard deviation was multiplied by the ratio of the standard deviation of the raw item means to the standard deviation of ipsatized item means. When this was done, ipsatized item standard deviations ranged from 1.4 to 3.5 with a median of 2.5 and a mean of 2.6. These results then further confirm the results found on the raw data.

To further emphasize the size of the item standard deviations, each ipsatized item standard deviation was divided by the standard deviation of the ipsatized item means. Not one item showed a lower standard deviation than the standard deviations of the item means. The median item showed a ratio of 2.1.

Frames of reference

The whole notion of frames of reference has been developed by Helson (1948) in psychophysics and extended by him to social psychology. Basically Helson's theory "emphasizes the basic fact that shifts in the neutral point (of a stimulus continuum) are accompanied by re-structuration of the entire behavioral field and are not mere shifts in point of

subjective equality of the indifference point." (Helson, 1958) As an example of this phenomenon, if one were given a set of weights and asked to judge them, two sets of judgments would be expected if an external weight was included either heavier than, or lighter than the original set. In the former case the subjective continuum would be shifted down in its entirety while in the latter case it would be shifted up. Helson actually had Ss report that they preferred to lift the weights with the heavy standard because those weights felt so much lighter than with the light standard even though in reality, they (the weights with the heavy standard) were several hundred grams heavier!

> Stimulus properties therefore depend upon the state of the organism which, in turn is determined by the total stimulus-organic configuration. (Helson, 1948)

Helson (1964) states that traditional workers in psychophysics have tried to control for anchor, series, and order effects in the sense that they were external, confounding variables and that they presumed that each sense modality had a fixed relationship to external stimulation which did not vary. "Psychophysics cannot ignore the role of internal norms except at its own peril. By internal norms we refer to the operationally defined concept of adaptation level." (Helson, 1964)

The key point which should be stressed is that when a person regards a stimulus, whether a light or a social situation, he regards it in relation to a finite continuum of all other similar stimuli he has experienced past and present. Further, as was suggested from the ipsatized data, the continuum within which the person may regard that particular stimulus might have a different ordering of stimulus elements than the continuum regarded by a second individual. Thus the attitude of a nun towards two boys fighting would be probably totally different than the attitude of a professional wrestler to the same social stimulus, whereas

the relative positions of the attitudes may reverse if the stimulus was two boys playing "house". An adolescent's attitude towards his homelife would probably be different, given the same type of home environment in a rich as opposed to a poor district. Eriksen and Hake (1957) in fact have supported the notion that given a continuum, finite or infinite, Ss will pick certain anchor stimuli bounding a subjectively determined finite continuum as comparative stimuli when making absolute judgements.

Since the results of this study appeared to be pointing toward the operation of some form of frames of reference with regard to indexing adolescent adjustment problems precluding the development of a direct (normative) index, it was thought that a shift in emphasis from the construction of an index of adolescent adjustment to a comparison among several procedures for assessing adjustment taking into account frames of reference was warranted. Thus the problem of the main study was directed at the investigation of several methods of indexing adolescent adjustment problems.

THE MAIN STUDY

A Comparison of four relative scoring procedures

From study I, several interesting results can be gathered. First, that theories of adolescence in general have not indicated any consistent major areas of problems for the adolescent other than the self. Second, that empirical research seems to suggest that factors involved in adolescent adjustment other than the self are the S's home, school, and future. Third, that adjustment problems do not appear to be universal even within a small sample but instead may be very sensitive to individual frames of reference. This may account for the fact that theories have not agreed on the major areas of concern for the adolescent. Finally, when other investigators have looked at past measures of adjustment little

common variance was found between them when they were administered to the same sample. It was suggested that this may have been due to lack of common definition of adjustment as well as the specificities of the populations the individual measures were originally developed on. Other than a lack of common definition, other possibilities to explain why previous measures of adjustment have not correlated may be the non-equivalence of these measures and the non-attendance to the dimensionality of the trait. Each of these will be considered in turn.

A definition of adjustment which might encompass all existing indices of adjustment might be the degree to which an individual is able to adaptively cope with his environment. Thus a maladjusted person would experience considerable difficulty coping with his environment. But a mere definition of the construct is not enough to deal effectively with the problem, the "(s)pecification of causal or consequent relationships... are (also) interesting and vital". (Smith et. al., 1969) A mere statement an individual is experiencing adjustment problems tells us nothing about why, where, or what can be done about them.

When comparing two or more techniques designed to measure the same construct, an estimate of their equivalence should be sought. "By equivalence we mean the assurance that conclusions reached using one measure would be the same if another measure were used for the same purpose." (Smith et. al., 1969) This of course doesn't seem to have been met in the field of adjustment measurement as evidenced by the contradicting results using two measures of adjustment (Watley, 1965) and the abundance of low correlations between different measures of adjustment (Tindall, 1955; Fiedler et. al., 1958). Smith et. al. have discussed this topic in relation to two extremes on a continuum of equivalence. In a weak sense equivalence may only involve equal distributional means and variances but

this may be achieved by simple scaling techniques and in no way assures equivalent prediction given external experimental manipulation. At the other extreme is the equivalence of Platonic true scores as used in physics or the true score as the limiting average as used in the social sciences (Lord and Novick, 1968) with no overlap in error variance (Smith et. al., 1969). In this sense one would have identical measures, but whereas this form of equivalence might be applicable to physics, it is not applicable to psychology in which "theories are typically based on unexplicated, inexact constructs". (Lord and Novick, 1968) The degree of equivalence adopted in the present study will be similar to that used by Smith et. al. (1969). That is, two measures of adjustment will be considered equivalent if they lead to similar conclusions and co-vary in a similar way when variables thought to be associated with adjustment are examined. This of course might be a re-statement of what Gulliksen (1950) called intrinsic validity.

The dimension of the construct must be considered before an adequate index can be constructed. Smith et. al. (1969) describe three dimensions along which satisfaction might be considered which seem applicable to adjustment. The first considered the dimension described as evaluative-descriptive. Past measures of adjustment, it was felt, have been tapping the evaluative aspect of adjustment for the most part, whereas concern with a more descriptive component of adjustment may prove fruitful. Given an area of possible concern, the adolescent might be asked to describe his attitudes toward it. It was assumed that adjustment in descriptive terms may lead more easily to the specifics of the maladjustment. Jourard and Lasakow (1958) reported that Ss report more willingness to reveal their attitudes than evaluations of their personality. The second dimension, thought pertinent, was the time perspective dimension.

For example, adjustment as specified by a discrepancy between how one regards himself and what he feels he should be like might become spurious if the time perspective is too short.

The third dimension was that of multiplicity of trait. That is, adjustment problems in the home may be totally independent of problems with respect to occupational aspirations with different expectations, priorities, and alternatives being operative in each case. This was a major criticism of self-regard as a measure of adjustment given by Wylie (1961) where typically a global index has been used. The multiplicity of this trait has been suggested by the diversity of theoretical emphases as noted above and of course has also been shown to exist as at least four factors as found in study I.

Finally, since several methods of indexing adjustment were to be compared, the use of multiple measures to establish construct validity as advocated by Campbell and Fiske (1959) was to be employed. The convergence of scores on a common trait using different methods of measurement as well as the discriminability of different traits using the same method of measurement is a powerful tool with which to infer validity of a measure.

> ...the final score...is a composite of effects resulting from the content of the item and effects resulting from the item used.
> In contrast with the single operationalism now dominant in psychology, we are advocating a 'multiple operationalism', ...(Campbell and Fiske, 1959; p. 101)

Wylie (1961) devoted considerable space to a discussion of various general types of measuring devices used to index self-concept as well as to the problems of using two-part indices. With respect to adjective check lists she found that scale-criterion correlations have been generally low. One of the major problems with adjective check lists she found to be scaling. The problem revolves around how a S is to choose

among several degrees of an adjective. She states the problem as follows:

> With reference to a single item in such an instrument, E's problem is to assign numbers to Ss to reflect magnitudes on a subjective dimension. As a first step E defines the dimension verbally for S. E then, in effect, asks S to regard himself as a "stimulus" and to place this "stimulus" on the subjective dimension E has described. To follow these directions, S has to do two things: (1) develop a conception of what content and situation the item refers to; (2) develop some psychological metric of the dimension on which he is going to place himself. (p. 102)

This problem was also found and noted in study I when Researcher attempted to have scale values assigned to individual items.

If one were to take into account varying frames of reference, how could this be done? One method which has had considerable use in the past would be to contrast Ss real-self to his ideal-self, that is, the construction of a dual index. But this method has not been uncriticized. "By any standard for relevant construct validity, is the dual index superior to the 'simpler score'? For example, would the level of self-regard experienced by the subject be expressed just as effectively by a direct report of self-acceptance as it is by an experimenter's derived discrepancy score obtained from two of S's reports? Or, alternatively, might one infer the level of self-regard from the "actual-self" score really less complex than the self-ideal discrepancy, or does its use imply that we are obtaining another kind of dual index, one part of which may be non-phenomenal? That is, in assigning a self-regard value to a self-score, are we in fact assuming a discrepancy between S's phenomenal self and a cultural norm which S may or may not have accepted as his phenomenal ideal for himself?" (Wylie, p. 36) Wylie further points out several other important questions concerning the dyadic self-ideal index of self-regard. What are the respective contributions of each part of the dual index? Are ideal-self scores for individuals that different

from norms established across individuals for ideal-self? Is there much variance across individuals in ideal-self reports? When change in self-regard is measured by a self-ideal discrepancy index is there change in the ideal-self or is most of the change in the discrepancy score due to the change in actual-self scores? It may be that in computing a discrepancy score one is simply subtracting a constant from actual-self scores. If this is so one is adding no new information to the self-regard index therefore why not simply use the actual-self score as the index of self-regard? When computing a discrepancy score, is it valid to take the absolute difference as is customary or is the sign important? That is, has the discrepancy between "like me" and "wish it were not like me" for an item the same psychological meaning for S as "not like me" and "wish it were like me"? Finally, does the self-ideal index have a higher empirical validity than the self-score? It was hoped that research reported in this paper may shed some light on some of these important questions. In particular Wylie (1961) cites some studies which did not look directly at the similarities between ideal-self ratings and normative ratings but did indirectly show that they may be very similar. Therefore it was hypothesized that ideal-self ratings would correlate significantly with normative ratings based on group averages.

Upon reviewing the literature on self-concept and adjustment all of the measuring instruments were composed of items normatively weighted or weighted by the self-ideal contrast. Aside from the self-ideal contrast, there are three other alternatives which may index an attitude taking into account the frame of reference of Ss. One may contrast a S's self rating with a worst or negative rating or alternatively contrast his self-rating simultaneously with both his ideal-rating and his worst-rating.

All three of these methods (self-ideal contrasts, self-worst contrasts, and ideal-self-worst contrasts) emphasize personal frames of reference. A third alternative to the self-ideal contrast might be the construction of a normative-relative score. That is, determine the group directions on each item from the group responses to that item and contrast S's self ratings with these group ratings.

The self-worst contrast score may be more practical for S to evaluate himself with than the self-ideal score. S can look to his own life to evaluate how certain 'real' factors in his personality have had negative effects on his social or physical environment. It may be more difficult, on the other hand, for S to project some imagined, normative and possibly unrealistic changes which might affect him in a positive way. S presumably may know how negative factors in his self-regard are affecting him since they are anchored in the present whereas an ideal-self is anchored in the future where S may only be able to make assumptions based upon the norms of the group he associates with. Further, S may find virulent characteristics in others more salient than ideal characteristics therefore providing a more defined base with which to compare himself. Brownfain (1952) developed an index involving a measure of worst-self but he was only interested in this measure as a component of the stability of the self-concept. Brownfain looked at the discrepancy between worst-self and ideal-self but did not attempt to explore a self-worst index of self regard. Brownfain did find that the variance in worst-self scores was much larger than the variance for ideal-self scores suggesting that worst-self scores may be less tied to group norms. It was therefore hypothesized that self ratings and worst ratings would show larger variances than ideal ratings. Further that self ratings and worst ratings would not correlate as highly with normative ratings as ideal ratings.

Self theory posits that a comparison between actual-self and ideal-self is a very real aspect of an individual's self regard and without it some important information may be overlooked. Possibly valuable information may be gained by exploring how S experiences himself in relation to both his ideal and worst selves. A triadic index is therefore proposed possibly encompassing information from both frames of reference.

Rational for scoring procedures

Smith et. al. (1969) employed all four of these alternative methods for indexing job satisfaction. They utilized individual frames of reference by helping S determine, concretely, his own frame of reference with respect to the specific area of satisfaction of interest and then having S answer the satisfaction items in relation to such a reference. For example, before marking items of pay satisfaction, S was asked to think of a specific, real job he felt he could hold which provided highly satisfactory pay benefits as well as the worst job he might hold with respect to pay. The items were then marked in one of three ways. The first method was triadic, where S was required to indicate whether an adjective described any of his best, present, or worst jobs. It was assumed that if S's present job was described similar to his best job and different from his worst job he was relatively satisfied. The second method was the up-down method of scoring where only a comparison between present job and worst job (down-scoring) or between present job and best job (up-scoring) was of interest. The final method was called direct scoring. Adjectives were only used if most workers described them as being indicative of either their best or worst jobs. Negative values were given to adjectives describing worst jobs and positive values to adjectives describing best jobs. A more complete description of these scoring procedures was reported in Appendix D. Smith et. al. found that

for indexing job satisfaction the direct or normative-relative method of comparing S's response to normative data was superior to the other three alternatives in most respects. As they suggest, this may be due to a common frame of reference for job satisfaction. A review of Smith et. al. has been given by Campbell (1970) and by Crites (1969) as well as an evaluation of the Job Descriptive Index in relation to other measures of job satisfaction previously developed. The present research has attempted to compare these four alternatives in relation to the development and utilization of an index of adolescent adjustment problems.

> The largest number of dropouts involve motivational forces - goals, interests, and satisfactions relative to college and other facets of the student's life. This is a difficult proposition to prove or develop because the motivational psychology of college students is still in a vague and crude state and there has been little critical experimentation.
>
> In much prior research "the student is classified rather than understood"; future research might well "attempt insight into the frame of reference of the student himself". (Summerskill, 1965)

Summary of Hypotheses Based on the research summarized above, several hypotheses were suggested:

1. That a global score of adjustment would not be indicated. That several independent areas of concern for the adolescent would be be found. That a composite of several factors concerning school life, home life, future, and self-concept will be found.

2. That significant multiple correlations between the adjustment factors and the following criteria would be found:

   a. School Grades; with the various factors of home life and self-concept contributing most to the correlation.

   b. Various global measures of self-reported happiness in each area found significant to adjustment; with the respective factor in the adjustment index contributing most to the prediction.

   c. Underachievement-Overachievement as measured by the difference between expected grade based on I.Q. and self-reported grade; with the factors relating to home life contributing most to the prediction.

d. A global self-reported measure of self adjustment.

e. An index of success-failure; with factors concerning homelife, school life, and self-concept contributing most to the prediction.

f. A measure of delinquency; with factors concerning homelife contributing most to the prediction.

g. Absenteeism.

h. Independent measures of self-concept; with factors concerning self contributing most to the correlation.

i. I. Q.; with factors concerning school and future contributing most to the correlation.

3. That the direct measures and triadic measures would show larger and more significant multiple correlations with criteria than self-ideal or self-worst measures.

4. That the triadic measures would predict the criteria better than the direct measure (since the triadic measure takes into consideration individual frames of reference).

5. That variance for 'ideal ratings' would be significantly lower than either 'worst ratings' or 'actual self ratings' and that 'ideal ratings' would show higher association with 'group ratings' than either 'worst ratings' or 'actual self ratings'.

Method

Subjects Ss were 192 grade 11 and 12 students selected from two High Schools in British Columbia, 99 females and 93 males. 110 Ss were in grade 12, 82 Ss were in grade 11, 135 Ss were in the Academic-Technical program while only 57 Ss were in the Vocational program. Two different groups of students composed the 192 Ss. The first group were 56 students sampled by phone from a Vancouver lower mainland high school. Ss were selected from a phone directory of grade 11 and 12 students - every fourth student was phoned. In all, 80 students were contacted. Four students declined to take part in the study. Questionnaires were mailed to the remaining 76 Ss, 56 were returned. The remaining 136 Ss were taken from a high school in the middle island area of Vancouver Island. Questionnaires were administered in school time. Two other differences between these

two groups should be noted. The first 56 Ss were sampled during the summer break while the 132 Ss were sampled during the second month of school. The 56 Ss were from an outlying district of a city of approximately one million people whereas the 132 Ss came from an Island rural area, the population of the closest large town being approximately 30,000 people.

Procedure The 99 item adjective check list of which the development was reported in study I is shown in Appendix A. The check list was administered three times to each S under three different instructions. Order of administration and item order were counterbalanced. S was asked to check 'yes' or 'no' to each item within each area indicating whether that item was descriptive of his 'best', 'worst', and 'real' school, home, future, and self. Since it was assumed in this study that adolescents use 'real' structures and persons when comparing themselves in everyday life, in each condition of the index S was instructed to select a real school, home, and person to describe. In the case of the worst check, for example, he was to select the worst school, home and person he knew of. For home this would mean that he would select the home he would least like to live in and describe that home. This, of course, could not be done for future. A forced-choice method was adopted to force S to indicate a direction on an item if he had minor tendencies in either direction. It was assumed that if S had the explicit opportunity to select a neutral category he would do so. It should be noted that neutral responses were possible and did occur. Ss either checked midway between the two alternatives or left the item out entirely to record a neutral response. Ss were told they were completing an attitude survey. A further questionnaire was used to collect some criterion measures and demographic data. Examples of the instructions for the adjective check

list and items in the criteria questionnaire are reported in Appendix B. Intelligence Quotients based on the 1957 Lorge-Thorndike Intelligence Test, expected grades based on I. Q. and 1960 B. C. Norms, and absenteeism were obtained for the 136 Ss from the Island school.

Four scoring procedures were applied to the raw data. To obtain direction of each item to be applied to the direct or relative-normative scoring technique, best rating was subtracted from worst rating for each item. A z-score was then computed on the difference for the item; only items with z-scores greater or equal to 5.00 were retained. The method used to transform the raw data to the four scoring procedure has been reported in Appendix D.

Analysis of the index items was very straight forward. The analysis took place in four stages. During the first stage, conformation of the factors found in study I was sought as well as an item analysis to select the best 'n' items for validity comparisons among the four scales. During the item selection procedure the four scaling methods were compared on ability to select good items. The second stage of the analysis attempted to show the construct validity of the selected item pool using a factor derivation of the Multitrait-Multimethod procedure described by Campbell and Fiske (1959). This method of assessing construct validity was also used by Smith et. al. (1969). The fourth stage of the analysis involved testing the various hypotheses concerning the relationships among the ideal ratings, actual ratings, worst ratings, and the normative ratings.

During the first stage items were organized into the a priori factors found in study I for all four scoring procedures and a principle component factor analysis with varimax rotation was performed on each a priori factor and procedure. Criteria for determining the number of

factors extracted were size of eigen value and meaningfulness of items in a factor. Only items with loadings greater or equal to .300 were kept. Scales were then compared on number of items retained. The remaining items were then compared over the four scales. Only items which were found in at least three of the scales were further retained. Thus, no one scale would contribute too many unique items to the final index. These items were then subjected to an item analysis procedure in which scales were compared on internal consistency of factors as well as median item-residual correlations within factors. A principle component factor analysis with varimax rotation was performed on retained items for each scale. Scales were compared on ability to retain the former a priori factor structure.

The third phase of the analysis consisted of extracting exact factor scores for each S from the rotated factor loadings and the inter-item correlation matrix. Factor scores were then used in a multiple correlation prediction of several criteria. Factor scores as opposed to raw subscores were used for the multiple regression analysis in order to take into account interaction effects between the factors. Jacob Cohen (1968) has shown that if predictors are independent, interaction effects can be shown in multiple regression analysis similar to those found in the standard analysis of variance design by simply taking the cross product of the factors and introducing them into the analysis as another predictor. Scales were compared on ability to show significant multiple correlations with criteria as predicted. The criteria used were the following: self-reported average grade for previous year of school; a self-rating on a six-point scale for happiness with school, happiness with home, happiness with future, happiness with self, general happiness, and degree of self-adjustment; underachievement-

overachievement as measured by the difference between self-reported grade and expected grade; psychological success-failure as measured by program in school; delinquency as measured by days skipped school (self-reported); absenteeism; self-concept as inferred from a discrepancy score between self-assessed I. Q. and measured I. Q. and as inferred from whether S chose to stay anonymous as opposed to exposing himself; and I. Q. The derivation of these criteria has been reported in Appendix F.

Results

Figure 1 shows the distribution of z-scores for the 99 items selected during study I. Z-scores were computed from the difference between percentage Ss rating each item as descriptive of best and the percentage Ss rating each item as descriptive of worst. As can be seen from figure 1, a large increase in number of items was found with z-scores 5.0 or larger. It was this shift in the graph that was used as the criterion for selection of items from the original 99, thus all items with a z-score less than 5.0 were rejected for further analysis. Table 5 shows the distribution of negative and positive valenced items as determined from the difference between percentage Ss scoring item as descriptive of best and percentage Ss scoring item as descriptive of worst. It can be seen that for all areas except school, number of negative and positive items were very close. Since it was this set of items that were administered to Ss it was felt that response set biases based on acquiescence would be negligible due to cancelling effects.

Phase I

Phase I of the study consisted of selecting a best single set of items for comparison of the four scoring techniques in criterion prediction. Identical analyses were performed on the data from each

scoring procedure. Principle component factor analysis was separately computed for the items in each a priori factor selected in study I; school, home, future, and self. Since considerable evidence was accumulated which suggested that there should be single factors for school, home, and future, scoring procedures were compared for ability to maintain this single factor structure within each a priori area. Eigen values were compared within each a priori area across scoring procedures to determine which scoring procedures retained the single factor structure, number of eigen values greater than 1.00 being used as the criterion for number of factors in the data. On the whole, all of the scoring procedures behaved similarly indicating more than one factor in each a priori area although in two areas, home and future, the self-worst procedure showed fewest factors while the normative-relative procedure showed the largest number of factors.

Within the a priori area, self, more than one factor was expected due to the large number of items describing the area although again the ability for a scoring procedure to account for the variance in as few factors as possible was used as the criterion for evaluating the relative strengths of the four procedures. Again the four procedures were very comparable with the self-worst procedure indicating the fewest number of factors.

When the factor loadings were considered within each a priori area, that is the loadings on the first factor for the areas, school, home and future and the loadings on a three-factor varimax rotation of the self area, the four scoring procedures looked fairly comparable in terms of size of loadings. Again, except for the area, home, the self-worst procedure produced the highest median loadings while the normative-relative procedure generally showed the lowest median loadings. Using

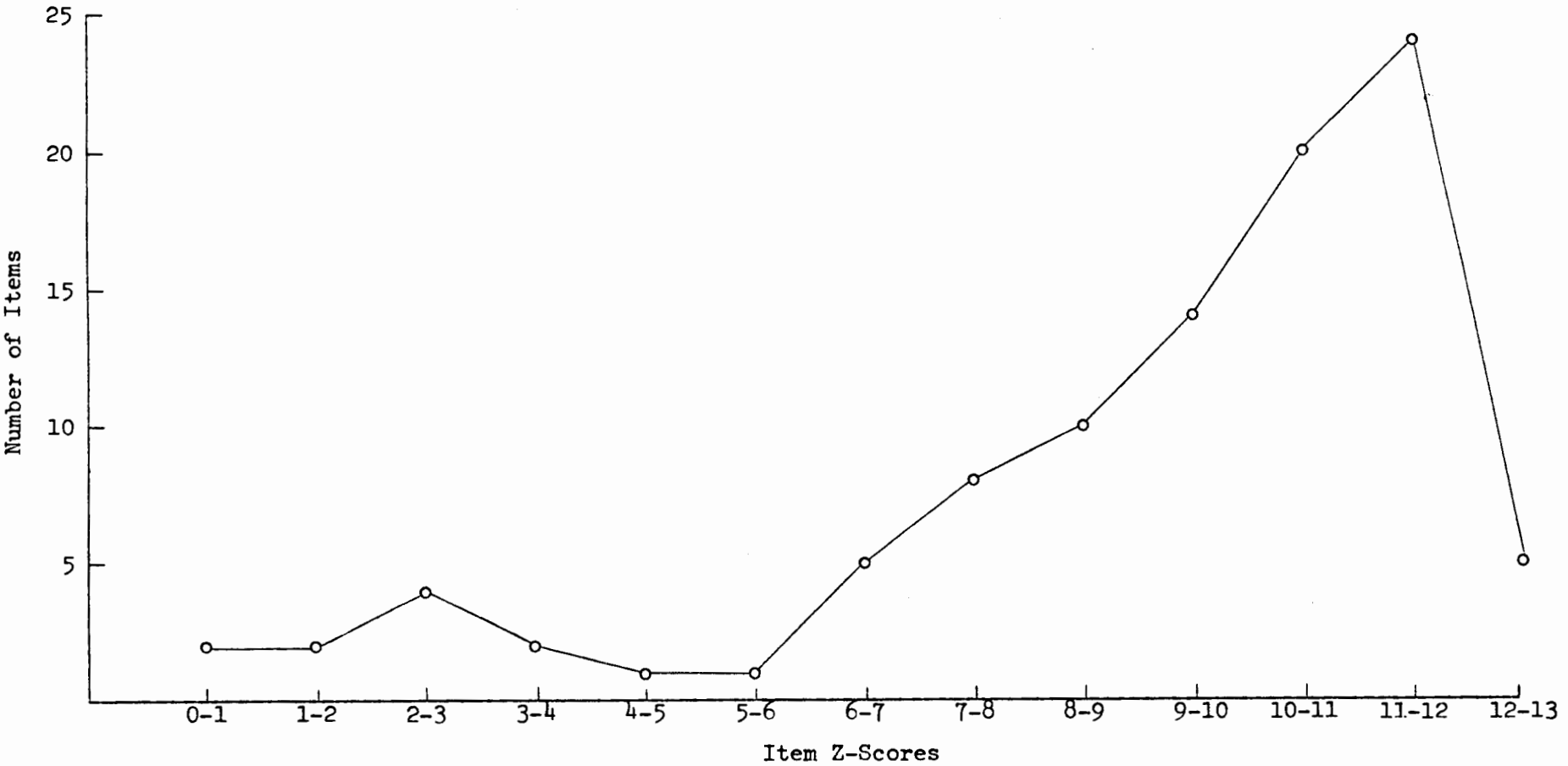

Figure 1: Frequency distribution of z-scores calculated for the difference between percentage Ss rating item best and percentage Ss rating item worst.

Table 5: Number of items in each area and over the total scale which were indicated positive or negative by the sign of the difference between percent scoring item "Best' and percent scoring item 'Worst'.

Direction of Item	Area				
	School	Home	Future	Self	Total
Negative	7	10	5	35	58
Positive	1	8	6	29	44

Table 6: Number of selected items each individual Scoring method retained.

	Total	Normative-Relative Scoring	Self-Ideal Scoring	Worst-self Scoring	Triadi Scorin
School	7	6	6	7	7
Home	11	8	10	10	10
Future	8	5	8	7	8
Self	27	22	26	27	27
Total	53	41	50	51	52

a criterion of a minimum factor loading of .300 each scoring procedure retained the following number of items of the original pool; normative-relative, 58; self-ideal, 62; self-worst, 85; and triadic, 76. As can be seen, the self-worst and triadic procedures were slightly superior to the other two methods in retaining the pre-selected items in the a priori areas.

Since a common pool of good items was required for relative validity comparisons, items which had a loading of .300 or higher on the selected factors over at least three of the scoring procedures were selected. It was hoped that by selecting items in this fashion, no one scoring procedure would have an advantage over the others in terms of the type or number of items used. Table 6 presents the total number of common items selected within each a priori factor as well as the number of those items each scoring procedure contributed to the final pool.

In all then, 53 items were selected; 7 describing school, 11 describing home, 8 describing future, and 27 describing self. The 27 items describing self appeared to consist of two subgroups. All of the scoring procedures extracted a factor from the self items consisting of a group of identical items. Because of the type of items involved in this factor it was named inferiority self. The remaining items were not distributed in any consistent pattern over the scoring procedures but the descriptions did suggest a pattern and therefore this group of items was labelled - independent self. It can be seen from table 6 that three of the scoring procedures contributed virtually all of the items to the final pool while the normative-relative procedure contributed a decidedly fewer number of items to this pool.

An item analysis consisting of a measure of Cronbach's Alpha for internal consistency and item-residual correlations were computed within

each area (School, Home, Future, Inferior self, and Independent self) for each scoring procedure. The median item-residual correlations and the alpha values for internal consistency have been reported in table 7. Again the self-worst procedure generally showed higher internal consistencies and item-residual correlations whereas there was little difference between the other three procedures. It should be cautioned though that these results may have been due to common method variance rather than to some higher common trait variance within the items for each area. A distribution of the number of items which were indicated as positive or negative by the discrepancy between percentage Ss rating item best and percentage Ss rating item worst for the selected pool of final items in each a priori area was reported in table 8. Almost half as many items were worded in the positive direction as opposed to the negative direction but it should be noted that Ss rated the entire 99 items where the distributions were more equal.

A principle component factor analysis with varimax rotation was then computed for all 53 items for each scoring procedure. Scoring procedures were compared for ability to retain the a priori factor structure - a measure of a type of convergent-discriminant validity. Five factors were rotated although more than five factors were indicated by the sizes of the eigen values. Only 5 factors were rotated because only 5 factors (school, home, future, inferior self, and independent self) were expected from earlier results and were the only factors of central concern. Factor names were assigned to the five factors by taking into account the structure of the loadings on the a priori areas.[2.] Table 9 presents a summary of the

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2. It should be noted that a more rigorous procedure would have been to rotate three of the factor structures with the fourth as a reference since small differences in the data may have contributed to different orientations of the factor axes for each scoring method. The present procedure was adopted in order to simulate as closely as possible the results which would have been obtained if only one of the scoring methods were used to validate the selected pool of items.

Table 7: Median item-residual correlations for each factor-selected area and Cronbach's Alpha showing the internal consistency for each area.

		Normative-relative Scoring	Self-ideal Scoring	Worst-self Scoring	Triadic Scoring
School	Median Item-residual Correlation	.07	.33	.31	.28
	Alpha	-.40	.60	.64	.55
Home	Median Item-residual Correlation	.27	.33	.42	.27
	Alpha	.60	.68	.76	.55
Future	Median Item-residual Correlation	.23	.33	.29	.27
	Alpha	.46	.60	.59	.58
Inferior Self	Median Item-residual Correlation	.38	.37	.44	.41
	Alpha	.71	.70	.76	.72
Independent Self	Median Item-residual Correlation	.19	.20	.45	.35
	Alpha	.58	.56	.88	.75

Table 8: Number of selected items in each area and over the total scale which were indicated positive or negative.

Direction of Selected items	School	Home	Future	Self	Total
Positive	0	4	4	11	19
Negative	7	7	4	16	34

Table 9: Convergent-discriminant validity within each scoring procedure showing number of items within each a priori factor which has highest loadings on the 5 factors obtained from varimax rotations of the 53 items for each scoring procedure. Full factor structures reported in Appendix C.

A Priori Factor	Scoring Procedure	Assigned Factors: School	Home	Future	Inferior Self	Independent Self
School	Normative-relative	6	1	0	0	0
	Self-ideal	5	0	1	0	1
	Worst-self	6	0	0	0	0
	Triadic	7	0	0	0	0
Home	Normative-relative	1	9	1	0	0
	Self-ideal	5	6	0	0	0
	Worst-self	0	10	0	0	1
	Triadic	1	9	0	0	1
Future	Normative-relative	0	1	5	1	1
	Self-ideal	0	0	5	2	1
	Worst-self	0	0	5	1	2
	Triadic	0	0	6	2	0
Inferior Self	Normative-relative	0	0	0	10	0
	Self-ideal	0	5	0	5	0
	Worst-self	0	0	1	9	0
	Triadic	0	2	0	8	0
Independent Self	Normative-relative	4	4	2	0	7
	Self-ideal	0	1	5	6	5
	Worst-self	0	0	2	1	14
	Triadic	6	0	2	3	6

number of items in each a priori area with the highest loading on the five factors for each scoring procedure. The self-ideal procedure was decidedly poorer than the other three methods showing neither good convergent nor good discriminant properties. The remaining three procedures were quite comparable over the first four a priori areas but for the independent self area, the self-worst procedure was found to be superior to the other three procedures. These results indicate that method variance for the self-worst procedure probably did not contribute too significantly to its better performance in the previous results from this phase of the study. In summary of the phase I analysis then, it was found that the normative-relative scoring procedure was not as good as the other three with respect to selection of good items and with respect to internal consistency of the items describing each a priori factor. The self-ideal scoring procedure was much poorer than the other three with respect to maintaining the a priori factor structures. Finally, the self-worst procedure appeared to be slightly superior to all of the other procedures with respect to all of the results found during phase I of the analysis.

Phase II

Four subtotals were computed for the areas school, home, future, and self for each S using all four scoring procedures. Thus there were eight variables, four traits and four methods, interacting to produce a total of sixteen variables. A principle component factor analysis was computed. Six factors accounting for 86.9% of the variance of these subscores were indicated by the number of eigen values greater than one. The six factors were then rotated by a varimax rotation and the factor structure was evaluated in terms of its ability to maintain the four established areas and show little method variance. The six rotated factors with their

loadings on each variable have been presented in table 10. The correlation matrix with means and standard deviations for each variable has been reported in Appendix E. In all, the four areas showed fairly good construct validity with only one method factor appearing which involved the self-worst and triadic procedures. This method factor may not have appeared in the previous factor analysis since only five factors of an indicated 18 were rotated for the self-worst procedure accounting for only a little more than 30% of the variance in the items. These results would then suggest the possibility of method variance accounting for the slight superiority of the self-worst procedure during the first phase of the analysis. These results do show that the 53 items selected as the validating index show good construct validity.

Phase III

The third phase of the analysis attempted to compare the four scoring procedures with respect to how well they would predict several specific criterion variables. Each of these criteria will be considered separately but within two broad classes. Several of the criteria were simply self-reported measures or measures with a self-reported component. The other group of measures were obtained independently of S. The group of self-reported measures were the various measures of satisfaction, self-reported adjustment, self-reported average school grade, self-reported school program, self-reported number of days S skipped school, underachievement-overachievement as measured by the difference between predicted average grade and self-reported average grade, and difference between measured I. Q. and self-reported I. Q. The group of measures which were obtained independent of S were a measure of anonymity, I. Q., and absenteeism. A description of the derivation of each of the criteria has been given in Appendix F. To aid the researcher in interpretive comparisons between

Table 10: Multitrait-multimethod factors showing content validity of final pool of 53 items.

Trait	Method	I	II	III	IV	V	VI	h^2
School	Normative-relative	-.03	-.02	.00	-.00	-.03	.96	.93
	Self-ideal	.02	-.17	-.88	.07	.18	.04	.85
	Worst-self	-.08	.02	-.82	.05	-.38	-.05	.83
	Triadic	.08	-.02	.52	-.03	.52	.48	.78
Home	Normative-relative	.02	-.90	-.02	.15	.04	-.02	.84
	Self-ideal	.11	-.89	-.09	.18	.18	.04	.89
	Worst-self	-.10	-.61	-.08	-.04	-.68	-.04	.86
	Triadic	.01	-.94	-.04	.02	-.22	.03	.93
Future	Normative-relative	.88	-.02	.06	.12	.04	-.12	.80
	Self-ideal	.92	-.06	.01	.13	.17	.07	.89
	Worst-self	.63	.04	-.01	.02	-.68	.03	.87
	Triadic	.92	-.03	.01	.08	-.33	.05	.97
Self	Normative-relative	.10	-.14	-.03	.84	-.15	-.07	.77
	Self-ideal	.12	-.20	-.01	.86	.28	.04	.86
	Worst-self	.09	.07	-.11	.55	-.75	.03	.89
	Triadic	.12	-.03	-.10	.84	-.46	.04	.95
Per cent total variance		18.4	18.5	11.0	16.0	15.5	7.5	86.9

the multiple R's obtained from predictions based on the factors for each scoring procedure of each criterion a significance test for differences between multiple R's was sought. Unfortunately no significance test was found. To obtain some information on the relative differences between the multiple R's a standard t-test for differences between conventional correlation coefficients was used. Since the predictors within each scoring procedure were undoubtably correlated across scoring procedures, a test given by McNemar (1969) for correlated correlations was used. The effect of having correlated predictors was to increase the t-value or conversely to require a smaller difference between the prediction correlations for significant differences to be shown. Because of this property of the test and the inappropriate application of the test for the present analysis it was assumed that a more conservative estimate of the differences between the multiple correlations should be sought. For this reason uncorrelated predictors were assumed during the application of this significance test. It should be cautioned that any significant differences found between the multiple R's should only be interpreted as tentative. Finally, since the same sample used to compare the relative predictive validities of the four scales was also used to select the optimum set of predictors for each scoring method, absolute size of the multiple R's should not be taken literally since these correlations have undoubtably taken advantage of chance fluctuations in the sample data. Since the presence of this problem would still contaminate the results a single shrunken multiple R was used for the comparisons which gives an unbiased estimate of the population R. Darlington (1968) developed a method of obtaining an unbiased population estimate of the mean square error of a multiple regression equation.

$$\sigma^2_{o(p)} = \frac{N-2}{N-n-2} \cdot \frac{N+1}{N-n-1} s^2_{o(p)}$$

Since the multiple correlation is related to the mean square error of the multiple regression equation, an estimate of the population multiple correlation is given by

$$R = \sqrt{1 - \frac{N-2}{N-n-2} \cdot \frac{N-1}{N-n-1} \cdot \frac{S_o^2(p)}{S_o^2(c)}}$$

This estimate was used for the comparative analysis.

The unshrunken multiple correlations have been reported in table 11 since the significance of these predictions was important to the confirmation of the hypotheses stated earlier. Comments on these results as they related to the hypotheses have been delayed to the discussion.

Self-reported criteria A summary of the single shrunken multiple correlations between the factors in each scoring method and the various self-reported criteria have been presented in table 12. Over all the normative-relative scoring method produced the highest multiple R's for all but four of the criteria. Even among these four criteria, this method produced the second highest multiple R's. Where the normative-relative scoring procedure did not produce the highest multiple correlation with the criterion, the multiple correlations were generally low and there were no significant differences between the four methods with respect to size of the correlation. The triadic scoring procedure showed the second best predictive ability with respect to the relative sizes of the multiple correlations. Taken together, these two scoring procedures showed the highest multiple correlations for ten of the eleven criteria and the second highest multiple correlation for eight of the eleven criteria. The self-worst scoring method was found to be the poorest with respect to predictive validity.

Taking each criterion separately, no significant differences were found between the multiple correlations predicting school happiness. With all four scoring procedures, the school factor was the single best

Table 11: Unshrunken multiple R's between factor predictors for each scoring method and the criteria. Hypothesis-relevant single predictors were included if their beta weights were significant.

Criteria	Normative-relative		Self-ideal		Worst-self		Triadic	
	R	Significant Hypothesized Predictors	R	Significant Hypothesized Predictors	R	Significant Hypothesized Predictors	R	Significant Hypothesized Predictors
School grades	.1805		.2551*	School X Inf-slf* Home X Inf-slf*	.2415	Inf-slf*	.2218*	Future X Inf-slf***
School Happiness	.5587****	School****	.5266****	School**** School X Future*	.4914****	School**** School X Future*	.4320****	School*** School X Home*
Home Happiness	.5715****	Home****	.5144****	Home****	.4373****	Home****	.5151****	Home****
Happiness with Future	.5010****	Future****	.3628****	Future****	.4292****	Future**** Future X Inf-slf*	.4744****	Future*** Future X Ind-slf*
Self Happiness	.5175****	Inf-slf**** Ind-slf*** Ind-slf X Home* Inf-slf X Future*	.2855**	Inf-slf** Ind-slf*	.3072****	Inf-slf*** Inf-slf X Ind-slf*	.3784****	Inf-slf** Ind-slf** Inf-slf X Home**
General Happiness	.4656****		.4104***		.2182*		.4290****	
Underachievement-overachievement	.2277*	Home*	.1824		.2481	Home*	.3093***	Home* Inf-slf X Home *
Self Adjustment	.4625****		.3633****		.3260****		.3808****	

Table II: (cont'd)

Success-failure	.4595****	Inf-slf* School*** Inf-slf X School** Home X Future*** School X Ind-slf***	.3414****	Ind-slf**** Home X Future**	.3058***	Inf-slf* Ind-slf***	.3936***	Ind-slf** School**** Inf-slf X Home*
Delinquency	.1186		.2111		.1442		.2442*	Inf-slf* Ind-slf* Inf-slf X Ind-slf*
Absenteeism	.3168**		.3273***		.1709*		.2989*	
Assessed I.Q. minus Measured I.Q.	.2959**	Ind-slf* Ind-slf X School**	.1922		.2601	Inf-slf X Ind-slf* Ind-slf X Future*	.3055*	Inf-slf* Ind-slf* Inf-slf X School* Ind-slf X School*
Anonymity	.2565*	Inf-slf**	.2825***	Inf-slf X Home* Inf-slf X School*	.3583****	Inf-slf** Ind-slf** Ind-slf X Home* Inf-slf X Future* Inf-slf X Ind-slf*	.3124***	Inf-slf X Future** Inf-slf X School*
I. Q.	.3994****	School**** Future* School X Ind-slf*	.2409*		.4757****	School* Future***	/4754****	School****

* $p < .05$; ** $p < .01$; *** $p < .005$; **** $p < .001$

Table 12: Single shrunken population estimates of multiple correlations between factors within each scoring method and S-reported criteria.

Criteria	Normative-relative	Self-ideal	Worst-self	Triadic
School Happiness	.5236	.4784	.4564	.3889
Home Happiness	.5521	.4732	.4062	.4914
Happiness With Future	.4672	.3142	.3731	.4321
Self Happiness	.4856	.2384	.2739	.3397
General Happiness	.4272	.3568	.2182	.3727
Self Adjustment	.4340	.3222	.3033	.3354
Self-reported Grade	.1310	.1865	.1816	.1699
Difference Between Reported Grade and Expected Grade	.1777	.0854	.1765	.2576
School Program	.4149	.3047	.2629	.3290
Days Skipped School	.0602	.1553	.1020	.1854
Difference Between Reported I.Q. and Measured I. Q.	.2407	.1279	.1794	.2426

Table 13: Single shrunken population estimates of multiple correlations between factors within each scoring method and criteria obtained independently of S.

Criteria	Normative-relative	Self-ideal	Worst-self	Triadic
Anonymity	.2141	.2452	.3005	.2707
I. Q.	.3362	.1808	.4436	.4530
Absenteeism	.2470	.2705	.1552	.2446

predictor of school happiness.

The multiple correlations between the factors in each scoring method and home happiness showed no significant differences. The home factor was the single best predictor of home happiness for all scoring methods.

Happiness with future showed the same general pattern. There were no significant differences between the multiple R's predicting happiness with future and the future factor was the single best predictor for each scoring method.

The pattern of predictions of self happiness was quite different than for the previous three criteria. The normative-relative procedure showed a significantly larger multiple R with self happiness than either the self-ideal method ($t=2.86$, $df=189$, $p < .01$) or the self-worst method ($t=2.48$, $df=189$, $p < .05$). For all scoring methods, the inferior-self factor was the single best predictor and for all but the self-worst procedure, the independent-self factor also contributed significantly to the predictions.

For the remaining seven criteria, no significant differences were found between the multiple correlations computed for each scoring procedure. The inferior-self factor was the most significant predictor of both general happiness and self adjustment for all scoring procedures. With respect to the prediction of average school grade, only the self-ideal method showed a significant contribution to the prediction from the home factor and the inferior self factor as expected. School, home, and self factors significantly contributed to the predictions of school program for both the normative-relative and triadic procedures as expected. For the self-ideal method only the home and self factors and for the self-worst method only the self factors contributed significantly

to the predictions. Finally, with respect to the prediction of days S skipped school, only the triadic scoring method included the self factors as significant predictors as expected.

Independent criteria As can be seen from table 13, the self-worst and triadic scoring methods produced the highest multiple correlations with the three criteria. There were no significant differences between the correlations predicting anonymity over the four scoring methods. Both the self-worst procedure ($t=2.86, df=189, p < .01$) and the triadic procedure ($t=3.04, df=189, p < .01$) showed a significantly higher multiple correlation than the self-ideal method for predictions of I. Q. Finally, there were no significant differences between the four scoring methods with respect to predicting absenteeism.

To summarize the findings for the relative predictive validities of the four scoring procedures it may be tentatively concluded that the normative-relative and the triadic procedures showed generally higher predictive validities than the other two methods. Furthermore, the normative-relative procedure generally showed higher predictive validity when self-reported criteria were used but the triadic procedure showed generally higher predictive validity when independent criteria were used. It should also be noted that the six happiness criteria showed a median intercorrelation of .26 which may explain in part why the normative-relative procedure consistently showed higher predictive validities with all of these criteria. Taking this into account, the triadic scoring method showed slightly higher predictive validities than the normative-relative scoring method and together these two methods accounted for the highest multiple correlation for seven of the nine independent criteria.

Phase IV

The question of whether the personal ratings of ideal and worst

differed from how the total group of Ss rated each item with respect to ideal and worst was of interest in the final phase of the analysis. The first involved the question of how much more valid information does a personal reference to an ideal contribute to the predictive validity of an index over the information gained from a normative reference to the ideal. It was felt that a direct test of this question could not be done but indirect information could be gained from the predictive ability of the normative-relative scores with respect to the two-part scores obtained during phase three of the analysis.

The second question involved the amount of variance in the personal ideal scores which was not included in the normative ideal scores. To answer this question correlations were computed over items for each person between how each person rated his personal ideal, and personal worst for each item and how the group rated each item for ideal and worst. The group ratings only comprised a set of item valences, positive meaning the item applied to the ideal and did not apply to the worst, negative meaning the item applied to the worst and did not apply to the ideal. The average correlations over people between the normative item ratings and the self ratings was .38, between ideal ratings and normative ratings was .78, and between worst ratings and normative ratings was -.55. Unfortunately unproportional marginal frequencies for the bivariate distributions of item ratings set limits on the obtained correlations which are not predictable, therefore precluding any rigorous test of the significance of the correlations.

A procedure for assessing the existence of dependencies between the self, ideal, and worst ratings and the normative ratings would be to calculate a chi-square using the Yates correction for noncontinuity. This would give a conservative estimate of the presence of dependency in the

data. When this test was applied to the self rating data a median chi-square of 9.04(df=1, $p < .01$) with a range (.00 to 56.69) was found for the 192 Ss over the entire 99 item scale indicating a fair degree of dependence between how Ss rated themselves and how the group rated the items. 51 of the 192 Ss showed no significant chi-square between their self-ratings and the normative ratings. A median chi-square of 46.38 (df=1, $p < .001$) with a range (.00 to 83.09) was found between the ideal ratings and the normative ratings for the 192 Ss. Only 11 of the 192 Ss showed no significant chi-square between their ideal ratings and the normative ratings. Finally, a median chi-square of 37.38 (df=1, $p. < .001$) with a range (.00 to 76.28) was found between the worst ratings and the normative ratings for the 192 Ss. 26 of the 192 Ss showed no significant chi-square between their worst ratings and the normative ratings.

The median chi-squares were converted into the index of mean square contingency described by Hays (1963) which gives the degree of association between two dichotomous variables. These values were $\phi = .22$ for the association between the self ratings and the normative ratings, $\phi = .49$ for the association between the ideal ratings and the normative ratings, and $\phi = .44$ for the association between the worst ratings and the normative ratings. A $\phi = 0.0$ indicates no association whereas a $\phi = +.10$ indicates complete association. These values, while lower, were comparatively similar to the correlations reported above.

The variances of ideal ratings, worst ratings and self ratings on each item were quite different. Matched t-tests were computed for the differences between the mean standard deviations for ideal rating, worst rating, and self rating. Ideal ratings had significantly less variation than either the self ratings ($t=9.42$, $df=98$, $p < .001$) or the worst ratings ($t=4.42$, $df=98$, $p < .001$) whereas there was no significant difference between the standard deviations of self ratings and worst ratings ($t=0.54$, $df=9$

Discussion

Study I concluded that a direct index of adolescent adjustment based on a fixed set of externally weighted items was difficult to construct due to the inability of researcher to have unambiguous weights assigned to the items. It was then suggested that since adjustment was a type of attitude directed toward the self as object, items with external references may be impossible to develop and that a measure which indexes the attitude taking into account individual frames of reference may be more helpful. It was therefore suggested that a comparison among the three logical alternatives of relative scoring with self as the reference be investigated. These three alternatives involved contrasting S with his personal ideal, contrasting S with his personal worst, and contrasting S simultaneously with his personal ideal and personal worst. A fourth relative score was suggested which involved contrasting S's self rating with the normative or group rating.

An initial pool of 99 items was used to compare the four scoring procedures. The first comparison involved the ability of the respective scoring methods to retain a maximum number of the original 99 items. This was thought to be significant since a considerable amount of information was already gained on these items from study I indicating that they were relatively good items. The results of this analysis demonstrated that the three relative scoring methods using the self as reference were very comparable while the normative-relative procedure selected only about 80% as many items. This result may have been more significant than the numbers show since it was only from the items showing a significant proportional split between ideal ratings and worst ratings that the selection of items was made. This would have undoubtably aided the normative scoring method but there seems little grounds to

suggest that the other three methods would have received the same benefit. That is, it would seem entirely possible that the scoring procedures which used a personal reference could select one or more of those rejected items as good items but entirely impossible for the normative method to select any of them.

The scoring methods were then compared on how well they would retain an a priori factor structure after the scores for each method on the selected items were subjected to a principle component factor analysis with varimax rotation. Three of the four methods were very comparable while the third method, the self-ideal scoring method, was considerably poorer. This scoring method showed good convergent validity for most of the a priori factors but very poor discriminant validity. Unfortunately good convergent validity was probably easily demonstrated due to common method variance but the degree of discriminant validity was probably more difficult to achieve for the same reason.

Aside from common method variance which the other three scoring methods would undoubtably also have had, another explanation for why the self-ideal method failed to show discriminant validity might be the following. Since an ideal is a non-real entity, might it be possible that most ideals are similar whether they be ideal schools, homes, futures, or selves? Could it be that this communality between ideal entities have contributed to this lack of discriminant validity?

Upon reviewing the results of table 9 it can be seen that the a priori factors school and home overlap. It would seem reasonable to assume that similar ideals would be attributed to homes and schools since each are in a sense institutions and each contain authority figures. Also home and self factors overlapped considerably. This may be because home, as well as being an institution, contains people with whom S would presumably

identify very closely. It would seem reasonable then, that ideals for a S's family would resemble his own ideals. Finally, future overlaps considerably with independent self. It need not be explicitly pointed out the relationship between an ideal future and an ideal independent self in western society.

But if this were valid, why should not it also apply to the other three scoring methods? For the self-worst procedure, one has a two part index with each constituent part anchored in the present or past. Since it is anchored in the present or past, it should reflect any real differences which do exist between different entities. Both the triadic and the normative-relative scoring methods use a worst comparison as well as an ideal comparison therefore real differences between the factors would be expected to show up for these methods also.

Based on the present research, it may be suggested that future researchers attempting to use a self-ideal index of adjustment should not expect to find clear independent factors. An alternative suggestion to the method employed here, for individuals interested in this scoring procedure, would be to use an oblique factor rotation for correlated factors. This method may align the factor axes more interpretively and account for more variance in the raw scores.

The item-residual correlations within each factor were difficult to interpret. On the one hand, high correlations would indicate that each item within a factor was measuring the same construct but on the other hand, high correlations between items and the residual items would suggest that each item was not contributing any new information to the index. It was therefore assumed that correlations between .30 and .50 would probably be optimal. Correlations of this size would show some degree of communality among the items but not so much that the item

wasn't contributing any new information. Using this as a criterion, all four scoring methods were fairly comparable with the normative-relative method showing slightly lower correlations. The four scoring methods were also very comparable in terms of internal consistency within each factor.

The multitrait-multimethod principle component factor analysis showed both considerable convergent validity and discriminant validity. It should be noted that the four methods were not maximally independent so that conclusions involving convergent validity must remain tentative. It would seem significant though that the six factors accounted for 86.9 per cent of the variance in the scores while the one method factor accounted for only 15.5 per cent of the variance. This would mean that the five trait factors accounted for 71.4 per cent of the total variance in the scores. Since the four methods were not independent, the high discriminant validity found in the raw data was probably very significant suggesting that the item pool had good construct validity. These results then confirm the first hypothesis, that a global adjustment score was not warranted by the data and that factors concerning school, home, future, and self as comprising an index of adjustment were confirmed to exist in the data.

There were several specific hypotheses concerning the relative predictive validity phase of the study.

Significant multiple correlations between adjustment factors and school grades with factors relating to home life and self-concept contributing most to the prediction would be found. This hypothesis was only partially confirmed by one of the scoring methods, the triadic method. Neither the home factor nor either of the self factors entered into the prediction significantly.

Significant multiple correlations between adjustment factors and various global measures of self-reported happiness with the respective factor in the adjustment index contributing most to the prediction would be found. All of the happiness measures showed significant multiple correlations with a composite of predictor factors from each of the adjustment scoring methods as hypothesized. Furthermore, as was hypothesized, the respective factor within each scoring procedure contributed significantly to the prediction of happiness of that factor.

Significant multiple correlations between adjustment factors and a measure of underachievement-overachievement with the factors relating to home life contributing most to the prediction would be found. This hypothesis was only confirmed by the normative-relative and triadic scoring methods. Both of these methods showed a significant multiple correlation with the criterion with the home life factor contributing significantly to the prediction in each case.

Significant multiple correlations between adjustment factors and a global self-reported measure of self adjustment would be found. This hypothesis was also confirmed by all scoring procedures. Self-reported adjustment was significantly predicted from a composite of factors for each of the scoring procedures.

Significant multiple correlations between adjustment factors and an index of success-failure with factors concerning home life, school life, and self-concept contributing most to the prediction would be found. This hypothesis was also confirmed by each scoring procedure although only the triadic and normative-relative procedures showed a significant contribution to the prediction by the school, home, and self factors as was expected.

Significant multiple correlations between adjustment factors and a measure of delinquency with factors concerning home life contributing

most to the prediction would be found. This hypothesis was only confirmed by the triadic scoring method.

Significant multiple correlations between adjustment factors and absenteeism would be found. This hypothesis was confirmed by all scoring procedures, showing a significant multiple correlation between the various factors of adjustment and absenteeism.

Significant multiple correlations between adjustment factors and independent measures of self-concept with factors concerning self contributing most to the prediction would be found. This hypothesis was also confirmed. Two measures of self-concept were used. For the first measure (difference between self-assessed I. Q. and I. Q. measured by the Lorge-Thorndike Intelligence Test) only the normative-relative and the triadic scoring methods confirmed the hypothesis. For the second measure (desire to remain anonymous) all scoring methods confirmed the hypothesis. As expected, with all of the significant predictions, self-concept contributed significantly to those predictions.

Significant multiple correlations between adjustment factors and I. Q. with factors concerning school and future contributing most to the correlation would be found. All scoring methods significantly predicted I. Q. although only the normative-relative and self-worst methods showed a significant contribution to the prediction by both the school and future factors as expected.

Overall then, the results tend to show that the items selected for the adjustment index showed considerable predictive validity since virtually all of the hypotheses were confirmed by at least one scoring method. In terms of how well each of these scoring methods showed the expected relationships, it was tentatively concluded that both the

normative-relative and triadic procedures were better.[3] Furthermore, the only scoring method which showed significant multiple correlations for all of the expected relationships was the triadic index.

All of the above results confirm the third hypothesis, both the triadic and normative-relative procedures showed higher multiple correlations with the criteria than did the other two methods. Again the triadic index showed a slight superiority to the normative-relative method. It would appear then, that with respect to predictive validity, the normative-relative and triadic scoring methods were superior and very comparable. Why should these two methods be so comparable when the triadic method was simply the average of the other two methods? One would expect the three relative scoring procedures taking into consideration personal frames of reference to be similar. One reason may have been that both the triadic and normative-relative methods took into account both the upper and lower frames of reference while the other two methods only contrasted each individual with one of his frames of reference. The major difference between the normative-relative and the triadic methods was that the triadic method took into account individual frames of reference whereas the normative-relative method took into account the group frame of reference. This attention to the individual component may be the reason that the triadic method was slightly superior to the normative-relative method in all phases of the analysis. It should be also pointed out that the normative directions for the items were taken from the same sample the normative-relative index was validated on. This procedure would undoubtedly increase the predictive ability of this method over the

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3. Only a tentative conclusion can be suggested since cross-validation was not demonstrated.

traditional employment of this method where the direction of each item is determined on a sample different than the one that the index is to be applied to. A further comment should be directed to the findings of Smith et. al. (1969) who used the same procedures to measure job satisfaction. These researchers found the normative-relative method to be better than the triadic method. A possible explanation for this difference may rest again upon the direction of the attitude being measured. Job satisfaction may be conceived of as an attitude directed outside of the self as confirmed by the types of factors the J.D.I. was composed of (e.g. work, pay, promotions, supervision, and co-workers) and therefore would be very susceptible to external references, but the measurement of adjustment involves attitudes directed toward the self where external references may not be applicable. It was suspected that for these reasons, the present study obtained different results than those obtained by Smith et. al. (1969).

Finally, Wylie (1961) has cast considerable doubt as to the significance of using a two-part measure of self-concept as opposed to using a standard one-part measure. Some of Wylie's more important questions (paraphrased) were the following. Is there significant unique variance in ideal ratings such that when they are contrasted with self ratings they add new and vital information? Results of this study have shown that whereas the ideal ratings had significantly less variance than either the self ratings or the worst ratings, there was still considerable amount of variance in these scores. If there is sufficient variance in the ideal ratings, is this variance unique or is most of it simply reflected in group ratings on the same items? Results of the present study suggest that whereas the variance in ideal ratings was considerably associated with group ratings of the same items, the association was not

high enough to suggest that there was not much unique variance in the ideal ratings over and above that found in the group ratings. Even if one were to interpret the correlations over items averaged over people which were undoubtably inflated, one finds that the normative ratings only account for 42 per cent of the variance in the ideal ratings. This leaves over half the variance in the ideal ratings unique to the individuals.

When a S rates himself on several items of an index, does he in fact take into consideration a normative ideal, rating himself high on the item if he is sufficiently close to this ideal and low if he were sufficiently far away from this ideal? If this were the case, one would only need the direction of each item and S's self rating and could therefore dispense with the ideal rating. It was found that about the only way this question could be answered was indirectly. That is, to look at the relative abilities of the several methods to predict relevant criteria. When this was considered it was found that in fact the self-ideal method does not predict better than a score based simply on S's self-rating contrasted with the direction of the item as reflected in the normative-relative scoring method and in fact was found to be poorer with respect to predictive validity. As noted above, the poorer performance of the self-ideal method probably was due to the fact that it does not take into consideration both frames of reference. When both frames of reference are considered, it was found that the index tapping the personal frames of reference was superior to the one tapping only normative frames of reference.

Is it meaningful to subtract S's self ratings from his ideal ratings without regard to sign as is traditional? Since the triadic scoring method took into consideration deviations both in the positive (ideal)

and the negative (worst) directions from the self it was thought that an appraisal of this method should answer this question. As was noted above, the triadic method and indeed the normative-relative method which used normative frames of reference, showed higher predictive and construct validities than did the self-ideal contrast. This result would suggest that the sign of the discrepancy was indeed important.

In summary, it may be concluded from the results of this study that a triadic measure should be used to index adolescent adjustment since it was as good if not better than the other logical alternatives in selection of good items, retaining an a priori factor structure, internal consistency, construct validity, and predictive validity. None of the other three alternatives to the triadic scoring method were as consistent in fulfilling each of these criteria. This then would suggest that the study reported as Study I should be continued using the triadic method of scoring item responses. Before such a study is completed an analysis of previously constructed measures of adjustment in terms of canonical redundancy should be made. Should this analysis show little redundancy in these former measures, the argument for continuation of Study I would be strengthened. Should this analysis show a large redundancy in these former measures of adjustment much information regarding the definition of adolescent adjustment problems may be clarified and Study I could be continued in view of such information.

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Appendix A

Items used to index adolescent adjustment

Descriptions of school

1. Teachers don't bother
2. Bummer
3. Stupid rules which are always violated
4. Classroom work counts
5. Hard to study there
6. Terrible
7. Hard work
8. Drag

Descriptions of home

1. Father works
2. Hard to study there
3. Father quick-tempered
4. Depend on parents
5. Can tell mother everything
6. Father a hard and steady worker
7. Parents responsible
8. Father doesn't listen
9. Respect parents
10. Father able to support family
11. Father will take lone stand in group discussions
12. Father picky
13. Mother picky
14. Terrible
15. Mother has everything her way
16. Father clever
17. Mother takes things hard
18. Mother's feelings easily hurt

Descriptions of future

1. Hard to get job
2. Overconcerned
3. Know what I want to do
4. Finish grade 12
5. Be able to get experience before you choose a job
6. Atomic war
7. Over-population
8. Challenging
9. Make money
10. Free
11. What I want to do requires too much school

Descriptions of self

1. Quick-tempered
2. Dependent on parents
3. Respect
4. Bummer
5. Do my own thing
6. Unsure
7. Took drugs to see what they were like
8. Have to do things to try them out even if warned not to
9. Get along well with my friends
10. Inferiority complex
11. Sensitive
12. Enjoy art or music
13. Left out of things
14. Forget things
15. Afraid of making mistake
16. Clever
17. Take things hard

18. Have natural talent
19. Can tell Jokes
20. Lack self-confidence
21. Have ability to pass or better in school
22. Can't express self
23. Self-control
24. Skip outs
25. Creative
26. Responsible
27. No grudges held
28. Can't go out
29. Travel first
30. Must do what others are doing to be able to communicate
31. Independent
32. Cool
33. Spoiled
34. Fat
35. Skinny
36. Feel rejected
37. Don't care
38. Depressed
39. Will take lone stand in group discussions
40. Frequently ask people for advice
41. Wear expensive clothes
42. Poor complexion or skin troubles
43. Get excited easily
44. Cross street to avoid meeting someone
45. Shy
46. Talkative at social gatherings
47. Feelings easily hurt
48. Moody
49. Easily distracted from work
50. Easily aroused sexually
51. Think a lot about sex
52. Worry about looks
53. Fast
54. Ambitious
55. Learn by experience
56. Bum around
57. Watch a lot of T.V.
58. Mind easily changed
59. Make own decisions
60. Won't ask questions in school
61. Hard and steady worker
62. Look for relationship

Appendix B

Instructions given to subjects

On the following pages you will find words and phrases grouped under four headings; School, Home, Future, and Self. Each item under a particular heading such as Home, describes that heading. You will be doing these items four times. You will find specific instructions for each section. Read these instructions carefully and then do the items.

In this section you will find descriptions of four areas; Your School, Your Home, Your Future, and Your Self. Please check 'Yes' if you feel the item applies to the area or 'No' if you feel it does not apply to the area.

EXAMPLE:

Your School

Yes	No		
☐	☐	1.	Teachers don't bother

If you think that the statement "Teachers don't bother" applies to Your School, put a check in the box for 'Yes'.

If you think that the statement "Teachers don't bother" does not apply to Your School put a check in the box for 'No'.

Continue in the same manner for all items in all areas. Please answer every item.

In this section you will find descriptions of four areas; Worst School, Worst Home, Worst Future, and Worst Self. Please check 'Yes' if you feel the description applies to the area or 'No' if you feel it does not apply to the area. Please check all items.

EXAMPLE:

Worst School

Yes	No		
☐	☐	1.	Teachers don't bother

Think of all the High Schools which you could be attending if you were living in the right district, town, or province. Pick the school you would least like to attend if you had to. (This could be your own school) Then answer all the items as if they applied to that school. If you feel that the statement "Teachers don't bother" describes this Worst School put a check in the box for 'Yes'. If you think that the statement "Teachers don't bother" does not describe this Worst School, put a check in the box for 'No'.

When checking items for 'Worst Home', pick a home you know of which, if you had to, you would least like to be in. (This could also be your own home) Then check all the items as if they apply to that Worst Home. The same procedure is used for 'Worst Future' and for 'Worst Self'.

In this section you will find descriptions of four areas; Best School, Best Home, Best Future, and Best Self. Please check 'Yes' if you feel the description applies to the area or 'No' if you feel it does not apply to the area. Please check all items.

EXAMPLE: Best School

Yes	No	
☐	☐	1. Teachers don't bother

Think of all the High Schools which you could be attending if you were living in the right district, town or province. Pick the school you would most like to attend if you could. (This could also be your own school) Then answer all the items as if they applied to that school.

If you feel that the statement "Teachers don't bother" describes this Best School put a check in the box for 'Yes'. If you think that the statement "Teachers don't bother" does not describe the Best School, put a check in the box for 'No'.

When checking items for 'Best Home', pick a home you know of which, if you could, you would most like to be in. (This could also be your own home) Then check all the items as if they apply to that Best Home. The same procedure is used for 'Best Future' and 'Best Self'.

Questions used for several criteria variables

1. How happy are you with school?

   Not Happy 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) Very Happy

2. How happy are you with home?

   Not Happy 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) Very Happy

3. How happy are you with your future?

   Not Happy 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) Very Happy

4. How happy are you with yourself?

   Not Happy 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) Very Happy

5. How happy are you in general?

   Not Happy 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) Very Happy

6. How well adjusted do you feel you are?

   Not Adjusted 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) Well Adjusted

7. Approximately, how many days were you away from school last year?

   _____

8. Approximately, how many days did you skip school last year?

9. What was your average grade in school last year?

_____

10. Approximately, what would you say your I. Q. is?

_____

Low average	- 90	Choose a reasonable value not
Average	- 105	less than 90 and not greater
Superior	- 150	than 150.

Appendix C

Table 14

Varimax factor loadings for normative-relative scoring method

Area	Item	Factors					
		I	II	III	IV	V	h^2
School	Teachers don't bother	04	33	14	27	-17	23
	Bummer	-06	64	-06	00	13	43
	Stupid rules which are always violated	-07	-61	-02	-11	19	42
	Hard to study there	-08	50	-07	01	-01	26
	Terrible	-12	69	-13	-07	01	51
	Hard work	-12	00	-23	02	-18	10
	Drag	06	-72	11	03	-09	55
Home	Hard to study there	26	35	08	-11	-11	21
	Father a hard and steady worker	08	03	10	16	-46	25
	Father doesn't listen	09	-05	-33	-14	-01	14
	Respect parents	09	-11	-57	-11	-03	36
	Father picky	10	03	-58	08	02	36
	Mother picky	16	07	-57	-12	12	38
	Terrible	-01	-23	-48	-17	-10	32
	Mother has everything her way	07	09	-30	-02	03	11
	Father clever	-19	-02	-38	18	-18	24
	Mother takes things hard	14	18	-53	08	20	38
	Mother's feelings easily hurt	17	16	-40	07	26	29
Future	Hard to get job	18	-17	09	01	42	25
	Overconcerned	51	-04	07	-24	33	43
	Know what I want to do	04	00	-21	08	24	11
	Be able to get experience before you choose a job	08	-03	-06	-18	08	05
	Atomic war	16	05	05	08	52	31
	Overpopulation	07	-01	-10	09	53	31
	Make money	-06	11	-07	-02	45	22
	Free	16	-14	21	-07	18	12
Inferior Self	Unsure	49	-07	05	-13	08	28
	Inferiority complex	50	-13	-04	23	02	33
	Afraid of making mistakes	40	18	02	19	11	21
	Take things hard	58	19	-22	-08	02	43
	Lack self-confidence	55	-11	14	26	08	41
	Self-control	40	-06	-08	-03	06	18
	Feel rejected	48	-19	-25	08	-10	35
	Depressed	57	-06	-16	-02	-07	35
	Feelings easily hurt	47	11	-35	02	-07	35
	Moody	50	02	-07	00	03	26

Table 14 (Cont'd)

	Get along well with my friends	17	-18	-13	-06	-11	09
	Respect	-14	-25	-31	13	-05	20
	Bummer	19	-32	-08	-38	-08	30
	Responsible	02	-35	-10	03	41	31
	Can't go out	02	-31	-13	05	06	12
	Cool	-01	01	-06	42	24	24
	Fat	-02	01	11	31	12	12
	Will take lone stand in group discussion	08	-37	06	30	-20	28
Independent	Ambitious	-12	-47	-24	37	11	44
Self	Clever	01	-27	03	31	24	23
	Learn by experience	-05	05	22	00	44	25
	Have to do things to try them out even if warned not to	07	-22	-46	-24	03	32
	Skip outs	16	-20	-22	-22	10	17
	Shy	32	-07	01	49	-08	36
	Talkative at social gatherings	18	-21	-02	53	-01	36
	Easily distracted from work	05	-22	-31	11	26	23
	Fast	03	-06	-10	63	-06	41
Per cent total variance		6.4	6.9	6.0	4.4	4.4	28.1

Table 15

Varimax factor loadings for self-ideal scoring method

Area	Item	Factors					
		I	II	III	IV	V	h^2
School	Teachers don't bother	-17	14	12	-13	14	10
	Bummer	-05	64	02	-01	-04	42
	Stupid rules which are always violated	-07	30	04	-09	-04	11
	Hard to study there	-09	47	11	-24	11	31
	Terrible	-11	65	-14	12	-07	47
	Hard work	08	25	28	-04	12	16
	Drag	04	59	08	12	-07	37
Home	Hard to study there	-09	11	-01	-32	08	13
	Father a hard and steady worker	-01	16	11	-26	-09	11
	Father doesn't listen	-12	35	-16	-25	-04	22
	Respect parents	06	41	-03	-17	-15	23
	Father picky	18	26	-08	-51	-12	38
	Mother picky	13	41	15	-43	-12	46
	Terrible	07	55	-31	-08	-09	42
	Mother has everything her way	-01	28	-14	-13	19	15
	Father clever	04	34	06	-10	-06	14
	Mother takes things hard	23	21	21	-47	03	37
	Mother's feelings easily hurt	27	09	32	-43	04	37
Future	Hard to get job	38	-09	03	-17	-21	23
	Overconcerned	13	-03	25	-28	-47	38
	Know what I want to do	39	17	27	-08	-09	27
	Be able to get experience before you choose a job	05	02	-04	-01	-48	24
	Atomic war	55	-10	14	04	-13	35
	Over-population	49	07	27	01	-10	33
	Make money	45	-08	14	05	06	23
	Free	15	00	50	-08	-08	28
Inferior Self	Unsure	-00	08	26	-18	-28	18
	Inferiority complex	06	-04	-11	-23	-54	36
	Afraid of making mistakes	16	-20	-09	-35	-24	26
	Take things hard	11	02	02	-60	-08	38
	Lack self-confidence	-02	-00	01	-35	-35	24
	Self-control	-07	00	08	-14	-64	45
	Feel rejected	11	17	-23	-15	-61	48
	Depressed	-12	05	-12	-56	-24	41
	Feelings easily hurt	07	00	-10	-64	-08	43
	Moody	03	15	04	-51	02	29

Table 15 (Cont'd)

	Get along well with my friends	07	-02	-36	10	-31	23
	Respect	00	10	01	08	-26	08
	Bummer	-03	23	-08	09	-43	25
	Responsible	52	08	-19	09	-05	33
	Can't go out	12	17	-40	-02	-04	21
	Cool	22	15	-32	02	-18	21
	Fat	04	-04	-06	04	-22	06
	Will take lone stand in group discussion	-01	-00	-46	-24	-17	30
Independent	Ambitious	47	20	-35	-01	-03	39
Self	Clever	46	-04	-06	-19	13	27
	Learn by experience	40	11	-10	-02	15	21
	Have to do things to try them out even if warned not to	-03	07	15	-10	-27	11
	Skip outs	19	12	-21	-24	-24	21
	Shy	-05	-08	-44	-40	07	37
	Talkative at social gatherings	05	-18	-31	-32	11	25
	Easily distracted from work	22	07	-10	-23	-26	19
	Fast	31	-06	-12	-11	-13	14
Per cent total variance		4.8	5.8	4.4	6.8	5.4	27.2

Table 16

Varimax factor loadings for worst-self scoring method

Area	Item	Factors					
		I	II	III	IV	V	h^2
School	Teachers don't bother	38	-09	39	13	-10	33
	Bummer	01	17	72	14	11	57
	Stupid rules which are always violated	23	05	45	-07	01	26
	Hard to study there	05	16	27	02	-25	16
	Terrible	-01	14	67	15	01	49
	Hard work	24	16	17	-02	-05	12
	Drag	-10	15	61	04	05	41
Home	Hard to study there	07	41	18	-02	22	26
	Father a hard and steady worker	44	44	31	08	07	49
	Father doesn't listen	-03	26	01	10	14	10
	Respect parents	31	60	20	14	02	51
	Father picky	07	57	18	-01	14	39
	Mother picky	03	49	02	30	-24	38
	Terrible	35	45	21	12	-21	43
	Mother has everything her way	11	42	19	26	-13	30
	Father clever	06	55	12	-12	20	37
	Mother's feelings easily hurt	-01	61	-20	20	06	45
	Mother takes things hard	-04	51	01	33	-06	38
Future	Hard to get job	04	03	16	12	55	35
	Overconcerned	20	-00	-14	30	-03	15
	Know what I want to do	19	14	02	17	40	24
	Be able to get experience before you choose a job	16	16	21	24	37	28
	Atomic war	35	05	03	13	49	38
	Over-population	-12	13	-13	02	61	43
	Make money	47	31	-08	-10	10	34
	Free	39	19	-11	10	13	23
Inferior Self	Unsure	09	19	-02	41	07	22
	Inferiority complex	24	-06	12	51	00	34
	Afraid of making mistakes	15	03	-08	29	36	25
	Take things hard	-10	13	21	56	14	41
	Lack self-confidence	28	-05	08	44	13	30
	Self-control	34	15	01	44	12	35
	Feel rejected	36	09	14	49	11	42
	Depressed	07	09	08	64	05	43
	Feelings easily hurt	08	24	15	48	03	32
	Moody	07	11	-02	49	15	28

Table 16 (Cont'd)

	Get along well with my friends	54	21	30	19	25	52
	Respect	64	27	-01	20	10	53
	Bummer	56	20	23	36	12	55
	Responsible	58	-01	07	25	26	48
	Can't go out	49	05	-05	03	-09	26
	Cool	31	08	-02	00	33	21
	Fat	55	-16	11	09	24	40
	Will take lone stand in group discussion	37	-16	21	26	20	31
Independent	Ambitious	42	04	35	23	26	41
Self	Clever	54	15	01	25	00	38
	Learn by experience	56	14	16	31	03	46
	Have to do things to try them out even if warned not to	35	11	02	35	00	26
	Skip outs	20	03	03	52	10	32
	Shy	37	-19	33	25	11	36
	Talkative at social gatherings	35	-15	24	05	40	37
	Easily distracted from work	27	-00	15	23	01	15
	Fast	48	07	-04	18	11	28
Per cent total variance		10.1	6.5	5.5	7.6	4.6	34.3

Table 17

Varimax factor loadings for triadic scoring method

Area	Item	Factors					
		I	II	III	IV	V	h^2
School	Teachers don't bother	-08	09	47	06	01	24
	Bummer	-05	-11	39	-11	-10	11
	Stupid rules which are always violated	01	10	33	22	-09	18
	Hard to study there	-07	-16	60	15	06	42
	Terrible	-01	-17	33	-09	-03	15
	Hard work	15	-08	37	03	-01	17
	Drag	00	-05	34	05	12	14
Home	Hard to study there	11	-44	33	09	-29	41
	Father a hard and steady worker	-07	-13	56	-06	03	34
	Father doesn't listen	07	33	-14	-06	-12	15
	Respect parents	02	50	-42	04	04	43
	Father picky	-03	69	-05	09	18	52
	Mother picky	18	54	-10	-02	-22	39
	Terrible	05	44	-44	-07	16	42
	Mother has everything her way	03	32	-22	-03	-02	16
	Father clever	-15	44	-08	13	-03	24
	Mother takes things hard	24	38	03	20	-39	39
	Mother's feelings easily hurt	14	43	11	32	-38	47
Future	Hard to get job	26	-01	10	38	11	23
	Overconcerned	57	-14	-12	22	-32	50
	Know what I want to do	09	09	06	50	01	27
	Be able to get experience before you choose a job	30	-06	-18	14	-15	16
	Atomic war	14	-05	-06	61	17	44
	Overpopulation	-05	03	19	57	-08	37
	Make money	-08	03	-30	44	07	29
	Free	04	03	-17	36	-19	19
Inferior Self	Unsure	31	18	04	08	-02	13
	Inferiority complex	57	-03	-08	-13	17	38
	Afraid of making mistakes	41	-06	08	09	07	19
	Takes things hard	45	38	16	05	11	39
	Lack self-confidence	51	-05	-09	02	16	29
	Self-control	54	02	-29	05	-04	38
	Feel rejected	53	11	-26	01	22	40
	Depressed	54	30	-04	-19	06	42
	Feelings easily hurt	41	45	12	02	20	42
	Moody	36	38	10	04	06	28

Table 17 (Cont'd)

	Get along well with my friends	16	06	-56	15	36	50
	Respect	20	02	-46	18	08	29
	Bummer	32	04	-54	11	11	43
	Responsible	13	-06	-39	45	29	46
	Can't go out	06	-00	-31	14	22	17
	Cool	-01	00	-06	23	36	19
	Fat	07	-31	-31	19	25	30
	Will take lone stand in group discussion	34	-07	-16	-04	37	28
Independent	Ambitious	17	13	-25	22	42	33
Self	Clever	12	01	-15	34	19	20
	Learn by experience	27	-29	-37	27	11	38
	Have to do things to try them out even if warned not to	33	-01	-25	17	-15	23
	Skip outs	53	05	-07	09	-00	30
	Shy	22	07	-04	-14	60	43
	Talkative at social gatherings	11	-04	09	10	65	46
	Easily distracted from work	29	08	-01	11	09	11
	Fast	26	-05	-10	22	30	22
Per cent total variance		7.5	6.1	7.8	4.9	4.7	31.0

Appendix D

Development of scoring procedures

Ss were instructed to describe their school, home, future and self by indicating by means of a "yes" or a "no" which of the words applied to these areas. In addition to the inclusion of many descriptive items, the instructions to the subjects emphasized description rather than evaluation.

Assume that we have decided to use descriptively worded items and have received the following responses to an adjective check list when the subject is describing his home:

Yes	No	
	✓	Father works
✓		Hard to study there
	✓	Father quick-tempered
	✓	Depend on parents

Given only this information, could one make any statement at all concerning this subject's adjustment? What was the "adjusted" response to each adjective? Since the development of an *a priori* key failed to show adequate results in Study I, this method could not be used. A second traditional method would be to item-analyze the item responses against some criterion which is felt to reflect adolescent adjustment. This method always raises the problem of what one uses for a criterion of an attitude or feeling. The use of total score on the inventory as an index of adjustment, before it has been determined that the inventory actually measures adjustment, seemed premature. On the other hand, if an outside criterion was used to item-analyze the inventory, an assumption is made that this criterion is in fact a good measure of adjustment. If this is the case, then why not use the criterion itself as a measure of adolescent adjustment?

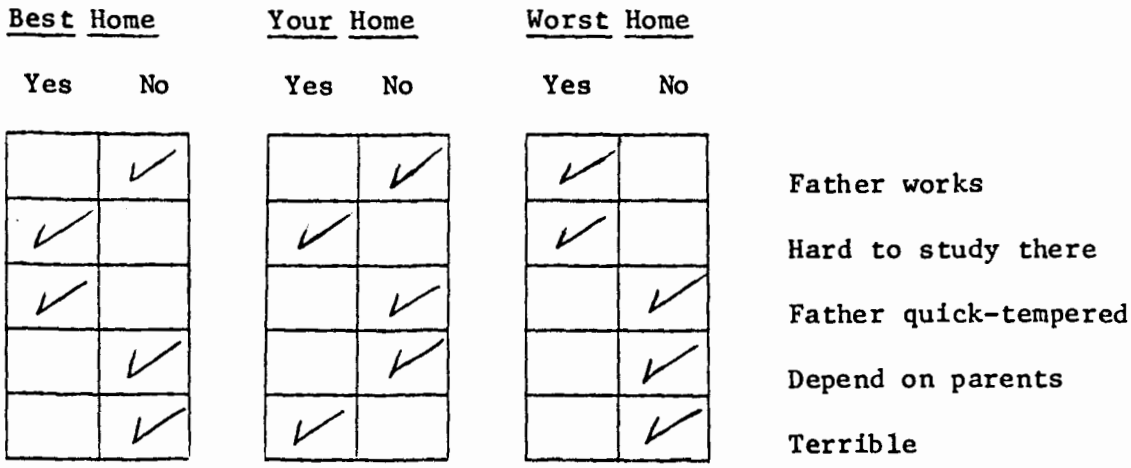
Self-ideal and Worst-self or Diadic Scoring

Given all three descriptions from a subject, one could utilize only the information one desired. For example, one could determine scoring directions by looking only at the present and best descriptions. In this procedure, referred to as "self-ideal" scoring, whenever the same adjective is said to be descriptive of both the present and the best lives, then the subject is given a score indicating adjustment. Likewise, one could determine the scoring direction for each item from the way subject described his present and worst lives. In this latter case, whenever the present description is like the worst description, S is given a score indicating maladjustment. This latter procedure has been referred to as "worst-self" scoring. Both "self-ideal" and "worst-self" scoring are diadic scoring methods.

A score indicating adjustment was given a +1, and a score indicating maladjustment was given a -1.

Triadic Scoring

Three descriptions were obtained from each S. Each S was asked to describe, in addition to his present life, the life he would most like to have (his best school, home, future, and self), and the life he would least like to have (his worst school, home, future, and self). It was felt that by comparing S's responses to each adjective when he described his present life with the responses to each adjective when describing his best and worst lives, not only an estimation of scoring direction for each adjective could be obtained, but also an indication of the subject's frame of reference, the end points of the subjective adjustment continuum, could be obtained. Assume that by including these two additional descriptions of home the following information was obtained from a S:



If one were to look at the responses to the adjective phrase "Father works" it would be found that S saw his present home as like his best home but different from his worst home. That is, in both his present and best homes his father does not work, but in his worst home his father works. Thus for this S a score indicating adjustment on this response would be assigned. It would be inferred that, if a subject says any given adjective is descriptive of his best home and not his worst home, the presence of this characteristic in his own home would be an indication of adjustment. If, on the contrary, in best and present homes father does work whereas in the worst home he does not work, it would be assumed that the presence of the father working would indicate adjustment.

The set of responses given to "Hard to study there", "Depend on parents", and "Terrible" would receive a score indicating neither adjustment nor maladjustment - a neutral score - since these adjectives and phrases do not discriminate between best and worst homes for this S.

The responses given to "Father quick-tempered" would receive a score indicating maladjustment, since on this characteristic the subject's home was seen as like his worst home but different from his best home.

Responses scored as adjustment were given a +1, responses scored as maladjustment were given a score of -1, responses scored as neutral were given a 0. It should be noted that responses scored as adjustment or

maladjustment were simple averages of the two dyadic scores for the same item.

Normative-Relative Scoring

In addition to the three scoring procedures just described, it was also possible to develop a direct or normative-relative scoring key. To construct this key, a scoring key was constructed in a somewhat unconventional manner, using information on the subjects' anchor descriptions (best and worst descriptions). An item was scored positively for all subjects if it was endorsed more frequently as a best description than as a worst description. It was scored negatively for all subjects if endorsed otherwise.

If the subject endorsed the item by indicating that it applied to himself, he was given the score for that item. If the subject indicated that the item did not apply to himself he was given the negative of the item score. If subject did not endorse the item he was given the neutral score of 0.

Appendix E

Table 18: Discriminant-convergent validity correlation matrix

		1	2	3	4	5	6	7	8
Normative Relative Method	School (1)								
	Home (2)	.01							
	Future (3)	-.09	.07						
	Self (4)	-.03	.24	.26					
Self-ideal Method	School (5)	-.02	.16	-.03	.10				
	Home (6)	.05	.80	.10	.23	.26			
	Future (7)	.04	.07	.76	.15	.03	.19		
	Self (8)	.03	.28	.17	.62	.10	.39	.28	
Worst-self Method	School (9)	-.04	.01	-.11	.13	.53	-.02	-.14	-.04
	Home (10)	-.00	.44	-.07	.19	.07	.37	-.15	-.09
	Future (11)	-.00	-.03	.46	.18	-.07	-.05	.39	-.06
	Self (12)	.01	.02	.10	.51	.05	-.06	.03	.19
Triadic Method	School (13)	.34	-.01	.04	-.14	-.26	.05	.17	.11
	Home (14)	.04	.79	.02	.17	.16	.78	.05	.16
	Future (15)	.01	.04	.72	.19	-.04	.09	.82	.12
	Self (16)	.02	.15	.15	.67	.09	.14	.16	.63
	Mean	-1.7	1.5	2.6	9.1	2.7	4.8	3.6	13.5
Standard deviation		1.7	4.1	3.3	7.8	3.4	4.5	3.5	7.8

		9	10	11	12	13	14	15	16
Normative Relative Method	School (1)								
	Home (2)								
	Future (3)								
	Self (4)								
Self-ideal Method	School (5)								
	Home (6)								
	Future (7)								
	Self (8)								
Worst-self Method	School (9)								
	Home (10)	.32							
	Future (11)	.20	.33						
	Self (12)	.35	.41	.55					
Triadic Method	School (13)	.61	.37	-.26	-.41				
	Home (14)	.09	.73	.11	.11	-.10			
	Future (15)	.04	.13	.84	.36	-.07	.12		
	Self (16)	.26	.28	.40	.88	-.27	.16	.34	
	Mean	1.2	2.6	1.0	3.8	-1.7	1.9	2.3	8.(
Standard deviation		3.8	5.5	3.9	12.8	2.2	3.5	3.1	8.:

Appendix F

Derivation of criteria

1. School grades - average school grade for previous year reported by subject.

2. Global measures of happiness - happiness in the areas of school, home, future, and self and general happiness reported on a six-point scale by subject.

3. Underachievement-Overachievement - calculated by taking the difference between S's expected grade (based on S's I. Q. taken on the Lorge-Thorndike Intelligence Test and 1960 British Columbia Norms) and average grade reported by S.

4. Global measure of self-adjustment - self-reported self-adjustment reported by S on a six-point scale.

5. Success-failure - It was assumed that where S reported he was on the vocational program in school, long-term failure would be experienced whereas if S reported that he was on the Academic-Technical program, long-term success would be experienced.

6. Delinquency - taken from number of days S reported he had skipped school.

7. Absenteeism - Number of days S was away from school as reported in the school records of the mid-island school.

8. Independent measures of self-concept - Two measures:

   a. Difference between self-reported I. Q. (self-assessed I. Q. reported by S) and I. Q. measured by the Lorge-Thorndike Intelligence Test.

   b. If S chose to remain anonymous after completing the questionnaire he was considered to have a lower self-concept than if he reported his identity.

9. I. Q. - Taken from school records of the Vancouver Island school. I. Q. was measured by the Lorge-Thorndike Intelligence Test.