Improving Attributional Retraining: A Study Assessing the
Method of Administration and a Common At-Risk Variable

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A Thesis Submitted to the Faculty of Graduate Studies in
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IMPROVING ATTRIBUTIONAL RETRAINING:
A STUDY ASSESSING THE METHOD OF ADMINISTRATION
AND A COMMON AT-RISK VARIABLE

BY

ANTHONY JAMES HUNTER

A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University

of Manitoba in partial fulfillment of the requirements of the degree

of

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"Back off man, I'm a scientist" - Dr. Peter Venkman

Abstract

Attributional retraining appears to be an effective method for improving students' academic performance in university. This procedure informs students that failure is controllable and unstable, and that success is often achieved through effort. The consequences of this intervention are a realization that failure is temporary and that effort will be rewarded with success. A method to identify students who are at-risk and how to best assist them needs to be developed. In this study, students who report a low - high school average were classified as at-risk (low versus high - high school average). Furthermore, the effectiveness of attributional retraining with these types of students was assessed with four different intervention methods. Following a standard attributional retraining videotape, subjects were asked to: do nothing, take an aptitude test, view a videotaped lecture and be tested on the material, or engage in a discussion on causal ascriptions. These conditions were compared to a control condition in which the subjects viewed a neutral-topic videotape. It was expected that as the degree of personal involvement in the procedure increased, attributional retraining would be more effective. Analysis of variance (ANOVA) did not reveal significant intervention effects as measured by improvements in university course grades, motivation, perceived control, and other related variables. A high school average main effect was evident for final course grade. A significant reported high school average by intervention condition interaction effect was

found on the motivation variable. Significant improvements following attributional retraining were only discovered when a priori t tests were conducted. The results for the students reporting low - high school average show that the attributional retraining videotape plus aptitude test condition and the attributional retraining videotape plus discussion condition improved students' scores on perceived control and motivation scales significantly. An analysis of the t test results and the trends of the dependent variable means suggests that further study is required to determine the most effective method of presenting attributional retraining.

Improving Attributional Retraining: A Study Assessing the
Method of Administration and a Common At-Risk Variable

Introduction

Overview

A common goal for university students and instructors
is the successful completion of the course of study. In this
pursuit many factors can help students; and just as many can
inhibit it. Failure in university may result from such
things as: low motivation, level of ability, personal
constraints, etc. These factors may have the greatest effect
in the first year of studies when students must come to
terms with new contingencies of behaviour, greater
independence, and often a host of personal changes. First
year students are no longer subject to the strict guidelines
set forth by a high school teacher, nor is parental
supervision as prominent. Because of these changes, a number
of first year students can be described as being at-risk,
resulting in poor academic performance.

Students who are at-risk must be identified and
offered the opportunity to partake in remedial
interventions. One such intervention is attributional
retraining, based on Weiner's theory of motivation and
emotion (1985, 1986, 1995). Attributional retraining
summarizes maladaptive causal ascriptions for failure and
suggests that failure is controllable and unstable.
Furthermore, success is described as being the result of

effort, a behaviour that students can control. Research to develop and improve attributional retraining is on-going (e.g Wilson & Linville, 1982, 1985; Menec, Perry, Hechter, Struthers, Schonwetter, Eichholz, 1994; Perry & Struthers, 1994). This thesis continues attributional retraining research by identifying other factors which put students at-risk and by assessing the effectiveness of different attributional retraining methods. Specifically, this thesis investigates how active participation in the intervention procedure enhances the effects of the intervention.

Ensuring Success in University

Concern for students who are at-risk of failing is a focus for many campus agencies. However, present attempts to assist at-risk students may not benefit all who are in need. Students are eased into university life by first week activities, support groups are organized, and campus leisure activities are offered. These resources help balance the daily life of students, but do not deal with their academic concerns. University may overwhelm students by requiring them to immediately demonstrate skills which they may not possess. Multiple choice tests, oral presentations, and essays, with which the student may be unfamiliar, may result in failure. In these situations, failure results from a deficiency in communication skills not an impoverished level of knowledge. If the students who experience failure attribute it to a lack of ability they will become demotivated. These students have wrongly attributed failure

to a stable factor when it is really due to being unfamiliar with novel assessment procedures. It is these students who are of particular concern to university officials.

To address the needs of these at-risk students, resources have been put into place to assist students through times of academic difficulty. Student advisors are available in most faculty or departmental offices and student counselling services composed of peers are common fixtures on university campuses. While no discredit is intended regarding these services, the effectiveness is limited by the fact that they rely on at-risk students to approach the counsellor. Many students may not utilize these services and are left to their own devices. Often students are not able to meet academic demands and face deleterious consequences, such as failure or dropping out. On the other hand, university educators also ensure the success of some students. Through effective teaching methods, which include high levels of clarity and organization (Perry, 1991), many students are able to overcome personal difficulties and inadequacies.

There are also some first year university students who are able to succeed on their own initiative. Despite factors such as extracurricular activities and employment during the academic year, which hinders most students' success, some students still find effort, ability, and time to properly address academic demands. Ineffective instruction techniques may not hinder some students, in fact it may motivate them

to increase personal effort to strive for success. These students may succeed by assuming a personal role in their education and may frequently visit the teaching assistant, search out alternative readings, possess exceptional note taking skills, etc. Perry, Schonwetter, Magnusson, and Struthers, (1994) describe these students as being "buffered" against such academic barriers.

Interventions should address the converse of the buffered students, namely those who face barriers to achieving success in university. Students encountering these barriers are at-risk. Despite effectual teaching experiences these students still find themselves performing poorly. This concern requires special attention because typical methods of enriching the learning environment do not benefit these students.

Defining At-Risk Students

Studies have shown that teacher effectiveness is an important factor in assuring student success (e.g. Perry, Schonwetter, Magnusson, & Struthers, 1994; Schonwetter, Perry, & Struthers, 1992), but there are other opportunities to assist at-risk students which must be exploited. While some students take advantage of an enriched learning environment, others have been identified as needing further interventions to avoid failure. There is a need to identify which characteristics best describe students as being at-risk for failure. The task for researchers is to develop a means to identify at-risk students and to implement methods

to assist their academic performance.

Research has indicated that many factors define at-risk students. Perry and Struthers (1994) assessed students on a measure of perceived success in university, then using a median split they divided subjects into low and high success groups. These groups distinguished students whose introductory psychology course performance was marginal and those who were performing adequately. In another study, students who were concerned about their academic performance were used to define at-risk (Wilson & Linville, 1982). Poor performance on course tests and assignments at the beginning of an academic year has also been used to identify at-risk students (VanOverwalle, Segebarth, & Goldchstein, 1989; VanOverwalle & DeMetsenaere, 1990; Wilson & Linville, 1985). Menec, Perry, Struthers, Schonwetter, Hechter, & Eichholz (1994) have also identified at-risk students based upon their performance on an aptitude-type test.

Nonacademic stressors may also have a great impact on performance in university. However, there is little that can be done to intervene in such a case. For example, effects were found for students' adjustment to college, based on their perceived distance from home (Mooney, Sherman, & Lo Presto, 1991). The list of possible characteristics which define being at-risk is extensive, but not all are practical for intervention applications. This thesis limits defining at-risk to the bounds that can be applied within a university setting.

Attribution Theory

    Success in university is a product of many factors, but
one of the strongest contributors is motivation (Aspinwall &
Taylor, 1992). A model is outlined in which many variables
influence academic motivation which, in turn, affects grade
point average. Academic motivation can be explained within
the domain of attribution theory (Weiner, 1986). The model
of motivation presented by attributional theory details the
events which occur following a given outcome, as outlined in
Figure 1, leading to specific emotional and behavioral
consequences. An outcome may be followed by causal search if
it is perceived as being negative, important, and/or
unexpected. Given the occurrence of such an event, the
search process is spontaneously generated (Weiner, 1985).
This is an adaptive process; an individual seeks out the
cause of a failure outcome to attempt to prevent or predict
similar future occurrences. In Weiner's model three
dimensions are proposed to define the characteristics of a
causal ascription. From this information predictions are
made of specific behavioral and emotional consequences.

    Causal dimensions. The dimensions defined by Weiner
are: locus of causality (internal-external), stability
(stable-unstable), and controllability (controllable-
uncontrollable); and are described as being orthogonal to
each other. The complete model is defined by a 2 x 2 x 2
matrix of causal dimensions. Locus describes whether the
cause was a result of the individual or of something other

than the individual, be it another person or any other possible influence. A distinction is made between Weiner's definition of internal-external locus of causality and Rotter's (1975) definition of internal-external locus of control. Rotter defines internal as a condition in which outcomes are contingent on an individual's action. Weiner refines this definition by including the orthogonal dimensions of stability and controllability. Stability determines whether or not the cause is likely to continue over time. This is an improvement over Rotter's taxonomy, as it reflects that events of the environment are subject to change. Weiner's dimension of controllability furthers the understanding of motivation. Previously, using Rotter's taxonomy, an event caused by a characteristic of the individual could only be defined as internal. However, not all internal events can be controlled, as implied by Rotter. For example, an explanation of low intelligence for failure on an exam is internal, but because this attribute is stable and uncontrollable success in the future is unlikely. Therefore, future outcomes are not contingent on this internal attribute, which defies Rotter's definition. Weiner would describe this ascription as being internal and uncontrollable, as it has to do with the person, but cannot be readily altered by the individual. This added dimension increases the precision which causal events can be labelled.

Caveats of attribution theory. To properly use Weiner's three causal dimensions to predict consequences of outcomes

OUTCOME ⇒ (NEGATIVE IMPORTANT &/OR UNEXPECTED)	OUTCOME DEPENDENT ⇒ AFFECT	CAUSAL SEARCH ⇒	CAUSAL ATTRIBUTIONS ⇒ • STABILITY • CONTROLLABILITY • LOCUS	PSYCHOLOGICAL BEHAVIORAL CONSEQUENCES
ACADEMIC SCENARIO **MALADAPTIVE**				
FAILURE ON EXAM	→ UPSET →	LACK OF → ABILITY	•STABLE → •UNCONTROLLABLE	•HOPELESSNESS → FUTURE •REDUCED STRIVING FAILURE FOR SUCCESS
ADAPTIVE				
FAILURE ON EXAM	→ UPSET →	LACK OF → EFFORT	•UNSTABLE → •CONTROLLABLE	•HOPEFULNESS → FUTURE •INCREASED EFFORT SUCCESS

Figure 1. A summary of Weiner's (1986) attribution theory of motivation and emotion. Included is an outline of maladaptive and adaptive causal search following an academic failure.

certain points must be understood. First, Weiner stresses that it is possible that the same causal ascription may be defined differently by different individuals. For one person luck may be a trait which is stable and internal (e.g. they are a lucky person); to another person luck may be unstable and external (e.g. friday the thirteenth). Despite having the same causal ascription (luck), the consequences according to attribution theory are based on the dimensions (internal-stable vs external-unstable). Ascriptions are commonly associated with dimensions, such as ability as being internal-stable-uncontrollable, or luck as being external-unstable-uncontrollable, only as examples to illustrate the theory.

Another important factor to understanding Weiner's model is that the causal dimensions are continuous. Often the dimensions are referred to as dichotomous for convenience of communication. This generalization of the dimensions may explain some ambiguity when predicting the consequences of an outcome. When an individual ascribes a causal ascription, they may believe that it is invariably uncontrollable or only slightly uncontrollable. The degree of polarization of these beliefs will induce different motivational and emotional consequences. This can also occur for the dimensions of stability and locus. As the dimensions are continuous, causing variability of strength of reaction, but discussed as dichotomies some error occurs but is justified.

Attributional Retraining

Attributional retraining, an intervention based on Weiner's theory of motivation, attempts to alter students' maladaptive attributions. Attributions for a failure outcome that are uncontrollable and stable are especially harmful. If a student concludes that failure is caused by an enduring (stable) facet of his academic career, for example thinking that he is stupid and will always be so, then feelings of hopelessness will ensue. This student will likely think that striving for success at university is a hopeless endeavour and will stop pursuing academic goals. This will lead to future failures which will only confirm the student's belief that failure is unavoidable and stable. In the worst case scenario the student will drop out of university. These consequences result from the mis-attribution that academic performance is caused by an uncontrollable and/or stable factor, but can be avoided through the use of attributional retraining.

When a student ascribes a failure outcome to an uncontrollable cause motivation is reduced and future success less likely. The negative consequences of an uncontrollable ascription are that the student will feel that academic events are not contingent on one's behaviour. When entering a new environment, such as first year students coming to university, the contingency rules may not be evident and are most likely different from those learned in high school. Students may not know that academic success is

controllable given the application of effort. The ascription of uncontrollable factors to failure also avoids the psychological consequences often associated with failure. An individual will feel guilty if she realizes that a poor grade is a result of an event that she could have controlled. Feeling guilty about an outcome is a negative experience which people will try to avoid. Guilt can be avoided by either mis-attributing future failure to uncontrollable causes, or by engaging in the activities to control the event leading to a desired outcome.

Effectiveness of attributional retraining. A review of attributional retraining studies (Perry, Hechter, Menec, & Weinberg, 1993) indicates that attempts to improve university academic performance through attributional retraining is effective. Originally, Wilson and Linville (1982) demonstrated the effectiveness of an attributional retraining intervention. The intervention they used was based on manipulating the perceived stability of successful outcomes. Students read information and attend to videotaped interviews of senior students. The content of the interviews illustrated how grades are often lower than anticipated in first year and that GPA improves significantly from the first semester. By demonstrating to students that academic performance is not stable and that grades improve, academic performance of intervention students improved when compared to a control group. Scores on GRE items were higher (4.18 vs 3.5 out of 6), fewer students left college (5% vs 25%), and

GPA improved more (.34 vs -.05) for those students in the intervention condition. These results were called into question following a secondary analysis by Block and Lanning (1984) in which the GPA of students who withdrew from the university were higher than those who remained. Block and Lanning also speculated that the improved performance of students in the intervention can be explained by regression to the mean and other factors. However, Wilson and Linville (1985) replicated their original results controlling for these criticisms, thus demonstrating the benefits of attributional retraining.

Subsequent studies replicated the Wilson and Linville (1982, 1995) findings. In VanOverwalle et al. (1989) and VanOverwalle and DeMetsenaere (1990) the videotape intervention included a variety of information that indicated success is a product of exerting control over outcomes. In the videotape, students gave their reasons for failure and their attempts to prevent future failure. The reasons presented included: lack of peer cooperation, lack of coherent understanding of the course material, lack of effort and ineffective study strategy, and poor time management. Those students who had participated in this intervention had higher GPA scores at the end of the year.

It has also been demonstrated that effective attributional retraining need not be delivered via accounts from fellow students. Using a videotaped discourse from a professor, Perry and Penner (1990) improved students'

performance on an achievement test and homework assignment. The professor's discussion emphasised that poor performance is often a result of a lack of effort and that increased effort and ability[1] can improve performance.

Two other studies discussed in the Perry et al. (1993) review article also indicate that videotape interventions plus a written handout are effective. Jesse and Gregory (1986-87) provided attributional retraining via a written handout. This method was most effective when paired with a GPA information videotape. This videotape was of students engaged in a discussion focusing on how GPA improves in future years. According to attribution theory, the GPA videotape is a version of attributional retraining as it indicates that failure is unstable. For the purpose of the present discussion this method is considered as being an attributional retraining videotape. The results indicate that students who did not receive the intervention experienced a decline in their second term GPA scores. Students who obtained the GPA information (i.e. attributional retraining videotape) maintained stable GPA scores throughout the academic year.

Similar results for the combination of attributional retraining videotape plus written handout are found in Noel, Forsyth, and Kelley (1987). Following an attributional retraining videotape in which students discuss how poor performance is unstable, subjects were given a handout of the main points made in the videotape. The results show that

higher test grades and final grades improved following this intervention.

Improving the intervention. It can be concluded that attributional retraining is a reasonably effective method for enhancing the performance of certain university students. However, further questions must be answered regarding improving the effectiveness and assessing how attributional retraining works. Efforts to begin to answer these questions have been undertaken by Perry and his associates (Menec et al., 1994; Perry & Struthers, 1994)[2]. Perry has taken the next step in research through studies investigating factors defining at-risk students and by manipulating the administration of attributional retraining.

In Menec et al. (1994), the main format of attributional retraining involved an eight minute videotaped presentation of a student discussing how a lack of effort and inefficient strategies led to poor performance. These deficiencies were reportedly corrected by increasing effort and changing strategies. The Menec study examined the effects of multiple attributional retraining sessions. Because some subjects participated in multiple intervention sessions, three different possible topics were discussed in the attributional retraining videotape: failure on an academic test, a piano test, and in obtaining a scholarship. Corresponding to previous results, attributional retraining again had significant effects on achievement test performance. A result of particular interest in this study

is that there was not a continued increase in performance with additional sessions of attributional retraining.

A superficial conclusion of the Menec et al. study would indicate that all of the benefits from attributional retraining are obtained following a single, brief videotaped intervention. However, this conclusion may be premature. A study replicating the Menec et al. procedures would need to be conducted using actual university course grades or similar variable as the measure of effect. It is possible that the achievement test was not difficult and that significant improvement came with only a marginal increase in effort on behalf of the students. The Menec et al. findings are limited because they come from a laboratory setting; to validate the results actual course-related test scores or GPA information would have to be analyzed. This would answer the question: What are the benefits of multiple attributional retraining sessions on longer term achievement-related evaluations?

Another possible reason for no further improvement following additional attributional retraining sessions may be due to a discrepancy between the topic of the videotape and the dependent variable. The authors present the three forms of attributional retraining as all being achievement-related (academic test, piano test, and scholarship application), but the dependent variable, an academic achievement test, is directly related to only one version of the videotape (academic test). Not having academic-testing

information in all of the retraining videotapes may have prevented effects from being obtained by multiple sessions. The design of the Menec et al. study may be better thought of as an investigation into the effects of different attributional retraining videotape content. An intervention discussing how piano playing can be improved through greater effort may not benefit students writing an unrelated academic test. Concluding that one attributional retraining session is all that is required to be effective may be premature.

Continuing the investigation into improved methods of attributional retraining, Perry and Struthers (1994) manipulated the means with which attributional retraining information was presented. Three possible forms of attributional retraining administration were conducted: written hand-out only, videotaped presentation only, and videotaped presentation plus small group discussion of the contents of the videotape and personal experience. Results indicate that improvements on long-term achievement measures, namely actual university course (psychology) test scores and final course (psychology) grades, are influenced by the method of attributional retraining administration.

The most effective form of the intervention was the videotape and discussion group. Specifically, Perry and Struthers proposed that the discussion facilitated the integration of the new causal attributions learned from the videotape. This allowed students to merge personal

experiences and newly learned information in order to better understand the material.

Ineffectiveness of attributional retraining. The discrepancy between the Perry and Struthers (1994) study and other research (Jesse & Greggor, 1986-87; Menec et al., 1994; VanOverwalle & DeMetsenaere, 1990; VanOverwalle et al., 1989; Wilson & Linville, 1982, 1985) lies with the videotape only attributional retraining group. This group did not experience a significant improvement in performance. This condition is unique in that it does not involve any activity of the subjects following attributional retraining. The other studies, in which attributional retraining using videotape only was found to be effective, indicate that subjects participated in some other actively following attributional retraining. Both Perry and Penner (1990) and Menec et al. (1994) give no indication of discussion following attributional retraining, yet effects are evident. What these studies did include, however, was a test (achievement or GRE-like) to allow students to practice the new attributions learned in the intervention. Other studies (VanOverwalle et al., 1989; VanOverwalle & DeMetsenaere, 1990; Wilson & Linville 1982, 1985) report that participants were requested to provide some form of written account of the attributional retraining videotape. This may be similar to the discussion condition in Perry and Struthers (1994) in that both a discussion and a written document require the individual to provide a personal recount of the attribution

process. It seems that attributional retraining plus
discussion or some other cognitive engaging procedure, such
as a test, is required to obtain significant performance
improvements.

Comparing the above studies (Table 1), differences in
procedures can account for the discrepancies in the results.
A discrepancy is found with the Perry and Struthers (1994)
study in the videotape only condition when compared to all
of the other reported studies. In this one condition there
is no report of further experimenter interaction with the
subjects immediately following attributional retraining;
subjects apparently leave the session immediately following
the intervention[3]. In all other conditions there is some
form of post-attributional retraining activity which
immerses the subjects into a situation where the information
from the intervention can be exercised.

In the Wilson and Linville studies (1982, 1985
[replication 1]), immediately following attributional
retraining, students were required to complete both an
anagram task and answer GRE type questions. In addition,
half of the subjects were included in a reasons analysis
condition in which they were asked to record all of the
reasons they could come up with for why grades improve
following first year. In Perry and Penner (1990) and Menec
et al. (study 1, 1994)[4] students wrote either a GRE or
aptitude type test following attributional retraining. The
studies conducted by VanOverwalle et al. (1990) and

VanOverwalle and DeMetsenaere (1989) involved having

students describe in writing what they felt were the most

important aspects of the attributional retraining session

and to report these to the experimental group. In all of the

studies, except the videotape only condition as discussed,

there is an opportunity for students to integrate the newly

taught attributions into their personal schema through

discussion or free thinking; or they are given an

opportunity through some form of testing to try out the new

attributions.

A requirement for some activity or task following

attributional retraining to crystallize the effects is not

new to researchers. Perry and Struthers (1994) suggest a

consolidation process, or active learning, accounts for the

improvement in the videotape and discussion group. In

another study in which attributions for academic success and

failure were manipulated (Perry & Magnusson, 1989),

significant results on an aptitude test were not obtained

and the experimenters concluded that time for cognitive

restructuring is a requirement for effective interventions.

Thus, it seems possible that time facilitates the

integration of the attributional retraining information.

Also an active process such as discussion or testing helps

students understand the information either through listening

to other students discuss the concept, or through practising

it on an actual test. If this is true, then using an

aptitude test as a dependent variable immediately following

Table 1.

Overview of Methods Employed in Attributional Retraining

Study	Method of Intervention	Post-Intervention Involvement	Significant Improvement
Jesse & Gregory (1986-87)	GPA Video Video	Written information on attributions	Stable GPA in second term
Menec et al. (1994)			
Study 1	1 or 2 Video Sessions	Achievement test	Achievement test increase
Study 2	1 or 2 Video Sessions	Achievement test	Achievement test increase
Noel, Forsyth, & Kelley (1987)	Video	Written summary	Test performance increase Final grade increase
Perry & Penner (1990)	8 minute Video	Aptitude test Achievement test	Achievement test increase
Perry & Struthers (1994)	3 methods		
	• 8 Minute Video	None	None
	• Written Hand-out	N/A[3]	None
	• 8 Minute Video & Discussion	Group discussion	Psychology test scores & final grade
VanOverwalle & DeMetsenaere (1990) VanOverwalle et al. (1989)	List causes of performance Video Interviews (approximately 50 minutes total)	Written report Verbal report	Exam performance increase
Wilson & Linville (1982, 1985)	Written report & Video	GRE test Anagram task Reason analysis	GRE score and GPA increase Drop out reduced

attributional retraining would not yield significant effects.

DenBoer, Meertens, Kok, and VanKnippenberg (1989), present evidence which suggest other methods, not only attributional retraining videotapes, affect performance. They report that asking students about their attributions as part of a screening questionnaire has effects similar to an attributional retraining videotape. Students who were exposed to failure experiences, but then asked a series of questions assessing their attributions, outperformed a similar group who were asked non-attribution questions on an anagram task. This indicates that measures of attributions may act as part of the attributional retraining process. Asking students to divulge their attributions may prevent them from prematurely concluding on maladaptive attributions. Students may feel obliged to seek out the truest causal ascription, which is often an effort ascription. This ascription ensures future motivation resulting in improved performance.

Thorough investigation of complete experimental procedures is required before conclusions about the effectiveness of an attributional retraining videotape alone treatment can be made. Attributional retraining researchers should carefully considered the method of evaluating students prior to and following an intervention. If independent and dependent variable measures can affect treatment results, so too may other experimental procedures.

In general, attributional retraining has had success in improving student performance. Increases have been recorded both immediately following interventions in the form of aptitude-type tests (eg. GRE) and achievement tests, as well as in long-term measures outside of the experimental setting, as seen in classroom tests, course grades, and year GPA. However, the study of these interventions is not complete. There has yet to be a complete analysis of attributional retraining which identifies which students benefit and the important components of the intervention. The present study addresses these two issues.

Factors Defining At-Risk Students

Defining which students are at-risk is important when working with a university population. A definition of at-risk should predict which students will and will not succeed in university and which students might benefit from remedial interventions. Defining which students are at-risk is of critical concern for researchers since it enables them to determine those unlikely to succeed in university and also defines those who will benefit from intervention attempts. As previously discussed, much research has successfully identified some variables which define at-risk: external locus of control and previous failure experience (Menec et al., 1994), low perceived success (Perry & Struthers, 1994), noncontingent feedback (Perry & Dickens, 1987), Type A/B behaviour and perceived control (Perry & Tunna, 1988), concern for performance and low GPA (Wilson & Linville,

1982, 1985), etc. Though the list is extensive, it is not exhaustive and a direction for future study needs to be established.

What best defines at-risk? Because the literature has identified many variables as defining at-risk, the question remains: which is best? Good research involves critically evaluating each variable; with regard to defining at-risk variables this also holds true. Some questions which must be addressed are: "Does the variable relate to an academic setting?", "Is the variable easily understood?", and "How is the variable measured? Is it valid?" These questions will help determine the direction of future research and are also of concern to administrators of universities and those seeking an applied method of intervention.

At-risk students should be easily defined in terms that reduce the ambiguity as much as possible. Some previously studied at-risk variables require complex explanations or are impractical for an applied setting. For example, a variable such as perceived success requires a specific definition before it can be understood. This definition may differ between researchers, and may be difficult to measure. Questions can arise such as, "Is the success to be measured relative to others, the individual's ideals, or some third party standard which remains undefined?" Students may also incorrectly state their perceived success in order to appear successful, or conversely, modest. Though students' perceived success seems to be an understandable

variable, it can be quickly obscured by personal definitions on the part of the researchers and the students. Even such a variable as an aptitude test begs the question, "What is being measured?" At best an aptitude test may measure a person's ability or intelligence, but this is far from being the only factor which determines a student's success in university. Furthermore, of all of the tests available to a researcher, which should they use? Such questions complicate the search for the variable which best defines at-risk.

Correlations, from an earlier study (Hunter, 1995), between final introductory course grade and variables used to define at-risk were calculated. Of the variables investigated, reported average grade of the last year of high school was most highly correlated to final course grade in introductory psychology ($r=0.525$, $p=.0001$, $n=110$). Measures such as expected course grade ($r=0.414$, $p=.0001$, $n=110$), and aptitude test score ($r=0.336$, $p=.0003$, $n=110$) were correlated at a lower level.

Menec, Perry, and Hunter (1996a) report that high school performance had the highest correlation to final grade across two different disciplines: biology and psychology. When the variables of gender, high school performance, locus of control, perceived control, intrinsic motivation, success orientation, and optimism were simultaneously entered into regression analysis, high school performance accounted for the most variance of final course grade (regression coefficient=0.34 and 0.38, $p<.001$, $dfe=307$

and 727; psychology and biology respectively). Other studies

have also found that high school performance is the best

predictor of university performance. Ferrari and Parker

(1992) found that GPA was most highly correlated to actual

high school English grades, relative to efficacy and locus

of control. Wolfe and Johnson (1995) also found that actual

high school performance better predicts college GPA than

self-control and SAT scores.

This suggests that the most reliable predictor of

university success is high school performance. However, this

evidence also indicates that there may be a cumulative

measure, combining the items reported above, which is a

better predictor. To address this possibility the pre-

screening questionnaire included items which assessed

possible predictor variables (e.g. intrinsic motivation,

perceived control, time management, etc.).

Contrary to the possibility of an aggregate predictor,

Menec, Perry, and Hunter (1996b) found that, depending on

the field of study that students were enroled, different

variables predicted final grade. However, of all the

variables, high school performance remained the best

predictor across area of study. For Arts students in a

psychology course, other strong predictors were perceived

control, locus of control, age, effort attributions,

positive emotions, and motivation. For Arts students in a

biology course, the only other predictors were age, positive

emotions, and motivation. For Science students in psychology

and biology, the predictors of grade also vary depending on subject of study. This indicates that even if a composite measure were to be used for predicting final grade, it would have to be tailored to which faculty the student was enroled and be course specific. For practical implications, the focus of this thesis remains to assess the effects of high school performance and attributional retraining on final course grade. Other predictor variables will only be used for descriptive purposes, unless analysis warrants further investigation.

Further to the empirical support, there are logical arguments for using high school grade to define at-risk. Performance in university is not determined by a single, or even a few variables. University performance is over-determined by a vast array of factors: natural aptitude, effort, life stressors, and study skills which are developed in high school. Likewise, success in high school is similarly over-determined, and therefore high school grade may be best able to predict university performance.

It can be argued that there are many students who fail in university despite superior high school performance, and conversely those who succeed in university following marginal high school performance. Similar statements, however, can be made for other predictive measures and it may be a matter of choosing the lesser of evils. High school grade is usually the only measure of academic performance available when a student enters university, as aptitude test

scores are not universally accepted. High school grades do not require additional testing or expense on the part of the student or the institution, and are available prior to the first day of classes. This would allow institutions to invite (or require) students to attend attributional retraining before they are ever jeopardized by failure experiences. By determining which students are at-risk, as defined by marginal high school grades, this study assesses the effectiveness of attributional retraining.

The Present Research

From the literature on attributional retraining, issues regarding its effectiveness have been identified. One concern is to identify a variable which effectively defines at-risk, but is also easy to assess and understand. A number of at-risk variables have been investigated, but many are embedded in a psychological construct that can be difficult to measure, understand, or agree upon, as intimated above. Another issue concerns the most effective method of attributional retraining. By having students ascribe failure to unstable and controllable causes, the general strategy of attributional retraining has been shown to be effective. But can this be improved upon? Do other events enhance the attributional retraining process?

To attempt to find a universal variable to define at-risk, reported high school grade was used in this study. As suggested previously, high school grade is a complex variable which may be over-determined by many other

variables, but those same variables may also be related to university performance. High school grade is also readily available either through self reports to the experimenter or by university application to the administrator, allowing this variable to be easily used in an applied setting.

In this study the method of attributional retraining was similar to previous research (i.e. videotape presentation of information), but the events immediately following the videotape were manipulated. As identified in the literature, there are four possible procedures which follow the attributional retraining videotape which may determine the effectiveness of the intervention: no treatment, aptitude type test, achievement lecture and test, or discussion. Each of these treatment procedures followed the attributional retraining videotape. A control group did not view the attributional retraining videotape, thereby creating five experimental treatment conditions.

It was expected that students who performed poorly in high school would benefit from attributional retraining compared to those who performed well in high school. For the different procedures following the attributional retraining videotape, the more cognitively involved the requirement, the more effective the intervention is expected to be. Thus, the passive viewing of a videotape will be the least effective, progressing through the aptitude test, lecture and test, and ending with the most effective method - engaging in a discussion requiring open ended thought and

personal disclosure.

The rational for this progression is that students may not be engrossed by a session which involves passively watching a videotape. Information processing may not occur when viewing a videotape; many students may not attend to the information; or if they do, it may not develop within the memory systems: "In one ear, out the other". The aptitude test may have given students an immediate opportunity to rehearse the new causal ascriptions. But because aptitude tests are a measure of a stable-uncontrollable characteristic (ability) and attributional retraining suggests that failure is unstable-controllable (effort), an inconsistency is raised. This may limit the impact and credibility of the intervention.

The lecture and test scenario further engages the student and provides opportunities to increase effort - in essence to practice the controllable attribution! Students had the opportunity to closely attend to a lecture, take thorough notes, etc. However, a test in an experiment does not have consequences outside the experiment as students are not held accountable for their performance. For some students the test may have been unimportant and therefore not invoke the causal search process. The degree that students feel that the test is important may depend on the demand characteristics of the experimenter, not the procedure. To measure the students involvement in the tests, both the aptitude test and the achievement test were

followed by the questions related to the test. For example, "How important was the test to you?", "How successful do you were on the test?", and "How hard did you try on the test?"

Finally, the discussion group session required individuals to be actively involved in the process of attributional retraining. Discussion groups required each student to compose thoughts on the issue of causal ascriptions and express their opinions, making it the most cognitively engaging task. Furthermore, discussion groups allowed the experimenter to monitor an individual's participation by attending to their vocalizations and encouraging everyone to speak up. In the other methods it would have been difficult to observe to what extent an individual was sincerely participating in the process.

Method

Subjects

Students were recruited from various sections of an introductory psychology course of a mid-western Canadian university. To have sufficient numbers for each category of intervention 273 participants were recruited to participate in the study in return for course credit. No restrictions were placed on which students could participate[5]. The five experimental conditions were randomly assigned to ten sessions over a two week period. Subjects were allowed to sign up for any session they wished as long as space was available.

Materials

Pre-screening questionnaire. All conditions of the study required that participants complete the pre-screening questionnaire, "Attitudes Toward University Educational Experience" (see Appendix A). Participants were asked to report their average in their last year of high school, with a 10 point scale ranging from 1=50% or less, to 10=91-100% in percent increments. The pre-screening questionnaire also included demographic measures of the participants.

Attributional retraining. Common to all intervention sessions was an eight minute videotape on attribution theory and causal ascriptions. The videotape began with a psychology professor telling viewers that research indicates that the manner in which people interpret events will affect future outcomes and that because of this it is important to understand the cause of outcomes to avoid future failure. Two students are then introduced as discussing some of the reasons for their poor performance in first year university and what subsequently occurred to improve performance.

A male student describes to a female student how he was devastated following a poor performance on a psychology test. He had thought that the test was too difficult and that he would not be able do well. After discussing the experience with a friend, it was explained to the student that in fact by not putting in the required effort and skipping classes failure would occur, and that this does not need to happen. The student then describes how he took control of his academic performance and increased his

effort, and subsequently experienced success. The female student describes how she thought she had studied hard but still failed. This led her to conclude that she must be stupid. She too had an encounter with a friend who outlined the fact that many students do poorly on the first test of university and that with increased skills and experience success will follow. The student then recounts getting higher grades in later tests. The presentation ends with the professor reiterating the main points raised by the students, that taking control over academic events leads to success and that failure is unstable.

Aptitude test. A modified Abstract Reasoning and Performance Test (ARPT) (Perry & Dickens, 1987) was administered to participants, labelled as the Abstract Reasoning and Abilities Test (ARAT) (see Appendix B). The test was composed of three sections, verbal analogy, quantitative, and sentence completion having 10, 5, and 10 questions, respectively. Each section had a time limit of 5 minutes. The test is designed to be difficult to ensure that some students experienced failure in order to practice the new attributional ascriptions.

Videotape lecture. A 30 minute videotaped economics lecture was presented to students followed by a brief test on the material (see Appendix C). They were informed that they may take notes if they wish, but that they will not be allowed to use the notes on the test. As instructor expressiveness (i.e. quality) has been found to facilitate

student learning (Schonwetter, Perry, & Struthers, 1992),

the lecture consisted of high quality instruction. From this

students will have had the opportunity to exercise control

over their performance in the lecture test by closely

attending to the videotape lecture and taking accurate

notes. This procedure gave students an opportunity to

actively engage in behaviours discussed during attributional

retraining.

Achievement test. The test included 30 items based on

the economics lecture and students had 20 minutes to

complete all questions. The test was followed by two

questions: whether students had ever studied the material

presented before the experiment, and whether they had this

instructor before.

Control videotape. In order to balance both time spent

in the experiment and experience watching a videotape with

the attributional retraining groups, the control group

viewed a non-attribution related videotape. The videotaped

segment was from a television news show dealing with an

issue completely unrelated to academic achievement. It is of

a female and male reporter discussing the differential

pricing of consumer items based on gender. It is

approximately the same length as the attributional

retraining videotape and is also presented as a discussion

between the two actors.

Follow-up questionnaire. Following the attributional

retraining or control videotapes the post-intervention

questionnaire, "Attitudes Follow-up Questionnaire" (see

Appendix D) was administered, including the perceived

control and motivation items of the pre-screening

questionnaire. Also included were items assessing expected

success in future psychology tests and attributions. These

items were analyzed between conditions, as indicators of the

effectiveness of attributional retraining.

Course test scores. To assess the real life

effectiveness of attributional retraining, students were

asked for permission to obtain their test scores and final

course grade from their introductory psychology professor.

Consent to collect this information (see Appendix E) was

obtained and then professors were approached for the grade

data. Introductory psychology course grades following

attributional retraining were compared across conditions.

Procedures

Students were recruited to participate in a two hour

session in return for partial course credit. Sessions were

held in a simulated college classroom with a maximum

occupancy of 30 students, allowing for one empty seat

between each student. At the start of each session students

were informed that the purpose of the study was to assess

thoughts, feelings, and reactions to experiences encountered

in university. Students were told that they were to complete

a questionnaire and had 30 minutes to do so. Next, the

intervention procedures were administered to the subjects

depending on which of the five the experimental conditions

(Table 2) they were in.

Condition 1: Subjects in the control condition
watched the non-achievement videotape news
segment.

Condition 2: Subjects in the attributional
videotape condition watched the attributional
retraining videotape with no follow-up procedure.

Condition 3: Subjects in the attributional
retraining videotape and aptitude test condition
watched the intervention videotape followed
immediately by the abstract reasoning and
abilities test.

Condition 4: Subjects in the attributional
retraining and videotape lecture plus test
condition watched the intervention videotape, then
watched the economics videotape lecture, then
immediately wrote the 30 item achievement test on
materials covered in the lecture.

Condition 5: Subjects in the attributional
retraining videotape and discussion condition
watched the intervention videotape and then were
divided by the experimenter into groups of 4-6
students. They were then instructed to describe,
either from personal experiences or constructed
examples, reasons why students may succeed or fail
in university. Students had 15 minutes to talk
within their group, after which they reported to

Table 2.

Overview of Experimental Conditions

Intervention Condition	Events Following Attributional Retraining	Expected Improvement
1) Control	N/A	None
2) Videotape	None	Low-Moderate
3) Videotape	Aptitude test	Moderate
4) Videotape	Lecture and Achievement test	Moderate-High
5) Videotape	Discussion	High

the class three reasons for performance outcomes. The reasons for failure were compiled by the experimenter, who explained to the students which were adaptive (controllable and unstable), and maladaptive (stable and uncontrollable). The experimenter concluded the discussion by emphasizing the importance of realizing how academic situations can be controlled.

The last section of the experiment involved all conditions. Students were asked to complete the post-intervention questionnaire. This questionnaire contained the dependent variables to be analyzed.

As one of the important dependent variables of this study was subsequent psychology test grades, an immediate debriefing of subjects would have interfered with the results. Subjects were invited to attend an optional session in which the purpose and methods of all conditions were outlined following the completion of the final exam period. For those students who did not wish to attend such a session, a written handout was made available providing feedback on the study.

Results

The literature (Ferrari & Parker, 1992; Menec et al., 1994; Menec, Perry, & Hunter, (1996a); Menec, Perry, & Hunter, 1996b; Perry, 1991) suggests that measures such as perceived control, motivation, and expected grade are associated with success in university. This study investigated the 2 x 5 interaction of reported high school

average by intervention condition (control, attributional
retraining videotape only, videotape plus aptitude test,
videotape plus achievement lecture and test, and videotape
plus discussion group) on these variables. ANOVA analyses
only revealed a significant 2-way interaction (p < .05) for
the motivation variable. However, for the most important
dependent variable, final grade, a main effect for reported
high school average (p < .05) was found. The ANOVA results
of the intervention main effect did not achieve
significance, but did suggest issues for further
investigation.

Previous literature (see: Perry, Hechter, Menec, &
Weinberg, 1993) proposes that specific individuals benefit
from interventions, thus a priori t tests were conducted as
a more powerful method of detecting attributional retraining
effects in this study. These tests compared the control
condition to the intervention conditions (videotape only,
videotape plus aptitude test, videotape plus achievement
lecture and test, and videotape plus discussion) for the low
- high school average group. Research indicates (eg. Wilson
& Linville, 1982, 1985; Menec et al., 1994) that only those
students who have been defined as being at-risk of failure
benefit from the intervention, thus the high - high school
average students were not included in the analyses. Each of
the intervention conditions were expected to improve
students' performance, thus one-tail t test were used. As
this study is a replication of proven attributional

retraining methods it was felt that the consequences of a

type II error (false negative) were greater than a type I

error (false positive). Thus, for each of the four

comparisons alpha was maintained at the p = .05 level.

Descriptive Statistics

A number of variables were assessed in this study and

are outlined in Table 3. From these data a median split was

performed on the reported high school average ("What was

your average (%) in your last year of high school?", M =

6.922, SD = 1.728, Mdn = 7) to create low and high

performance groups. To make the group sizes as equal as

possible scores falling on the median (7) were included in

the low - high school average group. The low - high school

average group included 159 students and the high - high

school average group contained 114 students, a difference of

45. In comparison, if the median was included in the high -

high school average group the low and high - high school

average groups would have contained 106 and 167 students

respectively, a difference of 61 students. Realizing that

this division is somewhat arbitrary, exploratory analysis

which involved moving the median was conducted and will be

discussed later.

The subjects were recruited from an introductory

psychology course and the mean age is reportedly between the

17-18 years old and 19-20 years old age categories. In fact,

75% of the students fell into these two categories. Only one

student responded to the over 45 years old category.

Table 3.

Descriptive Statistics

Variable	M	SD	N*	Range
Reported High School Average**	6.922	1.728	270	1-10
Final Percent in Psychology	74.081	11.257	236	0-100
Grade in Psychology***	6.139	2.007	237	0-9
Perceived Control (Time 1)	3.970	0.587	273	1-5
Perceived Control (Time 2)	4.164	0.578	272	1-5
Motivation (Time 1)	3.383	0.780	273	1-5
Motivation (Time 2)	3.413	0.718	270	1-5
Age****	1.945	1.427	271	1-9
Involvement in the Session	3.816	0.895	244	1-5

* Sample size may differ as a result of incomplete questionnaires or to the unavailability of grade data from the instructors.

** 1= <50% 2= 51-55% 3= 56-60% 4= 61-65% 5= 66-70%
    6= 71-75% 7= 76-80% 8= 81-85% 9= 86-90% 10= 91-100%

*** 0=F 2=D 4=C 5=C+ 6=B 7=B+ 8=A 9=A+

**** 1= 17-18 2= 19-20 3= 21-22 4= 23-24 5= 25-26
    6= 27-30 7= 31-35 8= 36-40 9= 41-45
    10= older than 45

Measures

A number of scales were used to assess students'
reactions and feeling towards university and their
adjustment to the academic demands placed upon them. Of
particular interest were those scales and measures used as
dependent variables. The 16 item perceived control scale
administered following the attributional retraining
intervention had a Cronbach coefficient alpha = 0.888. This
indicates that each item maintained a reasonable correlation
to the other items in the scale, but not to the extent that
the items were totally redundant. Factor analysis of the
perceived control scale indicated that only one factor had
an eigen value greater than one. This is contrary to
previous studies which have used this scale. Hunter, Perry,
and Menec (1997) report evidence to suggest that the scale
contains three factors, each relating to a specific domain.
Those factors: Life, Academic, and Desire for control, were
not revealed in this study, and therefore the scale will be
discussed as a whole.

Another scale that was used following the intervention
was a five item motivation scale. The motivation scale had a
Cronbach coefficient alpha = 0.777, which indicates the
scale does not include redundant items. Factor analysis
indicated only one factor can be discerned, which is
understandable given the scale contains only five items.

Correlations

As part of the assessment of what defines student who

are at-risk of failure, the Attitudes Towards University

Educational Experience (pre-screening) questionnaire

included items, such as perceived control and motivation, to

compare to students' reported high school average. The

correlations between final grade and these items are

presented in Table 4. From this table it is seen that there

is a high degree of correlation between most of the items,

as would be expected given that they are all academically

related.

The variables that show the highest correlations to

final course grade were expected grade in psychology and

reported high school average. Expected grade had the highest

correlation to final course grade, r = .780, p < .0001, n =

228. Reported high school average had the next highest

correlation to final grade, r = .409, p < .0001, n = 230.

The purpose of this study was to explore the use of high

school average as the best predictor of university

performance. These results, however, do not necessarily

contravene that purpose. While reports of expected grade may

be valuable for predicting final course grade, the present

study would not be reliable evidence.

A problem with this study, to be fully discussed later,

is that it was conducted after the majority of the academic

year had been completed. Many students that were recruited

had completed three out of six, some having completed four

out of six, tests for their psychology course. The

implication is that an expected grade variable is not being

answered by students predicting how they will do, rather it is answered based upon previous performance in the course. In support of this speculation, the students were also asked what their average in introductory psychology was to date. It was found that the students' reported average in introductory psychology to date was correlated with expected grade in psychology, r = .884, p < .0001, N = 262. The extremely high correlation between these items suggests that students may have been accessing the same information when answering these questions.

Data from a separate investigation of academic predictors of final grade reported the correlation between expected grade and final grade to be r = .575, p < .01 (Perry, 1997). However, even the Perry study was conducted two months into the academic year, likely after students have had one or two actual tests to base their expectations on. Self reports of high school average would not be subject to this influence and therefore may be the best predictor prior to beginning a university program. Further to this assertion, no other variables that were assessed in the pre-screening questionnaire exceeded an r value of .30. The screening items of perceived control, motivation, optimism, and stress all had r values less than .25.

The correlations between scales indicate that many factors influence a university academic environment. Of particular note is that, though reported high school grade was significantly correlated to final grade, it was not

correlated to other predictor variables. While motivation and perceived control were significantly correlated to final grade (p < .001), they were not correlated to reported high school average. This evidence suggests that, as a predictor, high school average is the best. However, high school average is not something that can be improved via a remedial intervention. Conversely, the other variables may not best predict success or failure but do suggest domains that can be improved upon by interventions efforts.

Critical to the success of the intervention sessions is that students were expected to attend to the material being presented. As a rough measure of students' attention to the information presented their involvement was assessed ("How involved were you in this session?" 1=Not at all - 5=Very much so). The correlations between how involved students were in the session and time 2 motivation (r = .229, p < .001, n = 244), and expected success in university (r = .197, p < .01, n = 243) indicate that greater involvement in the session may enhance the effectiveness of the materials presented.

Statistical Analyses

This study proposed a 2 x 5 interaction between high school average and intervention condition. Table 5 presents the means and standard deviations of each dependent variable by high school average and experimental conditions. To test for both main and interaction effects, analyses of variance (ANOVA) were performed on the following measures: perceived

Table 4.
Pearson Correlation Coefficients for Academic Measures

Measure	1	2	3	4	5	6	7
			$\underline{n}$ = 228-262····				
1. Grade	--						
2. P.Cont T1	.231··	--					
3. P.Cont T2	.288···	.655···	--				
4. Mot T1	.231··	.458···	.253···	--			
5. Mot T2	.339···	.330···	.350···	.687···	--		
6. High School Average	.409···	.099	.051	.099	.079	--	
7. Expected Grade	.780···	.238···	.295···	.277···	.384···	.357···	--

·$\underline{p}$< .01. ·· $\underline{p}$<.001. ··· $\underline{p}$<.0001.

**** The sample size varies due to missing values for some variables.

P.Cont = Perceived Control
Mot = Motivation
T1 = Time 1: before intervention
T2 = Time 2: after intervention

control, motivation, expected success in university, final
grade, and time 2 subtract time 1 difference scores for the
pre and post intervention measures of perceived control and
motivation. Table 6 presents the ANOVA tables for each of
the dependent variables to be
discussed. For each of the analyses p < .05 was considered
significant.

Perceived control. Perry (1991) discusses the merits of
perceived control in an academic environment extensively.
Possibly as a result of new found independence or that they
are now solely responsible for their academic performance,
students' sense of perceived control has an influence on
academic success. Furthermore, attributional retraining
focuses on instilling a sense of control over the academic
environment in students. The intervention explicitly states
that education is not a passive experience. To students, it
may sometimes feel that they have little influence on
performance, but they actually have a large influence over
it. For these reasons the 16 item perceived control scale
was administered to assess any differences between the
groups of the 2 x 5 matrix. The ANOVA analysis did not
reveal any significant effects. Figure 2 graphically
presents the perceived control means of each cell. The a
priori t tests did indicate that the low - high school
average videotape plus aptitude test group (M = 4.29, SD =
.50 n = 31), $t(67)$ = 2.24, p =.0125, and the videotape plus
discussion group (M = 4.25, SD = .46 n = 41), $t(77)$ = 2.127,

p = .017, were significantly different from the low - high
school average control group (M = 3.97, SD = .76 n = 37).
Neither of the other intervention conditions in the low -
high school average group were significantly different from
the corresponding control condition (videotape only (M =
4.11, SD = .53 n = 27), t(53) = .96, p = .34; videotape plus
achievement lecture and test (M = 4.06, SD = .56, n = 23),
t(59) = .54, p =.59).

Motivation. Attributional retraining was expected to
increase students' motivation to succeed. The five item
scale administered following the intervention was used to
assess this hypothesis. The 2-way interaction effect was
significant, F(1,267) = 3.22, p = .0134. The interaction was
probed with the a priori t tests comparing the control
conditions of the low - high school average groups to each
of the experimental conditions. Of these, only the low -
high school average: videotape plus aptitude test condition
(M = 3.77, SD = .58, n = 30), t(66) = 3.39, p < .0008, and
the videotape plus discussion condition (M= 3.47, SD = .66,
n = 41), t(76) = 1.77, p = .039 were significantly different
from the control condition (M = 3.19, SD = .73, n = 37). In
Figure 3, the low - high school average: videotape plus
aptitude test condition is the only group to exceed the
corresponding high - high school average group. Figure 3
also shows the crossover that occurs at the videotape plus
aptitude test condition, a trend that has been evident in
the other graphs.

Expected success in university. Following attributional
retraining students should feel more confident about
succeeding in classes that they previously thought were
beyond their capability. To assess this, the question, "How
successful do you think you will be in University this
year?", was included in the post-intervention questionnaire.
ANOVA analysis did not reveal significant results for either
main effects, nor 2-way interaction. The a priori t tests
also did not indicate significant differences between the
control and intervention conditions of the low - high school
average group. However, Figure 4 continues to show the
crossover that occurs in the videotape plus aptitude test
condition and a similar pattern overall.

Course grade. An objective measure of effects of this
study is the influence on final course grade in introductory
psychology. The median split on reported high school average
produced two groups which yielded a significant main effect
on course grade $F(1,229) = 32.82$, $p = .0001$. The means were:
low - high school average group $M = 5.495$, $SD = 2.02$, $n =$
128; high - high school average $M = 6.961$, $SD = 1.69$, $n =$
102. Even with the significant main effect, the graph in
Figure 5 still shows a trend for the high school groups to
crossover at the videotape plus aptitude test condition. The
a prior t tests of the four intervention conditions compared
to the control condition of the low - high school average
group revealed a significant difference between the control
condition ($M = 5.17$, $SD = 1.90$, $n = 30$) and the videotape

Table 5

Scores on Various Dependent Variables by High School Average

and Experimental Condition

Condition	Low – High School Average			High – High School Average		
	M	SD	n	M	SD	n
Perceived Control						
Control	3.97	.76	37	4.31	.63	21
Video Only	4.11	.53	27	4.19	.56	23
Video + Aptitude Test	4.29	.50	31	4.14	.57	24
Video + Achievement Test	4.06	.56	23	4.05	.79	24
Video + Discussion	4.25	.46	41	4.24	.42	19
Motivation						
Control	3.19	.73	37	3.41	.59	21
Video Only	3.06	.76	27	3.57	.79	23
Video + Aptitude Test	3.77	.58	30	3.44	.73	23
Video + Achievement Test	3.21	.68	23	3.58	.74	21
Video + Discussion	3.47	.66	41	3.33	.64	19

Table 5 continued

Condition	Low – High School Average				High – High School Average		
	M	SD	n		M	SD	n
Expected Success In University							
Control	3.46	.74	35		3.67	.73	21
Video Only	3.30	.95	27		3.82	.85	22
Video + Aptitude Test	3.71	.81	28		3.32	.99	22
Video + Achievement Test	3.50	.80	22		3.75	1.03	24
Video + Discussion	3.78	.77	40		4.06	.68	16
Grade							
Control	5.17	1.90	20		6.76	1.89	17
Video Only	5.45	2.16	20		7.50	.86	22
Video + Aptitude Test	6.08	1.79	24		6.57	2.06	23
Video + Achievement Test	5.26	2.10	19		6.95	1.91	22
Video + Discussion	5.51	2.17	35		7.00	1.46	18

Table 6
Analysis of Variance for Attributional Retraining and Reported High School Average

Source	df	Perceived Control	Motivation	Expected Success in University	Final Grade	Perceived Control Difference Score	Motivation Difference Score
		F					
High School Average (HS)	1	0.50	2.08	2.60	32.80···	0.07	0.09
Attributional Retraining (AR)	4	0.80	1.63	1.75	0.50	1.72	1.15
HS × AR	4	1.31	3.22··	2.02·	1.09	1.81	1.17
Within-group error	220-267····	(0.33)	(0.48)	(0.71)	(3.57)	(0.23)	(0.32)

Note. Value enclosed in parentheses represent mean square errors.
*p < .10. **p <.05. ***p <.01.
**** due to missing values for some variables the within-group error degrees of freedom varies.

EFFECT ON PERCEIVED CONTROL

Figure 2. The attributional retraining condition by reported high school average. Perceived control represents the average response (range 1 -5) of the 16 item scale administered in the attitudes follow up questionnaire.

Figure 3. The attributional retraining condition by reported high school average. Motivation represents the average response (range 1 -5) of the 5 item scale administered in the attitudes follow up questionnaire.

plus aptitude test condition ($\underline{M}$ = 6.08, $\underline{SD}$ = 1.79, $\underline{n}$ = 24),
$\underline{t}$(53) = 1.77, $\underline{p}$ = .039.

    <u>Difference between time 1 and time 2.</u> To determine
which of the methods of administering attributional
retraining was the most effective, the difference between
time 1 and time 2 scores was assessed across methods of
administration. Students responded to the variables
perceived control and motivation prior to the intervention
and after the intervention. For each variable the time 1
score was subtracted from the time 2 score (time 2 - time
1). This created a score reflecting the change that should
occur following the intervention procedure. This procedure
tested whether significant differences occurred over time
from attributional retraining. The ANOVA analysis (see Table
6: perceived control and motivation difference scores) of
these scores did not reveal significant effects.

<u>Further Manipulations</u>

    <u>Subject involvement.</u> To investigate why the expected
results were not achieved, further analyses were conducted.
One such analysis involved the post intervention question,
"How involved were you in this session?", (1=not at all,
5=very much so). It is assumed that, if subjects were not
involved nor participating fully in the session, they would
not be able to benefit from the information being conveyed.
An ANOVA analysis of the 2 x 5 factorial design was
conducted using students' involvement as a dependent
variable. This was done to determine if any one group
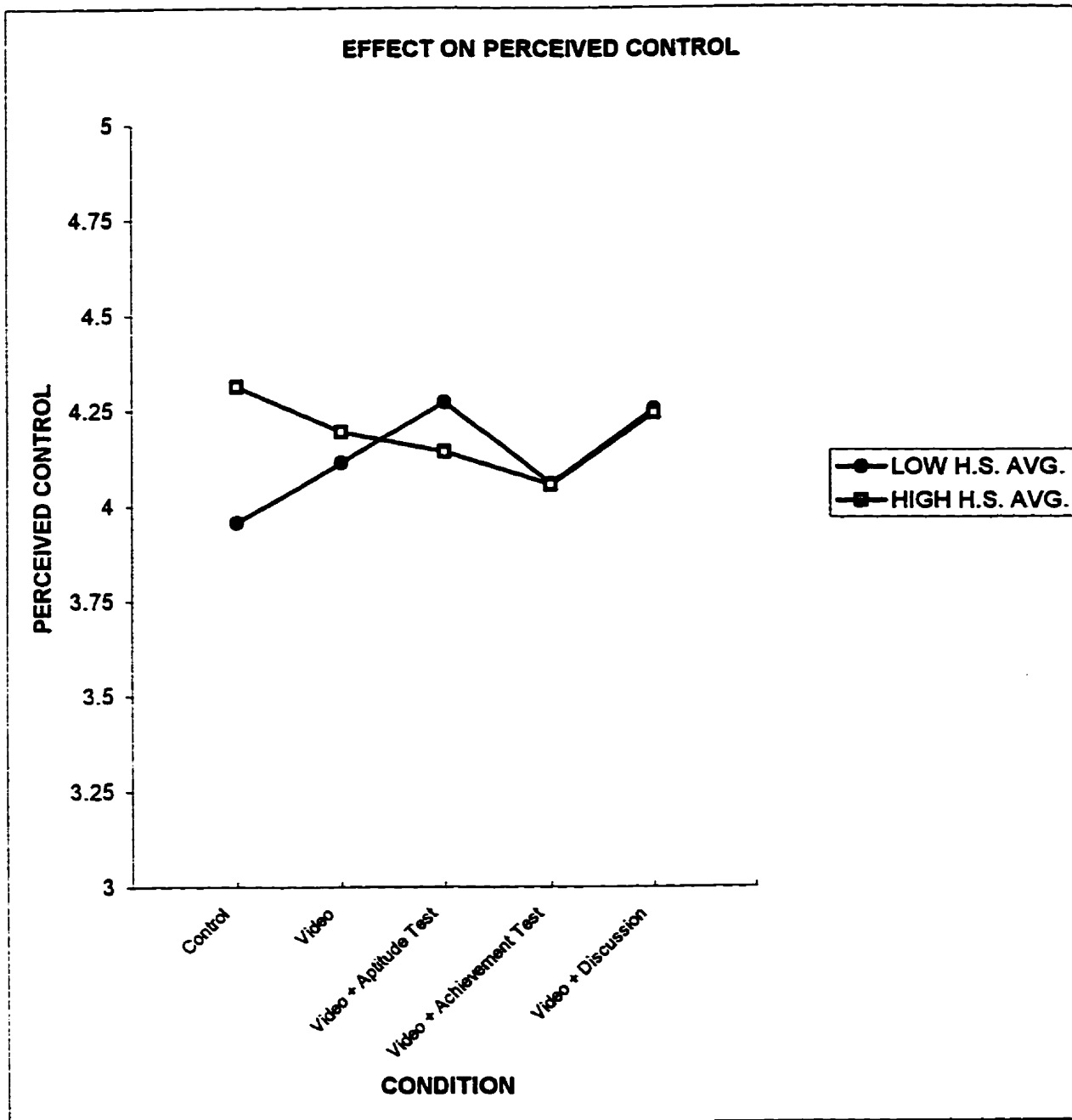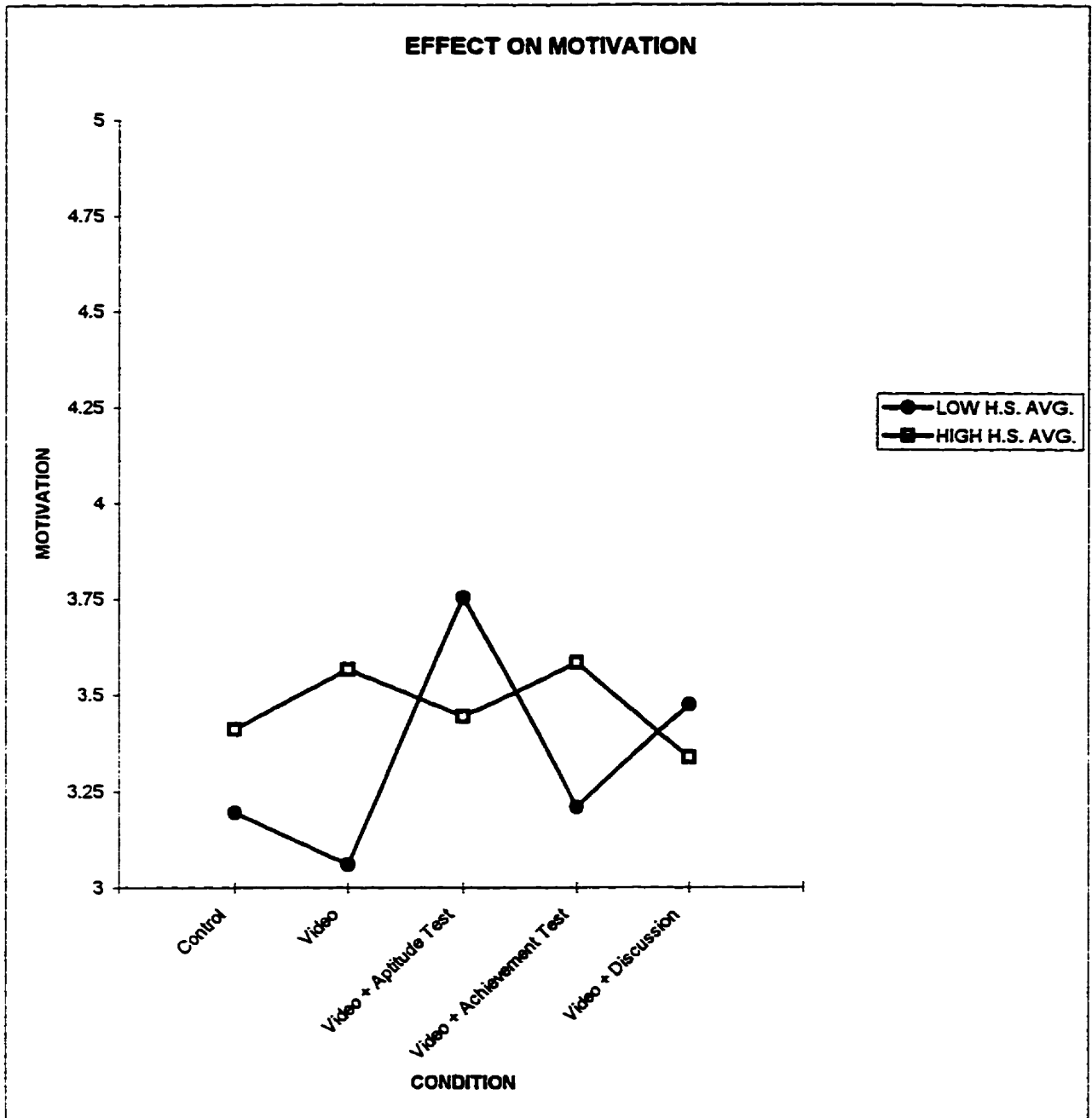
EFFECT ON EXPECTED UNIVERSITY SUCCESS

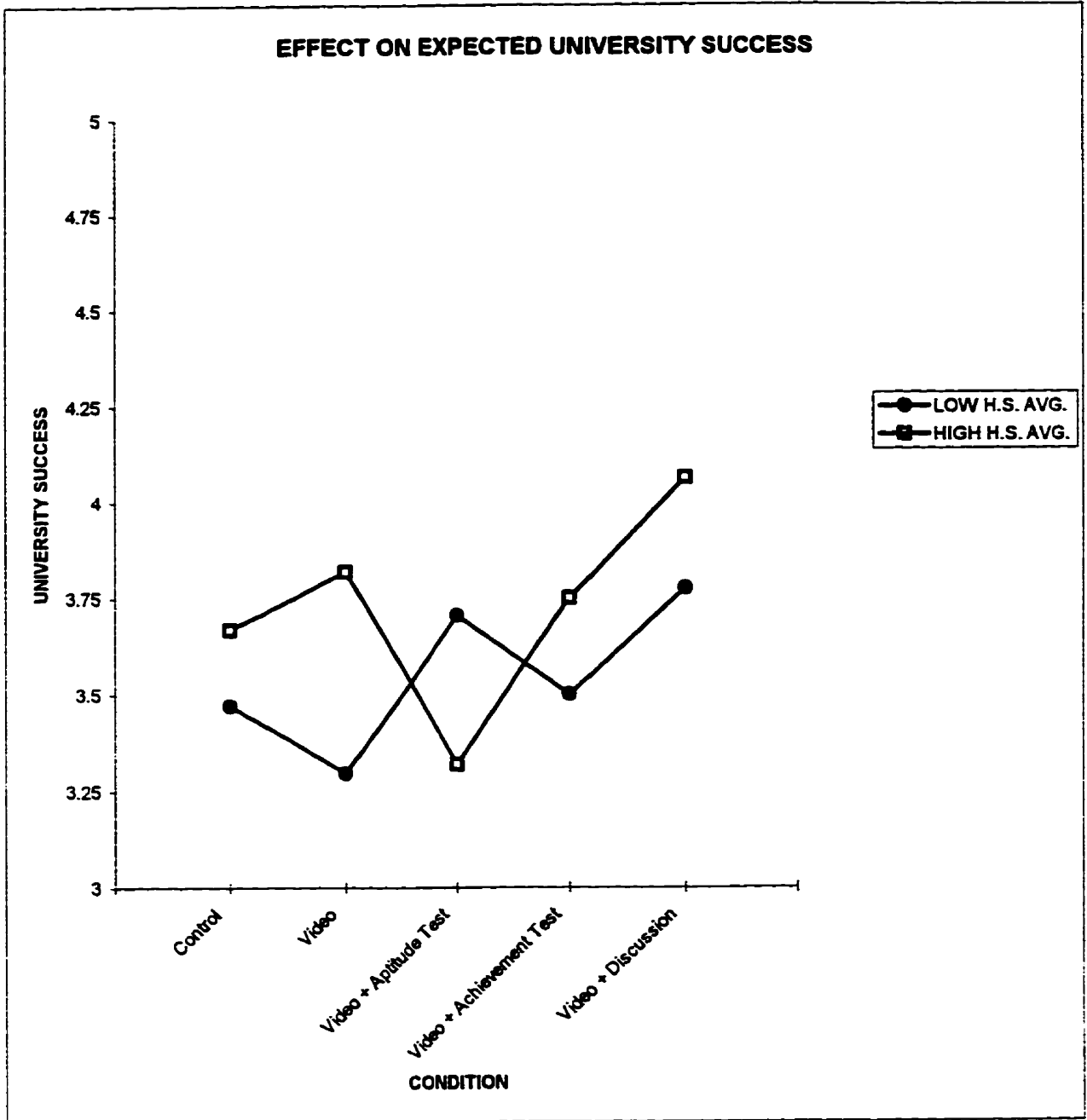Figure 4. The attributional retraining condition by reported high school average. University success represents the average response (range 1 -5) of the single item administered in the attitudes follow up questionnaire.
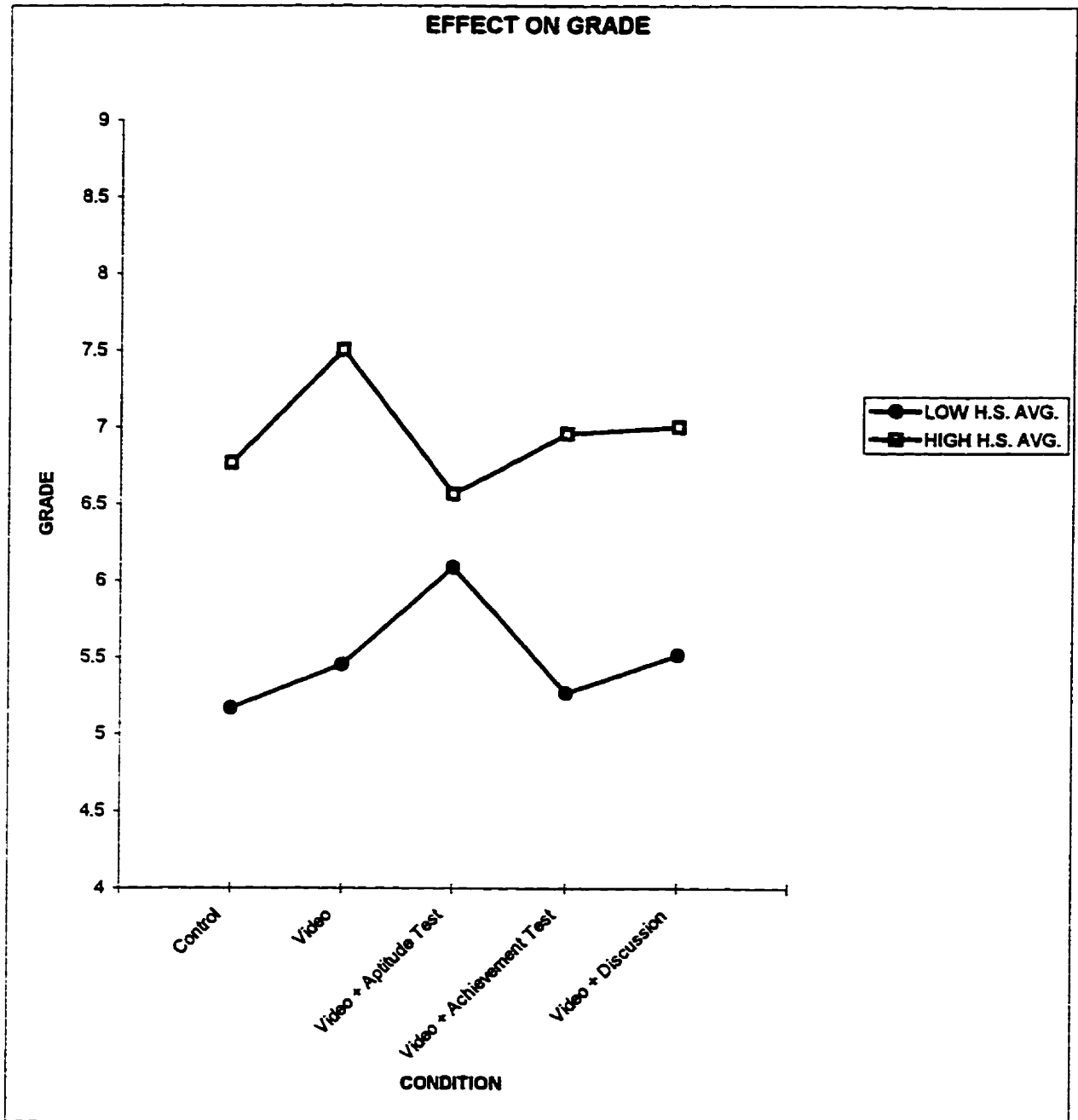
Figure 5. The attributional retraining condition by reported high school average. Grade represents the average final grade (range 0=F, 2=D, 4=C, 5=C+, 6=B, 7=B+, 8=A, 9=A+) in introductory psychology.

reported a significant difference in their involvement. Significant differences were not found for either the main or interaction effects on session involvement.

Low versus high - high school average classification. Realizing that the division of low and high - high school average was based on a pragmatic placement of the median, namely sample sizes, other classifications of the median were considered. The median score of 7/10 was originally included in low - high school average group. A score of 7 relates to a reported average of 76-80% which is not necessarily low. The first analysis on the median was to move it so that it was included in the high - high school average group. Thus the cutoff for the low - high school average group was reduced to the range of 71-75%, reflecting a more realistic term for being at-risk. While this is conceptually sound, it did not reduce the mean square error term when an ANOVA analysis on final grade was conducted with the median in the high - high school average group (median in low group MSE = 3.575, median in the high group MSE = 3.702). Also the F values were reduced for the main and interaction effects (eg. 2-way interaction: median in low group $F(4,229)$ = 1.09, p = .36, median in high group $F(4,229)$ = .49, p = .74.

Another analysis considered was the deletion of students who report that their high school average fell on the median. This was conducted to increase the distinction between the low and high - high school average groups and

resulted in 45 deletions. The error term following this
manipulation was reduced slightly (eg. Final grade: before
deletions MSE = 3.575, after deletions MSE = 3.493), but the
F values were also reduced (eg. Final grade 2-way
interaction: no deletion $F(4,229)$ = 1.09, p = .36, median
deleted $F(4,186)$ = .61, p = .65.

The last consideration was the reordering of the
graphic representation of final grade and experimental
conditions. Figure 6 places the conditions along the X-axis
in an order based upon the mean responses to the involvement
item, "How involved were you in this session?" It was
originally hypothesized that the ascending order of the
conditions by increasing involvement would be: control,
videotape only, videotape plus aptitude test, videotape plus
achievement test, and videotape plus discussion, and result
in an increased effect of attributional retraining. This was
based on the demands that each type of session would place
on students. As students were actively engaged in the
sessions, they would retain and integrate more of the
information presented making the intervention more
effective. However, the means of conditions for the
involvement item in ascending order were: Videotape plus
achievement test (M = 3.62), control (M = 3.80), videotape
plus aptitude test (M = 3.84), videotape only (M = 3.85),
and videotape plus discussion (M = 3.93). While the
reordering did not affect the results for each condition, it
did indicate that some error may have occurred. To account

for this error an analysis of covariance (ANCOVA) was conducted on final grade using involvement in the session as a co-factor. The results of the ANCOVA did not differ from those reported for the ANOVA and no further effects were revealed.

Discussion

The results of this study indicate that some intervention procedures enhance the effects of attributional retraining. All of the procedures used in this study were derived from previously successful attributional retraining studies and should have had significant effects, with the exception of the videotape only condition. This study clarifies results of past studies, despite some limitations which will be discussed.

The most consistent condition to produce significant effects was the videotape plus aptitude test condition. This method has been effective in previous studies (Perry & Penner, 1990; Wilson & Linville, 1982,1985). The results indicate that low – high school average students perform better in their introductory psychology courses, have a greater sense of control, and are more motivated following the intervention, if it includes an aptitude test. Another method which had significant effects was the videotape plus discussion group. Previously successful studies reported this as part of a successful attributional retraining intervention (Jesse & Gregory, 1986-87; Noel, Forsyth, & Kelley, 1987; Perry & Struthers, 1994; VanOverwalle &

DeMetsenaere, 1990; VanOverwalle et al., 1989). The effects

show that attributional retraining will assist students who

are at-risk as defined by low - high school average, as

measured by perceived control and motivation. Similar to

Perry and Struthers (1994), the videotape only condition did

not significantly improve students' psychology course

performance, sense of control, or motivation; it was

predicted that this condition would have low to moderate

effects at best.

The one condition that did not have the expected effect

was the videotape plus achievement lecture and test. This

condition gave students the most opportunity to utilize the

new causal search process, and was expected to allow

practice and integration of the material. The results

indicate that this group may have had the worst performance

of all of the intervention conditions, and this is

apparently contrary to the results of Menec et al. (1994),

and Perry and Penner, (1990). Menec et al., and Perry and

Penner both report increases in achievement test

performance, indicating attributional retraining was

effective. Unfortunately, the present study did not included

a control condition that was administered an achievement

lecture and test to compare results. Furthermore, the

results of Menec et al., and Perry and Penner are confounded

by the inclusion of a GRE (aptitude) type test prior to the

attributional retraining intervention. It may be that an

aptitude test which precedes attributional retraining, in a

session which includes an achievement lecture and test, enhances the effects of attributional retraining. The videotape plus achievement lecture and test condition of the present study, which did not included an aptitude test at all, would not result in significant effects. As suggested previously, replications of the Menec et al., and Perry and Penner studies need to be conducted to address some of the short comings and the application to a university classroom setting.

Involvement

This study rests on the belief that the methods following the administration of attributional retraining may place different demands on students, which affect their level of involvement in the intervention. This may influence the effects found in this study. As discussed, passively viewing an attributional retraining videotaped may not present the information adequately for students to grasp its importance. However, if students were required to discuss personal experience relevant to the attributional retraining information, they may better understand and accept the attributional retraining information. With the intent to identify the methods of administration and quantify which produced the best remedial improvement, five conditions were created. These conditions were ordered based on the expected demand that each placed on students and how each reflected a real academic setting.

The control condition was designed to mimic the

EFFECT ON GRADE
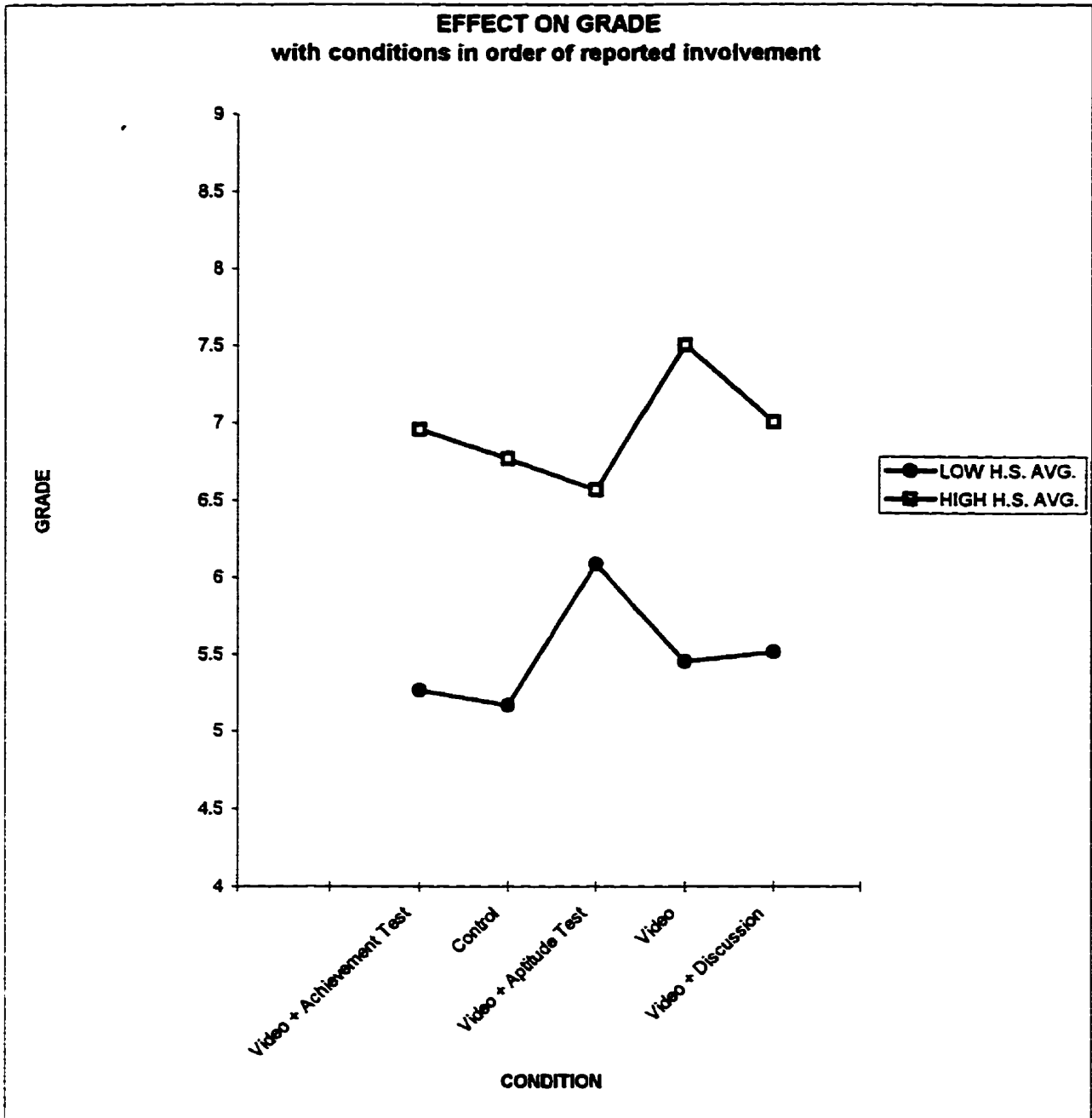with conditions in order of reported involvement

Figure 6. The attributional retraining condition by reported high school average. The attributional retraining conditions are reorder by mean values on the involve item. Grade represents the average final grade (range 0=F, 2=D, 4=C, 5=C+, 6=B, 7=B+, 8=A, 9=A+) in introductory psychology.

procedures of the intervention conditions without offering
any remedial information. The attributional retraining
videotape only condition was expected to be the least
involving as it did not require students to actively
participate in the session (other than completing the
questionnaires). The videotape plus aptitude test condition
was expected to engage the students in a cognitively
demanding task and offer an opportunity to practice the
recently presented attributional retraining information on a
real test. The videotape plus achievement lecture was
expected to further increase the involvement of students.
Students would have to attend to a lecture and then complete
a test on the materials present. Like the aptitude test
condition, students would have an opportunity to practice
the new causal search process learned in the intervention.
Furthermore, in this condition they would also have the
opportunity to engage in activities which enhance control
over their performance, such as closely attending to the
lecture material. Finally, the videotape plus discussion
condition was expected to produce the most student
involvement. Because students were required to participate
in a small group discussion on their personal experiences
with failure, they must also become aware of the
attributional retraining information. The results of the
discussion are then presented to the administrator and
summarized.

The means of the involvement item did not reflect the

conceptualization outlined above. Only the videotape plus
aptitude test and videotape plus discussion conditions
remained in the same position (see Figure 6.). The ANOVA
analysis did not indicate significant differences between
the conditions, which is contrary to expectations. If
ordered based on the means, the videotape plus achievement
test condition would be the least involving. Respectively,
the control, videotape plus aptitude test, and videotape
only would be next (all within .044 out of 5 on the
involvement item). The most involving condition would be the
videotape plus discussion condition.

An explanation for this ordering may be that the
demands of the whole session, not just by the demands placed
on the students by the tests or discussion. Of particular
interest is the length of each experimental session. The
videotape plus achievement test condition was the longest
session, lasting almost 110 minutes including a 30 minute
videotape lecture on economics. Though the test was expected
to place a demand on students, because their performance on
it did not have any consequences, they may not have been
attending to the material. To the students this session may
have been extremely tedious and this was reflected in the
low involvement mean for this condition. If this was the
case then the enhancing effect of an academic test following
attributional retraining would not be revealed. In
comparison, the other session which shifted order was the
videotape only condition which was the shortest condition

lasting only 70 minutes. To correct for this a field study would be required in which an actual course test followed shortly after the intervention.

Despite the intent to vary the involvement of each session, an article by Harp and Mayer (1997) indicates that general interest is not the most reliable criteria for determining if information will be learned. They defined emotional and cognitive interest in learning material. Emotional interest refers to the arousal produced by including trivial but interesting bits of information in the presentation. Cognitive interest refers to the inclusion of key point summaries along with the body of information to be learned. It was found that cognitive interest enhances learning and not emotional interest. In reference to the present study, this may mean that session involvement is only important if it stems from cognitive interest in the materials presented, not the entertainment value of the presentation. The implication for further study in attributional retraining is that following an intervention a handout containing the main attributional retraining points may enhance the effectiveness of the intervention.

High School Average as a Predictor

In this study reported high school average did have the highest practical correlation to final grade, which concurs with literature cited earlier. This result does not mean it is the best at-risk predictor. For example, Larose and Roy (1995) reported that high school means were good predictors

of university performance. They also suggest that high school average and other common ability or aptitude measures like S.A.T. scores do not identify what needs to be improved to enhance performance. For an intervention to be successful it should address the area which the student needs assistance. If the student's study skills are poor, a motivational intervention will not address this and the student will likely continue to perform poorly. Likewise, having a low - high school average indicates that assistance is required, but does not speak to which form of remediation should be conducted. In addition, high school performance is in the past and can not be enhanced when students have already entered university.

Correlational analyses from this study showed that though high school average was highly correlated to final grade, it was not correlated to other items and scales. Specifically, high school average was not related to perceived control and motivation, both of which were moderate predictors of final grade. Unlike grade, these other variables reflect the students' current state and can be influenced by interventions. Identifying at-risk students and students who can be assisted by various interventions would best be accomplished by a composite measure. High school performance should be included as a best predictor of grade and other scales included to identify what type of intervention should be administered. Past studies partially address this issue by including some form of skill enhancing

intervention as part of attributional retraining. For example, study 2 of VanOverwalle and DeMetsenaere (1990) included study strategy sessions of time management, reading comprehension, and course material. By using a similar approach, but first including assessment measures of which study strategy is needed, future investigations can be tailored to individual student needs.

Does Attributional Retraining Work?

The review of attributional retraining studies by Perry et al. (1993) provides convincing testimony to the effectiveness of attributional retraining in its present state. This leaves the question, why were the effects not consistently seen across all conditions and variables? Previous research indicates one possible explanation. Wilson and Linville (1992) propose that the self-report effects of attributional retraining are not always forthcoming. This is suggested to be a result of a self-report system that is partially independent of behaviour. In the present study this may be a particularly salient point. The post-intervention questionnaire was administered immediately following the conclusion of the intervention procedure. The dependent variables in the post-intervention questionnaire may have been administered too soon for effects to be consolidated.

Another reason why the intervention may not have produced the expected results, specifically on perceived control, lays in a study by Marsh and Young (1997). In

studying academic self concept and its relation to performance, it was found that self concept is domain specific. Students' beliefs about their abilities in Mathematics did not reflect on their performance in English. Marsh and Young describe self concept as the ability to influence performance, this is similar to perceived control. As was discussed earlier, the perceived control scale used in this study included only one identifiable factor. Therefore, this scale may not have tapped into the domains that were being affected by attributional retraining. The perceived control scale may require more definite factors which cover a range of domains to properly assess students' sense of control.

With regard to the results observed for the final grade data, there may have not been enough tests remaining for effects on final grade to be clearly demonstrated. As previously stated, the study was conducted late in the year when most students who participated had completed over half of the years test (i.e. three or four test out of six completed prior to the study). Attributional retraining can only affect the last two or three tests. At this time of year, when a student's final grade is largely determined, effects must be two or three times as large to reach significance compared to a study run at the beginning of the year. Even if analyses could be done on the tests following attributional retraining[6] it is likely that students' expectations, based on the multiple previous testings, would

be the determinate of performance. The stable fact of their past performance would override the enhancing effects of attributional retraining. Furthermore, Perry, Hechter, Menec, and Weinberg (1993) suggest that attributional retraining is most applicable during the transition from high school to college. The vast changes in the demands placed on students creates a very stressful period. This is when students may be most amenable to suggestions for enhancing their performance. The routine (stability) of their academic performance may have set in by the time this study was conducted which inhibits the belief fostered by attributional retraining that performance is unstable.

Other Implications of the Study

The graphical representation of the dependent variable means shows a consistent pattern of a crossover at the videotape plus aptitude test condition. The pattern appears to be a product of both the high - high school average group dropping and the low - high school average group increasing. The question to be answered is, "What is unique about the videotape plus aptitude test condition?"

The aptitude test was developed to be difficult for students to succeed (Perry & Dickens, 1987). The content was demanding and the time to complete the items was very limited. These factors may have stressed the participants more than any other condition, resulting in the unusual pattern. Traditionally, all forms of attributional retraining are expected to benefit those students at-risk,

yet this study did not find such results. This may have been because students, except those in the videotape plus aptitude test condition and possibly the videotape plus discussion condition, did not actively engage in the sessions. The stress of the aptitude test may have been arousing and energised students to integrate the information presented, and the group discussion made the information salient.

As for the drop of the high - high school average students, a study by Drewniak (1997) may explain this pattern. The Drewniak study points out that attributional retraining focuses on negative events (eg. failure) and that success is not a result of ability. For students who are succeeding and believe that it is because of ability (eg. I am intelligent), the intervention may demotivate them. Successful students may stop thinking they are smart and have the ability to do well, reducing their effort. Thus the pattern of performance dropping for high - high school average students in the videotape plus aptitude test condition, a condition which may be effective, would be expected.

Conclusion

This study was intended to investigate the implications of the procedures in an attributional retraining session. The results to that end are somewhat tenuous, and limited by some of the short comings of the study. The trends and a prior t tests suggest that the events in a session do

influence its effectiveness. A small amount of stress may arouse students and activate some undetermined process which allows attributional retraining to be functional, and discussion may allow students to personalize the attributional retraining materials presented.

What this study did do was to highlight some methodological issues concerning the timing and presentation of attributional retraining interventions. In particular, sessions may need to be conducted early in the academic year for full effectiveness. Session run later in the year, as this one was, may have to compete against students' predetermined expectations and grades. This would limit the influence of attributional retraining. When designing studies it may also be important to consider the length of each session and how that will affect students' responses during the session. As discovered in the videotape plus achievement test condition, students may have been more influenced by boredom; when it is arousal, such as in the videotape plus aptitude test or discussion condition, which makes attributional retraining effective.

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Footnotes

1.   Perry and Penner (1990) explain that both increased effort and ability were presented as unstable factors. This was to ensure consensus on the appropriate dimensions of causality between individuals. This fits with Weiner's (1986) statement that it is not the actual causal ascription that affects consequences, rather it is the dimensions which define the ascription for the individual.

2.   For the Menec et al. (1994, Experiment 1 and 2) and the Perry and Struthers (1994) studies, subjects were defined by the following at-risk variables: previous experience of failure or success; external vs internal locus of control; and low or high perceived success, respectively. The results discussed generally refer to those groups found to be at-risk: failure experience; external locus; and low perceived control.. Groups not defined as being at-risk were expected to be performing at or near optimal levels, not in need of an intervention to improve performance, and did not benefit from attributional retraining.

3.   In Perry and Struthers (1994) students in the written hand-out condition did not view an attributional retraining videotape and were allowed to leave the experiment following reading the material. The results of the written hand-out group were not significant from the control group, but were in the expected direction, and did fall between the videotape only and the videotape and discussion group. As the basic procedure did not included a videotape

presentation these results will not be included in this discussion.

4.   Study 2 from Menec et al. (1994) is not being included in the discussion of events following attributional retraining because of concern over flaws with the order of presentation of the intervention. Of concern is that attributional retraining did not occur until the second session in the one attributional retraining condition following the MMCS in session one, and that in the two attributional retraining conditions the MMCS occurred in the second session, after an attributional retraining session had occurred, but still preceded the second intervention. This is an apparent inconsistency in the methods of Study 1 and 2. Also, as outlined in the DenBoer, Meertens, Kok, and VanKnippenberg (1989) article, the process of asking about attributions may act as a form of attributional retraining. Administering the MMCS at different periods between the conditions makes interpretation of the results of order effects confusing, if not impossible in Study 2.

5.   It was be requested that students not sign up who have previously participated in two other studies which are similar to this study.

6.   Analysis was limited to final grade data because not all students' test scores were available. Furthermore, because students were recruited from multiple course sections the time between the intervention and the test varies greatly between subjects.

Appendix A

The following section contains the Attitudes Toward University Educational Experience questionnaire (pre-screening questionnaire) that was administered in this study.

ATTITUDES TOWARD
UNIVERSITY EDUCATIONAL EXPERIENCE

DEPARTMENT OF PSYCHOLOGY

THE UNIVERSITY OF MANITOBA

This questionnaire concerns your beliefs and opinions about your time spent at this university. There are no right or wrong answers -- we are simply trying to find out how you think and feel about your university experience. We are interested in your personal opinions, so please be candid in your responses. Your identity and your answers will be kept strictly **CONFIDENTIAL**. *The information will be used for research purposes* **ONLY** *and will* **NOT** *be available for any other reasons.*

The questionnaire consists of 140 items which are to be answered using the **TWO** *IBM sheets provided.* **Items 1 to 80 should be answered using the first IBM sheet and the remaining 60 items, on the second IBM sheet. Please be sure that your answer to each item corresponds to the appropriate number on each IBM sheet.**

Your participation in this study is vital to its overall success. The time you have given to answer this questionnaire is very much appreciated. Thank you for your support.

Raymond P. Perry, Ph.D.
Professor of Psychology

PART I

The following statements concern your beliefs about experiences in your psychology course and in your life more generally. Although some of the items are similar, there are differences between them and you should treat each one as a truly separate question. The best approach is to ANSWER EACH ITEM FAIRLY QUICKLY. That is, don't try to count up the number of times you felt a certain way, but rather choose the alternative that seems to reflect your view most closely. Read each item carefully and RESPOND USING THE SCALE PROVIDED. Record your answers for PART I on the FIRST IBM FORM, using the appropriate number, 1 THROUGH 46.

1 Strongly Disagree	2	3	4	5 Strongly Agree

1. My greatest personal accomplishments have come from hard work and persistence.
2. I have a great deal of control over my academic performance in my psychology course.
3. Much of what happens in my life is beyond my control.
4. The more effort I put into my courses, the better I do in them.
5. It would be desirable to have complete control over what happens in my psychology course.
6. No matter what I do, I can't seem to do well in my courses.
7. What matters most is that I can influence what happens to me.
8. Life is what you make of it.
9. I see myself as largely responsible for my performance throughout my college career.
10. I often feel that my life is determined by others.
11. How well I do in my courses is often the "luck of the draw."
12. I have little interest in controlling how things unfold in my life.
13. Whether you try or not makes little difference in the grand scheme of things.
14. There is little I can do about my performance in university.
15. Things that happen in my life are largely determined by me.
16. When I do poorly in a course, it's usually because I haven't given it my best effort.
17. I enjoy having control over the various things I do in my life.
18. It is important to me to be able to control how well I do in my psychology course.
19. There is little you can do to avoid life's calamities.
20. My grades are basically determined by things beyond my control and there is little I can do to change that.
21. I have a lot of influence over things in my life.
22. Getting good grades is often the result of knowing what courses to take.
23. Being able to determine my academic performance in my university courses is important to me.

Strongly Disagree				Strongly Agree
1	2	3	4	5

24. Much of what has happened in my life so far is my own doing.

25. I start each school term highly motivated, and I stay that way.

26. I am excited about the courses I take.

27. I enjoy learning.

28. I think that what we learn in my introductory psychology course is interesting

29. I am motivated to do well in my introductory psychology course.

30. I feel that I'm a person of worth, at least on an equal plane with others.

31. I feel that I have a number of good qualities.

32. All in all, I'm inclined to feel that I am a failure.

33. I am able to do things as well as most other people.

34. I feel I do not have much to be proud of.

35. I take a positive attitude toward myself.

36. On the whole, I am satisfied with myself.

37. I wish I could have more respect for myself.

38. I certainly feel useless at times.

39. At times I think I am no good at all.

40. In uncertain times, I usually expect the best.

41. If something can go wrong for me, it will.

42. I always look on the bright side of things.

43. I'm always optimistic about my future.

44. Things never work out the way I want them to.

45. I'm a believer in the ideal that "in every cloud, there is a silver lining."

46. I rarely count on good things happening to me.

PART II

The next se⁀ of questions are to be answered using the following scale. PLEASE NOTE THAT THE END-POINTS ON THE SCALE DIFFER FROM THE RATING SCALE USED IN THE PREVIOUS SECTION (PART I).

For each of the next twelve statements, CHOOSE ONE AND ONLY ONE OF THE TWO ALTERNATIVES provided, either: (1) or (2). BEGINNING WITH #47 on your IBM FORM, please blacken the space corresponding to:

(1)   if you agree with the first alternative   **(2)   if you agree with the second alternative**

47.   When I have lost something that is very valuable to me and I can't find it anywhere:
       (1)   I have a hard time concentrating on something else.
       (2)   I put it out of my mind for a little while.

48.   When I have to solve a difficult problem:
       (1)   It takes me a long time to adjust myself to it.
       (2)   It bothers me for a while, but then I don't think about it anymore.

49.   When I'm in a competition and have lost every time:
       (1)   I can soon put losing out of my mind.
       (2)   The thought that I lost it keeps running through my mind.

50.   If I had bought a new piece of equipment (for example, a CD player) and it accidentally fell on the floor and was damaged beyond repair:
       (1)   I would manage to get over it quickly.
       (2)   It would take me a long time to get over it.

51.   If I have to talk to someone about something important and, repeatedly, can't find her or him at home:
       (1)   I can't stop thinking about it, even while I'm doing something else
       (2)   I easily forget about it until I can see the person again.

52.   When I've bought a lot of stuff at a store and realize when I get home that I paid too much – but I can't get my money back:
       (1)   I can't concentrate on anything else.
       (2)   I easily forget about it.

53.   When I am told that my work has been completely unsatisfactory:
       (1)   I don't let it bother me for long.
       (2)   I feel paralyzed.

54.   If I'm stuck in traffic and miss an important appointment:
       (1)   At first, it's difficult for me to start doing anything else at all.
       (2)   I quickly forget about it and do something else.

(1)   if you agree with the first alternative   **(2)   if you agree with the second alternative**

55.   When something is very important to me, but I can't seem to get it right:
      (1)   I gradually lose heart.
      (2)   I just forget about it and go do something else.

56.   When something really gets me down:
      (1)   I have trouble doing anything at all.
      (2)   I find it easy to distract myself by doing other things.

57.   When several things go wrong on the same day:
      (1)   I usually don't know how to deal with it.
      (2)   I just keep on going as though nothing has happened.

58.   When I have put all my effort into doing a really good job on something and the whole thing doesn't work out:
      (1)   I don't have much difficulty starting something else.
      (2)   I have trouble doing anything else at all.

The next set of statements (#59 to #71) refer to aspects of your courses and of the university more generally. Use the rating scale provided and PLEASE NOTE THAT IT DIFFERS FROM THE SCALE USED FOR THE PREVIOUS SET OF STATEMENTS.

Not at all   **Very much so**

   1   **2**   **3**   **4**   **5**   **6**   **7**   **8**   **9**   **10**

59.   I expect to return to the University of Manitoba as a full-time student next year.

60.   I am interested in the study of psychology in general.

61.   I expect to do very well in my Introductory Psychology course this year.

62.   My Introductory Psychology course is very important to my university program.

63.   It is important for me to do well overall at university this year.

64.   The study of psychology is relevant to my everyday life.

65.   It is extremely important for me to do well in my Introductory Psychology course.

66.   I expect to do very well overall at university this year.

67.   In comparison to other university students, I consider myself to be very successful.

68.   I plan to major in Psychology.

69.   I have complete control over my academic performance in my Introductory Psychology course.

70.   I feel responsible for my performance in my Introductory Psychology course.

71.   I am in complete control of things in my life overall.

Please indicate ON YOUR IBM FORM to what extent each of the following emotions describ 86 OW YOU FEEL ABOUT YOUR PERFORMANCE IN YOUR INTRODUCTORY PSYCHOLOGY COURSE TO DATE:

		Not at all	Very much so
72.	I am WORRIED.	1	10
73.	I am HOPEFUL.	1	10
74.	I am PROUD.	1	10
75.	I feel GUILTY.	1	10
76.	I feel HELPLESS.	1	10
77.	I feel ANGRY.	1	10
78.	I feel FRUSTRATED.	1	10
79.	I feel ASHAMED.	1	10
80.	I feel CONFIDENT.	1	10

You have now completed the first IBM answer form. Before beginning Part III on the next page, please check to see that you have answered all 80 items on the questionnaire and that these correspond to items 1 to 80 on the first IBM sheet.

TO COMPLETE THE REMAINDER OF THIS QUESTIONNAIRE, PLEASE START WITH YOUR SECOND IBM FORM.

PART III

The next set if 18 statements refer to the experiences you've had in you psychology course to date. Please read each statement carefully and respond using the following scale. Note that the scale differs from the one used in the previous section. Please record your answers on the SECOND IBM FORM, beginning with #1 through to #18.

Not at all true	A little true	Moderately true	Largely true	Completely true
1	2	3	4	5

WITH REGARD TO MY INTRODUCTORY PSYCHOLOGY COURSE :

1. I enjoy learning new things.

2. Before I start studying material in this course, I feel tense and nervous.

3. When studying for the course, I feel bored.

4. Some topics are so much fun that I look forward to studying them.

5. I feel queasy when I think of having to study and to do all the work.

6. The things I have to do for this course are often boring.

7. After studying, I am pleased that I know more than before.

8. When studying for this course, I am worried that I won't be able to master all the material.

9. The content is so boring that I often find myself daydreaming.

10. After studying for this course, I feel calm and relaxed.

11. When studying the material in this course, my heart beats fast because I am nervous.

12. When studying, my thoughts are everywhere else, except on the course material.

13. Some topics are so enjoyable that I am very motivated to continue studying them.

14. While I am studying, I sometimes would like to distract myself in order to reduce my anxiety.

15. The materials in this subject area are so boring that I feel quite exhausted.

16. Because this course is fun for me, I study the materials more extensively than is necessary.

17. When I have problems with learning the material in this course, I get anxious.

18. Often I am not motivated to invest effort in this boring course.

The next set of questions concern your feelings and thoughts DURING THE LAST MONTH. In each case, you are asked to indicate how often you felt or thought a certain way. Use the following scale for each item:

Never	Infrequently	Sometimes	Frequently	Very Often
1	2	3	4	5

IN THE LAST MONTH:

19. How often have you been upset because of something that happened unexpectedly?

20. How often have you felt that you were unable to control the important things in your life?

21. How often have you felt nervous and "stressed"?

22. How often have you found that you could not cope with all the things that you had to do?

23. How often have you been angered because of things that happened that were outside of your control?

24. How often have you found yourself thinking about things that you would have to accomplish?

25. How often have you felt difficulties were piling up so high that you could not overcome them?

PART IV

This next set of questions concerns your physical well-being during the last month. Read each statement carefully and respond to it on your SECOND IBM ANSWER FORM using numbers 26 through 60 Use the following scale to record your answers. **PLEASE NOTE THAT THIS SCALE DIFFERS FROM THE PREVIOUS SCALE.**

DURING THE LAST THREE MONTHS, HOW MUCH WERE YOU BOTHERED BY:

		Not at all	About once a month	About twice a month	About four times a month	Several times a month
26.	sleep problems (can't fall asleep, wake up in the middle of the night or early in the morning)	1	2	3	4	5
27.	headaches	1	2	3	4	5
28.	feeling low in energy	1	2	3	4	5
29.	muscle tension or soreness	1	2	3	4	5
30.	nausea and/or vomiting	1	2	3	4	5
31.	acid stomach or indigestion	1	2	3	4	5
32.	dizziness	1	2	3	4	5
33.	diarrhea	1	2	3	4	5
34.	constant fatigue	1	2	3	4	5
35.	stomach pain (e.g. cramps)	1	2	3	4	5
36.	heart pounding or racing	1	2	3	4	5
37.	poor appetite	1	2	3	4	5
38.	fainting spells	1	2	3	4	5
39.	weight gain	1	2	3	4	5
40.	excessive perspiration (sweating)	1	2	3	4	5

CONSIDERING YOUR OVERALL STATE OF HEALTH:

	Not at all	About once a month	About twice a month	About four times a month	Several times a month
41. How often have you gone to see a physician?	1	2	3	4	5
42. How often have you missed classes because of health problems?	1	2	3	4	5

The next set of questions, numbers 43 through 60, are specifically related to YOUR LAST YEAR IN HIGH SCHOOL and your experiences this year at the University of Manitoba. EACH QUESTION HAS A SLIGHTLY DIFFERENT SCALE, SO READ EACH ONE VERY CAREFULLY.

43.   What was your average (%) in your last year of **high school?**

(1)	50% or less	(6)	71 - 75%
(2)	51 - 55%	(7)	76 - 80%
(3)	56 - 60%	(8)	81 - 85%
(4)	61 - 65%	(9)	86 - 90%
(5)	66 - 70%	(10)	91 - 100%

44.   How **successful** do you feel you were in your last year of **high school?**

Very unsuccessful									Very successful
1	2	3	4	5	6	7	8	9	10

45.   Was the **cause** of your success in your last year of **high school** something that:

Reflects an aspect of yourself									Reflects an aspect of the situation
1	2	3	4	5	6	7	8	9	10

46.   Was the **cause** of your success in your last year of **high school** something that:

Was controllable by you or other people									Was uncontrollable by you or other people
1	2	3	4	5	6	7	8	9	10

47.   Was the **cause** of your success in your last year of **high school** something that:

Was variable over time									Was stable over time
1	2	3	4	5	6	7	8	9	10

48. How many tests have you had so far in your **Introductory Psychology course?**

    (1)   one test   (4)   four tests
    (2)   two tests   (5)   five tests
    (3)   three tests

49. What is your average (%) in your **Introductory Psychology Course** so far this year?

(1)	50% or less		(6)	71 - 75%
(2)	51 - 55%		(7)	76 - 80%
(3)	56 - 60%		(8)	81 - 85%
(4)	61 - 65%		(9)	86 - 90%
(5)	66 - 70%		(10)	91 - 100%

50. How **successful** do you feel you are in your **Introductory Psychology Course** so far this year?

Very unsuccessful   **Very successful**

   1   **2**   **3**   **4**   **5**   **6**   **7**   **8**   **9**   **10**

51. What percentage (%) do you expect to obtain in your **Introductory Psychology Course** at the end of the year?

(1)	50% or less		(6)	71 - 75%
(2)	51 - 55%		(7)	76 - 80%
(3)	56 - 60%		(8)	81 - 85%
(4)	61 - 65%		(9)	86 - 90%
(5)	66 - 70%		(10)	91 - 100%

*In this part of the survey, we ask for some factual information about you. Your answers to all the questions are CONFIDENTIAL. Please record you answers on the **second IBM form, numbers 52 through 60.***

52. How would your rate your **physical health** right now?

(1)	very poor		(4)	good
(2)	poor		(5)	very good
(3)	average			

53. How would your rate your **psychological health** right now?

(1)	very poor		(4)	good
(2)	poor		(5)	very good
(3)	average			

54. What is your **gender?**

    (1)   female
    (2)   male

55. What is your **age** in years?

(1)	17 - 18	(6)	27 - 30
(2)	19 - 20	(7)	31 - 35
(3)	21 - 22	(8)	36 - 40
(4)	23 - 24	(9)	41 - 45
(5)	25 - 26	(10)	older than 45

56. In which **Faculty** are you registered?

(1)	Arts	(6)	Science
(2)	Human Ecology	(7)	Physical Education
(3)	Engineering	(8)	Nursing
(4)	Management	(9)	Social Work
(5)	Education	(10)	Other

57. Do you plan to participate in a **study group** related to your introductory psychology course?
    - (1) yes
    - (2) no

58. How many **credit hours** are you taking this year?
    (Note: half courses = 3 credit hours, full courses = 6 credit hours)

(1)	3	(6)	18
(2)	6	(7)	21
(3)	9	(8)	24
(4)	12	(9)	27
(5)	15	(10)	30 or more

59. Have you ever taken 99.111 – Introduction to University?
    - (1) yes
    - (2) no

60. What ethnicity do you consider yourself?

(1)	English	(5)	Polish
(2)	French	(6)	Scandinavian
(3)	German	(7)	Ukrainian
(4)	Aboriginal	(8)	Asian
		(9)	Other

THANK YOU FOR PARTICIPATING IN THIS STUDY

Appendix B

The following section contains the Abstract Reasoning and
Abilities Test (aptitude test) that was administered in this
study.

Abstract Reasoning and Abilities Test

Canadian Educational Testing Service

Toronto, Canada

September, 1991
(Revised, 1994)

GENERAL INSTRUCTIONS

The Abstract Reasoning and Abilities test (ARAT) has been developed for use in universities and schools across Canada as a measure of student ability and is more culturally appropriate than other similar aptitude tests such as the Scholastic Aptitude Test, Graduate Record Examination, or Millers Analogies Test.

The ARAT is composed of three separate sections, each with a different type of question. The first section is composed of 10 verbal analogy questions. You will be allowed 5 minutes to complete the first section. The second section is made up of quantitative questions and the time limit for the 5 questions is 5 minutes. Sentence completion questions are found in the third section. Again you will be allowed 5 minutes to answer the 10 questions.

Please remember to choose the one response that best answers the question. Think carefully before answering because questions having more than one response selected will be considered incorrect.

There is no penalty for an incorrect answer, as it is advisable to answer all questions.

DO NOT WRITE IN TEST BOOKLET.

Please turn to the instructions for section 1.

SECTION 1:   - 3 -

VERBAL ANALOGIES

Directions: Each of these questions consists of two capitalized words which have a certain relationship to each other, followed by five lettered pair words. Choose the lettered pair of words which are related to each other in the same way as the words of the capitalized pair are related to each other.

An example of an analogy question is:

SHIP : HARBOUR

a)   flower : garden
b)   village : people
c)   nest : bird
d)   editor : newspaper
e)   car : garage

The correct response is e) car : garage.

PLEASE WAIT FOR INSTRUCTIONS TO BEGIN.

1.   SYMPHONY : COMPOSER

    a)   bricks : builder
    b)   policeman : law
    c)   music: singer
    d)   airplane : stewardess
    e)   sonnet : poet

2.   IMPLY : INFER

    a)   lower : raise
    b)   question : remark
    c)   emit : receive
    d)   swindle : detect
    e)   remove : carry

3.   CHRONOMETER : SUNDIAL

    a)   reduction : enlargement
    b)   watch : ray
    c)   chronology : analogy
    d)   measurement : visibility
    e)   computer : abacus

4.   OXYGEN : RESPIRATION

    a)   improvement : care
    b)   camera : photography
    c)   sunlight : photosynthesis
    d)   hydrogen : digestion
    e)   drama : acting

5.   REQUEST : REFUSAL

    a)   eat : obesity
    b)   deny : affirmation
    c)   try : failure
    d)   swim : sinking
    e)   struggle : victory

6.   SHACKLED : UNFETTER

    a)   land : sea
    b)   omen : sign
    c)   give : take
    d)   hurt : comfort
    e)   chain : link

7.   CRITICIZE : CALUMNIATE

    a)   slap : wallop
    b)   sentimentalize : slobber
    c)   plan : plot
    d)   ruminate : ponder
    e)   socialize : fraternize

8.   GARGANTUAN : MINUSCULE

    a)   positive : negative
    b)   throaty : hoarse
    c)   microscopic : enormous
    d)   obese : spare
    e)   scintillating : vapid

9.   INIQUITOUS : DISOBEDIENT

    a)   inflammable : flammable
    b)   quiescent : lethargic
    c)   adult : child
    d)   inequitable : equitable
    e)   hostile : cool

10.   LULLABY : BARCAROLE

    a)   birth : marriage
    b)   cradle : gondola
    c)   song : poem
    d)   carol : sonneteer
    e)   night : morning

END OF SECTION 1.

PLEASE STOP AND WAIT FOR FURTHER INSTRUCTIONS.

SECTION 2:

MATH ITEMS

Directions: Each of the problems in this section is followed by 5 alternatives lettered (a) through (e). Solve each problem and then choose the correct answer.

An example of a math questions is:

A certain type of siding for a house cost $10.50 per square yard. What does it cost for the siding for a wall 4 yards by 60 feet long?

a) $800
b) $840
c) $2520
d) $3240
e) $1940

The answer is b) $840

The area of the wall = 4 yds. x (60 ft./3) = 4 yds. x 20 yds. = 80 sq. yds.
The cost = 80 x $10.50 = $840.

PLEASE WAIT FOR INSTRUCTIONS TO BEGIN.

11. A Large field of 700 acres is divided into 2 parts. The difference of the areas of the 2 parts is one-fifth of the average of the 2 areas. What is the area of the smaller part?

   a) 225 acres
   b) 300 acres
   c) 335 acres
   d) 315 acres
   e) cannot be determined from the information given

12. Given that [y] means the greatest integer less than or equal to y, find the value of [-1/4] + [5 1/2] + [7].

   a) 12 1/4
   b) 12
   c) 12 1/2
   d) 11
   e) 10

13. Anne has 3 blouses, 4 skirts, and 2 pairs of shoes. How many different outfits can she wear, if an outfit consists of any blouse worn with any skirt and either pair of shoes?

   a) 8
   b) 12
   c) 24
   d) 9
   e) 48

14. Car A runs at constant speed of 30 kilometres per hour (kph), and car B at a steady rate of 5 kph. Starting from the same spot, car B drives due west, while car A drives due north for 1 hour and then turns due east (maintaining speed) for 2 hours. How far apart are the cars 2 hours after they both started out originally?

   a) 72 kms
   b) 60 kms
   c) 55 kms
   d) 50 kms
   e) 36 kms

15. Bill can mow 200 sq. ft. of lawn in 12 minute and Fred can mow 300 sq. ft. in 15 minutes. What is the ratio of Bill's mowing rate to Fred's rate?

   a) 6/5
   b) 5/6
   c) 5/4
   d) 4/5
   e) 5/4

END OF SECTION 2.

PLEASE STOP AND WAIT FOR FURTHER INSTRUCTIONS.

SECTION 3:

SENTENCE COMPLETIONS

Directions: Each of these sentences has 2 blank spaces, each blank indicating that a word has been omitted. Beneath the sentence are 5 sets of words. You are to choose the set of words which , when inserted in the sentence, best fits in with the meaning of the sentence as a whole.

An example of a sentence completion is:

Legal _____ initiated by the government necessitates that manufacturers use _____ in choosing food additives.

a)   entanglements . . . . . knowledge
b)   devices . . . . . intensification
c)   talents . . . . . decretion
d)   proclivities . . . . . moderation
e)   restraints . . . . . caution

The answer is b)   restraints . . . . . caution.

PLEASE WAIT FOR INSTRUCTIONS TO BEGIN.

16. Some people respond to a threat of rejection by becoming very _____ while others _____ and become again like little dependent children.

   a)   concise . . . . . objectify
   b)   militant . . . . . regress
   c)   impulsive . . . . . diminish
   d)   indignant . . . . . revive
   e)   amiable . . . . . procrastinate

17. While the _____ goal is to meet the specific learning needs of each child, the long-range aim is to develop his ability to assume the _____ for his own learning.

   a)   real . . . . . initiative
   b)   supposed . . . . . requirements
   c)   immediate . . . . . responsibility
   d)   apparent . . . . . desire
   e)   innate . . . . . preparation

18. In spite of its limited _____, the magazine had a strong _____ on political thought in the country.

   a)   dimension . . . . . intensity
   b)   appeal . . . . . repression
   c)   values . . . . . survival
   d)   insights . . . . . reminder
   e)   circulation . . . . . influence

19. They talk a good deal about using _____ but deep down they seem to expect that society will treat them with _____ if they do so.

   a)   theology . . . . . reverence
   b)   violence . . . . . indulgence
   c)   intellect . . . . . appreciation
   d)   machinations . . . . . relish
   e)   insubordination . . . . . revulsion

20. Not only did he display _____ manners but his whole attitude betrayed his _____ for these people whom he considered his inferiors.

   a)   elegant . . . . . frustration
   b)   peculiar . . . . . anxiety
   c)   revolting . . . . . indignation
   d)   abominable . . . . . contempt
   e)   benign . . . . . attrition

21. After remaining _____ for some time the object began to move _____ upward.

   a)   stationary . . . . . imperceptibly
   b)   illuminated . . . . . variously
   c)   invisible . . . . . partially
   d)   secondary . . . . . rapidly
   e)   fragile . . . . . undulatingly

22. _____ may conceivably be a virtue, if it is not _____.

   a) frugality . . . . . invalidated
   b) ambition . . . . . traditional
   c) rivalry . . . . . skeptical
   d) nobility . . . . . inevitable
   e) inconsistency . . . . . habitual

23. Increased _____ on school systems do not necessarily bring results _____ with money spent.

   a) communications . . . . . applicable
   b) implementations . . . . . consistent
   c) evaluations . . . . . persistent
   d) expenditures . . . . . commensurate
   e) objectives . . . . . relating

24. An attitude toward other races or religions that is _____ will only succeed in arousing more _____ on either side.

   a) sympathetic . . . . . harmony
   b) indigent . . . . . analysis
   c) bombastic . . . . . euphony
   d) militant . . . . . inevitable
   e) antagonistic . . . . . hostility

25. Since the salary increases each year were _____, his action in cancelling them was considered highly _____.

   a) mendacious . . . . . laudatory
   b) mandatory . . . . . arbitrary
   c) exorbitant . . . . . pecuniary
   d) contested . . . . . polemical
   e) monetary . . . . . philosophical

END OF SECTION 3.

PLEASE STOP AND WAIT FOR FURTHER INSTRUCTIONS.

PLEASE ANSWER THE FOLLOWING QUESTIONS IN REGARDS TO THE ARAT YOU HAVE JUST COMPLETED. INDICATE YOUR ANSWER BY SELECTING THE MOST APPROPRIATE NUMBER.

26.   How successful do you feel you were on this test?

1	2	3	4	5	6	7	8	9	10
VERY UNSUCCESSFUL									VERY SUCCESSFUL

27.   What percentage (%) of responses do you think you answered correctly?

1	2	3	4	5	6	7	8	9	10
<10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	90<

28.   How successful do you feel the other students were on this test?

1	2	3	4	5	6	7	8	9	10
VERY UNSUCCESSFUL									VERY SUCCESSFUL

29.   What percentage (%) of responses do you think the other students answered correctly?

1	2	3	4	5	6	7	8	9	10
<10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	90<

30.   How important was the test to you?

1	2	3	4	5	6	7	8	9	10
NOT AT ALL IMPORTANT									VERY IMPORTANT

31.   How hard did you try on the test?

1	2	3	4	5	6	7	8	9	10
NOT HARD AT ALL									VERY HARD

THANK YOU FOR YOUR COOPERATION

Appendix C

The following section contains the economics achievement test which was administered in the videotape attributional retraining and achievement test condition of this study.

ACHIEVEMENT TEST

INSTRUCTIONS

This is a test on the Demand Lecture. Please answer the questions to the best of your ability. No one is expected to get all the answers correct. If you are in doubt about the answer to a question, then guess. All responses must be made using the pencil provided. Choose the one best answer for each item.

Place your answers on the computer-scored answer sheet which has been provided. Please do not mark in the test booklet.

NOTE: FOR THIS QUIZ, USE ITEMS NUMBERED 1-32 ON THE COMPUTER-MARKED SHEET.

1. The law of demand is illustrated by a demand curve that is
   a. horizontal.
   b. downward-sloping.
   c. vertical.
   d. upward-sloping.

2. If the demand curve for product G is downward-sloping, this means that an increase in the price of G will result in
   a. an increase in the demand for G.
   b. a decrease in the demand for G.
   c. no change in the quantity demanded for G.
   d. a smaller quantity demanded for G.

3. The law of demand tells us what will happen to the quantity demanded of a good, other things being equal, when
   a. the price of the good changes.
   b. consumers' incomes change.
   c. the prices of other goods change.
   d. the quantities of other goods purchased change.

4. Demand can be defined as
   a. prices and quantities.
   b. a curve that slopes downward and to the right.
   c. a list or schedule of the quantities that will be bought at various prices.
   d. a list of preferences and tastes a consumer has for various goods.

5. A demand curve for railroad commuter tickets would show
   a. the number of tickets the railroad is willing to sell at each price.
   b. the number of people who need to travel by rail in order to get to work.
   c. the quality of service that commuters demand when they buy a ticket.
   d. the number of tickets that will be purchased at each price.

6. The law of demand refers to the
   a. tendency of prices to increase as more units of a product are demanded.
   b. increase in price that results from an increase in demand for a good whose supply is limited.
   c. negative relationship between the price of a good and the quantity of the good demanded.
   d. increase in the quantity of a good available as the price of the good increases.

7. A change in demand can be graphically represented by
   a. a movement down along a particular demand curve.
   b. a movement up along a particular demand curve.
   c. a rightward or leftward shift of a demand curve.
   d. a change in demand cannot be represented graphically.

8. Which of the following will **NOT** cause a shift in the demand curve
   for good X?
   a. a change in the price of a complementary good.
   b. a change in the price of good X.
   c. a change in consumer preference from good X to good Y.
   d. consumers' incomes increase and good X is a desirable good.

9. A graphical representation of the demand for fresh air by people
   living in Winnipeg who enjoy breathing fresh air could be represented
   by
   a. a downward sloping line.
   b. an upward sloping line.
   c. a line going up the vertical axis.
   d. a line going along the horizontal axis.

10. The effects of a decrease in the price of coffee, other things
    being equal, are best represented by which of the following?
    a. a leftward shift in the demand curve for coffee.
    b. a downward movement along the demand curve for coffee.
    c. a rightward shift in the demand curve for coffee.
    d. an upward movement along the demand curve for coffee.

11. Assume that chicken and beef are substitutes. A decrease in the
    price of beef would, as an indirect effect,
    a. decrease the demand for chicken and beef.
    b. increase the demand for chicken.
    c. decrease the demand for chicken.
    d. increase the demand for chicken and increase its price.

12. Assuming that people purchase more automobiles when their incomes
    increase, a rise in consumers' incomes, other things being equal,
    will cause
    a. the demand curve for automobiles to shift to the left.
    b. the demand curve for automobiles to shift to the right.
    c. a movement down along the demand curve for automobiles.
    d. a movement up along the demand curve for automobiles.

13. Which of the following will cause a movement along the demand curve
    for good X?
    a. a change in the price of a close substitute.
    b. a change in the price of good X.
    c. a change in consumer tastes from good X to good Y.
    d. a change in consumers' incomes.

14. Which of the following would **NOT** shift the demand curve for television
    sets?
    a. an increase in the price of television sets.
    b. an increase in the incomes of consumers.
    c. an increase in the price of radios (a substitute).
    d. an increase in the price of cable service (a complement).

15. In economic terms, to say that the demand for a product has increased means that
    a. the demand curve has shifted to the left.
    b. the product's price has fallen and as a result, consumers are buying a larger quantity of the product.
    c. the product has become particularly scarce for some reason.
    d. consumers are now willing to purchase more of the product at each possible price.

16. Which of the following will increase the demand for small automobiles?
    a. a fall in the price of small automobiles.
    b. a fall in insurance rates for small automobiles.
    c. a fall in the price of large automobiles.
    d. a fall in buyers' incomes (assuming small automobiles to be a desirable good).

17. Your local grocery store advertises a sale on apples for two days, and more apples than usual are sold. This is an example of
    a. a change in demand due to a change in consumer preferences for apples.
    b. a change in demand due to a change in the price of apples.
    c. a change in the quantity of apples demanded due to a change in price.
    d. a change in the quantity of apples due to a change in consumer preferences for apples.

18. A graphical representation of hockey fans' demand for Stanley Cup Tickets when the price per ticket is $5 (tickets for Stanley Cup games are usually much more than $5), could likely be represented by a line that is
    a. upward sloping from a price of $5.
    b. downward sloping from a price of $5.
    c. horizontal at a price of $5.
    d. There is not enough information to determine a demand curve.

19. You enjoy eating steak, but you get laid off from your job and find that your income is cut in half. Your demand curve for steak would likely
    a. shift inward to the left.
    b. shift outward to the right.
    c. become horizontal at the price of steak.
    d. not be affected at all since you still enjoy eating steak.

20. Suppose that most consumers regard beef and pork as substitute foods in their diets. Then a decrease in the price of pork will cause the demand curve for beef to
    a. shift to the left as consumers switch from buying beef to buying pork.
    b. shift to the left as producers increase pork production and reduce beef production.
    c. shift to the right as consumers switch from beef to pork.
    d. shift to the right as producers increase pork production and reduce beef production.

21. The effects of a decrease in the price of orange juice, other
    things being equal, would best be represented by which of the following?
    a. a rightward shift in the demand curve for orange juice.
    b. a downward movement along the demand curve for orange juice.
    c. a leftward shift in the demand curve for orange juice.
    d. an upward movement along the demand curve for orange juice.

22. Assume that beef and chicken are substitutes. Then, other things being
    equal, an increase in the price of beef will
    a. increase the demand for chicken and the price of chicken.
    b. decrease the demand for chicken and the price of chicken.
    c. increase the demand for chicken and decrease its price.
    d. decrease the demand for chicken and increase its price.

23. Other things being equal, the effects of an increase in the price
    of orange juice would best be represented by a (an)
    a. upward movement along the demand curve for orange juice.
    b. leftward shift in the demand curve for orange juice.
    c. downward movement along the demand curve for orange juice.
    d. rightward shift in the demand curve for orange juice.

24. A graphical representation of the demand for medicine prescribed
    by a physician that a person believes is necessary to cure their illness
    is likely
    a. a vertical line starting at the quantity prescribed.
    b. a horizontal line starting at the price of the prescription.
    c. a normal demand curve sloping downward to the right.
    d. a curve that slopes upward to the right from the prescription
        price.

25. Assuming coffee and tea to be substitutes, a rise in the price of
    coffee is likely to have which of the following effects on the
    market for tea?
    a. an upward movement along the demand curve for tea.
    b. a downward movement along the demand curve for tea.
    c. a leftward shift in the demand curve for tea.
    d. a rightward shift in the demand curve for tea.

26. The price of Pepsi Cola falls dramatically. As a result, your demand
    curve for gasoline will likely
    a. shift upward to the right.
    b. shift downward to the right.
    c. become more vertical.
    d. be unaffected since Pepsi Cola and gasoline are not complements.

27. An increase in the price of cameras, other things being equal, will
    have which of the following effects on the market for photographic
    film?
    a. A downward movement along the demand curve for film.
    b. An upward movement along the demand curve for film.
    c. A rightward shift in the demand curve for film.
    d. A leftward shift in the demand curve for film.

28. Assume that steak and potatoes are complements. Then, other things being equal, an increase in the price of steak would
    a. increase the demand for potatoes.
    b. decrease the demand for potatoes.
    c. increase the demand for potatotes and decrease the price of potatoes.
    d. decrease the demand for potatoes and increase the demand for steak.

29. Assuming that the amount of clothing people purchase increases as their income increases, an increase in consumer income, other things being equally, would:
    a. increase the demand for clothing.
    b. decrease the demand for clothing.
    c. increase the quantity of clothing demanded.
    d. decrease the quantity of clothing demanded.

30. Assuming that travel decreases when incomes fall, a decrease in consumer income, other things being equal, would
    a. decrease the quantity of travel demanded.
    b. increase the demand for travel.
    c. decrease the demand for travel.
    d. increase the quantity of travel demanded.

31. Have you ever had this material before?
    a. yes
    b. no

32. Have you ever taken (or are you presently taking) a course with this instructor?
    a. yes
    b. no

PLEASE ANSWER THE FOLLOWING QUESTIONS IN REGARDS TO THE ACHIEVEMENT TEST YOU HAVE JUST COMPLETED. INDICATE YOUR ANSWER BY SELECTING THE MOST APPROPRIATE NUMBER.

33. How successful do you feel you were on this test?

    1   2   3   4   5   6   7   8   9   10
    VERY   VERY
    UNSUCCESSFUL   SUCCESSFUL

34. What percentage (%) of responses do you think you answered correctly?

    1   2   3   4   5   6   7   8   9   10
    <10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 90<

35. How successful do you feel the other students were on this test?

    1   2   3   4   5   6   7   8   9   10
    VERY   VERY
    UNSUCCESSFUL   SUCCESSFUL

36. What percentage (%) of responses do you think the other students answered correctly?

    1   2   3   4   5   6   7   8   9   10
    <10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 90<

37. How important was the test to you?

    1   2   3   4   5   6   7   8   9   10
    NOT AT ALL   VERY
    IMPORTANT   IMPORTANT

38. How hard did you try on the test?

    1   2   3   4   5   6   7   8   9   10
    NOT HARD   VERY
    AT ALL   HARD

THANK YOU FOR YOUR COOPERATION

Appendix D

The following section contains the Attitudes Follow-up

Questionnaire (post-intervention questionnaire) that was

administered in this study.

ATTITUDES FOLLOW-UP QUESTIONNAIRE

Department of Psychology
UNIVERSITY OF MANITOBA

This questionnaire is a follow up to your beliefs and opinions about your university experience. Again, there are no right or wrong answers, and all information will be kept strictly **CONFIDENTIAL.**

Though some of the items in this questionnaire are similar to the first questionnaire, do not attempt to remember how you had responded to answer these questions. Answer each question as you feel **NOW.**

Your participation in this study is vital to its overall success. The time you have given to answer this questionnaire is very much appreciated. Thank you for your support.

Beginning on a new IBM sheet, read each statement carefully and respond using the following scale for each statement.

Strongly Disagree				Strongly Agree
1	2	3	4	5

1. I have a great deal of control over my academic performance in my psychology course.

2. Much of what happens in my life is beyond my control.

3. It would be desirable to have complete control over what happens in my psychology course.

4. What matters most is that I can influence what happens to me.

5. I see myself as largely responsible for my performance throughout my college career.

6. I often feel the my life is determined by others.

7. I would rather study according to my own schedule than follow someone else's.

8. I have little interest in controlling how things unfold in my life.

9. There is little I can do about my performance in university.

10. Things that happen in my life are largely determined by me.

11. I enjoy having control over my life.

12. It is important to me to be able to control how well I do in my psychology course.

13. My grades are basically determined by things beyond my control and there is little I can do to change that.

14. I have a lot of influence over things in my life.

15. I prefer being told what to do rather than making my own decisions.

16. Being able to determine my academic performance in my university courses is important.

Strongly Disagree				Strongly Agree
1	2	3	4	5

17. I start each term highly motivated, and I stay that way.

18. I am excited about the course I take.

19. I enjoy learning.

20. I think that what we learn in my introductory psychology course is interesting.

21. I am motivated to do well in my introductory psychology course.

22. I feel that I'm a person of worth, at least on an equal plane with others.

23. I feel that I have a number of good qualities.

24. All in all, I'm inclined to feel that I am a failure.

25. I am able to do things as well as most other people.

26. I feel I do not have much to be proud of.

27. I take a positive attitude toward myself.

28. On the whole, I am satisfied with myself.

29. I wish I could have more respect for myself.

30. I certainly feel useless at times.

31. At times I think I am no good at all.

3

These questions refer to your expectations. Using the scale provided please answer each based on how you feel **NOW**.

Not at All				Very Much So
1	2	3	4	5

32. How successful do you think you will be in your next Introductory Psychology Test?

33 How successful do you think you will be in your Introductory Psychology Course this year?

34. How difficult do you think your Introductory Psychology Course is?

35. How successful do you think you will be in University this year?

36. How involved were you in this session?

Thank you for participating in this study.

Appendix E

The following section contains the consent form that
students completed, giving the experimenter permission to
obtain their course grade information.

CONSENT FORM FOR INTRODUCTORY PSYCHOLOGY GRADES

We are interested in students' grades and how they relate to
teaching and learning preferences. In order to gain access to these
grades we need your permission. You are assured that your responses
in this experiment as well as your grades will be kept entirely
CONFIDENTIAL and that the summarization, presentation, and reporting
of the results of the study will be handled so that the identity of
the participants is protected.

Please indicate below as to whether you consent to our accessing
your psychology test results.

I, _____ (please print name),

grant Dr. Perry permission to obtain my introductory psychology

(17.120) test results.

Student Number: _____

Name of your psychology professor: _____

Signature: _____

Date: _____