

Do High Standards, Sensitivity to Failure, and Lack of Perseverance Interact to Predict
All-or-Nothing Behaviour?

by

LIANNE M. McLELLAN

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Queen's University

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ABSTRACT

Why do some people tend to begin new goals or activities with a high level of commitment and determination, only to drop substantially in their involvement within a short time? The purpose of the present research was to identify stable individual differences that influence the tendency to manifest this pattern of behaviour (i.e., starting strong then dropping off), which is subsequently termed “all-or-nothing behaviour”. In Study 1, participants completed questionnaire items that were expected to tap all-or-nothing behaviour. Common factor analysis was performed to examine the factor structure of the data, and revealed three independent constructs that were labelled “high standards”, “sensitivity to failure”, and “lack of perseverance”. The purpose of Study 2 was to assess the temporal stability of these constructs. Participants completed measures of the constructs at two times separated by 20 weeks. High correlations between scores at Time 1 and Time 2 revealed that the constructs are stable over time. The purpose of Study 3 was to examine the distinctiveness of the target constructs from existing individual difference measures, and to examine their association with theoretically similar and dissimilar constructs. Participants completed measures of the target constructs along with several other individual differences, and correlations among the measures were computed. Moderate to high correlations were found between the target constructs and theoretically related constructs, but they were not so high such that they appeared to represent the same underlying dimension. Further, relatively low correlations were found between the target constructs and theoretically unrelated constructs. The purpose of Studies 4 and 5 was to investigate the influence of the target constructs on all-

or-nothing behaviour in the domains of group fitness attendance (Study 4) and campus club involvement (Study 5). In both Studies 4 and 5, participants completed measures of the constructs that were believed to relate to an all-or-nothing behavioural pattern, and their adherence to the target behaviours was assessed. I hypothesized a three-way interaction among the target constructs such that the presence of all three would be necessary to predict all-or-nothing behaviour. Results from both Studies 4 and 5 were consistent with this hypothesis such that individuals who were high in each of the three constructs were more likely to exhibit the all-or-nothing pattern of behaviour than were other individuals. Theoretical implications for understanding processes involved in behaviour change, and practical implications for interventions targeting at-risk individuals, are discussed.

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CHAPTER 1: GENERAL INTRODUCTION AND PILOT STUDIES

Why do some people tend to stick to their planned behaviour changes whereas others are more likely to “fall off the wagon?” Most of us know someone who often approaches a new goal or activity with steadfast determination and enthusiasm, but then abandons that goal or activity within a matter of weeks. This type of behavioural pattern (beginning strong, then quitting) is ubiquitous in daily accounts. For example, a friend begins a strict diet but then gives it up completely after a weekend of indulgence, the keen new exerciser spends hundreds of dollars on a home gym that later collects dust in the basement, or the eager new windsurfer takes several lessons but drops her newfound hobby within a short while. A failed New Year’s resolution is a classic case of ambitious behaviour change plans gone awry. Although most people believe they can commit to their resolutions permanently, research findings suggest otherwise. One study found that only 50% of people were successful at upholding their resolutions only one month into the year (Norcross, Ratzin, & Payne, 1989; see also Norcross, Mrykalo, & Blagys, 2002).

Adopting ambitious health-related goals such as a strict diet or exercise regimen is common practice, but is generally not effective for goal attainment (Kyllo & Landers, 1995). One need only peruse a few popular health magazines to find examples of behavioural patterns similar to those described above whereby one begins a new behaviour at a high level of commitment but fails to sustain the behaviour over time. For example, in the article “51 ways to burn fat”, the author asserts, “People fail on diets. And it's because of the diet mindset. You're either on or off a diet. They're too easy to give up because many things—like a lunch meeting—can blow it for you” (Hannam,

2005, p. 64). Here, the author notes a common approach taken by dieters—failing to uphold one’s rigid diet to the letter and so abandoning the diet altogether.

I subsequently use the term “all-or-nothing behaviour” in this research program to refer to the general pattern of starting a new behaviour with initial enthusiasm and commitment, but failing to sustain this commitment over time.¹ The term “all-or-nothing” is used because the behavioural pattern of interest involves beginning a new behaviour with exceptional dedication (i.e., “all”) but experiencing a substantial drop in the behaviour with the passage of time (i.e., “nothing”). Despite the intuitive appeal of all-or-nothing behaviour, there is virtually no scientific research that has systematically examined this pattern². This could be due to the complex nature the phenomenon and that it is difficult to conceptualize. Perhaps its investigation has also been stifled because it is a longitudinal behavioural pattern and tracking behaviour over time has practical difficulties associated with it. In any case, the present research program brings a new perspective to research in the domain of behavioural change and commitment.

There has been virtually no systematic research to examine how and why people behave in an all-or-nothing way, but given the ubiquity of this behavioural pattern, one could certainly speculate on its potential causes. Perhaps some people manifest this behavioural pattern more so than others, and so stable traits could account for differences

¹ The behavioural pattern of interest is referred to as all-or-nothing behaviour. The term “all-or-nothing” in the present research is limited to long-term behavioural outcomes. The term “all-or-nothing” may educe thoughts of trait characteristics such as cognitive rigidity, authoritarianism, or dogmatism. Trait characteristics such as these, however, are examples of stable individual differences in beliefs or thought patterns and are different from the behavioural pattern investigated in the present research.

² There is a great deal of work assessing individual differences that affect adherence more generally (e.g., smoking cessation and diet and exercise adherence). The present research focuses specifically on the all-or-nothing pattern which has received far less attention in the literature.

in individuals' tendencies to show all-or-nothing behaviour. In the present research program, I am interested in empirically investigating this possibility by examining the influence of stable individual differences on the propensity to show the all-or-nothing pattern of behaviour. All-or-nothing behaviour is a specific type of behavioural adherence failure characterized by high behavioural commitment at the outset but a relatively large decline in commitment with the passage of time. Although it is related to adherence more generally, I am interested in specific individual differences that are implicated in all-or-nothing behaviour which extends beyond the scope of adherence literature to date.

My first goal was to identify an individual difference variable (or set of variables) that might be related to all-or-nothing behaviour. One possible theory might suggest that the tendency to begin new goals and activities with enthusiasm but fail to commit long-term is best predicted by a unitary construct and that people who have higher levels of this construct are more likely to manifest this pattern. An alternative theory might stipulate that this tendency is better predicted by an interaction of individual difference constructs than by any one alone. Regardless of whether this pattern of behaviour is best captured by a unitary construct or a profile of interacting constructs, to identify individual difference factors associated with all-or-nothing behaviour bears importance from both theoretical and practical perspectives. It would provide a novel theoretical contribution to the prediction of long-term behavioural commitment through an individual difference—or a confluence of individual differences—that has not yet been examined. Practically, knowledge of factors related to all-or-nothing behaviour could be used to inform interventions that promote adaptive goal setting and adherence.

From a practical perspective, understanding factors related to long-term commitment to behaviour change is crucial because health behaviours such as exercising regularly and following a healthful diet are only advantageous to the extent that they are maintained. It takes little effort to begin either of these behaviours, but to sustain them is a more important and challenging feat. It is beneficial to examine individual difference factors that influence commitment to health behaviours because if individual differences that are associated with all-or-nothing behaviour in a health domain are identified, this information could then inform interventions (e.g., promoting adaptive goal setting at the outset of a new behaviour, encouraging perseverance at times when these people are at a higher risk of discontinuing the behaviour) that are targeted toward individuals who exemplify these individual differences.

Although there is no systematic research examining all-or-nothing behaviour as a phenomenon in general populations, there is some empirical evidence of all-or-nothing behaviour in clinical populations, specifically among people who have eating disorders (Muuss, 1986; Ramacciotti, et al., 2000) and among people with alcoholism (Van Wormer, 1988). In his observations of people who have bulimia, Muuss (1986) identifies what he terms cognitive deficiencies of the bulimic. These include unrealistic goal-setting, adherence to narrowly defined standards, perfectionistic thinking, and all-or-none reasoning. Bulimics often tend to “perceive even a slight deviation from the weight-loss regimen as a devastating failure” so even a minor transgression is seen as a catastrophe (Muuss, 1986, p. 264).

Like bulimics, people classified as having binge eating disorder (BED) tend to adopt rigid rules that dictate what they are allowed in their diets. Ramacciotti et al. (2000) assessed cognitive and behavioural patterns in a sample of obese people who were seeking treatment for their obesity. Participants were categorized as having BED or not, according to DSM-IV research criteria. The researchers evaluated “dichotomous (all-or-none) thinking about food or dieting”, using structured interviews (p. 133). They found that those who had BED were more likely to say that they had engaged in all-or-none consistent behaviours in their approach to food (e.g., “blowing up” their diets if they ate a little more than prescribed, starving themselves or overeating, or behaving as if it were feast or famine) relative to those who did not currently have the disorder. The authors suggest that one’s susceptibility to BED may represent an underlying trait characteristic that leads one to adopt narrowly defined standards and to abandon them if they are violated, but do not go on to speculate what this characteristic might be.

Van Wormer (1988) discussed the extremeness in thoughts and behaviours among alcoholics that she had observed in clinical interviews. She noted that alcoholics are often perfectionists who have low tolerance for mediocrity and hold themselves to standards that are unsustainable. According to the author, the alcoholic sometimes “sets a trap for oneself before a particular task is even underway” because one is highly unlikely to uphold such standards (p. 29). Similar to a strict dieter who decides he or she may as well binge because of a small indulgence, the alcoholic may have one drink and then decide he or she may as well get drunk.

The behavioural tendencies that have been reported among people with eating disorders and alcoholism is similar to the pattern of behaviour I examine in the present research (i.e., beginning a behaviour at an ambitious level but failing to sustain that commitment over time). However, whereas past researchers have examined the all-or-nothing behavioural pattern among people who have clinical disorders, I investigate this pattern among more general, non-clinical populations. Further, though some researchers suggested that an underlying trait might cause one to adopt this pattern (Ramacciotti et al., 2000), trait characteristics were not systematically measured in past research. In the present program, I systematically assess stable individual differences that relate to the all-or-nothing pattern of behaviour.

Individual Difference Variables of Interest

Many people have probably displayed the all-or-nothing pattern of behaviour at one time or another. The main goal of the present research is to identify an individual difference variable, or profile of variables, that predicts the chronic tendency for people manifest this pattern of behaviour. To decide which individual differences would contribute to all-or-nothing behaviour, I speculated at length about a prototypical person who continually displays this pattern, and about the characteristics he or she might possess. There are numerous individual difference variables that might predict the all-or-nothing behavioural pattern though no single one appears to sufficiently capture the longitudinal pattern on its own. The general constructs that I believe might comprise the elusive prototypical person who displays all-or-nothing behaviour are described below.

The first individual difference that I believe to be held by people who display all-or-nothing behaviour is setting high standards. The prototypical person who displays all-or-nothing behaviour appears especially enthusiastic and ambitious at the outset of a new goal or activity. He or she initially sets high standards for personal performance and immerses him or herself in the new behaviour. As the individual difference variable high standards is presently conceptualized, one could manifest this tendency in many different domains. Someone high in this dimension could be the new exerciser who starts going to the gym six days a week and hires a personal trainer, the dieter who begins a strict eating regimen that disallows numerous food items that he or she is accustomed to eating, or the entrepreneur who invests monetary savings and countless hours in a new business endeavour. Someone who holds high standards, as I conceptualize it, displays a sort of “whole-hogged” approach such that one throws oneself into new activities and sets behavioural goals that are very difficult to maintain. In contrast, people low on this dimension might take a more lax approach to new activities that they decide to pursue, easing their way into them rather than to commit a great deal of resources at the outset.

The second individual difference that I expect might be present in people who display all-or-nothing behaviour is sensitivity to failure. Although most people find obstacles to their goals unpleasant, I believe those who chronically show all-or-nothing behaviour find setbacks in personal performance particularly aversive. Setting unrealistically high standards at the outset of a new behaviour will almost inevitably result in a failure to uphold these standards. The point in time at which people concede failure to uphold their standards, and their ability to proficiently manage their emotions

following a perceived failure, will likely influence their behavioural responses. For instance, people who are robust to failure might take time to assess fairly whether it is indeed a failure, interpret the failure in a rational manner, and readjust their goals to sustainable levels. People who are highly sensitive, however, might prematurely label a brief slip-up as a failure, feel bad about oneself for not upholding a high level of behaviour, and react in a self-defeating way such as contemplating disengaging from the behaviour completely.

Although the prototypical person who exhibits all-or-nothing behavioural patterns probably intends to maintain his or her initial high standards across time, his or her impressive ambition at the outset is very difficult to sustain. Therefore, the third individual difference that I expect might be present in people who show all-or-nothing behaviour is lack of perseverance. I expect this to be a necessary component in the all-or-nothing pattern because presumably someone who is high in the individual differences high standards and sensitivity to failure could begin a new behaviour with a high level of commitment, feel sensitive to failure in the face of a setback, but then nonetheless persevere at a more sustainable level. This behavioural response would not represent the all-or-nothing pattern because, as I conceptualize it, all-or-nothing behaviour involves a failure to persevere when a setback occurs. I expect that the individual difference lack of perseverance will capture one's tendency to disengage from projects or activities.

I believe that these three individual difference variables will play a role in the prediction of all-or-nothing behaviour, and there are a few possibilities as to how they might contribute to this pattern. First, the variables could naturally covary with one

another such that they reflect a single unitary construct and thus higher levels of this construct would predict a greater tendency toward all-or-nothing behaviour. Second, the variables could represent distinct constructs that combine in an additive fashion to predict all-or-nothing behaviour. That is, the constructs contribute to the outcome, but the impact they exert is constant regardless of the presence of the others. A third possibility is that the variables could represent distinct constructs that combine in an interactive fashion to predict all-or-nothing behaviour, and this is the outcome I predicted. In that case, none of these three factors on its own would predict all-or-nothing behaviour but rather a confluence of all three would be necessary. Someone who holds high standards only may set their goals fairly high, but then also maintain those standards over time. Someone who is highly sensitive to failure only may persevere with the new behaviour despite feeling discouraged. Finally, someone who is high in lack of perseverance only may generally take a slack approach to new behaviour (e.g., set low standards at the outset) and not have far to fall to exhibit the all-or-nothing pattern. Thus, I would not expect lack of perseverance on its own to cause a substantial decline in behaviour. In sum, I believe that these three constructs play a role in all-or-nothing behaviour, and their main and interactive effects on goal adherence will be tested in the present research.

The three components that I expected to contribute to all-or-nothing behaviour are not entirely novel constructs; they bear some similarity to existing constructs that have been examined in psychological literature. Even though similar constructs have been examined, this research would be an entirely novel contribution because in no research to date have the collective effects of high standards, sensitivity to failure, and lack of

perseverance—or any combination of similar constructs—been examined in the area of behaviour change. Further, I am looking at the manifestation of a specific type of behavioural pattern that has not yet been examined systematically: an all-or-nothing pattern of behaviour.

To explore how each of the personality constructs discussed above might operate to produce all-or-nothing behaviour I turn to the area of self-regulation. All-or-nothing behaviour can be considered a form of misregulation of behaviour, and so a general model of how people self-regulate is pertinent to the present research.

Self-Regulation

The all-or-nothing behavioural pattern is conceived as a dysfunctional approach to new activities or goals because one begins with a high level of behavioural commitment that is often too great to be maintained, resulting in a considerable drop-off in behaviour. People who repeatedly display an all-or-nothing pattern fail to proficiently manage their behaviour over time or, in other words, they fail to self-regulate. Literature in the area of self-regulation can speak to how the individual differences discussed above might operate to produce this specific form of self-regulation failure.

A general theory of self-regulation toward goal achievement has three components: goal selection, preparation for action, and a cybernetic cycle of behaviour (Markus & Wurf, 1987). The first stage, goal selection, is generally believed to arise in the context of an expectancy-value framework (Atkinson, 1964; Rotter, 1954). That is, selected goals are a function of the expectancy of reaching the goal, and the positive

value placed on attaining the goal versus the negative value of not attaining the goal. The second stage, preparation for action, involves designing and preparing to implement a plan to achieve a goal (Markus & Wurf, 1987). The final stage, the cybernetic cycle of behaviour, involves forming an expectancy about the likelihood of reducing discrepancy between actual and goal states, and then adjusting behaviour based on expectancies and emotion. The constructs that I believe might relate to all-or-nothing behaviour (high standards, sensitivity to failure, and lack of perseverance) can be applied to these stages of self-regulation. I briefly describe how each of the individual difference constructs might to operate within the framework of self-regulation.

As mentioned above, I expect that people who are prone to all-or-nothing behavioural patterns will be high in the dimension high standards such that they begin a new behaviour with a high level of ambition and commitment. In the first stage of self-regulation (goal selection) goals are generally selected on the basis of how valuable one sees it and the expectancy one has for achieving it (Markus & Wurf, 1987). It is perhaps the case, then, that people who display high standards at the outset see the new goal or activity as very desirable and attainable.

Preparation for action is the second stage of self-regulation. At this point, one devises a plan to achieve a goal and prepares to implement that plan (Markus & Wurf, 1987). Sometimes, however, people begin new endeavours without a good deal of forethought and thus do not effectively prepare for action at this stage (Brown, 1998). It may be that people who are high in the dimension high standards fail to devise a plan to which they can adhere, or they fail to adequately prepare for its implementation. Failure

to plan and prepare properly when adopting a new behavioural goal may lay the groundwork for a later drop in behavioural commitment.

The cybernetic cycle of behaviour, also called Control Theory (CT; Carver & Scheier, 1982), is the third and final stage of self-regulation. Originally conceived as a theory for understanding how machines self-regulate, CT is also applicable to the regulation of human behaviour. Its central component is the negative feedback loop, which serves to reduce discrepancy between one's current and desired state. The negative feedback loop operates by assessing the present condition, comparing against a point of reference and, if a discrepancy is perceived then a behaviour is performed to reduce the discrepancy. For example, using the analogy of a furnace, the furnace is activated or shut off if the room is too cold or too hot, respectively. The general purpose of the negative feedback loop is to reach and maintain the desired condition. Applying this cycle to an example of achieving a performance goal, people who wish to obtain a grade of 90% in their introductory psychology course would begin by assessing how well they are currently doing in the course (e.g., observe their 75% mid-term exam grades), compare their grades to their reference value (75% versus 90%) and then perform a behaviour to reduce that discrepancy (e.g., study harder for the final exam). The negative feedback loop serves the self-regulatory function of keeping one's performance congruent with goals by helping to identify discrepancies between actual and desired states so one knows when to act to reduce discrepancy.

How might the influence of individual differences on all-or-nothing behaviour be understood in the CT framework? In examining CT in the context of the all-or-nothing

behavioural pattern, it is important to note that reference standards in the cybernetic cycle of behaviour are seldom fixed; reference standards, expectancies, and the situation can change over time (Carver & Scheier, 1982). If the discrepancy between actual and goal states is too large to eliminate, one could either lower the goal standard to an attainable level, or disengage from the goal completely.

I believe that people who are high in the dimension high standards begin new activities at a high level of commitment that is very difficult to sustain. If and when they experience a lapse in behaviour, I believe that people's levels of sensitivity to failure play a role in their reaction to the lapse. Relating this pattern more specifically to CT, there are two general options to reduce the negative feedback loop when there is a large discrepancy between one's originally chosen goal state and one's actual state: 1) readjusting reference standards so the goal is more attainable or 2) disengaging from the goal altogether. I expect that people who are high in the dimensions sensitivity to failure and lack of perseverance will feel bad about themselves following a behavioural setback and be more likely to disengage from the goal (i.e., exit the cybernetic cycle of behaviour) than someone who is not particularly high on these constructs. I expect that people who are not especially high in these constructs would adjust their standards to reduce the negative feedback loop when the discrepancy between goal and actual states is irresolvable. The operation of the cybernetic cycle of behaviour (i.e., CT) is not directly assessed in the current research. Rather, I refer to it as a framework in which to understand how certain individual differences might operate in an all-or-nothing behavioural pattern.

Review of Hypotheses and Rationale

The general purpose of the present research is to identify an individual difference, or profile of individual differences, that predict(s) an all-or-nothing pattern of behaviour. As mentioned above, this behavioural phenomenon might be best predicted by a unitary trait such that the individual differences involved in its prediction are highly positively correlated and that scale items assessing all-or-nothing behaviour cluster into a unitary factor. Perhaps a more intriguing possibility, however, is that the phenomenon is multidimensional such that the constructs that are related to all-or-nothing behaviour are largely orthogonal and can be combined in a unique way to predict the pattern of interest.

There were three main objectives to the current research program. The first was to identify the constructs that are potentially involved in all-or-nothing behaviour. In Study 1, questionnaire items that were believed to tap into all-or-nothing behaviour were administered to participants. Responses to these items were then factor analysed to identify the basic constructs that comprise all-or-nothing behaviour.

The second objective of the present research was to examine the nature of the constructs identified in Study 1—specifically, their temporal stability and relatedness to other constructs. In Study 2, I assessed the correlations of the measures across two administrations separated by several weeks to establish that the constructs are stable traits rather than transitory states. In Study 3, I examined the distinctiveness of the constructs from other constructs that are theoretically related and unrelated. Correlations between the target constructs and other individual difference measures were examined, and it was

expected that the target constructs would have moderate to high correlations with theoretically similar constructs, but not be so highly correlated that they represent the same underlying trait. Conversely, relatively low correlations were expected between the target constructs and theoretically dissimilar constructs, providing evidence that the scale items capture the types of individual differences they were believed to capture, rather than something that is theoretically unrelated.

The third objective was to test the ability of an individual difference (or confluence of individual differences) identified and examined in Studies 1 to 3 to predict the all-or-nothing behavioural pattern. I hypothesized that these constructs would predict an all-or-nothing pattern of behaviour (i.e., beginning new behaviours with a high level of involvement, but show a large decrease in involvement across time) when applied to relevant domains. In Study 4, I examined participants' attendance at group fitness classes. In Study 5, I examined participants' involvement in campus clubs at the beginning and end of an academic year. In both Studies 4 and 5, participants completed measures of the constructs that were believed to relate to an all-or-nothing behavioural pattern, and their adherence to the target behaviours was assessed.

Pilot Studies

The all-or-nothing pattern of behaviour has not been well conceptualized in the past, as evidenced by the paucity of systematic research investigating this phenomenon. In the initial stages of this research program, I established a pool of questionnaire items that were expected to tap into all-or-nothing behaviour, and these items were

subsequently administered to participants. The goal of doing so was to identify constructs that underlie the tendency to show this behaviour. Below, I provide a brief report of the procedure and results from two different samples of participants that completed questionnaire items that were expected to relate to all-or-nothing behaviour. Subsequently, I discuss potential problems with the interpretability of data from the pilot studies due to methodological limitations.

Before the administration to the first sample, a brief description of all-or-nothing behaviour (as I conceptualized it), along with examples of instances where this pattern might present itself, were provided to a team of seven researchers. These researchers collectively wrote a pool of 207 items that were written to tap into constructs related to all-or-nothing behaviour. This initial pool of items was exploratory and so it was expected that many of the items would not be good measures of constructs related to all-or-nothing behaviour. Participants were contacted over the telephone and asked if they would like to participate in the study (see Appendix A for telephone script). One hundred four introductory psychology students (41 men, 62 women, and 1 did not disclose his or her gender; $M_{\text{age}} = 18.71$ years, $SD = 1.05$) read a Letter of Information (see Appendix B), signed a Consent Form (see Appendix C) and completed the 207-item questionnaire (see Appendix D). At the end of the study, participants were paid \$5 and debriefed (see Appendix E for debriefing form).

A factor analytic method (e.g., non-iterated or iterated principal axis factor, or maximum likelihood) was not used because, in trying to fit a common factor model, the data did not converge on a solution, likely because of too few participants (MacCallum,

Widaman, Zhang, & Hong, 1999). A principal components analysis (PCA) with a Direct Quartimin rotation (i.e., a Direct Oblimin rotation with a delta equal to zero) was conducted on the item responses to identify the most parsimonious component structure in the data. A two-component solution was most interpretable and the components were tentatively labelled: 1) High Standards (e.g., “When I start a project, I put all of my energy into it”) and 2) Lack of Perseverance (e.g., “When I set a goal for myself, I persevere despite obstacles”; reverse-scored). Within the pool of 207 items, many of the items had very low communalities, which is associated with substantial distortion in results (MacCallum et al., 1999; see also Fabrigar, Wegener, MacCallum, & Strahan, 1999). These items did not seem to cohere at all and thus were excluded from administration in subsequent studies. The fact that many items performed poorly was not seen as particularly problematic because the initial item pool was exploratory in nature and thus it was expected that many of the items would not be good measures of the constructs being explored. Inclusion of irrelevant items distorts structure and makes it difficult to achieve coherent results (Cattell, 1978; see also Fabrigar et al., 1999). Seventy-four items from the initial pool performed well in this two-component solution (i.e., loaded highly on one component only³) and were retained for administration to the second sample.

The second sample was comprised of 150 introductory psychology students. Participants signed a Consent Form (see Appendix F) and completed the 74 items that were retained from the first administration (see Appendix G), which was completed as a

³ That is, items that had loadings above .5 on the primary component, and below .3 on the other component were retained. These retention criteria were also used for the second sample in the Pilot Study, below.

filler task for a separate study. Demographic data were not collected for this sample. They received course credit as compensation for their participation in both studies. Again, a Principal Components Analysis with a Direct Quartimin rotation was conducted to identify the most interpretable component structure within the data. It was expected that the two-component structure would replicate in the second administration. There was some replication such that the two components found in the first pilot study also emerged in the second pilot study. However, in the second study, a new third factor also emerged. A three-component solution was most interpretable and the components were tentatively labelled: 1) High Standards, 2) Lack of Perseverance, and 3) Sensitivity to Failure (e.g., “If I have a problem trying to reach my goal, it feels hopeless”). Within the pool of 74 items, many of the items performed poorly such that they had very low communalities and did not seem to cohere, and thus were excluded from subsequent administrations. As mentioned above, inclusion of irrelevant items can cause substantial distortion in the structure of the data (MacCallum et al., 1999; see also Fabrigar et al., 1999). Thirty-two items that performed well in this three-component solution (i.e., loaded highly on one component only) were retained for further administration (see McLellan & MacDonald, 2005).

Results from these pilot data are ambiguous and do not give a clear picture of the dimensions underlying all-or-nothing behaviour. The two solutions differ in their support for the number of components that best represent the data. Further, there are a number of limitations in the study that might have obscured the structure of the data.

First, many items from both administrations appeared to be irrelevant to the domain of interest, as evidenced by their very low communalities. Inclusion of irrelevant items can obscure the structure of the data, making it difficult for the true structure to emerge. For example, components that are truly relevant may not have emerged because they were obscured. Second, there were a small number of participants ($N = 104$) in the first administration relative to the number of items in the questionnaire. Although there is no consensus in the literature on precisely how many participants should complete the questionnaire at this stage to ensure the responses are reliable, the general belief is that it should be a large number (e.g., at least 300) to attenuate variance attributable to subjects (Nunnally, 1978). Given that there was an especially large pool of items in the first administration of the pilot study, even 300 participants might not have been sufficient. Further, MacCallum et al. (1999) have demonstrated that when communalities are low, a relatively large N is needed to obtain reliable factor structure. Third, because of the sheer length of the questionnaire, some participants may have experienced fatigue partway through completing it, thus reducing the validity of their responses and hindering the utility of the PCA.

The number of components that were readily interpretable did not replicate across the two samples in the pilot study. In the first sample a two-component solution was most interpretable and in the second sample a three-component solution was most interpretable. In short, the number and nature of the constructs that comprise all-or-nothing behaviour remains unclear. The constructs underlying all-or-nothing behaviour would be more clearly delineated by 1) administering only the 32 items that were

expected to best tap into all-or-nothing behaviour 2) administering these items to a much larger sample than was used in the pilot studies, and 3) analysing the data using exploratory common factor analysis (EFA) instead of PCA. In the pilot studies it was not possible to use EFA. One advantage of EFA over PCA is the ability to formally evaluate the fit of the model, as PCA does not have formal indices of model fit.

CHAPTER 2: STUDY 1

The purpose of Study 1 was to improve upon the pilot studies to identify constructs related to all-or-nothing behaviour. To do so, I examined the factor structure of responses to the 32 questionnaire items that were expected to tap all-or-nothing behaviour derived from the pilot data, to see how they cluster together. As mentioned above, these items might all cluster together, thus representing a unitary trait. This would suggest that all-or-nothing behaviour may be captured by a single dimension and higher levels of this dimension predict a greater tendency to display the all-or-nothing pattern. Alternatively, the items might cluster into more than one factor, thus suggesting that the all-or-nothing phenomenon is multi-dimensional. A factor structure involving more than one factor would imply that all-or-nothing behaviour might be captured by a configuration of constructs. Thus, an interaction of constructs would predict a tendency to display the all-or-nothing pattern. I hypothesized that the items would cluster into more than one factor because the all-or-nothing phenomenon appears to be too complex to be captured by a single trait. Further, the types of items included in the administrations are fairly broad in scope, and so it seemed that they could not reasonably be grouped into a single factor.

Large-scale administrations of a measure comprising 32 items allowed me to examine the factor structure of the items. Once the factors were determined, the internal consistency (i.e., reliability) of each of the factors, and correlations among the factors, were examined. Two different samples were used for data collection in Study 1, and so the methods and results are described for each sample.

Method

Participants

For the first sample, 1234 introductory psychology students (872 women, 309 men, and 53 did not disclose their gender) with a mean age of 18.26 years ($SD = 1.87$) participated as part of an in-class pre-screening session. For the second sample, 1113 introductory psychology students (813 women, 289 men, and 11 did not disclose their gender) with a mean age of 18.45 years ($SD = 2.71$) participated also as part of an in-class pre-screening session. For both samples, participants were not awarded direct compensation but, by completing a package of self-report questionnaires, they were made eligible for various psychology studies for which they would receive compensation.

Materials and Procedure

For both samples, a 32-item self-report questionnaire that comprised items that were expected to relate to all-or-nothing behaviour was administered to participants (see Appendix H). The procedure was identical for both samples. Participants gave general informed consent before completing a large package of questionnaires that included the self-report measure of interest. They participated in large groups of approximately 500 students. Participants indicated their level of agreement using a Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). They also provided demographic information (e.g., age and gender), and materials from various studies unrelated to the current research. The total session lasted approximately 90 minutes, but the measure of interest took approximately 5 minutes to complete.

Results

Exploratory Factor Analysis

The factor structure of the 32 items that participants completed was assessed using exploratory factor analysis (EFA) in both samples. It was expected that the items would cluster into more than one factor, thus supporting a multidimensional EFA solution.

First, the scree plots using eigenvalues from the reduced correlation matrices were examined to give an initial approximation of the correct number of factors (Cattell, 1966). Next, EFA was used to determine the factor structure of the items. I employed maximum likelihood common factor analysis with a Direct Quartimin rotation (i.e., a Direct Oblimin rotation with a delta equal to zero) to achieve simple structure. Root Mean Square Error of Approximation (RMSEA; Steiger & Lind, 1980) values for one- to four-factor solutions are reported as an index of model fit. The ability of the factor structure to replicate across two samples was also examined because stable solutions are likely more accurate than solutions that show a lot of variability across samples (Browne & Cudeck, 1992; Fabrigar et al, 1999). Because I hypothesized that the scale items would cluster into more than one factor, I discuss model fit for rotated two-, three-, and four-factor solutions.⁴ However, I also examined a one-factor solution to find out whether the items are best conceived as a unidimensional construct.

⁴ I also examined model fit for solutions of more than four factors, but model fit did not significantly improve and theoretically meaningful constructs could not be identified with several more factors. Therefore, only one- to four-factor solutions are reported here.

First, scree plots from the reduced correlation matrices for both the first and second administrations support a three-factor solution because there are three relatively large eigenvalues (see Figures 1 and 2). These three factors represent the major common factors, and the following factors appear to represent only small systematic influence or random noise.

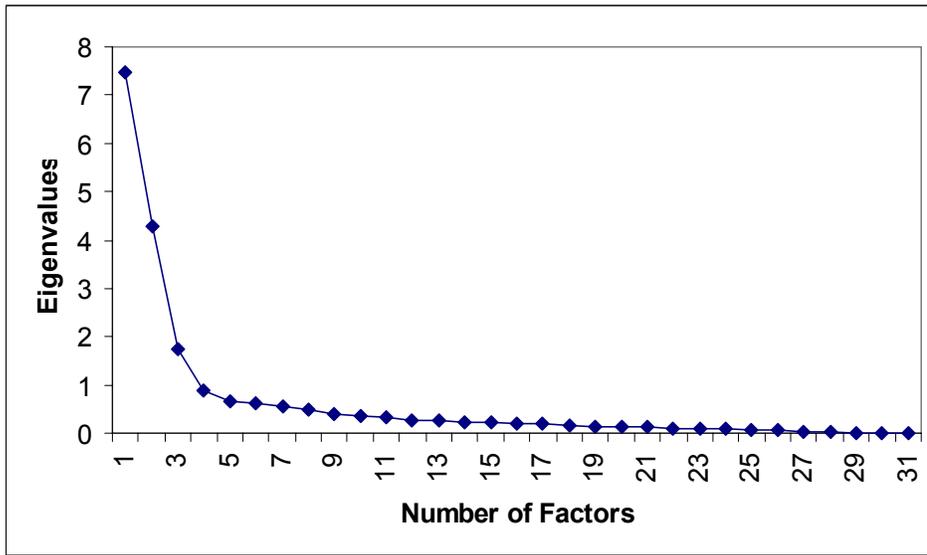


Figure 1.
Eigenvalues from the reduced correlation matrix for first sample, Study 1

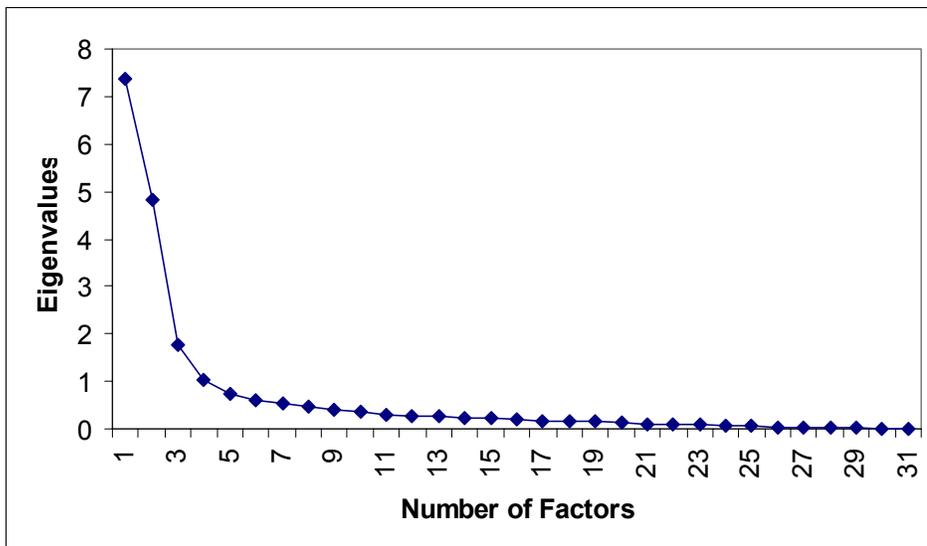


Figure 2.
Eigenvalues from the reduced correlation matrix for second sample, Study 1

Next, I calculated RMSEA values as a fit index for one-, two-, three-, and four-factor solutions for both samples⁵. This fit index is a measure of model discrepancy with data per degree of freedom. As a general rule, values between .08 and .10 show marginal fit, values between .05 and .08 show acceptable fit, and values less than .05 show excellent fit (Browne & Cudeck, 1992). It is important to bear in mind that the relative difference between models should be considered, along with absolute RMSEA values (Fabrigar et al., 1999). Because RMSEA has a known sampling distribution, a confidence interval can also be computed as an indication of the precision of the estimate. The corresponding 90% confidence interval for each RMSEA value was also calculated (see Table 1 for RMSEA values and confidence intervals). The improvement from two to three factors is fairly noteworthy for both samples, but the relative gain of adding a fourth factor is relatively modest. Following guidelines advanced by Browne and Cudeck (1992; p. 253) I used subjective judgement to find a balance between model fit and parsimony and thus to select the most useful model. I judged a three-factor solution to be superior to a four-factor solution because the relative improvement gained by including a fourth factor did not offset the loss of model parsimony.

⁵ Another fit index that I employed was the chi-square difference test, which involves performing a statistical test to compare fit between two different models. It normally works by increasing the number of common factors until adding another factor does not significantly improve model fit. This index proved to be uninformative because this test is sensitive to sample size (Browne & Cudeck, 1992). Due to the large sample size in the present study, adding another factor always improved model fit until there were far too many factors than were reasonably interpretable.

Table 1
RMSEA values and Corresponding 90% Confidence Intervals

Common factors	First sample		Second sample	
	RMSEA	90% CI	RMSEA	90% CI
1	.110	.108 - .112	.122	.119 - .124
2	.074	.071 - .076	.080	.078 - .083
3	.058	.056 - .061	.066	.064 - .069
4	.051	.049 - .054	.056	.053 - .058

Next, I examined factor loadings for a three-factor solution because that was the solution suggested by the scree plot. Factor loadings for the first factor varied from .72 to .41 and from .72 to .38 for the first and second administrations, respectively (see Tables 2 and 3). Upon examination of the items, it appeared that they were tapping sensitivity to failure (e.g., “If I have a problem trying to reach my goal, it feels hopeless”). Factor loadings for the second factor varied from .73 to .46 at the first sample and from .82 to .43 at the second sample. Items loading on this factor appeared to be tapping the construct high standards (e.g., “I put a great deal of work and effort in everything that I do”). Factor loadings for the third factor varied from .70 to .63 at the first sample and from .59 to .38 at the second sample. Items on this factor appeared to be tapping the construct lack of perseverance (e.g., “I tend to start different hobbies but then end up dropping them”). With the exception of one item (“It is very important to me that I do well at school”), all items loaded on the same factor for both samples. When this item is eliminated, the lowest factor loading for the third factor at the second administration is .53 (rather than .38).

The scree plots support a three-factor solution at both administrations. RMSEA values show a substantial improvement in model fit from a two- to three-factor solution,

but relatively little improvement from a three- to four-factor solution. Generally speaking, models with a greater number of factors will tend to have smaller RMSEA values, but both absolute values and the relative difference between the models should be considered. In terms of factor interpretability, items from the second and fourth factor in a four-factor solution both appear to be tapping the construct high standards, but could conceivably be divided into two factors subsumed in high standards: effort (e.g., “People often tell me that I am a hard worker”) and keenness (e.g., “People are often impressed by the passion with which I approach new activities”). Factor loadings in a three-factor solution are higher than in a four-factor solution, however, suggesting that the items are better measures of the latent variables when grouped into three factors. See Appendix I for item loadings in a four-factor solution for both administrations. All items from factors two and four in a four-factor solution load highly on the same factor in a three-factor solution.

A three-factor solution was stable across two samples, was supported by the scree plots, and showed good factor interpretability (i.e., items loaded high on the primary factors and low on the secondary factors). Also, RMSEA values and corresponding 90% CI for the three-factor model fell within the acceptable range. Thus, a three-factor solution was deemed most appropriate for these data.

Principal Components Analysis

I also employed Velicer's Minimum Average Partial (MAP) Test to determine the number of components present in each of the samples in Study 1. This test compares the “relative amounts of systematic and unsystematic variance remaining in a correlation matrix after extraction of increasing numbers of components” (O’Connor, 2000; p. 396).

The results of this test supported a three-component solution in the first sample, and a four-component solution in the second sample. The outcomes of the MAP test suggest that a three- or four-component solution fits the data best, but results were inconsistent between the two samples.

Table 2

Item Loadings using Maximum Likelihood Extraction with Direct Quartimin Rotation for First Sample

Scale Item	Pattern Matrix Values by Factor		
	STF	HS	LOP
If I have a problem trying to reach my goal, it feels hopeless.	.72	.08	.04
When I set a goal for myself, I get very discouraged when I encounter obstacles.	.71	.03	.03
Any setbacks or problems make me feel like I will never achieve my goals.	.68	-.07	.08
If I make even one mistake, I feel like a failure.	.66	.10	.09
When I get a bad mark in school, part of me feels as though I will never succeed in doing something meaningful with my life.	.64	.01	.00
I often interpret criticism as a sign that the other person thinks I'm a failure.	.64	.05	.12
If someone offers me criticism on a task, it makes me feel like I've failed at it.	.61	.05	.15
Obstacles and difficulties tend to sour a project for me.	.60	-.04	.15
I am confident that I can deal with obstacles to my plans. (R)	.59	-.23	-.07
I usually give up when something goes wrong.	.57	-.18	.20
I tend to "throw in the towel" if something does not go the way I wanted it to.	.57	-.07	.28
If I find I'm not performing as well as I'd like, I tend to give up.	.54	-.17	.24
If people criticize me, I have a hard time "letting go" of what they said.	.53	.15	.07
I do not let setbacks pull me down. (R)	.51	-.23	-.05
If I did poorly on an exam, I would be confident that I could do better on the next one. (R)	.49	-.14	-.14
I find it difficult to let go of mistakes when I make them.	.48	.17	-.04
I have an easy time getting over mistakes that I make at school. (R)	.41	.11	-.12
I put a great deal of work and effort in everything that I do.	.05	.73	-.11
When I am working on a project, I try to do everything perfectly.	.13	.68	-.09
People often tell me that I am a hard worker.	.04	.67	-.13
I strive for excellence.	.03	.64	-.09
People have told me that I'm a perfectionist.	.22	.57	-.05
When I start a new activity, I throw myself into it 100%.	-.13	.57	.13
People are often impressed by the passion with which I approach new activities.	-.17	.53	.07
When I start a new project, I tend to throw myself into it.	-.04	.51	.12
When I start a project, I put all of my energy into it.	-.07	.50	.01

Even when my co-workers are slacking off, I always put 100% into my jobs.	-.05	.50	-.06
It is very important to me that I do well at school.	.12	.46	-.09
I tend to start different hobbies but then end up dropping them.	.08	.00	.70
I tend to lose interest in hobbies and projects quickly.	.15	-.06	.68
I'd rather start something new than persist with a project I've already started.	.03	.02	.64
I have a lot of unfinished projects.	.08	-.08	.63

Note. Regarding the abbreviations, STF = Sensitivity to Failure, HS = High Standards, and LOP = Lack of Perseverance.

Table 3
Item Loadings using Maximum Likelihood Extraction with Direct Quartimin Rotation for Second Sample

Scale Item	Pattern Matrix Values by Factor		
	STF	HS	LOP
When I set a goal for myself, I get very discouraged when I encounter obstacles.	.72	.03	.08
I often interpret criticism as a sign that the other person thinks I'm a failure.	.70	.02	.12
If I have a problem trying to reach my goal, it feels hopeless.	.70	.09	.03
If someone offers me criticism on a task, it makes me feel like I've failed at it.	.68	.01	.14
When I get a bad mark in school, part of me feels as though I will never succeed in doing something meaningful with my life.	.64	.08	.03
I am confident that I can deal with obstacles to my plans. (R)	.62	-.27	.02
If people criticize me, I have a hard time "letting go" of what they said.	.61	.09	-.08
I do not let setbacks pull me down. (R)	.55	-.25	.00
Obstacles and difficulties tend to sour a project for me.	.55	-.03	.17
I tend to "throw in the towel" if something does not go the way I wanted it to.	.54	-.11	.32
Any setbacks or problems make me feel like I will never achieve my goals.	.54	-.08	.13
I usually give up when something goes wrong.	.53	-.13	.31
If I make even one mistake, I feel like a failure.	.53	.05	.03
I have an easy time getting over mistakes that I make at school. (R)	.48	.08	-.26
If I find I'm not performing as well as I'd like, I tend to give up.	.47	-.18	.33
I find it difficult to let go of mistakes when I make them.	.47	.14	-.08
If I did poorly on an exam, I would be confident that I could do better on the next one. (R)	.38	-.11	-.07
When I start a project, I put all of my energy into it.	-.04	.82	.07
When I start a new activity, I throw myself into it 100%.	-.16	.75	.26
When I start a new project, I tend to throw myself into it.	-.02	.67	.23
I put a great deal of work and effort in everything that I do.	.12	.60	-.38
When I am working on a project, I try to do everything perfectly.	.18	.57	-.35
People are often impressed by the passion with which I approach new activities.	-.20	.55	.09
I strive for excellence.	.06	.52	-.28
People often tell me that I am a hard worker.	.11	.48	-.36
People have told me that I'm a perfectionist.	.21	.48	-.24
Even when my co-workers are slacking off, I always put 100%	.01	.43	-.13

into my jobs.

I'd rather start something new than persist with a project I've already started.	.11	.03	.59
I tend to lose interest in hobbies and projects quickly.	.24	.02	.56
I have a lot of unfinished projects.	.14	.02	.55
I tend to start different hobbies but then end up dropping them.	.23	.04	.53
It is very important to me that I do well at school.	.21	.31	-.38

Note. Regarding the abbreviations, STF = Sensitivity to Failure, HS = High Standards, and LOP = Lack of Perseverance.

Internal Consistency and Correlations Among Target Measures

Measures of the three factors were developed by giving items equal weights on their respective scales. After reverse-coding appropriate items, the three measures were scored separately and were computed by taking the mean of the items in that scale. Scores on each of the measures (i.e., High Standards, Sensitivity to Failure, and Lack of Perseverance) may range from 1 to 7. This is because positively keyed items are scored from 1 (strongly disagree) to 7 (strongly agree).

Reliability analyses for each of the three measures were then conducted to assess their internal consistencies. Cronbach's alpha coefficients were computed for each of the measures (i.e., High Standards, Sensitivity to Failure, and Lack of Perseverance). Using guidelines specified by Streiner and Norman (1995), alpha coefficients should be above .70. The internal consistency reliabilities of the scales were reasonable for all three measures at both administrations. The following alpha coefficients are reported for the first and second samples, respectively. For High Standards (10 items), Cronbach's alpha coefficients were $\alpha = .77$ and $\alpha = .85$. For Sensitivity to Failure (17 items) the alpha coefficients were $\alpha = .91$ and $\alpha = .89$. For Lack of Perseverance (4 items) the alpha coefficients were $\alpha = .80$ and $\alpha = .80$. Regarding the suitability of separating the high standards factor into two factors, internal consistency reliability for the two separate scales was substantially lower than when they were grouped into one. Alpha coefficients were as low as $\alpha = .71$. That the one High Standards scale had considerably higher

internal consistency than when divided into two scales was further evidence that three factors (rather than four) should be retained in this case.

Pearson product-moment correlations among the measures of the three target constructs were computed to examine the degree to which they are related. Exploratory factor analyses had revealed that the items did not hang together in a unidimensional construct. Rather, they clustered into three factors that are largely orthogonal and thus it was expected that scores on the three measures would not be strongly correlated with one another. At both administrations, the High Standards measure was negatively associated with Sensitivity to Failure and Lack of Perseverance (which were positively correlated with each other; see Tables 4 and 5). It appears that, in general, those who have high standards are less likely to feel bad following failure and are also less likely to give up. Further, the correlations between Sensitivity to Failure and Lack of Perseverance was fairly modest, $r(1215) = .373, p < .001$ and $r(1107) = .374, p < .001$, respectively, suggesting that there is little overlap among the factors.

Measures of the three factors are not all strongly and positively correlated and thus their effects on all-or-nothing behaviour should be examined separately rather than calculating an overall mean score. This finding is, of course, consistent with the factor loadings of the items onto three separate factors.⁶ It remains to be seen whether all three factors will contribute to all-or-nothing behaviour; perhaps only one or two of the factors will play a role. If indeed all three factors influence behaviour, they might combine additively such that the sum of their main effects predicts behaviour. Alternatively, the

⁶ Descriptive statistics of overall scale scores, and scale scores by gender, were also computed. Please see Appendix J for scale scores by gender, and differences between genders.

factors may influence behaviour in an interactive fashion such that the impact each of them exerts depends on the presence of the others. I will examine both the main effects and all interactions among the three factors to delineate their influences on all-or-nothing behaviour.

Table 4
Scale Correlations for First Administration

Measure	Sensitivity to Failure	High Standards	Lack of Perseverance
Sensitivity to Failure	1.00		
N	1228		
High Standards	-.12*	1.00	
N	1227	1227	
Lack of Perseverance	.37*	-.21*	1.00
N	1217	1217	1218

Note. * $p < .001$.

Table 5
Scale Correlations for Second Administration

Measure	Sensitivity to Failure	High Standards	Lack of Perseverance
Sensitivity to Failure	1.00		
N	1113		
High Standards	-.09*	1.00	
N	1113	1113	
Lack of Perseverance	.37**	-.27**	1.00
N	1109	1109	1109

Note. * $p < .005$, and ** $p < .001$.

Discussion

The purpose of Study 1 was to identify constructs related to all-or-nothing behaviour by examining the factor structure of responses to questionnaire items that were expected to tap this pattern of behaviour. One possibility was that all items would load on one factor, denoting a unitary construct. Instead, however, I expected that the items would cluster into more than one factor, representing independent constructs. Results from Study 1 supported a three-factor solution across two administrations. As mentioned above, one item defected from one factor (High Standards) in the first administration to a

different factor (Lack of Perseverance) in the second administration. Because this item does not appear to fit well with either factor, it was not used in subsequent studies. Factor loadings of all other items replicated across both samples; items had high loadings on their primary factors and relatively low loadings on other factors. While the MAP test in the second sample suggested a four-component structure, it suggested a three-component structure in the first sample. Other evidence suggested a three-factor structure; the scree plot appeared to show three factors and RMSEA for three factors showed acceptable fit, and so I selected the more parsimonious three-factor model.

Further, alpha coefficients were reasonably high, denoting good internal reliability of the three scales. I also examined correlations among the measures to see how the factors are related. As expected, the measures were not highly correlated and thus appear to tap independent constructs. Therefore, the main effects of each of the factors and interactions among them (rather than an overall mean score of all items) were examined in the present research to see how they predict all-or-nothing behaviour.

CHAPTER 3: STUDIES 2 AND 3

The purposes of Studies 2 and 3 were to assess the stability of the constructs and their distinctiveness, respectively. Although the stability and distinctiveness of the constructs cannot be directly evaluated, they were inferred from the scales measuring these constructs. In Study 2, I examined the reliabilities of the three scales across time to determine whether they are tapping stable individual differences or transitory states. Because the constructs of high standards, sensitivity to failure, and lack of perseverance are conceived as being temporally stable traits, all of the scales were expected to show reasonably high correlations across two administrations that were separated by several weeks. In Study 3, I examined how the individual difference measures related to measures of constructs that were theoretically similar and dissimilar. The individual difference measures of interest bear some semblance to measures that have already been developed in the psychological literature and whose psychometric properties are known. It was expected that the individual difference measures of Sensitivity to Failure, High Standards, and Lack of Perseverance would have moderate correlations with measures of constructs that are conceptually similar but have relatively low correlations with measures of constructs that are conceptually dissimilar. I also wanted to establish that the measures of constructs of interest are not so highly correlated with measures of previously identified constructs such that they are conceptually redundant. Once it has been established that the measures show stability across time and appropriate convergence with other measures, then the ability of these individual differences to predict behaviour can be examined in subsequent studies.

Study 2

The purpose of Study 2 was to assess whether the scales of Sensitivity to Failure, High Standards, and Lack of Perseverance are stable over time. It is evident from Cronbach's alpha values and results from the EFA in Study 1 that these measures have high internal consistency. However, scales that have high internal consistency do not necessarily have high test-retest reliability. For example, mood measures can have high internal reliability but low test-retest reliability because the construct of mood is inherently fluid. The next step in the current research program is to confirm that the constructs of interest are stable individual differences (as they were conceptualized) rather than transitory states. Measures of the three constructs should show good stability across time if indeed they are measuring stable individual differences. I expected the constructs to be temporally stable, and thus I expected scores on each scale to be highly correlated across two administrations that were separated by several weeks.

Method

Participants

People who had signed up for the Healthy Lifestyles Program (HLP) at Queen's University were invited to participate. This 10-week program is offered at the start of each year and costs approximately \$250 to participate. Anyone over 14 years of age can sign up for the program but, because the program is advertised on Queen's University

campus only, participants are largely people from the Queen's community (i.e., staff, faculty, and students). The HLP involves weekly classes and regular one-on-one exercise and nutrition information sessions. The researcher attended an information session about the HLP shortly before it began, and invited people signing up for the program to take part in the present study. At Time 1, 39 people entering the HLP participated in exchange for a ballot in a draw to win \$100. Thirty-one of the initial 39 participants (11 men and 20 women) with a mean age of 48.00 ($SD = 12.03$) completed the follow-up questionnaire at Time 2 in exchange for a ballot in a draw to win \$50.

Materials and Procedure

Participants of the HLP who were interested in participating in the present study picked up a pencil and paper questionnaire comprising a Letter of Information (see Appendix K) and Consent Form (see Appendix L), demographic questions (i.e., age and gender), measures of the constructs of interest (i.e., High Standards, Sensitivity to Failure, and Lack of Perseverance), and various questions regarding their current and anticipated levels of physical activity (see Appendix M for complete intake questionnaire, except for the target individual difference measures, which appear in Appendix H). This intake questionnaire (Time 1) was to be completed at home and returned in a sealed envelope to the program leaders at their first one-on-one session. The follow-up session (Time 2) took place 10 weeks following the end of the HLP, and thus 20 weeks from Time 1. At this time, participants completed an online version of the follow-up questionnaire, which comprised the target individual difference measures and various questions regarding their lifestyle choice since their involvement in the HLP (see

Appendix N for complete follow-up questionnaire, except for the target individual difference measures, which appear in Appendix H). Participants' scale scores from both times were matched using a confidential participant code such that no identifying information was linked to participants' responses.

Results

Pearson product-moment correlations between the two administrations were computed for each of the three scale scores to determine the stability of participants' scores over the 20-week period. The correlations between the two administrations for each of the three measures were moderate to high, denoting good stability of the traits over time (see Table 6). For Sensitivity to Failure, the Pearson correlation between the two administrations was .81, for High Standards it was .66 and for Lack of Perseverance it was .69.

Table 6
Correlations Between Two Administrations of Target Scales

Measure	Sensitivity to Failure T1	STF T2	High Standards T1	HS T2	Lack of Perseverance T1	LOP T2
STF T1	1.00					
STF T2	.81**	1.00				
HS T1	-.03	-.04	1.00			
HS T2	.06	.01	.66**	1.00		
LOP T1	.64**	.43*	-.26	-.04	1.00	
LOP T2	.62**	.65**	-.25	-.08	.69**	1.00

Note. STF = Sensitivity to Failure, HS = High Standards, LOP = Lack of Perseverance, T1 = time 1, and T2 = time 2. At T1, $N = 39$. At T2, $N = 31$.

* $p < .05$, and ** $p < .001$.

Discussion

The constructs appear to be stable over time, as evidenced by the moderate to high correlations of the measures across two administrations. It is worth noting that 20 weeks between administrations is a longer delay than is often used when assessing the stability of measures and this longer delay makes it more difficult to demonstrate stability in the scores. Even the weakest correlation with a 20-week lag was .66 (High Standards), suggesting that the measures are indeed tapping stable individual differences. Further, the sample that was used in this study was more diverse than the sample that was used in Study 1 in terms of participants' ages and occupations, suggesting that the scales are stable within a fairly diverse population.

It is worth noting that, although participants completed the measures two times, Study 2 does not use a strictly test-retest methodology. There was an intervention

between administrations (i.e., the Healthy Lifestyles Program) that could have influenced the constructs of interest. For example, someone who reported high levels Lack of Perseverance at Time 1 may report lower scores at Time 2 because, with the support provided by the program, he or she demonstrated increased perseverance to complete the program successfully. I would expect changes in people's levels of the construct that are due to the program to only attenuate—not inflate—correlations between administrations, and so the constructs appear to be stable despite the methodology used. Another point to consider is that attrition from Time 1 to Time 2 may be related to these constructs, and so people who are exceptionally high or low on any of them might have been over- or under-represented at Time 2. However, effects due to attrition are inherent in any study of test-retest reliability, and this would not be expected to inflate correlations between administrations. Importantly, Study 2 does provide evidence that the constructs are temporally stable.

Study 3

In Study 1, there appeared to be three main factors represented in the scale items—High Standards, Sensitivity to Failure, and Lack of Perseverance. The purpose of Study 3 was to examine the overlap and distinctiveness of these constructs with other constructs. That is, I examined correlations among the scales measuring the target constructs and other individual difference measures, and it was expected that the target constructs would have moderate to high correlations with conceptually similar constructs, but not be so highly correlated that they represent the same underlying dimension.

Conversely, I expected relatively low correlations between the target constructs and conceptually dissimilar constructs.

Upon examination of the scale items that loaded on each of the three factors in Study 1, I speculated about how they are similar to, and different from, related psychological constructs for which measures already exist.

High Standards

The first individual difference that was believed to be present in people who chronically display all-or-nothing behavioural patterns is high standards. This construct appears to be related to all-or-nothing behaviour because I believe that people who are high in this dimension set ambitious performance goals and begin a new behaviour with a high level of enthusiasm and commitment. Two constructs that I expected to correlate with high standards as it is conceptualized here are perfectionism and conscientiousness, each of which is described below.

One facet of perfectionism, personal standards, involves setting excessively high personal standards and criticizing one's own performance (Frost, Marten, Lahart, & Rosenblate, 1990). The Personal Standards subscale of the Multidimensional Perfectionism Scale (MPS; Frost et al., 1990) appears to have substantial overlap with High Standards. The authors of this scale found that the Personal Standards subscale correlates strongly with self-efficacy and positive self-concept, suggesting that setting high personal standards alone is adaptive. When high personal standards coexist with other dimensions of perfectionism, however, it may be problematic as evidenced by the finding that overall MPS correlate with Self-Critical Depression (Blatt, D'Afflitti, &

Quinlan, 1976). I expected four other subscales of the MPS (Concern over Mistakes, Parental Expectations, Parental Criticism, Doubts about Actions, and Organization) to be less strongly correlated with High Standards because they are conceptually divergent, but to be moderately correlated with High Standards, because all six subscales of the MPS are highly correlated (Frost et al., 1990).

Conscientiousness, a dimension of Costa and McCrae's (1992) Neo Five-Factor Inventory (NEO-FFI), is characterized by competence, order, dutifulness, achievement striving, self-discipline, and deliberation. Conscientiousness bears some similarity to the construct high standards, as I conceptualize it, and thus I expected these two constructs to be moderately related. However, these two constructs differ in that someone who is high in the dimension conscientiousness displays competence and dutifulness across time. I believe that someone who is high in the dimension high standards may appear conscientious at the outset of a new behaviour but fail to maintain a high level of achievement over time. People who score high on Conscientiousness tend to favour concentration on a limited number of goals and work hard to attain them, rather than to impulsively switch from one task to the next (Howard & Howard, 1995). One who scores high on the High Standards measure is not necessarily conscientious because one's initial enthusiasm and achievement striving may wane with time so that one fails to follow through with goals.

Sensitivity to Failure

The second individual difference that I believed to be involved in all-or-nothing behavioural patterns is sensitivity to failure. This construct appears to be related to all-or-

nothing behaviour because I believe that people high in this construct often see setbacks as disproportionately big obstacles to achieving one's goal, and interpret criticism from others as a sign of failure. To deal with negative feelings associated with perceived failure, people high in this dimension sometimes feel as though they should abandon the goal altogether. The constructs of dysfunctional attitudes, concern over mistakes, and neuroticism bear similarity to sensitivity to failure. Measures for these constructs are described below.

The Dysfunctional Attitude Scale (DAS; Weissman & Beck, 1978) measures relatively stable patterns of maladaptive thinking, or "negative schemas" that are often adopted by clinically depressed individuals (Nelson, Stern, & Cicchetti, 1992; Oliver & Baumgart, 1985). The DAS is fairly broad in its scope and taps the extent to which one holds dysfunctional attitudes across different domains. Items from this scale such as "It is awful to be disapproved of by people important to you" and "I should be upset if I make a mistake" appear to have significant overlap with the sensitivity to failure construct as I conceptualize it. Thus, sensitivity to failure could be considered a specific type of dysfunctional attitude.

Concern Over Mistakes, a subscale of the MPS, also appears to tap a construct similar to sensitivity to failure. The authors conceptualize this construct as feeling bad about failure, over-interpreting mistakes as failures, and feeling worried about losing respect from others because of the perceived failure (Frost et al., 1990). The facet of the concern over mistakes construct that most resembles sensitivity to failure is over-interpreting mistakes as failures. Examples of items from this scale that appear to have

significant overlap with Sensitivity to Failure are, “I should be upset if I make a mistake” and “If I fail partly, it is as bad as being a complete failure.” Items from the Concern Over Mistakes subscale that are focused on losing respect from others appear less related to sensitivity to failure and thus these two constructs appear to be conceptualized slightly differently.

Neuroticism, another dimension of Costa and McCrae’s (1992) NEO-FFI appears similar to sensitivity to failure, as I conceptualize it. People who score high on Neuroticism tend to be highly reactive to their environments and thus are more likely to experience negative emotions in response to generally unfavourable stimuli (Howard & Howard, 1995). One item from the neuroticism scale (“Too often, when things go wrong, I get discouraged and feel like giving up”) appears highly congruent with the sensitivity to failure construct. Neuroticism, however, reflects general emotional instability across a wide range of situations and stimuli. Sensitivity to failure taps negative emotion specifically in response to failure or setback, and so could be considered a sub-component of neuroticism.

Lack of Perseverance

Lack of perseverance is the third component I believed to be involved in all-or-nothing behavioural patterns. People high in this construct, as I conceptualize it, often fail to follow through with projects or new behavioural goals. They might have tried several different hobbies or have many abandoned projects. The lack of perseverance construct is somewhat different from high standards and sensitivity to failure in that it focuses exclusively on past behaviours, whereas the other two constructs focus largely on one’s

attitudes and emotions. One construct that appears to be similar to lack of perseverance is impulsivity.

Whiteside and Lynam (2001) developed a self-report measure of impulsivity that actually contains a subscale called “Perseverance”. The authors describe perseverance as the ability to remain focused on a task that may be boring or difficult and to ignore distracting stimuli. When reverse-scored, it appears to be somewhat similar to the lack of perseverance construct in the present research. The scale includes items such as “Once I start a project, I almost always finish it” and “There are so many little jobs that need to be done that I sometimes just ignore them all” (reverse-scored). The perseverance construct as Whiteside and Lyman conceptualize it, however, is broader in scope and includes general ability to focus on the task at hand. Items in the Lack of Perseverance scale in the present research are narrower in scope and focus on a pattern of instances of failing to follow through with projects and activities.

Participants completed measures of constructs that were conceptually similar and dissimilar to the constructs of interest and correlations among the measures were assessed. To review, High Standards was expected to correlate with measures of Conscientiousness and Perfectionism. I expected scores on Sensitivity to Failure to correlate with scores on the Dysfunctional Attitudes Scale, Concern Over Mistakes, and the Neuroticism scale from the NEO-FFI. Finally, scores on Lack of Perseverance were expected to correlate (negatively) with the Perseverance subscale of the impulsivity scale. Participants also completed the Rosenberg (1965) Self-Esteem Scale and the Life Orientation Test (LOT-R; Scheier & Carver, 1985), which measures dispositional

optimism. These scales were administered for exploratory purposes. I expected little overlap of self-esteem and optimism measures with the constructs of interest because they bear little conceptual similarity. Participants also completed the Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1998) to ensure that the target constructs did not correlate highly with self-deceptive enhancement or self-presentation. High correlations would indicate that the target measures might be tapping the tendency to present favourably, thus compromising the ability of these scales to measure the constructs of interest. Two different samples were used for data collection for Study 3, and so the methods and results sections are divided into parts 3a and 3b.

Method

Participants

In Study 3a, 1142 introductory psychology students (293 men, 829 women, and 24 did not disclose their gender) with a mean age of 18.44 ($SD = 2.71$) participated as part of an in-class pre-screening session. Participants in this sample were not awarded direct compensation but rather, by completing a package of self-report questionnaires, they were made eligible for various future studies for which they would receive compensation.

In Study 3b, 79 introductory psychology students (21 men, 56 women, and 2 did not disclose their gender) with a mean age of 18.23 ($SD = 0.83$) years participated in exchange for either course credit or for \$5.

Materials and Procedure

In Study 3a, participants completed the study in large groups of approximately 500 students in an introductory psychology classroom as part of a pre-screening session. They gave general informed consent before completing a large package of questionnaires that included measures of the target constructs (see Appendix H) and the NEO-FFI (Costa & McCrae, 1992), which is a 60-item personality inventory comprising items that assess Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness (see Appendix O). For this measure, respondents rate their level of agreement with each item on a 5-point scale. Of particular interest for the current study were the scales to measure Neuroticism and Conscientiousness because they were expected to correlate with Sensitivity to Failure and High Standards, respectively. I did not expect any of the other three dimensions from the NEO-FFI to be highly related to the individual differences in the present research because they are not conceptually similar.

Participants in Study 3b were contacted over the telephone and asked if they would like to participate in the study (see Appendix A for telephone script). When participants came into the lab, they read a Letter of Information (see Appendix P) and signed a Consent Form (see Appendix Q). Participants completed the questionnaire of the target individual differences (see Appendix H) in addition to six other individual difference measures: Perfectionism (Frost et al., 1990; Appendix R), Impulsivity (Whiteside & Lynam, 2001; Appendix S), Self-Esteem (Rosenberg, 1965; Appendix T), Dispositional Optimism (Scheier & Carver, 1985; Appendix U), Dysfunctional Attitudes (Weissman & Beck, 1978; Appendix V), and Desirable Responding (Paulhus, 1998;

Appendix W). Participants indicated their level of agreement with items from each of the measures using Likert-type scales ranging from Strongly Disagree to Strongly Agree. Participants took part in groups of 5 to 10 and were seated at tables with at least one chair separating participants to ensure privacy. The items from the High Standards, Sensitivity to Failure, and Lack of Perseverance scales were always completed first. Participants completed six remaining scales in one of six randomly generated orders. The total session lasted approximately 30 minutes and participants were debriefed upon completion of the study (see Appendix X).

Results

To examine how the constructs high standards, sensitivity to failure, and lack of perseverance relate to other constructs that appear to be theoretically related and unrelated, Pearson correlation coefficients were calculated between each of the target measures and all other scales that were administered. Moderate to high correlations were expected between conceptually similar constructs and low correlations were expected between dissimilar constructs. In Study 3a, consistent with what was hypothesized, there were high correlations between Neuroticism and Sensitivity to Failure, $r(1095) = .71, p < .001$, and between Conscientiousness and High Standards, $r(1107) = .64, p < .001$. All other correlations were relatively low (see Table 7).

In Study 3b, Pearson correlations were computed between the target measures and each of the other measures (see Table 8). As expected, there was a moderate correlation between High Standards and the Personal Standards subscale of the MPS, $r(77) = .37, p = .001$. High Standards was also moderately correlated with the Perseverance subscale of

Impulsivity, $r(76) = .51, p < .001$, and this result was unexpected. The Perseverance subscale includes items such as “I am a productive person who always gets the job done” and “I concentrate easily” which appear to show some overlap with high standards as it was conceptualized here.

Table 7
Correlations Among Target Individual Differences and Scales from the NEO-FFI, Study 3a

Measure	STF	HS	LOP
Sensitivity to Failure	1.00		
High Standards	-.09*	1.00	
Lack of Perseverance	.37**	-.27**	1.00
Neuroticism	.71**	-.12*	.32**
Extraversion	-.31**	.20**	-.15**
Openness to Experience	-.12**	.02	.10*
Agreeableness	-.21**	.09*	-.20**
Conscientiousness	-.25**	.64**	-.44**

Note. STF = Sensitivity to Failure, HS = High Standards, LOP = Lack of Perseverance. *N*s range between 1094 and 1113. *N* = 79.

* $p < .005$, and ** $p < .001$.

Table 8
Correlations Among Target Individual Differences and Conceptually Similar and Dissimilar Constructs, Study 3b

Measure	HS	STF	LOP
High Standards	1.00		
Sensitivity to Failure	-.22	1.00	
Lack of Perseverance	-.28*	.56***	1.00
Perfectionism			
Personal Standards	.37**	.06***	-.16
Concern over Mistakes	.12	.66***	.31**
Parental Expectations	-.09	.04***	.08
Parental Criticism	-.07	.50***	.32**
Doubts about Actions	-.04	.54***	.38***
Organization	.30**	-.24*	-.35**
Impulsivity			
Premeditation	.27*	-.01	.04
Urgency	-.10	.42***	.45***
Sensation Seeking	-.09	-.29**	-.24*
Perseverance	.51***	-.36**	-.55***
Self-Esteem	.10	-.67***	-.36**
Dispositional Optimism	.23*	-.72***	-.32**
Dysfunctional Attitudes	.06	.49***	.38**
Desirable Responding			
Impression Management	.12	-.17	.02
Self-Deceptive Enhancement	.09	-.34**	-.23*

Note. STF = Sensitivity to Failure, HS = High Standards, and LOP = Lack of Perseverance.

* $p < .05$, ** $p < .01$, and *** $p < .001$.

As expected, Sensitivity to Failure had moderate to strong correlations with Dysfunctional Attitudes, $r(76) = .49, p < .001$, and Concern over Mistakes, $r(77) = .66, p < .001$. Somewhat surprisingly, Sensitivity to Failure also correlated quite strongly with two other dimensions of Perfectionism: Parental Criticism, $r(77) = .50, p < .001$, and Doubts about Actions, $r(77) = .54, p < .001$. Other significant correlations with Sensitivity to Failure that deserve mention, though were not hypothesized, are the Urgency subscale of Impulsivity, $r(76) = .42, p < .001$, Self-Esteem, $r(77) = -.67, p < .001$, and Optimism, $r(76) = -.72, p < .001$.

The hypothesized moderate correlation was found between Lack of Perseverance and the Perseverance subscale of Impulsivity, $r(76) = -.55, p < .001$. There was also a moderate correlation between Lack of Perseverance and the Urgency subscale of Impulsivity that was not anticipated, $r(76) = .45, p < .001$. The Urgency scale taps the tendency to act in a rash way that one often regrets, usually when experiencing negative affect, and includes items such as “I have trouble controlling my impulses” and “Sometimes I do things on impulse that I later regret”.

Correlations were examined between the target measures and measures of desirable responding (i.e., Impression Management and Self-Deceptive Enhancement). High correlations with measures of deception would indicate that the measures of interest may be tapping a desire to present oneself favourably to others or to see oneself in a favourable light, rather than being a true reflection of the level of construct the scales are expected to measure. Relatively low correlations were observed between the target measures and desirable responding. The strongest correlation was between Sensitivity to Failure and Self-Deceptive Enhancement, $r(77) = -.34, p = .002$. This correlation suggests

that the more reluctant one is to admit personal limitations, the lower one scores on Sensitivity to Failure. All other correlations between measures of deception and the target measures were low.

Discussion

The purpose of Study 3 was to examine the distinctiveness of the constructs of interest from existing constructs, and to examine their relatedness to theoretically similar and dissimilar constructs. The findings from Study 3, including some unexpected relationships, are discussed below.

In Study 3a, the expected moderate relationships were found between High Standards and Conscientiousness, and between Sensitivity to Failure and Neuroticism. No other notable correlations were hypothesized and, although many other statistically significant correlations were found between the target measures and the “Big Five” personality factors, all other correlations were below .3; thus, they were not strong enough to warrant speculation about conceptual overlap in the constructs.

In Study 3b, the High Standards scale showed the hypothesized correlations with the Personal Standards subscale of Perfectionism. High Standards was also moderately correlated with the Perseverance subscale of Impulsivity and this correlation was unexpected. Upon examination of the items, it appears that Perseverance taps a construct similar to Conscientiousness. I would hypothesize that Perseverance and Conscientiousness would be moderately correlated because both constructs appear to tap an ability to pace oneself to finish the job one starts. This correlation could not be computed in the present study, however, because two different samples completed the measures of Conscientiousness and Perseverance.

As hypothesized, Sensitivity to Failure correlated with both Dysfunctional Attitudes and the Concern Over Mistakes subscale of Perfectionism. Somewhat surprisingly, this scale also correlated quite strongly with two subscales of Perfectionism: Parental Criticism and Doubts about Actions. These dimensions of perfectionism do not seem similar to sensitivity to failure and so these correlations warranted speculation. Items from Parental Criticism (e.g., “As a child, I was punished for doing things less than perfect”) do not appear similar to items from Sensitivity to Failure, but the correlation may elucidate the etiology of being highly sensitive to failure. A plausible connection between the two traits is that being highly criticized by one’s parents as a child leads one to feel especially bad following failure as an adult. Further, Doubts about Actions and Sensitivity to Failure do not appear to tap very similar constructs at first blush. However, people who are highly sensitive to failure may tend to second-guess their actions because the consequences of doing something wrong may seem graver to them than they do to most people (i.e., those who are not particularly high in sensitivity to failure). Therefore, although these two measures appear to tap different constructs they may be connected because one (sensitivity to failure) causes the other (doubts about actions).

Sensitivity to Failure also had an unexpected moderate correlation with the Urgency subscale of Impulsivity. The relationship between these scales was less surprising upon closer examination of some of the items from the Urgency scale. For example, the items “When I feel rejected, I will often say things that I later regret” and “When I am upset I often act without thinking” appear to tap an overreaction to an upsetting event, and this aspect of urgent impulsivity appears highly related to sensitivity to failure.

The correlations of Sensitivity to Failure with Self-Esteem and Optimism were unexpectedly strong. Both correlations were negative, demonstrating that the more sensitive individuals are to failure, the less optimistic they are and the lower they are in terms of self-esteem. Results from research examining the effects of self-esteem on emotional responses to failure elucidate a possible cause for the relationship between self-esteem and sensitivity to failure. Brown and Dutton (1995) found that, following negative evaluative feedback, both high and low self-esteem participants experienced negative affect following negative feedback, but only low self-esteem participants felt bad about themselves. Feelings of self-worth for participants with high self-esteem did not depend on whether they had just succeeded or failed. Therefore, one would expect self-esteem to be inversely related to sensitivity to failure because people low in self-esteem feel particularly bad about themselves following failure.

The relation between Sensitivity to Failure and Dispositional Optimism was unexpected. The item content of the scales does not appear to overlap and there is no obvious link between the two constructs. This relationship may, however, shed light on one cause of being chronically sensitive to failure; perhaps being generally pessimistic causes one to have a more aversive reaction to failure because one does not believe the situation will improve. Said differently, being optimistic may cause one to be less sensitive to failure, because one is more confident in the likelihood of “bouncing back” after a setback. The unexpected relation between sensitivity to failure and optimism remains conjectural and could be examined in future research.

As expected, Lack of Perseverance was moderately correlated with the Perseverance subscale of Impulsivity. Lack of Perseverance was also moderately

correlated with the Urgency subscale of Impulsivity, and this result was not predicted. However, items from the Urgency scale include, “I have trouble controlling my impulses” and “It is hard for me to resist acting on my feelings” which are consistent with a tendency to impulsively cease participation in an activity (i.e., to show lack of perseverance).

It was important to examine correlations between the target measures and measures of desirable responding to ensure that the way in which one responds to the measures is not largely influenced by a desire to present oneself favourably. The target measures tap constructs that may be viewed as desirable (high standards) or undesirable (sensitivity to failure and lack of perseverance), thus potentially hindering the ability of the measures to tap the constructs that they were believed to tap. Relatively weak correlations were found between the target measures and measures of Self-deceptive Enhancement and Impression Management, which is evidence that the target measures have little overlap with one’s effort to see themselves in a favourable light, or to present favourably to others.

The hypothesized correlations between the target measures and measures of other constructs for which psychometric properties are known, emerged. The target measures were significantly correlated with measures of theoretically related constructs, and generally had relatively low correlations with measures of theoretically dissimilar constructs. It is important to note that even in cases where the correlation between the measures of interest and similar measures are strong, they are still much less than one. These modest correlations are not believed to be due to measurement error because the scales have fairly high internal consistency. Incidentally, I calculated correlation

coefficients corrected for attenuation due to measurement error (see Charles, 2005) for the correlations of interest and they did not get much stronger with this correction. The only notable increase in correlation strength was between Lack of Perseverance and the Perseverance subscale from the Impulsivity scale. After correcting for measurement error, the correlation between these two scales increased from $r = -.551$ to $r = -.755$. In general, however, it appears that the generally modest correlations that were obtained are due to conceptual differences in the constructs, thus attesting to the distinctiveness of the target constructs from other constructs.

In this study, I identified only a few constructs that had theoretical overlap with the constructs of interest. Measures of several other constructs could also potentially share variance with the target measures. For example, the Jackson Personality Research Form Extended Report (PRF-E; Jackson, 1984) includes measures of scales that appear related to High Standards, Sensitivity to Failure, and Lack of Perseverance: Achievement, Defence, and Endurance, respectively. Similarities and differences between each of the target scales and scales from the PRF-E are presently discussed.

A scale that appears to be somewhat related to High Standards is the Achievement scale from the PRF-E. In brief, someone who scores high on Achievement takes on challenging tasks, maintains high standards, and works hard to achieve goals. While there is some overlap between the constructs high standards and achievement, someone who is high in achievement (as Jackson, 1984, conceptualizes it) perseveres toward distant goals, but this characteristic is not necessarily present in someone who is high on the high standards construct.

The Defence scale from the PRF-E (Jackson, 1984) appears to tap a construct similar to sensitivity to failure. Someone who is high in Defence is easily offended by criticism (i.e., he or she is defensive and self-excusing). Although the constructs are conceptualized such that those who are high in defence and those who are high in sensitivity to failure both respond poorly to criticisms, their particular reactions are different. People high in defence respond with defensiveness and protest, whereas people high in sensitivity to failure respond with feelings of defeat and thoughts of disengaging.

The Endurance scale from the PRF-E appears to be similar to lack of perseverance as it is presently conceptualized, if one of the scales were reverse-scored. Someone high in endurance perseveres in the face of obstacles and works tirelessly until the job is done. Lack of perseverance is somewhat similar to endurance, but pertains more specifically to failing to see projects through to the end. Endurance is characterized by persisting (or failing to persist, if reverse-scored) on problems more generally.

Although these measures from Jackson's PRF-E were not administered in the present study, I would expect them to be moderately correlated with the measures of interest. The PRF-E constructs mentioned above, and potentially other measures not mentioned here, are theoretically related to high standards, sensitivity to failure, and lack of perseverance. The relation of the PRF-E scales (and others) to the target measures could be assessed in future research. In the present research, only a select few could be practically administered without introducing fatigue effects that could increase error variance. Importantly, measures of the target constructs did generally show moderate to

high correlations with similar constructs, but remained distinctive such that they did not appear to be completely redundant with similar existing constructs.

CHAPTER 4: STUDIES 4 AND 5

The purpose of Studies 4 and 5 was to investigate the influence of the constructs high standards, sensitivity to failure, and lack of perseverance on all-or-nothing behaviour. I have identified three factors that I believe will predict all-or-nothing behaviour in the domains of exercise (Study 4) and campus club involvement (Study 5). Specifically, I hypothesized that all three constructs would be necessary to predict behaviour, thus implying an interactive effect among the three constructs. However, there are several possible ways in which the target constructs might relate to participants' decline in behaviour.

One possible outcome is that only one or two of the constructs (i.e., of high standards, sensitivity to failure, and lack of perseverance) predict all-or-nothing behaviour and all three do not contribute to its prediction. If only two contribute to predicting behaviour, they could combine in an additive or interactive fashion to predict behaviour. An interaction between two of the constructs would provide partial support for my hypothesis such that indeed there is an interactive effect, but not among all three constructs. If all three constructs predict behaviour, there are several possible ways that this could happen. For example, they could combine in an additive way such that there is a main effect of each of the constructs and their sum predicts all-or-nothing behaviour. In this case, the influence of each of the constructs would remain constant regardless of the presence of the other two. This outcome would be partial support for my hypothesis such that indeed all three matter, but they do not interact. Another possibility is that the three constructs combine interactively to predict behaviour. In this case, the influence that each of the constructs exert on behaviour is dependent on the levels of the other two

constructs. I hypothesized that all three constructs would be necessary to predict all-or-nothing behaviour and that they would combine in an interactive fashion. This hypothesis was tested in Studies 4 and 5.

Study 4

Due to the importance of sustaining healthful behaviours across time to achieve beneficial effects, adherence to a health-relevant behaviour—exercise—was chosen for investigation in Study 4. Although adherence could be operationalized in a number of different ways, adherence in the current study refers to the degree to which participants sustain their initial levels of group fitness class attendance from the beginning of the study to the end (i.e., the mean difference between the first and final weeks of the study).

Despite the documented health benefits of exercise (Blair, Booth, Lewis, & Wainwright, 1989; Kirschenbaum, 1992; Morgan & Goldston, 1987; Petruzzello, Landers, & Salazar, 1991), drop-out rates for most organized exercise programs are 50% within 3 to 6 months (Dishman, 1988). Most people have witnessed accounts of people failing to adhere to their physical activity goals, either in their own lives or another's. Specifically relevant to the current study are those instances where one begins a fitness regimen at a very ambitious and consistent level, but then drops the regimen altogether when a setback occurs (e.g., Sosna, 2005). A setback is defined as a factor that impedes or hinders one's progress toward a goal. One way to help mitigate this self-defeating all-or-nothing approach to exercise may be to target people who are at-risk of abandoning their fitness goals with appropriate interventions. If there are stable traits associated with all-or-nothing behaviour, then measures of these traits could be used to identify these

people who are at risk. The purpose of Study 4 was to examine the influence of the constructs high standards, sensitivity to failure, and lack of perseverance on all-or-nothing behaviour, in the domain of exercise.

In my initial conceptualization of the all-or-nothing pattern of behaviour, I identified perceived failure as an integral part of the phenomenon. That is, people who are prone to all-or-nothing behaviour are expected to show a significant decrease in their behaviour after having experienced a setback. Before the occurrence of a setback, I would not expect people who are high on all three individual differences to experience a significant drop in their behaviour. Thus, I expected the experience of a setback to moderate the association between the interaction among the individual differences and all-or-nothing behaviour. The design of Study 4 allowed me to investigate this part of my hypothesis. I tracked participants' attendance over a period of 5 weeks, which allowed me to assess whether they had experienced a setback. A setback was operationalized in the current study as failing to attend any fitness classes during the third or fourth week in the study. I then included this dichotomous setback variable in the model to determine whether it moderated the association between the interacting constructs and behaviour. It is worth noting that the behavioural lapse of failing to attend group fitness classes for one or two weeks is only one type of setback, but it was the only measured setback variable in the present study. Nonetheless, its impact was expected to vary depending on participants' levels of the target constructs.

As mentioned above, there are a number of different possible outcomes from this study (e.g., that only one or two of the individual differences will predict behaviour, or that all three will matter but combine in an additive fashion). I hypothesized a four-way

interaction among the three individual difference variables and the dichotomous setback variable on participants' fitness class attendance from week 1 and week 5. More specifically, I expected that people who scored high on all three dimensions and who had experienced a setback in their attendance to fitness classes would show a greater decline in their attendance from the first to last week of the study relative to people who did not score high on the individual difference measures, or who did not experience a setback. This hypothesis was predicated on the belief that those who score high on High Standards, Sensitivity to Failure, and Lack of Perseverance would find it particularly difficult to resume their fitness regimens after having experienced a behavioural lapse.

Method

Participants

One hundred forty-five members of the Queen's University community (144 women, 1 man) who were taking group fitness classes offered at Queen's participated in the study. Under-representation of male participants in group fitness classes is not uncommon and has been documented in past research (e.g., Leslie et al., 2004; see also Kerr, Au, & Linder, 2004). Because there was only one male, I excluded this participant from the analyses. The final sample comprised 144 female participants with a mean age of 21.83 ($SD = 3.81$).

Materials and Procedure

The researcher went to approximately 30 different group fitness classes offered at the physical activity centre on campus during the first week back to classes in January 2005 and made a brief announcement at the beginning of each class inviting people to

participate in a research study (see Appendix Y for recruitment script). It was specified that only those who planned to exercise regularly and who planned to use Queen's group fitness classes as their primary means of exercise were invited to participate in the study. These eligibility criteria were specified in an effort to select a sample that was somewhat homogeneous in their intentions to attend group fitness classes. If the sample included participants who were not planning to exercise (or not planning to use group fitness classes for their exercise) then their attendance at these classes would not be a suitable measure of their propensity to exhibit all-or-nothing behaviour. The researcher returned at the end of each class and people who were interested in taking part in the study, and who identified as eligible to do so, completed the intake questionnaire. Participants were entered into a draw for one of three prizes of \$100.

At the initial session, participants read the Letter of Information (Appendix Z) and signed the Consent Form (Appendix AA). Then, they completed the paper and pencil intake questionnaire that included demographic questions (i.e., age and gender) and measures of the three constructs of interest (i.e., high standards, sensitivity to failure, and lack of perseverance). They were also asked to write a confidential participant code on the questionnaire, which was derived by taking the first two letters of their mother's name and the last four digits of their staff or student number (see Appendix BB for the intake questionnaire, excluding the target individual difference measures, which appear in Appendix H). Because I was interested in participants' attendance at group fitness classes across the subsequent 5 weeks, I required a reliable method to track the number of fitness classes they were attending. Fortunately, the fitness program at Queen's University lends itself to such a method. To participate in a fitness class at Queen's, one must obtain a

paper wristband from the desk at the physical activity centre before each class and then wear this bracelet to the class. To track how many classes participants were attending, I asked participants to write their confidential participant codes on their wristbands (the same codes they had also written on their intake questionnaires) after each class they attended and to deposit them in a locked drop box that was placed in each fitness studio. The researcher collected the wristbands on a daily basis to record the classes that each participant had attended. Attendance records were subsequently matched to responses on the intake questionnaire. Upon completion of the study, participants were emailed a debriefing form explaining the purpose of the study (see Appendix CC).

Results

As mentioned above, the experience of a setback was expected to moderate the influence of the target individual differences on participants' decline in group fitness class participation from week 1 to week 5. Because I had tracked participants' attendance over the course of the study, I could assess whether or not they had experienced a setback. A setback was operationalized in the current study as failing to attend fitness classes during week 3 and/or week 4 of the study.

I expected to find an interaction among scores on the three target constructs and whether or not one had experienced a setback on the dependent variable—the decrease (i.e., difference) in number of fitness classes participants attended from week 1 to week 5. More specifically, I expected that, among participants who scored high on measures of all three constructs, those who had experienced a setback would show a greater decline in fitness class attendance from week 1 to week 5 of the study than would those who had not experienced a setback. Among other groups of participants (i.e., those who were not

high on all three constructs), having a setback was not expected to moderate the decline in attendance from week 1 to week 5. To test this hypothesis, I used the general linear model and examined the four-way interaction among the three individual difference measures and the dichotomous variable of whether or not a setback had occurred, on the outcome variable—drop in fitness class attendance from week 1 to week 5. Scores on the individual difference variables were centred prior to the analyses, as recommended by Aiken and West (1991). Main effects and two-, three-, and four-way interactions among High Standards, Sensitivity to Failure, and Lack of Perseverance (all centred), and the dichotomous setback variable, were entered into the model.

First, I tested the difference in fitness class attendance between week 1 and week 5, using a paired t-test. Not surprisingly, there was a significant difference in the number of fitness classes attended; participants attended more classes at week 1 ($M = 1.90$, $SD = 1.64$) than they did at week 5 ($M = 1.01$, $SD = 1.52$), $t(143) = 6.49$, $p < .001$. I then used the general linear model to examine the effects of the individual differences of interest and the dichotomous setback variable on the decrease in attendance from week 1 to week 5. There were no significant main effects, and no significant two- or three-way interactions among the trait constructs and the dichotomous setback variable on the drop in class attendance (all $ps > .19$). There was, however, a marginal four-way interaction among the four predictor variables, $F(1, 127) = 3.27$, $p = .073$. The effect size associated with this interaction was small (partial eta squared, $\eta^2_p = .03$).

To deconstruct this interaction and reveal where the differences were, I calculated the mean drop in group fitness attendance from week 1 to week 5 for eight separate groups. Groups were formed based on median split scores: group 1 comprised

people who scored above the median on all three measures, group 2 comprised people who scored below the median on all three, and groups 3 through 8 comprised every other combination of high and low scores. I had expected the occurrence of a setback to be especially damaging to participants within the focal group who scored high on the three individual difference measures such that they would experience a substantial decline in their attendance if they had experienced a setback, relative to if they had not. Alternately, I did not expect the occurrence of a setback to be particularly damaging to participants in the remaining seven groups. Thus, I did not expect differences in the decline in attendance between those who had had a setback and those who had not, within these seven groups. To test this hypothesis, I conducted independent *t*-tests to examine the differences in means for those who had a setback versus those who did not, within each of the eight groups. The dependent variable for these *t*-tests was the difference score between the number of classes attended at week 1 and at week 5. I expected that people high on all three dimensions would find a setback particularly aversive and thus a setback would result in the greatest decrease in attendance within that group. Consistent with my hypothesis, there was a trend such that those who scored high on all three trait measures and who had experienced a setback experienced a greater drop in attendance from week 1 to 5 ($M = 1.54$, $SD = 1.27$) than those who scored high on all three trait measures but did not have a setback ($M = 0.50$, $SD = 1.84$), $t(21) = 1.60$, $p = .12$. See Table 9 for the means and standard deviations for each of the sixteen groups (i.e., each of the eight groups subsequently divided into setback versus no setback). Because it was specifically hypothesized that this group (i.e., those who scored high on all scales and experienced a

setback) would experience a *decrease* in attendance, there is reason to accept the one-tailed *p*-value (.06) instead of the two-tailed value stated above.

This difference did not reach the conventional $\alpha = .05$ level of statistical significance. However, the effect size associated with this difference was medium to large (Cohen's $d = .66$; see Table 9 for all effect sizes). It is therefore possible that a failure to achieve statistical significance is due to low power (Howell, 1997). Among the remaining seven groups, no differences between those who had a setback versus those who did not have a setback approached significance (all $ps > .26$; see Table 9).

Table 9

Descriptive Statistics and Comparisons of Difference in Attendance from Week 1 to Week 5 Between those who had a Setback and those who did not

Group	Setback			No Setback			<i>t</i>	<i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>			
1. Hi STF, Hi HS, Hi LOP	1.54	1.27	13	0.50	1.84	10	1.60	.12	.66
2. Lo STF, Lo HS, Lo LOP	0.60	0.55	5	0.44	2.88	9	0.12	.91	.08
3. Hi STF, Lo HS, Hi LOP	0.94	0.93	16	1.50	2.53	14	0.83	.42	.29
4. Lo STF, Hi HS, Lo LOP	0.77	1.27	22	0.29	1.27	14	1.12	.27	.38
5. Hi STF, Lo HS, Lo LOP	2.00	1.63	4	1.50	0.71	2	0.40	.71	.40
6. Lo STF, Hi HS, Hi LOP	0.33	0.52	6	0.33	3.06	3	0.00	1.00	0
7. Hi STF, Hi HS, Lo LOP	0.50	0.58	4	1.33	2.08	3	0.79	.47	.54
8. Lo STF, Lo HS, Hi LOP	1.67	2.25	6	0.57	1.62	7	1.02	.33	.56

Note. Hi = Score above the median, Lo = Score below the median, STF = Sensitivity to Failure, HS = High Standards, and LOP = Lack of Perseverance.

Discussion

Results from Study 4 are consistent with the hypothesis that the individual difference constructs of interest predict an all-or-nothing pattern of behaviour in the domain of exercise when participants have experienced a setback. There was a trending

difference within the group that scored high on all three individual difference measures such that those who had experienced a setback had a larger drop in participation from week 1 to week 5 than did those who had not experienced a setback. This difference did not achieve statistical significance; however, this particular difference was hypothesized a priori and it was the only one to even approach significance.

There are a couple of aspects of the analyses that deserve further attention. Some of the post-hoc *t*-test analyses were conducted on extremely small sample sizes and thus did not have enough power to detect a significant difference should one actually exist. It is possible that significant differences would have emerged within other groups if the group sizes had been bigger. For example, group 8, which has a configuration of low sensitivity to failure, low standards, and high lack of perseverance showed a pattern of means similar to group 1 (high on all three constructs). In group 8, there was a larger drop in participation from week 1 to week 5 for participants who had experienced a setback ($M = 1.67, SD = 2.25$) than for those who had not experienced a setback ($M = 0.57, SD = 1.62$). This difference did not approach statistical significance, but it may have if the cell sizes in this group were larger. It would have been preferred that all groups have reasonable statistical power to detect a decrease in exercise behaviour following a setback. Most importantly, however, the group that scored high on all three dimensions did indeed show the predicted trend.

Another noteworthy finding is that the four-way interaction was the only term in the model to approach significance. None of the individual differences on its own, nor interactions among them, predicted drops in fitness class attendance. This result is

consistent with my prediction that a configuration of all three individual differences, in conjunction with a behavioural setback, is necessary to predict the all-or-nothing pattern.

There were two major challenges faced in Study 4. One is that a four-way interaction is difficult to achieve because of the complex nature of the particular effect that was hypothesized and the statistical power required to reach significance with such a complex interaction. Results consistent with this interaction were obtained in spite of its complexity, which lends support for my hypothesis. Another challenge is that, in deconstructing the interaction using median splits, the cell sizes were quite low. Sample size is inversely related to power and so the small sample sizes in the current study made it difficult to detect differences in the simple effects analyses.

Because Study 4 was predicated on such complex interactions, it made for a very challenging test of my hypothesis, because 1) complex interactions require greater sample sizes to test and 2) it is difficult to interpret such complex effects. Thus, it seems desirable to move to an alternative research design that is more simple and easy to interpret, and also more statistically powerful.

In Study 5, I opted for a simpler design that did not include a variable indicating whether or not one had experienced a setback. However, because having a setback is expected to moderate all-or-nothing behaviour, I still needed to consider this variable in the study design. To address this aspect of my hypothesis, I conducted Study 5 over a much longer period of time (8 months compared to 5 weeks as in Study 4) to maximize the likelihood that the vast majority of participants would experience a setback within the time frame of the study. Therefore, instead of checking whether participants had experienced a setback, I assumed that most participants would have had a setback in that

time. Then, the effect of interest was a three-way interaction among the trait variables on behaviour.

Study 5

The purpose of Study 5 was to examine the interactive effects of the constructs of interest (high standards, sensitivity to failure, and lack of perseverance) on an all-or-nothing pattern of behaviour. Results from Study 4 suggested that these individual differences interact to predict behaviour. In Study 5, I again investigated whether the interaction of these constructs predict all-or-nothing behaviour, but over a longer period of time (8 months) and in a different domain (membership in campus clubs). Participants reported the number of clubs they joined at the beginning of an academic year, and how many they were still a part of at the end of the academic year. I hypothesized that participants' scores on the scales High Standards, Sensitivity to Failure, and Lack of Perseverance would interact to predict decreases in involvement in campus clubs over the course of an academic year.

As mentioned in Study 4, an integral part of the conceptualization of the all-or-nothing phenomenon is that one who is prone to an all-or-nothing pattern of behaviour must first experience a setback in order to show the pattern. Results from Study 4 suggest that whether or not one has a setback moderates the manifestation of all-or-nothing behaviour. The design of Study 4 was conducive to testing the moderating effect of a setback because participants' attendance at fitness classes was tracked over the course of the study. In Study 5, participants' membership in campus clubs was reported for the beginning and end of the academic year only and so there was no measure of whether or

not participants had experienced a setback over the course of the study. However, Study 5 occurred over a longer period of time than did Study 4 (8 months versus 5 weeks). As in Study 4, a setback in Study 5 is defined as a behavioural lapse (e.g., failing to attend meetings for a week or two during the mid-term exam period). Although a few people might uphold consistent involvement in all of the clubs for which they signed up throughout the entire academic year, it was assumed that the vast majority of participants would experience a behavioural lapse. Because it was expected that most people would experience this type of setback within the 8-month time frame of the study, testing the moderating effects of this variable was deemed unnecessary.

A three-way interaction among the trait variables was expected to predict decreases in people's involvement in campus clubs. Specifically, participants who are high in all three constructs were expected to experience a larger drop in their involvement in campus clubs relative to those who are not particularly high in all three.

Method

Participants

At Time 1, 369 students at Queen's University completed the intake questionnaire in exchange for a ballot in a draw to win one of three prizes of \$100. Two hundred twenty of the initial 369 participants (152 females, 68 males) with a mean age of 19.35 years ($SD = 2.60$) completed the follow-up questionnaire at Time 2 in exchange for a ballot in a draw to win \$50.

Materials and Procedure

At Time 1, Queen's University students who attended Campus Clubs information nights were invited to participate. This is an annual event that takes place on two consecutive nights. It is set up similar to a trade show whereby representatives from various campus clubs man booth displays in a large venue. Visitors to the information night are invited to walk around and visit the different booths, ask questions about the clubs, and to sign up for them if they are interested. There was a booth set up for the purposes of the present study near the exit of the venue, and researchers approached people as they were leaving to invite them to participate. People who were interested in taking part read a Letter of Information (see Appendix DD), signed a Consent Form (see Appendix EE), and completed an intake questionnaire. This questionnaire included demographic information (i.e., age and gender), the individual difference measures of interest (i.e., High standards, Sensitivity to Failure, and Lack of Perseverance), and items asking about their experiences at the Campus Clubs information night (e.g., how many booths they visited, and how many clubs they intended to join). At the end of this questionnaire, there was an invitation to complete the second portion of the study, which was an online questionnaire to be emailed to them at the end of the academic year. Those who wanted to participate in the second part provided their email address and their written consent for the researchers to email them the follow-up questionnaire. See Appendix FF for complete intake questionnaire (excluding the individual difference measures of interest, which appear in Appendix H).

At Time 2, participants who had given their consent at Time 1 were emailed a follow-up questionnaire to complete online. Participants were also emailed the confidential participant code that had appeared on their intake questionnaire. They then

entered this code in the online questionnaire so that responses at Time 2 could be matched to responses at Time 1. The follow-up questionnaire included items regarding the clubs with which they had become involved (e.g., how many they had signed up for, levels of commitment, enjoyment, and enthusiasm toward each club, and in how many clubs they had remained for the entire academic year or duration of the club). See Appendix GG for follow-up questionnaire. At the end of the follow-up questionnaire, participants read a debriefing form (see Appendix HH).

Results

I hypothesized a three-way interaction such that people who scored high on all three measures (High Standards, Sensitivity to Failure, and Lack of Perseverance) would show a greater drop from the number of clubs for which they had signed up to the number of clubs in which they had remained for the duration of the academic year, relative to people who did not score high on all three measures. To test this hypothesis, I used the general linear model to examine the interactive effects of the three individual difference measures on the outcome variable—the difference between the number of clubs for which one had signed up versus stayed in (i.e., number of clubs dropped). Scores on the individual difference variables were centred prior to the analyses, as recommended by Aiken and West (1991). Main effects, and two- and three-way interactions among High Standards, Sensitivity to Failure, and Lack of Perseverance (all centred) were entered into the model.

There were no significant main effects and no significant two-way interactions among the individual difference measures on the dependent variable—number of clubs dropped (all $ps > .11$). The hypothesized three-way interaction among the individual

difference variables was significant, $F(1, 148) = 11.75, p = .001^7$. The effect size for this interaction was small, $\eta^2_p = .074$. Simple effects analyses were conducted to deconstruct the interaction and reveal where the significant differences were. As in Study 4, groups were first formed based on median split scores: group 1 comprised people who scored above the median on all three measures, group 2 comprised people who scored below the median on all three, and groups 3 through 8 comprised every other combination of high and low scores. See Table 10 for descriptive statistics for the eight groups. I then conducted a one-way analysis of variance (ANOVA) with a Tukey honestly significant difference (HSD) post-hoc test to determine which means differed significantly⁸. Tukey HSD is a recommended pairwise test when there are more than five groups because of the control it exercises over alpha (Howell, 1997). The overall ANOVA examining differences among the eight groups in the number of clubs dropped was significant, $F(7, 148) = 2.45, p = .021^9$. Those who scored high on all three measures (i.e., group 1) dropped out of the most number of clubs ($M = 2.42, SD = 2.26$). Post-hoc tests revealed that those in group 1 dropped out of significantly more clubs than did those who scored low on all three measures (group 2; $M = 0.73, SD = 0.59, p = .04$) and those who scored high on Sensitivity to Failure and low on the other two variables (group 5; $M = 0.67, SD = 0.82; p = .03$). The only other post-hoc comparison to even approach significance was

⁷ The dependent variable, number of clubs dropped, had a positive skew of 2.17. The analysis was also conducted using square root values of the dependent variable to help normalize the data, and this resulted in a much lesser skew—0.23. When the square root values were used, the three-way interaction remained significant at $p = .03$.

⁸ Post-hoc tests were also conducted using Bonferroni multiple-comparison correction, which is a more statistically conservative test than Tukey HSD (Weisstein, 2007). The same significant differences between means emerged.

⁹ Levene's test for equality of variances was significant in this analysis, $F(7, 148) = 3.17, p = .004$, indicating that the homogeneity of variance assumption was violated. I also conducted the analysis using square root values of the dependent variable. When the square root values were used, Levene's test was not significant, $F(7, 148) = 1.06, p = .39$, indicating that the homogeneity assumption was met. Using the square root values, the overall ANOVA remained significant ($p = .025$), and Tukey HSD results remained the same, except the difference between means of group 1 and group 2 was marginally significant ($p = .11$).

between those high on all three constructs (group 1) and those who were high on High Standards and Sensitivity to Failure but low on Lack of Perseverance (group 7; $M = 1.14$, $SD = 1.06$; $p = .148$). No other post-hoc tests examining differences in the number of clubs dropped for the other seven groups approached significance (all $ps > .30$).

Table 10
Descriptive Statistics of the Number of Clubs for which Participants had Signed up, the number in which they Remained, and the Difference

Group	Clubs for which signed up			Clubs in which remained			Diff.
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	
1. Hi STF, Hi HS, Hi LOP	3.54	2.13	24	1.13	1.19	24	2.42 _a
2. Lo STF, Lo HS, Lo LOP	2.20	0.78	15	1.47	0.84	15	0.73 _b
3. Hi STF, Lo HS, Hi LOP	2.63	1.58	32	1.19	1.00	32	1.44 _{ab}
4. Lo STF, Hi HS, Lo LOP	3.26	2.72	28	1.46	1.29	28	1.79 _{ab}
5. Hi STF, Lo HS, Lo LOP	2.07	0.88	15	1.40	0.99	15	0.67 _b
6. Lo STF, Hi HS, Hi LOP	2.70	2.06	10	1.30	0.67	10	1.40 _{ab}
7. Hi STF, Hi HS, Lo LOP	2.33	1.53	21	1.19	0.98	21	1.14 _{ab}
8. Lo STF, Lo HS, Hi LOP	2.36	1.29	11	1.00	0.63	11	1.36 _{ab}
Total	2.73	1.86	156	1.27	1.02	156	1.46

Note. Hi = Score above the median, Lo = Score below the median, STF = Sensitivity to Failure, HS = High Standards, and LOP = Lack of Perseverance. Common letters in subscript denote statistically equivalent means at $\alpha = .05$.

Discussion

The purpose of Study 5 was to test the hypothesis that measures of the three individual differences of interest (High Standards, Sensitivity to Failure, and Lack of Perseverance) would interact to produce an all-or-nothing behavioural pattern, operationalized in the current study as having a relatively large drop in campus club involvement. Results from Study 5 supported my hypothesis, as evidenced by a significant three-way interaction term in the model to predict the number of clubs participants dropped over the course of an academic year. I deconstructed this interaction by creating groups based on median splits and testing the differences among the group means. Consistent with what was expected, the focal group comprising people who scored high on all three individual difference measures dropped the most number of

clubs. Further, this was the only group to differ significantly from other groups (i.e., groups 1 and 5). Statistically significant differences between target group 1 and all other groups would have provided stronger support for my hypothesis, but the differences that did emerge were in the predicted direction.

Upon observing the mean number of clubs for which participants signed up versus stayed in, it is apparent that there are greater differences in terms of the number of clubs for which participants signed up than in the number of clubs in which they had remained. Group 1 signed up for the most number of clubs and so it may be that they are “biting off more than they can chew” (i.e., overextending themselves) by signing up for too many clubs and, as a result, they drop relatively more clubs. This interpretation of the data would not discount the observed effects but rather would help to explain why this subgroup of people is more likely to exhibit the all-or-nothing pattern. This interpretation could be further explored in future research.

It is also worth noting that the overall analysis revealed a significant three-way interaction, but no significant main effects or two-way interactions. This three-way interaction, in the absence of two-way interactions or main effects, supports the hypothesis that a configuration of all three individual difference variables is necessary to predict the all-or-nothing pattern of behaviour.

CHAPTER 5: GENERAL DISCUSSION

The general purpose of the present research program was to identify stable individual differences associated with an all-or-nothing pattern of behaviour. I had three main goals at the outset of this research program. The first was to examine the factor structure of questionnaire items that were believed to have high face validity for tapping individual differences associated with all-or-nothing behaviour. There were two general possible outcomes from these factor analytic procedures. One was that the items would group into one factor to tap a unitary construct, suggesting that a single dimension might predict all-or-nothing behaviour. The other possible outcome from the factor analysis was that the items would group into separate factors, suggesting that a configuration of stable individual differences might predict all-or-nothing behaviour. Results from Study 1 were consistent with the latter outcome; the items best fit a three-factor solution and the items appeared to tap three independent constructs that were labelled high standards, sensitivity to failure, and lack of perseverance. There was some evidence of a possible fourth factor emerging from the data. Although a three-factor solution was deemed the most appropriate fit to the present data, support for this decision was not entirely one-sided. The presence of fourth factor contributing to the prediction of all-or-nothing behaviour warrants investigation in future research. In the present research, items loading on the fourth factor might have been eliminated in the items selection phase because items had been selected based on two- and three-component solutions in the pilot studies. To test whether all-or-nothing behaviour is better captured by four (rather than three) factors, many more questionnaire items than the 32 that were used in Study 1 would need to be administered to very large sample sizes. Then, responses could be analysed using

exploratory common factor analysis to evaluate the fit of various models. It is important to note that, even though future research may find stronger support for a four- than three-factor model, this would not discount results obtained in the present research program. The three factors obtained in this research did predict behavioural outcomes. Stronger support for a fourth factor could help to refine the theory by, for example, moderating the influence of the three factors on behaviour¹⁰.

The second goal I set out to achieve was to ensure that the individual differences under investigation are temporally stable constructs, and that they showed convergence with conceptually similar constructs and divergence from dissimilar constructs. In Study 2, participants' scores on each of the three targets measures were highly correlated across two administrations, showing that the constructs are stable individual differences rather than transitory beliefs. This was important to establish because if these constructs were constantly in flux, little could be inferred from their effects on behaviour. Identifying the influence of stable individual differences on behaviour change is valuable for informing theory and intervention strategies. In Study 3, the target constructs were moderately related to theoretically similar constructs and showed relatively low correlations with theoretically dissimilar constructs. Specifically, High Standards correlated with Conscientiousness, and Personal Standards; Sensitivity to Failure correlated with Neuroticism, Dysfunctional Attitudes, and Concern over Mistakes; Lack of Perseverance correlated (negatively) with Perseverance. The target scales had relatively low correlations with the theoretically dissimilar measures of deception (i.e., Self-deceptive Enhancement and Impression Management), which is evidence that the scales are not

¹⁰ Analyses were conducted to examine the main and interactive effects of four (rather than 3) factors in Studies 4 and 5. Results using a four-factor solution were inconsistent across these two studies and so no clear pattern involving the fourth factor emerged.

tapping into people's desire to see themselves in a favourable light, or to present favourably to others. This pattern of results provides evidence that the three constructs under investigation are associated with similar constructs. However, they are not so highly correlated with other measures that they are redundant with constructs for which measures already exist in the psychological literature.

The third goal of this research program was to test whether the constructs that were identified in Study 1 (i.e., high standards, sensitivity to failure, and lack of perseverance) could predict all-or-nothing behaviour. In the domains of fitness classes (Study 4) and campus clubs (Study 5), I tested the influence of the three constructs on the drop in participants' involvement in the target behaviour from the beginning to the end of each study. Although it was possible that only one of the constructs, or an interaction of two, would predict all-or-nothing behaviour, I hypothesized that an interaction among all three constructs would best predict an all-or-nothing behavioural pattern. Results from both Studies 4 and 5 were consistent with my hypothesis. In Study 4, the trending three-way interaction among the target constructs on drop in group fitness class attendance from week 1 to week 5 of the study was moderated by whether participants had had a setback (i.e., whether they had failed to attend any classes in weeks 3 or 4 of the study). In Study 5, I assessed behaviour over a longer period of time (8 months compared to 5 weeks as in Study 4). It was assumed that most people would have experienced a setback, and that testing a setback as a moderator was therefore unnecessary. Here, the three-way interaction among the target individual differences predicted decreases in involvement in campus clubs. In both studies, as hypothesized, the group that had the most notable drop

in involvement was the group of participants who scored high on all three individual differences.

Although some of the findings were only marginally significant, there are also strengths in the converging pattern of findings that lead me to believe that observed differences were not due to chance. First, the results of Studies 4 and 5 converged such that the three-way interaction among the hypothesized individual differences was significant or marginally significant in both studies (qualified by whether or not one had a setback in Study 4). Second, the respective hypothesized interaction term in both Studies 4 and 5 was the only significant term in the model. This finding is quite notable and suggests that a configuration of all three individual differences (high standards, sensitivity to failure, and lack of perseverance) is necessary to predict the all-or-nothing pattern. Third, there were eight groups that comprised each of the different configurations of the target individual differences and, in both Studies 4 and 5, the group that was high in all three dimensions showed a pattern of behaviour most consistent with all-or-nothing. Given the complexity of the interactions that were tested in Studies 4 and 5, and the ability of the interaction to replicate in two behavioural domains, it seems unlikely that the observed differences were spurious. The fact that some results were only marginally significant might be due to low statistical power. Further research could examine this possibility by replicating Study 4 using a larger sample size.

It was interesting to note that, in Study 5, there was more variance between groups in the number of clubs for which participants had signed up than in the ones in which they had remained. It may be the case, then, that at least part of the all-or-nothing phenomenon can be explained by the notion that people who are high in the target

individual differences are over-extending themselves at the outset of a new activity. This interpretation could be tested in future research by randomly assigning the number of clubs for which participants sign up. If participants who are assigned to sign up for more also drop significantly more clubs than this would provide evidence for the over-extension hypothesis. If, however, people who are assigned to sign up for more do not drop significantly more, then this would provide support for the notion that the three target individual differences interact to cause a decline in behaviour independent of the level at which they start. Neither outcome would diminish the results of Study 5, but rather would offer insight into why the all-or-nothing pattern occurs. Although it might not be practically feasible to randomly assign the number of clubs for which participants sign up, an alternative design could have all participants sign up for the same number of clubs, thus keeping this variable constant. Some private schools require students must sign up for a specific number of clubs, for example, and so a naturalistic study could be performed on this population.

Results from Studies 4 and 5 suggest that those who are high in the dimensions high standards, sensitivity to failure, and lack of perseverance experienced the most notable drop in behaviour. One might infer, then, that the optimal configuration of these constructs for maintaining behaviour is being low on all three dimensions. However, this does not appear to be the case and, in fact, no specific combination of these individual differences was clearly optimal for behavioural maintenance in the present research. While the individual differences investigated in the present research appear to interact in such a way to predict a drop in behaviour, more research is needed to elucidate individual differences that relate to sustaining high levels of behavioural commitment over time.

All-or-nothing behaviour seems to be a ubiquitous phenomenon in our lives and most people can relate to this pattern either directly or through the experience of an acquaintance. Surprisingly, virtually no empirical research has systematically examined this pattern of behaviour. Having identified a profile of individual differences that predict all-or-nothing behaviour in the present research is an important initial step toward understanding this pattern. But why do the individual differences high standards, sensitivity to failure, and lack of perseverance interact to predict all-or-nothing behaviour? In future research, a worthwhile goal would be to delineate the mechanisms through which these variables operate to effect all-or-nothing behaviour. A model of long-term behaviour change (described below) provides a framework for understanding processes through which all-or-nothing patterns of behaviour might occur. Below I discuss how the individual differences investigated in the present research relate to the phases of behaviour change and speculate about directions for future research that could help delineate processes of behaviour change.

Behaviour Change Models and Directions for Future Research

Much of the research on behaviour change to date has focused on factors that influence the decision to adopt a new behaviour, whereas the processes involved in long-term behavioural maintenance have been largely overlooked (see Rothman, 2000, for a review). Given the evidence that many people are able to initiate behaviour change but fail to adhere to these changes (e.g., McCaul, Glasgow, & O'Neill, 1992) it cannot be assumed that the same factors affecting behaviour initiation are the same as those guiding behaviour maintenance. The four-phase model is one model of behaviour change that does account for processes of long-term behaviour change to some degree (Rothman,

Baldwin, & Hertel, 2004)¹¹. It is a general model that stipulates a series of phases through which people progress as they demonstrate increasing commitment to a new behaviour.

Rothman et al. (2004) proposed four phases of behaviour change and purported that different factors influence behaviour at different phases of the change process. The application of this model begins after a decision has been made to initiate a new behaviour either explicitly (e.g., enrolling in an exercise program) or through an affirmation to begin a new behaviour (e.g., resolving to start exercising at least 3 days per week). The four phases of the model are initial response, continued response, maintenance, and habit. The first two phases reflect the initiation of a behaviour and the last two phases reflect the maintenance of that behaviour.

The first phase of the model, initial response, is defined by the point in time when one has shown a significant change in behaviour. Efficacy beliefs (i.e., confidence in oneself to perform the behaviour) and outcome expectations (i.e., the extent to which one believes that the new behaviour will have a favourable outcome) are the major determinants of behaviour at this phase (Rothman et al., 2004). Once a person has reliably demonstrated the desired behaviour (e.g., started eating a healthy diet, started attending dance lessons), he or she enters the second phase—continued response. At this phase, one's efficacy and expectations regarding the behaviour come into conflict with challenges that can cause behavioural lapses. Transition out of this phase is marked by the ability to proficiently manage one's behaviour and to deal with potential setbacks. One enters the third phase in this model, the maintenance phase, when he or she is no

¹¹ The Stages of Change Model from the Transtheoretical Model (Prochaska & DiClemente, 1984) is another prominent stage model of behaviour change. However, this model does not address potential processes guiding transition through phases of change and thus it is generally less informative than the four-phase model for understanding how the constructs under investigation in the present research might have operated to produce an all-or-nothing pattern.

longer struggling to perform the behaviour. Setbacks and obstacles do not cause large fluctuations in behaviour at this phase. The primary determinant of behaviour in the maintenance phase is the perceived value of the behaviour, and the four-phase model posits that as long as one continues to see the behaviour as worthwhile, he or she will continue to perform the behaviour. The last phase, habit, occurs when one no longer looks to verify the value of the behaviour but performs it regardless of the outcome. Interestingly, one can stay in the third phase (maintenance) for an indefinite period of time without ever transitioning to the habit phase. Even people who manage to maintain a behaviour for several years will remain in the maintenance phase as long as they continually assess the value of that behaviour.

The authors note that the proposed processes guiding transition between the stages remain largely conjectural due to the dearth of research investigating long-term behaviour change (Rothman et al., 2004). Findings from the current study can be applied to the four-phase model by elucidating constructs that might influence progression and relapse through phases of behaviour change among individuals who display an all-or-nothing pattern of behaviour. At what stages of change might these individual differences have operated in the current research? I believe the individual differences investigated in the present research are most pertinent to the first two phases (initial response and continued response), and so discussion of their possible influences on processes of change will focus primarily on these two phases.

At the initial response phase, I would expect people who are high on the construct high standards to show a great deal of enthusiasm and commitment to the new behaviour. According to the four-phase model, the determinants of behaviour at this phase are

efficacy beliefs and outcome expectations. Therefore, I would expect people who are high in high standards to see the new behavioural goal as both attainable and highly desirable. For example, someone with high standards who has started to attend group fitness classes four times per week would perceive their new behaviour as relatively easy to do, and to have positive expectancies about the outcome (e.g., losing 10 pounds, lowering blood pressure).

What is the mechanism through which high standards might lead one to perceive a new behaviour as highly desirable and attainable? Gollwitzer's (1990) model of action phases suggests a possible process mediating the relation between high standards and beginning a new behaviour with a high level of commitment in the initial response phase. This model posits that the cognitive processes necessary to complete a task are activated by adopting specific mindsets. Generally speaking, the deliberative mindset activates processes related to decision-making, and the implemental mindset activates processes for undertaking chosen goals. Someone who is high in the dimension high standards might have a tendency to begin a new behaviour with a great deal of enthusiasm and commitment, but have positively biased beliefs about their ability to sustain commitment over time. From the vantage point of Gollwitzer's model of action phases, it might be that people who are high in the dimension high standards spend only a short time in the deliberative (i.e., decision-making) mindset and move quickly to the implemental (i.e., planning) mindset. Shifting quickly from a deliberative mindset to an implemental mindset might impede one's ability to assess fully the attainability of a goal, making it less likely that one will readjust that goal if it is unreasonable. Empirical evidence shows that people in an implemental mindset make positively biased evaluations of chosen goals

(Gollwitzer, Fujita, & Ottingen, 2004). For example, using a spreading of alternatives paradigm, Harmon-Jones and Harmon-Jones (2002) found that, relative to a control group, participants in an implemental mindset experienced greater spreading of alternatives (indicative of a more favourable evaluation of the chosen alternative) whereas participants who were in a deliberative mindset experienced a reduction in spreading of alternatives. Further, participants in an implemental (versus deliberate) mindset chose more difficult tasks and were more likely to overestimate their probability of success (Puca, 2001). Research in the area of Gollwitzer's model of action phases highlights a plausible mechanism through which people adopt ambitious behavioural goals. Perhaps people who are high in high standards assume an implemental mindset at the outset of the new behaviour, see the chosen behaviour as especially appealing and attainable, and thus approach it with a high level of enthusiasm and commitment. Adopting an implemental mindset might lead one to take an ambitious approach to a new behaviour (e.g., exercising five times per week) at the initial response phase without considering obstacles and difficulties (e.g., illness, workload, social commitments) that might hinder performance in the continued response phase.

As mentioned above, the major determinants of behaviour at the first phase of the four-phase model of behaviour change—initial response—are the perceived desirability and attainability of the chosen goal. Therefore, it is expected that people who begin new behaviours with a high level of involvement (e.g., people who are high in the dimension high standards) see the new behaviour as highly desirable and attainable. Future research could assess the mediating role of the amount of time spent in the implemental versus deliberative mindsets on the relation between the tendency to begin a new behaviour with

a high level of commitment, and perceptions of the new behaviour as desirable and attainable. I would expect that people who begin a new behaviour with a high level of involvement (i.e., those who are high in the dimension high standards) spend relatively little time in the deliberative mindset, and thus do not do an extensive analysis of the expected costs and likely benefits of engaging in a new behaviour. Devoting less time to this type of analysis may be associated with perceiving the behavioural goal in a biased manner (i.e., positive expectations that they goal is highly desirable and attainable). Conversely, I would expect that people who begin a new behaviour at a more moderate level of involvement (i.e., perhaps those who are relatively low in the dimension high standards) spend a relatively long time in the deliberative mindset, and thus evaluate the desirability and attainability of the behavioural goal in a less biased manner. This finding would suggest that the relative amount of time spent in the deliberative and implemental mindsets mediates the relation between high standards and perceived desirability and attainability of the behavioural goal.

I believe the individual difference sensitivity to failure is most pertinent at the second phase of the four-phase model (i.e., the continued response phase) when one's efficacy and expectations regarding the behaviour come into conflict with challenges and setbacks. I expect people who are high on this dimension to feel particularly bad following a lapse in performance and to feel discouraged from further pursuit of the behaviour. Thus, instead of taking an adaptive approach to setbacks (e.g., acknowledging that one has had a lapse and trying to resume the initial behavioural goal) I would expect one who is high in sensitivity to failure to find a drop in behaviour particularly aversive, and to consider disengaging as a result. For example, someone who has begun a calorie-

restricted diet might experience a behavioural lapse of indulging at a holiday party. An adaptive response to this setback would be to acknowledge the lapse and then to resume the diet in a timely manner. I would expect someone high in sensitivity to failure, however, to feel particularly bad about oneself following the indulgence and to consider giving up on the behavioural goal as a result. This hypothesis could be tested by measuring participants' sensitivity to failure at the outset of a longitudinal study, and taking repeated assessments of both participants' adherence to behavioural goals and their feelings of failure following lapses in behaviour. I would expect sensitivity to failure to be positively correlated with reports of feeling bad about themselves following behavioural lapses.

Also at the continued response phase, I expect the third individual difference associated with all-or-nothing behaviour, lack of perseverance, to play a role. I expect people who are high in this dimension (i.e., who have a history of quitting various activities) to disengage from the behaviour before reaching the maintenance phase. For example, the dieter who is high in lack of perseverance and who experienced a lapse at a holiday party would, like many times before, resume pre-change habits the following day. In sum, I expect that people who are high on all three dimensions to set their sights high at the initial response phase but to feel particularly bad when they experience a behavioural lapse during the continued response phase.

Among those people who are likely to exhibit the all-or-nothing pattern, I would expect relatively few to enter the maintenance and habit phases. However, some might adhere to the behaviour long enough to enter the third phase, the maintenance phase. At this phase the primary determinant of behaviour is its perceived value. In this phase, one

no longer struggles to perform the behaviour and so I would expect setbacks to have a relatively small influence compared to the earlier phases. However, among people who are prone to behave in an-or-nothing way, the initial excitement that they were presumed to have experienced at the outset of a new behaviour may wane at this phase. This, in turn, may cause some people who have made it to the maintenance phase to cease adherence because they no longer see the behaviour as valuable as they once did.

No research to my knowledge has examined the influence of individual differences on how people transition through phases of behaviour change. I have speculated about how the stable individual differences in the present research might have caused failure to progress through the phases of behaviour change, but further research is needed to formally test when and how these individual differences operate.

As mentioned above, there is little empirical research to date that has investigated processes underlying long-term behaviour change. Rothman et al. (2004) have noted that researchers examining long-term behaviour change often rely on a single administration of measures of psychological constructs, or take measures at brief intervals, to predict distal outcomes. While informative for uncovering correlates of behaviour change, this type of methodology does little to reveal processes by which people adopt, or fail to adopt, long-term behaviour change. In order to assess more precisely how psychological constructs operate across time, a research design that captures participants' feelings, thoughts, and behaviour as they pass through stages of behaviour change is needed. An overview of such a design is described below.

Results from Studies 4 and 5 demonstrate that individual differences can predict all-or-nothing behavioural outcomes. Future research could extend these findings to more

thoroughly reveal how these three constructs affect participants' initial enthusiasm and subsequent drop in behaviour. For example, I would propose a replication and extension of Study 4 whereby participants' thoughts, feelings, and attendance at group fitness classes are repeatedly assessed. Over the course of 5 weeks, a daily diary technique could be employed to assess respondents' specific thought processes. Open-ended questions would be coded for specific content such as expectations at the outset of a behaviour, reasons for attending or failing to attend fitness classes, and feelings of failure following a lapse in behaviour. I would expect that thoughts mediate the relation between the constructs and all-or-nothing behaviour, and that different types of thoughts would be associated with the three constructs. Specifically, I would expect levels of high standards to be associated with thoughts of perceiving the goal as desirable and attainable, and sensitivity to failure to be associated with feeling bad about oneself following a setback. A similar methodology that uses repeated assessment could also be used in a replication and extension of Study 5. Although it would probably be too onerous for participants to complete questionnaires assessing their involvement in clubs several times a week for eight months, participants could perhaps complete one questionnaire each week. By taking repeated assessments of participants' thoughts and feelings as they progress through stages of change, the cognitive processes that guide behavioural decisions from the time people embark on the new behaviour until the end of the study could be accurately documented. Again, I would expect high standards to be associated with thoughts of perceiving the behavioural goal (i.e., involvement in the clubs for which one signed up) as desirable and attainable, and sensitivity to failure to be associated with feeling bad following a lapse in club involvement.

A thorough examination of the processes underlying all-or-nothing behaviour would be a significant contribution on both theoretical and practical levels. On a theoretical level, it would elucidate how people transition—or fail to transition—through the first phases of behaviour change. Research that identifies underlying processes of change would supplement current models of behaviour change by empirically testing the determinants of behaviour at each phase, and the markers of transition from one phase to the next. On a practical level, a thorough investigation of the mechanisms involved in all-or-nothing behaviour would inform intervention strategies. The present research has shown that the three constructs under investigation could be used to identify people who are prone to all-or-nothing behaviour, and so understanding the processes that lead to this pattern of behaviour could inform interventions that are targeted toward such people. If researchers can identify the emotions and cognitions that guide people's decisions to decrease behavioural commitment, interventionists can give appropriate guidance at critical times. For example, in the case of all-or-nothing behaviour, it could be that people who chronically display this pattern see the new behaviour as highly desirable and attainable, and give relatively little consideration to the obstacles inherent in beginning a new activity. If this is the case, such people might fare best from an intervention that involves anticipating obstacles, planning to deal with these obstacles, and redefining goals so they are more achievable in the face of setbacks. If all-or-nothing behaviour is largely the result of people interpreting setbacks as relatively large personal failures, an intervention that involves construing setbacks as minor lapses and increasing efficacy to resume behaviour might be most appropriate. Though costly in terms of time and

resources, methodology that allows thorough investigation of processes involved in long-term behaviour change would, I believe, be worth the investment.

Another aspect to the current research that deserves further investigation is the causal effect of a behavioural setback on the relation between the target construct and all-or-nothing behaviour. Results from Study 4 provided evidence that a behavioural setback moderates the relation between the target individual differences and all-or-nothing behaviour. A causal moderating effect of setbacks seems highly plausible given how I have conceptualized the all-or-nothing behavioural pattern and the constructs that predict it. However, the field studies in the present program were longitudinal and relied on non-experimental methods. Therefore, there could be a third variable that is associated with both the probability of having a setback and subsequent decreases in behaviour. Although the stable individual differences under investigation cannot be randomly assigned, the presence of a behavioural setback could be experimentally manipulated, thus testing its causal role. For example, participants' levels of High Standards, Sensitivity to Failure, and Lack of Perseverance could be measured. Then, at a later date (so participants are not aware of the relation between their earlier responses and their participation in the study) participants would take part in a study, ostensibly to assess their abilities in an achievement domain (e.g., verbal aptitude). Participants would be given the opportunity to prepare for the test, and their amount of preparation would serve as a baseline level of behaviour. Next, participants would complete a verbal aptitude test and receive bogus performance feedback (i.e., a favourable or poor score that is randomly assigned). Participants would then be given the opportunity to prepare for the alleged second part of the test, and their amount of preparation at this time would serve as a measure of relative

increase or decrease in behaviour caused by the feedback they received; a poor score would induce a setback whereas a favourable score would not. The logic underlying this paradigm is that if people who are high on all three individual differences examined in the present research are more likely to manifest all-or-nothing behaviour in the face of a setback then this group (i.e., those who are high on all three constructs) should show a larger decrease in test preparation after having received a poor score than after having received a favourable score. Experimental methods that use a shorter timeframe would also inform the temporal boundaries of the ability of the target constructs to predict all-or-nothing behaviour. Conceivably, the individual differences may only influence decreases in behaviour over a relatively long period of time and thus a short amount of time (e.g., one hour in a lab study) would not be sufficient to capture the effects of these constructs on all-or-nothing behaviour.

Conclusion

Some people approach behavioural goals with a high level of commitment at the outset. However, initial commitment to healthful behaviour does little to improve one's quality of life if the behaviour is not sustained. Though people who begin new health behaviours at ambitious levels likely have good intentions to sustain these habits long-term, some may be counterproductively inclined to abandon the behaviour.

This research is the first to systematically assess patterns of all-or-nothing behaviour. Identifying individual differences associated with all-or-nothing behaviour is an important initial step for elucidating reasons why some people fail to commit to their behaviour goals long-term. Results from this program offer a number of novel

contributions to the research area of long-term behaviour change. I have identified individual differences associated with the tendency to start a new behaviour strong and then relapse. Further, I assessed the temporal stability of these constructs and their relatedness to theoretically similar and dissimilar constructs. Finally, I tested the ability of these constructs to predict all-or-nothing behaviour in two field studies across two different domains. Current models of long-term behaviour change are largely descriptive in nature and provide little insight into how people progress from one phase to the next. This research offers a novel contribution to behaviour change theory by elucidating stable individual differences that are related to behaviour change. This research also sets the stage for further empirical research investigating processes underlying an all-or-nothing pattern of behaviour. A better understanding of the determinants of long-term behaviour change is crucial for developing intervention strategies that encourage people to adopt sustainable goals at the outset of a new behaviour, and to persevere in the face of setbacks.

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APPENDIX A: Telephone Recruitment Script for Pilot Study (first sample) and for Study
3b

Hello, this is _____ calling from the psychology department at Queen's and I'm calling to invite you to participate in a research study. Are you interested in hearing about it?

(If yes): If you choose to participate, you will be asked to complete a pencil and paper questionnaire that asks about different areas of your personality. The study will take approximately 30 minutes to complete. You will receive \$5 for your participation in this study. We will ask for final consent when you show up for the study, and provide full information about its purpose following your participation.

Would you like to sign up for the study?

(If yes, set up a time).

Thank you.

APPENDIX B: Letter of Information for Pilot Study (first sample)

**Letter of Information
“Assessing Personality Differences”**

This research is part of a project being conducted by Lianne McLellan, a graduate student at Queen’s University. This study will involve indicating your age and gender and then responding to questionnaire items that ask about different areas of your personality. We will provide a more detailed description of the types of personality differences that we are researching at the completion of the study.

The total length of this session will be approximately 30 minutes. Please do not indicate your name on the questionnaire. Your responses to the questionnaire will remain anonymous and confidential. You are free to withdraw from this study at any time without penalty. You are free to omit responses to any questions you choose not to answer.

There are no known risks associated with your participation in this study.

All data collected from this study will be used for research purposes and there will be no disclosure of your responses to anyone but authorized researchers. Completed questionnaires will be kept confidential in a secure laboratory. Questionnaires will be destroyed after 7 years, in accordance with the standards of the American Psychological Association. The results of this study may be presented for academic purposes, such as at a conference or in an academic journal.

This project has been approved by the Queen’s Research Ethics Board. If you have any comments or questions about your participation in this study, please contact Dr. Merlin Donald, Head of the Department of Psychology, Queen’s University, at 533-2492 or Dr. Hugh Munby, Vice-chair, Queen’s Research Ethics Board, at 533-6000 ext. 77296. You may also contact the researcher, Lianne McLellan, at 2lm15@qmlink.queensu.ca or her supervisor, Dr. Tara MacDonald at tmacdon@psyc.queensu.ca or at 533-2873.

APPENDIX C: Consent Form for Pilot Study (first sample)

Consent Form
“Assessing Personality Differences”

I, _____, hereby state that I have volunteered for a study of personality. I will be asked to complete a scale that assesses different personality variables. The total length of this session will be approximately 30 minutes.

I have read the Letter of Information and have had any questions answered to my satisfaction.

I will receive a ballot for a draw to win \$50 for my participation in this study.

By signing below, I indicate that I understand the nature of the study, and consent to participate voluntarily as a research participant. I understand that I am free to discontinue participation in this study at any time, without penalty. I understand that my responses to the items will remain anonymous and confidential. I understand that all questionnaires will be kept confidential in a secure laboratory and only authorized researchers will have access to the data.

I am aware that I can contact the researcher, Lianne McLellan, her supervisor, or the Queen’s Research Ethics Board should I have any questions, complaints or comments about my participation in this study.

The general procedure of this study has been explained to me. I have read and understood the above statement. I freely consent to participate in this study.

Signature: _____

Date: _____

APPENDIX D: Questionnaire for Pilot Study (first sample)

Age: _____ Gender (circle one): **M** **F**

Please **clearly** place a number from 1 to 7 beside each of the following statements to indicate how much you agree or disagree with it. Use the scale at the top of each page to see what the numbers mean. Read each statement carefully and respond truthfully.

1	2	3	4	5	6	7
Strongly Disagree			Neither agree nor Disagree			Strongly Agree

1. _____ It bothers me when I fail to meet my personal standards at work.
2. _____ It is important to me that other people see me as being competent.
3. _____ People often tell me that I am a hard worker.
4. _____ It is very important to me that I do well at school.
5. _____ I am good at dividing my time evenly between my various responsibilities and activities.
6. _____ As long as I was learning something valuable, I would not be upset about getting a mediocre mark in a course at school.
7. _____ I feel disillusioned when things don't go my way.
8. _____ I would rather finish a project I have already started than begin a new project.
9. _____ People would only call me a perfectionist in a joke.
10. _____ It's easy for me to balance my old and new interests.
11. _____ I tend to dwell on criticism.
12. _____ I tend to persevere on tasks that are very difficult for me.
13. _____ People have told me that I'm a perfectionist.
14. _____ I am the type of person who never gives up until a task or project is done.
15. _____ When things go wrong in my romantic relationships, I usually try to work on the problem rather than end the relationship.
16. _____ When I receive negative feedback, I take this as an opportunity to improve.
17. _____ I am very bothered when I sense that others are disappointed in my performance.
18. _____ I am usually able to let the criticism of others "roll off my back."
19. _____ If I find I'm not performing as well as I'd like, I tend to give up.
20. _____ I'd rather just "slide by" than try to do my best.
21. _____ When something goes wrong, I have a tendency to "blow things out of proportion."
22. _____ I like to take my time when deciding whether or not to start a new project.
23. _____ If I make a mistake or two, I try to stay focused on the positive.
24. _____ I do not expect to be successful at everything.
25. _____ I am constantly looking for ways to improve myself.
26. _____ Others would describe me as a "slacker".
27. _____ I do most things well.
28. _____ I tend to enjoy my hobbies more once I have been doing them for a while.
29. _____ I strive for excellence.

1	2	3	4	5	6	7
Strongly Disagree			Neither agree nor Disagree			Strongly Agree
30.	_____					
31.	_____					
32.	_____					
33.	_____					
34.	_____					
35.	_____					
36.	_____					
37.	_____					
38.	_____					
39.	_____					
40.	_____					
41.	_____					
42.	_____					
43.	_____					
44.	_____					
45.	_____					
46.	_____					
47.	_____					
48.	_____					
49.	_____					
50.	_____					
51.	_____					
52.	_____					
53.	_____					
54.	_____					
55.	_____					
56.	_____					
57.	_____					
58.	_____					
59.	_____					

- | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|----------------------|---|---|-------------------------------|---|---|-------------------|
| Strongly
Disagree | | | Neither agree
nor Disagree | | | Strongly
Agree |
60. _____ When I don't follow through with a plan, I feel like a failure.
61. _____ When I get frustrated with a new project, I tend to give up and move on to something new.
62. _____ When I work on a difficult or frustrating task, I tend to lose momentum partway through.
63. _____ I always find constructive criticism helpful.
64. _____ Obstacles and difficulties tend to sour a project for me.
65. _____ I wish I had more will-power.
66. _____ When I encounter a setback, I stay focused on my goals.
67. _____ I have confidence in my ability to meet the goals that I set for myself.
68. _____ Outcomes are beyond my control.
69. _____ I usually give up when something goes wrong.
70. _____ I rarely give up on things.
71. _____ I do not like to give up on tasks that I have started.
72. _____ I put a great deal of work and effort in everything that I do.
73. _____ I'm good at managing my time when trying something new.
74. _____ If I was romantically interested in someone and that person did not return my feelings, I would feel as though I would never be able to find a romantic relationship in the future.
75. _____ I tend to ease my way into new activities, rather than just jumping in.
76. _____ I would be mortified if one of my role models expressed disapproval about something I had done.
77. _____ When it comes to setting goals, I think it's best to aim high.
78. _____ If someone offers me criticism on a task, it makes me feel like I've failed at it.
79. _____ It's hard for me to get excited about a new hobby or project unless I go "all out".
80. _____ When things do not go my way, I generally seek out new endeavors.
81. _____ When I do something wrong, I see it as merely a setback.
82. _____ When I start something new, I am really excited about it.
83. _____ A new hobby can absorb a lot of my time.
84. _____ When I decide to try something new it totally consumes me.
85. _____ I finish most things I start.
86. _____ When I get a bad mark in school, part of me feels as though I will never succeed in doing something meaningful with my life.
87. _____ I persevere when faced with obstacles.
88. _____ I do not let setbacks pull me down.
89. _____ I become unhappy when I can't devote enough time to a task to do the best job possible.

1	2	3	4	5	6	7
Strongly Disagree			Neither agree nor Disagree			Strongly Agree
90.	_____					
	It is more important to have fun with extra-curricular activities than to be good at them.					
91.	_____					
	If I did poorly on an exam, I would be confident that I could do better on the next one.					
92.	_____					
	People don't expect much of me.					
93.	_____					
	I often put less effort into a task when I sense that other people are more talented than I am.					
94.	_____					
	I tend to pursue a wide variety of interests at once.					
95.	_____					
	When I encounter a set-back in achieving one of my goals, I become even more motivated to achieve it.					
96.	_____					
	I prefer to stick to my usual routine without adding new activities.					
97.	_____					
	I tend not to get too "wrapped up" in new activities.					
98.	_____					
	When I start a project, I put all of my energy into it.					
99.	_____					
	I am not concerned with my evaluations.					
100.	_____					
	As long as a job gets done, that's all that really matters.					
101.	_____					
	When I start a new job, I am comfortable with making a few mistakes.					
102.	_____					
	I would probably feel okay if I failed at something.					
103.	_____					
	If I encounter a setback, I will no longer try to accomplish my goal.					
104.	_____					
	I am not a "go-getter" type of person.					
105.	_____					
	I feel upset if I do not achieve all of my goals.					
106.	_____					
	I am grateful when someone is willing to give me constructive criticism.					
107.	_____					
	Through hard work and effort, one can achieve almost anything.					
108.	_____					
	If I try something new and I'm not good at it right away, I keep at it until I improve.					
109.	_____					
	Others would describe me as a very diligent worker.					
110.	_____					
	I aim to score high on tests.					
111.	_____					
	I often lose track of time when I'm engaged in a task that I enjoy.					
112.	_____					
	Failing to persevere on a project you've started is a sign of weak character.					
113.	_____					
	I tend to start different hobbies but then end up dropping them.					
114.	_____					
	I am sensitive to feedback.					
115.	_____					
	I am wary of committing to something new right off the bat.					
116.	_____					
	I spend a lot of time thinking about the underlying meaning of criticism directed at me.					
117.	_____					
	I have an easy time getting over mistakes that I make at school.					
118.	_____					
	I can accomplish anything I set my mind to.					
119.	_____					
	What other people think of my work ethic is of little concern to me.					
120.	_____					
	I like the challenge of working through problems to attain my goals.					
121.	_____					
	Outside of school, I try to focus on just one or two hobbies.					

1	2	3	4	5	6	7
Strongly Disagree			Neither agree nor Disagree			Strongly Agree
122.	_____					
	If I have performed a task sufficiently, I don't worry a lot about the "loose ends."					
123.	_____					
	One good thing about me is that I am always enthusiastic about new projects and activities.					
124.	_____					
	When I begin a new project, I follow through with finishing it.					
125.	_____					
	I am very hard on myself when I don't do as well as I wanted to.					
126.	_____					
	When I find something that I like to do, I completely immerse myself in it.					
127.	_____					
	I cope well with unexpected problems.					
128.	_____					
	I generally don't pay much attention to my test scores.					
129.	_____					
	I do things more poorly than others.					
130.	_____					
	I feel very enthusiastic about my courses at the beginning of the school year.					
131.	_____					
	I try new things in a sensible, balanced way.					
132.	_____					
	When the going gets tough, I'm tough too.					
133.	_____					
	When someone is critical of me, I tend to assume that he or she will think poorly of me forevermore.					
134.	_____					
	I never give up on my goals, even when things are going badly for me.					
135.	_____					
	When I become enthused about a task, it is difficult for me to focus on anything else.					
136.	_____					
	When I get negative feedback, I assume that I will improve in the future.					
137.	_____					
	When I start a new project, I tend to throw myself into it.					
138.	_____					
	I have trouble following through with ambitious plans.					
139.	_____					
	I tend to neglect other aspects of my life in order to attain a specific goal.					
140.	_____					
	Small things can put me off track from a goal.					
141.	_____					
	When I'm starting something new, it's a big deal if I make mistakes.					
142.	_____					
	In the past, I have given up on tasks when maybe I should have stuck to my goals.					
143.	_____					
	When I am focused on completing a task, I am often oblivious to things around me.					
144.	_____					
	I believe that I can achieve almost anything I set my mind to.					
145.	_____					
	If I start a task, I always finish it.					
146.	_____					
	I do most new things in an all-or-none way.					
147.	_____					
	I try to get back on track with my goal when I have a minor setback.					
148.	_____					
	To accomplish a goal, I tend to work at it gradually rather than doing it all at once.					
149.	_____					
	I often do the bare minimum required to complete a task.					
150.	_____					
	I take constructive criticism very well.					
151.	_____					
	When I have a setback, it doesn't tend to bother me.					
152.	_____					
	Other people often observe that my life seems to lack balance.					

1	2	3	4	5	6	7
Strongly Disagree			Neither agree nor Disagree			Strongly Agree
153.	_____					I am hesitant to commit to a new activity before I have time decide whether I really enjoy it.
154.	_____					I have to focus on one thing at time to get things done.
155.	_____					I could probably accomplish more if I did not give up on tasks so easily.
156.	_____					When I have many things to do, I try to devote equal amounts of time to everything.
157.	_____					I often abandon one activity if something more exciting comes along.
158.	_____					I only do things that I know I'll do well.
159.	_____					If I'm not good at something right away, I'm motivated to improve.
160.	_____					I am rarely bothered when others criticize me.
161.	_____					When working towards a goal, I tend to take setbacks in stride.
162.	_____					My projects are usually small-scale.
163.	_____					When I start a new activity, I throw myself into it 100%.
164.	_____					I get very upset when I realize I may have done something wrong.
165.	_____					When I become involved in a new romantic relationship, I feel like I can't get enough of that person.
166.	_____					It is important to be successful at everything.
167.	_____					I work hard to achieve my goals.
168.	_____					I feel like a failure when someone points out a mistake I made.
169.	_____					If I make even one mistake, I feel like a failure.
170.	_____					If people criticize me, I have a hard time "letting go" of what they said.
171.	_____					I expect myself to perform better than my peers in most activities.
172.	_____					I have a lot of unfinished projects.
173.	_____					I am often willing to devote a lot of time to new hobbies.
174.	_____					I become discouraged when I fail to master a new skill relatively quickly.
175.	_____					If I were doing badly in one of my courses, I would be more likely to try to improve my grade than to drop the course.
176.	_____					I am the type of person who always strives to excel.
177.	_____					I do not participate in activities that I am not good at.
178.	_____					People are often impressed by the passion with which I approach new activities.
179.	_____					I like to totally immerse myself in new projects.
180.	_____					If you have a job to do, you should do it well.
181.	_____					I give myself a few chances to get things right.
182.	_____					When I set goals for myself, I aim high.
183.	_____					If I do not succeed at a task the first time, I simply try again.
184.	_____					When I feel like I'm not measuring up, I work harder to improve.
185.	_____					I'd rather do something I really have to work at than something I do well naturally.

1	2	3	4	5	6	7
Strongly Disagree			Neither agree nor Disagree			Strongly Agree
186.	_____					When I am especially interested in a project, I feel compelled to work on it all the time.
187.	_____					I'd rather start something new than persist with a project I've already started.
188.	_____					I am not the type of person who fails to fulfill commitments.
189.	_____					I do the bare minimum required to get by in school.
190.	_____					I find that my feelings for my romantic partners get much stronger over time.
191.	_____					I work hardest at my courses at the beginning of the school year.
192.	_____					I tend to meet my goals in spite of any obstacles that I might encounter.
193.	_____					I abandon activities that don't come easily to me.
194.	_____					If I have a problem trying to reach my goal, it feels hopeless.
195.	_____					I generally don't try very hard in school.
196.	_____					I am often overwhelmed with excitement when I start something new.
197.	_____					I give up easily.
198.	_____					It is important to me that other people see me as being hard-working.
199.	_____					Before I start something, I wait until I have the time and resources to do it 100%.
200.	_____					When I am working on a project, I try to do everything perfectly.
201.	_____					I tend to put setbacks into perspective.
202.	_____					It is often better not to work on a task at all than to do a mediocre job on it.
203.	_____					If I feel that I have not prepared adequately for an exam, I will not even try to do well.
204.	_____					I have difficulty understanding people who don't put much effort into making something of themselves.
205.	_____					Minor setbacks cause me to abandon my goals.
206.	_____					I tend to let criticism "roll off my back."
207.	_____					When I have difficulty with a task, I tend to switch to one that I am good at.

APPENDIX E: Debriefing Form for Pilot Study (first sample)

Participant Feedback
“Assessing Personality Differences”

As we told you at the beginning of the study, this study was to assess a number of different personality variables. What we did not tell you is that we are developing a personality scale of “all-or-nothing” (AON) thinking. We are testing the list of items that you completed today and those items that are most reliable will be used in a smaller end questionnaire to assess this personality trait.

This construct of AON thinking is to capture individual differences in people’s desires to achieve certain (high) standards but to abandon goals when they don’t reach or maintain these standards. People high in AON have a narrow definition of success and a broad definition of failure. Therefore, even a minor setback will be perceived as a failure because one has low tolerance for mediocrity. Most people have probably engaged in AON thinking and behaviour at different times in their lives but what we’re trying to capture here is a chronic tendency to do so.

As stated earlier, your responses to the questionnaire items will be confidential and anonymous. If you have any questions in the future about the study, please contact the researcher using the contact information provided on the information sheet.

Please do not tell anyone about this study before the end of the term.

It is very important that other participants are not aware of the full purpose of the study before they participate, so please honour our confidentiality.

Thank you for your participation!

APPENDIX F: Consent Form for Pilot Study (second sample)

The following questionnaire is part a study that is separate from the study you came in for today. This is research is part of a project being conducted by Lianne McLellan, a graduate student at Queen's University. This study will take 10-15 minutes and will involve responding to questionnaire items that ask about different areas of your personality. You will not receive compensation for your participation in this study over an above that which you are entitled for participating in the study you came in for today. By signing below, you are indicating that you consent to participate voluntarily as a research participant. You may discontinue participation in this study at any time, without penalty. Your responses to the items will remain anonymous and confidential. All questionnaires will be kept confidential in a secure laboratory and only authorized researchers will have access to the data.

Signature

Date

APPENDIX G: Questionnaire for Pilot Study (second sample)

Please **clearly** place a number from 1 to 7 beside each of the following statements to indicate how much you agree or disagree with it. Use the scale at the top of each page to see what the numbers mean. Read each statement carefully and respond truthfully.

1	2	3	4	5	6	7
Strongly Disagree			Neither agree nor Disagree			Strongly Agree

1. _____ I do not let setbacks pull me down.
2. _____ I am the type of person who always strives to excel.
3. _____ When I start a project, I put all of my energy into it.
4. _____ I tend to start different hobbies but then end up dropping them.
5. _____ If I did poorly on an exam, I would be confident that I could do better on the next one.
6. _____ I tend to lose interest in hobbies and projects quickly.
7. _____ Minor setbacks cause me to abandon my goals.
8. _____ It's important for me to complete a task as best I can.
9. _____ I often put less effort into a task when I sense that other people are more talented than I am.
10. _____ I tend to let criticism "roll off my back."
11. _____ I am very bothered when I sense that others are disappointed in my performance.
12. _____ I am sensitive to feedback.
13. _____ If I start a task, I always finish it.
14. _____ When I start something new, I am really excited about it.
15. _____ When I don't follow through with a plan, I feel like a failure.
16. _____ If I have performed a task sufficiently, I don't worry a lot about the "loose ends."
17. _____ Others would describe me as a very diligent worker.
18. _____ If I do not succeed at a task the first time, I simply try again.
19. _____ When I do something wrong, I see it as merely a setback.
20. _____ If I have a problem trying to reach my goal, it feels hopeless.
21. _____ I often do the bare minimum required to complete a task.
22. _____ I give up easily.
23. _____ Any setbacks or problems make me feel like I will never achieve my goals.
24. _____ When I get a bad mark in school, part of me feels as though I will never succeed in doing something meaningful with my life.
25. _____ What other people think of my work ethic is of little concern to me.
26. _____ I would probably feel okay if I failed at something.
27. _____ I have a lot of unfinished projects.
28. _____ When I am working on a project, I try to do everything perfectly.

1 2 3 4 5 6 7

Strongly
Disagree

Neither agree
nor Disagree

Strongly
Agree

61. _____ It is important to me that other people see me as being hard-working.
62. _____ I rarely give up on things.
63. _____ I generally don't pay much attention to my test scores.
64. _____ People don't expect much of me.
65. _____ People often tell me that I am a hard worker.
66. _____ It is important to be successful at everything.
67. _____ People are often impressed by the passion with which I approach new activities.
68. _____ I am not a "go-getter" type of person.
69. _____ If I encounter a setback, I will no longer try to accomplish my goal.
70. _____ I usually give up when something goes wrong.
71. _____ I am very hard on myself when I don't do as well as I wanted to.
72. _____ Sometimes, the best that I can do has to be good enough, even if it isn't perfect.
73. _____ When I have difficulty with a task, I tend to switch to one that I am good at.
74. _____ Even when my co-workers are slacking off, I always put 100% into my jobs.

APPENDIX H: Measures of High Standards, Sensitivity to Failure, and Lack of Perseverance

Please **clearly** write a number from 1 to 7 beside each of the following statements to indicate the extent to which you agree or disagree, using the following scale:

	1	2	3	4	5	6	7
	Strongly Disagree			Neither agree nor Disagree			Strongly Agree
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note: Item #32 was included in Study 1 only. Scoring used in Studies 2 to 5 indicated by letters; S = Sensitivity to Failure, H = High Standards, and P = Lack of Perseverance.

APPENDIX I

Item Loadings for a Four-factor Solution using Maximum Likelihood Extraction with Direct Quartimin Rotation for First Administration, Study 1

Scale Item	Pattern Matrix Values by Factor			
	1	2	3	4
Any setbacks or problems make me feel like I will never achieve my goals.	.7	-.14	-.01	-.09
If I have a problem trying to reach my goal, it feels hopeless.	.74	.05	-.01	-.07
When I set a goal for myself, I get very discouraged when I encounter obstacles.	.73	.02	-.02	-.03
If I make even one mistake, I feel like a failure.	.69	.04	.02	-.11
When I get a bad mark in school, part of me feels as though I will never succeed in doing something meaningful with my life.	.67	-.00	-.05	-.04
I usually give up when something goes wrong.	.65	-.25	.10	-.08
I often interpret criticism as a sign that the other person thinks I'm a failure.	.63	.07	.10	-.00
I tend to "throw in the towel" if something does not go the way I wanted it to.	.63	-.14	.19	-.10
If someone offers me criticism on a task, it makes me feel like I've failed at it.	.61	.05	.12	-.03
Obstacles and difficulties tend to sour a project for me.	.61	-.02	.12	.01
If I find I'm not performing as well as I'd like, I tend to give up.	.60	-.22	.16	-.05
I am confident that I can deal with obstacles to my plans.	.56	-.06	-.04	.21
I do not let setbacks pull me down.	.49	-.08	-.03	.19
If people criticize me, I have a hard time "letting go" of what they said.	.47	.23	.11	.06
If I did poorly on an exam, I would be confident that I could do better on the next one.	.43	.05	-.09	.23
I find it difficult to let go of mistakes when I make them.	.42	.23	-.01	.04
I have an easy time getting over mistakes that I make at school.	.32	.28	-.04	.18
I put a great deal of work and effort in everything that I do.	-.07	.72	-.02	-.11
When I am working on a project, I try to do everything perfectly.	.03	.65	-.02	-.13
People often tell me that I am a hard worker.	-.07	.64	-.05	-.11
I strive for excellence.	-.08	.63	-.01	-.08
People have told me that I'm a perfectionist.	.14	.53	-.01	-.12
It is very important to me that I do well at school.	-.00	.53	.01	.02
Even when my co-workers are slacking off, I always put 100% into my jobs.	-.08	.38	-.05	-.20
I tend to start different hobbies but then end up	-.03	.11	.80	.09

dropping them.				
I tend to lose interest in hobbies and projects quickly.	.10	-.04	.69	.01
I'd rather start something new than persist with a project I've already started.	-.02	.02	.65	-.03
I have a lot of unfinished projects.	.03	-.05	.65	.02
When I start a new activity, I throw myself into it 100%.	.03	.08	-.04	-.71
When I start a new project, I tend to throw myself into it.	.10	.08	-.04	-.63
When I start a project, I put all of my energy into it.	.01	.19	-.06	-.46
People are often impressed by the passion with which I approach new activities.	-.10	.22	-.02	-.46

Item Loadings for a Four-factor Solution using Maximum Likelihood Extraction with Direct Quartimin Rotation for Second Administration, Study I

Scale Item	Pattern Matrix Values by Factor			
	1	2	3	4
When I set a goal for myself, I get very discouraged when I encounter obstacles.	.75	.03	.00	-.06
If I have a problem trying to reach my goal, it feels hopeless.	.71	.09	-.02	-.09
I often interpret criticism as a sign that the other person thinks I'm a failure.	.68	.06	.10	-.02
If someone offers me criticism on a task, it makes me feel like I've failed at it.	.66	.04	.11	-.02
When I get a bad mark in school, part of me feels as though I will never succeed in doing something meaningful with my life.	.65	.08	-.02	-.08
I am confident that I can deal with obstacles to my plans.	.64	-.09	-.02	.17
I usually give up when something goes wrong.	.61	-.24	.12	-.05
Any setbacks or problems make me feel like I will never achieve my goals.	.61	-.13	-.02	-.04
If I find I'm not performing as well as I'd like, I tend to give up.	.59	-.31	.10	-.04
I tend to "throw in the towel" if something does not go the way I wanted it to.	.58	-.18	.18	-.02
I do not let setbacks pull me down.	.57	-.08	-.03	.16
Obstacles and difficulties tend to sour a project for me.	.55	-.03	.12	-.01
If people criticize me, I have a hard time "letting go" of what they said.	.50	.28	.06	.05
If I make even one mistake, I feel like a failure.	.49	.12	.05	-.00
If I did poorly on an exam, I would be confident that I could do better on the next one.	.39	.01	-.08	.07
I find it difficult to let go of mistakes when I make them.	.37	.29	.06	.02
I put a great deal of work and effort in everything that I do.	-.08	.72	-.07	-.17
When I am working on a project, I try to do everything perfectly.	-.02	.69	-.04	-.16
People often tell me that I am a hard worker.	-.07	.62	-.07	-.11
I strive for excellence.	-.13	.61	.01	-.14
It is very important to me that I do well at school.	.02	.60	-.05	.05
People have told me that I'm a perfectionist.	.11	.47	-.08	-.20
I have an easy time getting over mistakes that I make at school.	.35	.37	-.04	.11
Even when my co-workers are slacking off, I always put 100% into my jobs.	-.04	.31	-.06	-.25
I tend to start different hobbies but then end up dropping them.	-.00	.10	.77	.05
I tend to lose interest in hobbies and projects quickly.	.04	.05	.75	.04

I'd rather start something new than persist with a project I've already started.	-01	-08	.67	-04
I have a lot of unfinished projects.	.00	-04	.65	-01
When I start a new activity, I throw myself into it 100%.	-01	-04	.00	-.81
When I start a project, I put all of my energy into it.	.03	.22	-.06	-.72
When I start a new project, I tend to throw myself into it.	.12	-01	-.01	-.70
People are often impressed by the passion with which I approach new activities.	-.14	.10	-.02	-.48

APPENDIX J

Target Individual Difference Scores for First Sample, Study 1

Scale (N=1217)	M	SD
Sensitivity to Failure	3.50	1.01
High Standards	5.35	0.93
Lack of Perseverance	3.53	1.31

Note. Scores range between 1-7 for each of the scales.

Target Individual Difference Scores by Rater Gender for First Sample, Study 1

Scale	Men (N=304)		Women (N=867)		F(1, 1169)
	M	SD	M	SD	
Sensitivity to Failure	3.15	0.99	3.62	0.99	52.76*
High Standards	5.15	0.97	5.43	0.90	20.91*
Lack of Perseverance	3.45	1.28	3.55	1.33	1.35

Note. Scores range between 1-7 for each of the scales.

* $p < .001$.

Target Individual Difference Scores for Second Sample, Study 1

Scale (N=1109)	M	SD
Sensitivity to Failure	3.49	0.96
High Standards	5.19	0.93
Lack of Perseverance	3.48	1.31

Note. Scores range between 1-7 for each of the scales.

Target Individual Difference Scores by Rater Gender for Second Sample, Study 1

Scale	Men (N=287)		Women (N=811)		F(1, 1096)
	M	SD	M	SD	
Sensitivity to Failure	3.13	0.93	3.62	0.95	55.58*
High Standards	4.87	0.95	5.31	0.89	47.95*
Lack of Perseverance	3.53	1.30	3.46	1.31	0.49

Note. Scores range between 1-7 for each of the scales.

* $p < .001$.

APPENDIX K: Letter of Information for Study 2

Letter of Information
“HEALTHY”

This research is part of a project being conducted by Lianne McLellan under the supervision of Dr. Tara MacDonald in the psychology department at Queen’s University. The purpose of this study is to examine the effects of different personality characteristics on adherence to health and fitness goals. Although we cannot tell you what we are specifically examining right now because it may affect your responses, we will provide complete information about the purpose via email when the study is complete.

This study involves answering a short questionnaire (approximately 10 mins.) about different aspects of your personality and your fitness goals for the Healthy Lifestyles Program. You do not have to answer any questions that you find objectionable, or that make you feel uncomfortable. With your consent, the researcher will examine your personal file from the Healthy Lifestyle Program. This information will be kept strictly confidential and will be used solely for the purposes of this research. In addition to the questionnaire today, the researcher will email you a short (3 min.) follow-up questionnaire approximately 10 weeks after the Healthy Lifestyle Program has ended. This questionnaire will include questions regarding your health and fitness behaviours at that time. When the study is complete (in approximately 20 weeks) the researcher will email you with complete information regarding the purpose of the study and you may contact her (via email or phone) if you have any further questions about the study. If you decide to participate, you will receive a ballot in a draw to win \$100 cash. You are free to withdraw from this study at any time without penalty and your name will still be entered in the draw.

There are no known risks associated with your participation in this study.

All data collected from this study will be used for research purposes and there will be no disclosure of your responses to anyone but authorized researchers. Completed questionnaires will be kept confidential in a secure laboratory to which only authorized researchers have access. No identifying information will be stored with your responses to the questionnaires, or to the information from your personal file from the Healthy Lifestyle Program. Only participant codes will be used, to maintain confidentiality. Questionnaires will be destroyed after 7 years, in accordance with the standards of the American Psychological Association. The results of this study may be presented for academic purposes, such as at a conference or in an academic journal. Results will be presented in aggregate form, so no individual responses will be published.

This study has been approved by the Queen’s Research Ethics Board. If you have any comments or questions about your participation in this study, please contact the researcher, Lianne McLellan, at 2lm15@qlink.queensu.ca or her supervisor, Dr. Tara MacDonald at tmacdon@post.queensu.ca or by phone at 533-2873. You may also contact the Head of the Department of Psychology Queen’s University, at 533-2492 or the Chair of Queen’s Research Ethics Board, at 533-6288.

APPENDIX L: Consent Form for Study 2

Consent Form
"HEALTHY"

I, _____, hereby state that I have volunteered for a study of personality and adherence to health and fitness goals. I will be asked to complete a short questionnaire about my personality and fitness goals. I do not have to answer any questions that I find objectionable, or that make me feel uncomfortable. I also give consent to the researcher to access my personal file from the Healthy Lifestyle Program with the understanding that this information will be kept strictly confidential and will be used solely for the purposes of this research. In addition to the questionnaire today, I consent to the researcher emailing me a short (3 min.) follow-up questionnaire approximately 10 weeks after the Healthy Lifestyle Program has ended. I may choose not to complete the questionnaire at that time, without penalty. An explanation of the full purpose of this study will be emailed to me at its completion in approximately 20 weeks.

I have read the Letter of Information and have had any questions answered to my satisfaction.

For my participation in this study, I will receive a ballot in a draw to win \$100 cash. If I withdraw from the study before its completion, my name will still be entered in the draw.

By signing below, I indicate that I understand the nature of the study, and consent to participate voluntarily as a research participant. I understand that I am free to discontinue participation in this study at any time, without penalty, by contacting the researcher. I understand that my responses to the items will remain confidential and that only authorized researchers will have access to the data.

I am aware that I can contact the researcher (Lianne McLellan) at 2LM15@qlink.queensu.ca, her supervisor (Tara MacDonald) at tmacdon@post.queensu.ca or by phone at 533-2873, the Head of the Department of Psychology Queen's University at 533-2492, or the Chair of Queen's Research Ethics Board at 533-6288, should I have any questions, complaints or comments about my participation in this study.

The general procedure of this study has been explained to me. I have read and understood the above statement. I freely consent to participate in this study.

Signature: _____

Date: _____

*Email address: _____

*Please indicate your email address. You will be contacted via email if you win a cash draw, to take place in 10 weeks. The researcher will also email you a follow-up questionnaire 10 weeks after the Healthy Lifestyles Program concludes, and a debriefing form providing full information about the purpose of the study at its completion in approximately 20 weeks.

APPENDIX M: Intake Questionnaire for Study 2

1. How many times were you vigorously active at least 30 minutes per day (i.e., running, cycling, etc) **over the past month**?

_____ I wasn't vigorously active at all

_____ Less than once a week

_____ About once a week

_____ About twice a week

_____ About three times a week

_____ About four times a week

_____ 5 times a week or more

2. Approximately how many times per week would you **ideally** like to exercise over the next 10 weeks?

3. Approximately how many times per week would you **realistically** like to exercise over the next 10 weeks? (could be the same as #2 above)

4. Please write a number to indicate how **confident** you feel about exercising this many times, over the next 10 weeks, on a scale of 0 (not at all confident) to 100 (extremely confident). **Confidence = certainty that you will exercise this often.*

_____ (please write a number from 0 to 100)

5. Please write a number to indicate how **committed** you are to exercising this many times, over the next 10 weeks, on a scale of 0 (not at all committed) to 100 (extremely committed). **Commitment = resolve to exercise this often.*

_____ (please write a number from 0 to 100)

APPENDIX N: Follow-up Questionnaire for Study 2

The following questions ask about your exercise and health behaviours over the past week.

1. Over the past week, how many times have you engaged in vigorous exercise?

2. Over the past week, how many times have you eaten foods that you know aren't "good for you"?

3. Using the nutritional recommendations given to you during the Healthy Lifestyle Program as a guide, how would you rate your eating habits over the past week? (please circle a number)

1	2	3	4	5	6	7
not good at all						very good

4. Using the physical activity recommendations given to you during the Healthy Lifestyle Program as a guide, how would you rate your physical activity over the past week? (please circle a number)

1	2	3	4	5	6	7
not good at all						very good

Think about your diet and exercise behaviours before you participated in the Healthy Lifestyle Program

5. How much improvement/decline have you experienced in your *eating habits* from before participating in the program, to now.

1	2	3	4	5	6	7
a lot of decline			about the same			a lot of improvement

6. How much improvement/decline have you experienced in your *exercise habits* from before participating in the program, to now.

1	2	3	4	5	6	7
a lot of decline			about the same			a lot of improvement

APPENDIX O: NEO-FFI

This questionnaire contains 60 statements. Please read each item carefully and circle the one answer that best corresponds to your agreement or disagreement. Please answer all questions honestly.

SD = Strongly Disagree

D = Disagree

N = Neutral

A = Agree

SA = Strongly Agree

- | | | | | | |
|---|----|---|---|---|----|
| 1. I am not a worrier. | SD | D | N | A | SA |
| 2. I like to have a lot of people around me. | SD | D | N | A | SA |
| 3. I don't like to waste my time daydreaming. | SD | D | N | A | SA |
| 4. I try to be courteous to everyone I meet. | SD | D | N | A | SA |
| 5. I keep my belongings clean and neat. | SD | D | N | A | SA |
| 6. I often feel inferior to others. | SD | D | N | A | SA |
| 7. I laugh easily. | SD | D | N | A | SA |
| 8. Once I find the right way to do something, I stick to it. | SD | D | N | A | SA |
| 9. I often get into arguments with my family and co-workers. | SD | D | N | A | SA |
| 10. I'm pretty good about pacing myself as long as I get things done on time. | SD | D | N | A | SA |
| 11. When I'm under a great deal of stress, sometimes I feel like I'm going to pieces. | SD | D | N | A | SA |
| 12. I don't consider myself especially 'light-hearted'. | SD | D | N | A | SA |
| 13. I am intrigued by the patterns I find in art and nature. | SD | D | N | A | SA |
| 14. Some people think I'm selfish and egotistical. | SD | D | N | A | SA |
| 15. I am not a very methodical person. | SD | D | N | A | SA |
| 16. I rarely feel alone or blue. | SD | D | N | A | SA |
| 17. I really enjoy talking to people. | SD | D | N | A | SA |
| 18. I believe letting students hear controversial speakers can only confuse/mislead. | SD | D | N | A | SA |
| 19. I would rather co-operate with others than compete with them. | SD | D | N | A | SA |
| 20. I try to perform conscientiously all the tasks assigned to me . | SD | D | N | A | SA |
| 21. I often feel tense and jittery. | SD | D | N | A | SA |
| 22. I like to be where the action is . | SD | D | N | A | SA |
| 23. Poetry has little or no effect on me. | SD | D | N | A | SA |
| 24. I tend to be cynical and sceptical of others' intentions. | SD | D | N | A | SA |
| 25. I have a clear set of goals and work towards them in an orderly fashion. | SD | D | N | A | SA |
| 26. Sometimes I feel completely worthless. | SD | D | N | A | SA |
| 27. I usually prefer to do things alone. | SD | D | N | A | SA |

28. I often try new and foreign foods.	SD	D	N	A	SA
29. I believe most people will take advantage of you if you let them.	SD	D	N	A	SA
30. I waste a lot of time before settling down to work.	SD	D	N	A	SA
31. I rarely feel fearful or anxious.	SD	D	N	A	SA
32. I often feel as if I'm bursting with energy.	SD	D	N	A	SA
33. I seldom notice the moods or feelings that different environments produce.	SD	D	N	A	SA
34. Most people I know like me.	SD	D	N	A	SA
35. I work hard to accomplish my goals.	SD	D	N	A	SA
36. I often get angry at the way people treat me.	SD	D	N	A	SA
37. I am a cheerful, high-spirited person.	SD	D	N	A	SA
38. I believe we should look to our religious authorities for decisions on moral issues.	SD	D	N	A	SA
39. Some people think of me as cold and calculating.	SD	D	N	A	SA
40. When I make a commitment, I can always be counted on to follow through.	SD	D	N	A	SA
41. Too often, when things go wrong, I get discouraged and feel like giving up.	SD	D	N	A	SA
42. I am not a cheerful optimist.	SD	D	N	A	SA
43. Sometimes with poetry/looking at a work of art, I feel a chill or wave of excitement.	SD	D	N	A	SA
44. I'm hard-headed and tough-minded in my attitudes.	SD	D	N	A	SA
45. Sometimes I'm not as dependable or reliable as I should be.	SD	D	N	A	SA
46. I am seldom sad or depressed.	SD	D	N	A	SA
47. My life is fast-paced.	SD	D	N	A	SA
48. I have little interest in speculating on the universe or the human condition.	SD	D	N	A	SA
49. I generally try to be thoughtful and considerate.	SD	D	N	A	SA
50. I am a productive person who always gets the job done.	SD	D	N	A	SA
51. I often feel helpless and want someone to solve my problems.	SD	D	N	A	SA
52. I am a very active person.	SD	D	N	A	SA
53. I have a lot of intellectual curiosity.	SD	D	N	A	SA
54. If I don't like people, I let them know it.	SD	D	N	A	SA
55. I never seem able to get organised.	SD	D	N	A	SA
56. At times I have been so ashamed I just wanted to hide.	SD	D	N	A	SA
57. I would rather go my own way than be a leader of others.	SD	D	N	A	SA
58. I often enjoy playing with abstract theories or abstract ideas.	SD	D	N	A	SA
59. If necessary, I am willing to manipulate people to get what I want.	SD	D	N	A	SA
60. I strive for excellence in everything I do.	SD	D	N	A	SA

APPENDIX P: Letter of Information for Study 3

Letter of Information
“Assessing Personality Differences”

This research is part of a project being conducted by Lianne McLellan, a graduate student at Queen’s University. This study will involve indicating your age and gender and then responding to questionnaire items that ask about different areas of your personality. We will provide a more detailed description of the types of personality differences that we are researching at the completion of the study.

The total length of this session will be approximately 30 minutes. Please do not indicate your name on the questionnaire. Your responses to the questionnaire will remain anonymous and confidential. You will receive .5% research participation credits for psyc 100, or \$5, as indicated to you by the researcher. You are free to withdraw from this study at any time without penalty. You are free to omit responses to any questions you choose not to answer.

There are no known risks associated with your participation in this study.

All data collected from this study will be used for research purposes and there will be no disclosure of your responses to anyone but authorized researchers. Completed questionnaires will be kept confidential in a secure laboratory. Questionnaires will be destroyed after 7 years, in accordance with the standards of the American Psychological Association. The results of this study may be presented for academic purposes, such as at a conference or in an academic journal.

This project has been approved by the Queen’s Research Ethics Board. If you have any comments or questions about your participation in this study, please contact the researcher, Lianne McLellan, at 2LM15@qmlink.queensu.ca or her supervisor, Dr. Tara MacDonald, at 533-2873. You may also contact the Head of the Department of Psychology Queen’s University at 533-2492 or the Chair of Queen’s Research Ethics Board, at 533-6288.

APPENDIX Q: Consent Form for Study 3

Consent Form
“Assessing Personality Differences”

I, _____, hereby state that I have volunteered for a study of personality. I will be asked to complete a scale that assesses different personality variables. The total length of this session will be approximately 30 minutes.

I have read the Letter of Information and have had any questions answered to my satisfaction.

I will receive either 0.5 research participation credits for Psychology 100 or \$5, as indicated to me by the researcher.

By signing below, I indicate that I understand the nature of the study, and consent to participate voluntarily as a research participant. I understand that I am free to discontinue participation in this study at any time, without penalty. I understand that my responses to the items will remain anonymous and confidential. I understand that all questionnaires will be kept confidential in a secure laboratory and only authorized researchers will have access to the data.

I am aware that I can contact Lianne McLellan (the researcher) at 2LM15@qmlink.queensu.ca, Tara MacDonald (her supervisor) at 533-2873, the Head of the Department of Psychology Queen’s University at 533-2492, or the Chair of Queen’s Research Ethics Board at 533-6288 should I have any questions, complaints or comments about my participation in this study.

The general procedure of this study has been explained to me. I have read and understood the above statement. I freely consent to participate in this study.

Signature: _____

Date: _____

APPENDIX R: Perfectionism Scale

Indicate the degree to which each of the items represents your feelings according to the following code:

1	2	3	4	5
Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree

- ___ 1) My parents set very high standards for me.
- ___ 2) Organization is very important to me.
- ___ 3) As a child, I was punished for doing things less than perfect.
- ___ 4) If I do not set the highest standards for myself, I am likely to end up a second-rate person.
- ___ 5) My parents never tried to understand my mistakes.
- ___ 6) It is important to me that I be thoroughly competent in everything I do.
- ___ 7) I am a neat person.
- ___ 8) I try to be an organized person.
- ___ 9) If I fail at work/school, I am a failure as a person.
- ___ 10) I should be upset if I make a mistake.
- ___ 11) My parents wanted me to be the best at everything.
- ___ 12) I set higher goals than most people.
- ___ 13) If someone does a task at work/school better than I, then I feel like I failed the whole task.
- ___ 14) If I fail partly, it is as bad as being a complete failure.
- ___ 15) Only outstanding performance is good enough in my family.
- ___ 16) I am very good at focusing my efforts on attaining a goal.

- ___ 17) Even when I do something very carefully, I often feel that it is not quite right.
- ___ 18) I hate being less than the best at things.
- ___ 19) I have extremely high goals.
- ___ 20) My parents have expected excellence from me.
- ___ 21) People will probably think less of me if I make a mistake.
- ___ 22) I never felt like I could meet my parents' expectations.
- ___ 23) If I do not do as well as other people, it means I am an inferior human being.
- ___ 24) Other people seem to accept lower standards from themselves than I do.
- ___ 25) If I do not do as well all the time, people will not respect me.
- ___ 26) My parents have always had higher expectations for my future than I have.
- ___ 27) I try to be a neat person.
- ___ 28) I usually have doubts about the simple everyday things I do.
- ___ 29) Neatness is very important to me.
- ___ 30) I expect higher performance in my daily tasks than most people.
- ___ 31) I am an organized person.
- ___ 32) I tend to get behind in my work because I repeat things over and over.
- ___ 33) It takes me a long time to do something "right".
- ___ 34) The fewer mistakes I make, the more people will like me.
- ___ 35) I never felt like I could meet my parents' standards.

APPENDIX S: Impulsivity Scale

Indicate the degree to which each of the items represents your feelings according to the following code:

1	2	3	4
Strongly Disagree	Slightly Disagree	Slightly Agree	Strongly Agree

- ___ 1) I have a reserved and cautious attitude toward life.
- ___ 2) My thinking is usually careful and purposeful.
- ___ 3) I am not one of those people who blurt out things without thinking.
- ___ 4) I like to stop and think things over before I do them.
- ___ 5) I don't like to start a project until I know exactly how to proceed.
- ___ 6) I tend to value and follow a rational, "sensible" approach to things.
- ___ 7) I usually make up my mind through careful reasoning.
- ___ 8) I am a cautious person.
- ___ 9) Before I get into a new situation I like to find out what to expect from it.
- ___ 10) I usually think carefully before doing anything.
- ___ 11) Before making up my mind, I consider all the advantages and disadvantages.
- ___ 12) I have trouble controlling my impulses.
- ___ 13) I have trouble resisting my cravings (for food, cigarettes, etc.).
- ___ 14) I often get involved in things I later wish I could get out of.
- ___ 15) When I feel bad, I will often do things I later regret in order to make myself feel better now.
- ___ 16) Sometimes when I feel bad, I can't seem to stop what I am doing even though it is making me feel worse.
- ___ 17) When I am upset I often act without thinking.
- ___ 18) When I feel rejected, I will often say things that I later regret.
- ___ 19) It is hard for me to resist acting on my feelings.
- ___ 20) I often make matters worse because I act without thinking when I am upset.
- ___ 21) In the heat of an argument, I will often say things that I later regret.
- ___ 22) I am always able to keep my feelings under control.

- ___ 23) Sometimes I do things on impulse that I later regret.
- ___ 24) I generally seek new and exciting experiences and sensations.
- ___ 25) I'll try anything once.
- ___ 26) I like sports and games in which you have to choose your next move very quickly.
- ___ 27) I would enjoy water skiing.
- ___ 28) I quite enjoy taking risks.
- ___ 29) I would enjoy parachute jumping.
- ___ 30) I welcome new and exciting experiences and sensations, even if they are a little frightening and unconventional.
- ___ 31) I would like to learn to fly an airplane.
- ___ 32) I sometimes like doing things that are a big frightening.
- ___ 33) I would enjoy the sensation of skiing very fast down a high mountain slope.
- ___ 34) I would like to go scuba diving.
- ___ 35) I would enjoy fast driving.
- ___ 36) I generally like to see things through to the end.
- ___ 37) I tend to give up easily.
- ___ 38) Unfinished tasks really bother me.
- ___ 39) Once I get going on something I hate to stop.
- ___ 40) I concentrate easily.
- ___ 41) I finish what I start.
- ___ 42) I'm pretty good about pacing myself so as to get things done on time.
- ___ 43) I am a productive person who always gets the job done.
- ___ 44) Once I start a project, I almost always finish it.
- ___ 45) There are so many little jobs that need to be done that I sometimes just ignore them all.

APPENDIX T: Rosenberg Self-Esteem Scale

Please read each item below and then indicate how well each statement describes you using the following response scale:

1	2	3	4	5	6	7
Strongly Disagree			Neither agree nor Disagree			Strongly Agree

- ___ 1. On the whole, I am satisfied with myself.
- ___ 2. At times I think I am no good at all.
- ___ 3. I feel that I have a number of good qualities.
- ___ 4. I am able to do things as well as most other people.
- ___ 5. I feel that I do not have much to be proud of.
- ___ 6. I certainly feel useless at times.
- ___ 7. I feel that I am a person of worth, at least equal with others.
- ___ 8. I wish that I could have more respect for myself.
- ___ 9. I usually feel that I am a failure.
- ___ 10. I take a positive attitude toward myself.

APPENDIX U: LOT-R measure of Dispositional Optimism

Indicate the degree to which each of the items represents your feelings according to the following code:

1	2	3	4	5
Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree

___ I'm always optimistic about my future.

___ In uncertain times, I usually expect the best.

___ I always look on the bright side of things.

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

___ It's easy for me to relax.

___ I hardly ever expect things to go my way.

___ I enjoy my friends a lot.

___ It's important for me to keep busy.

___ I rarely count on good things happening to me.

___ I'm a believer in the idea that "every cloud has a silver lining."

___ I don't get upset too easily.

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

APPENDIX V: Dysfunctional Attitudes Scale

Listed below are different attitudes or beliefs which people sometimes hold. Read each statement carefully and decide how much you agree or disagree with the statement. Because people are different, there are no right or wrong answers to these statements. To decide whether a given attitude is typical of your way of looking at things, simply keep in mind what you are like MOST OF THE TIME.

Key: 1= Totally disagree
 2= Disagree very much
 3= Disagree slightly
 4= Neutral
 5= Agree slightly
 6= Agree very much
 7= Totally agree

- ___ 1. It is difficult to be happy unless one is good-looking, intelligent, rich and creative.
- ___ 2. Happiness is more a matter of my attitude toward myself than the way other people feel about me.
- ___ 3. People will probably think less of me if I make a mistake.
- ___ 4. If I do not do well all the time, people will not respect me.
- ___ 5. Taking even a small risk is foolish because the loss is likely to be a disaster.
- ___ 6. It is possible to gain another person's respect without being especially talented at anything.
- ___ 7. I cannot be happy unless most people I know admire me.
- ___ 8. If a person asks for help, it is a sign of weakness.
- ___ 9. If I do not do as well as other people, it means that I am an inferior human being.
- ___ 10. If I fail at my work, then I am a failure as a person.
- ___ 11. If you cannot do something well, there is little point in doing it at all.
- ___ 12. Making mistakes is fine because I can learn from them.
- ___ 13. If someone disagrees with me, it probably indicates he does not like me.
- ___ 14. If I fail partly, it is as bad as being a complete failure.
- ___ 15. If other people know what you are really like, they will think less of you.
- ___ 16. I am nothing if a person I love doesn't love me.

- ___ 17. One can get pleasure from an activity regardless of the end result.
- ___ 18. People should have a reasonable likelihood of success before undertaking anything.
- ___ 19. My value as a person depends greatly on what others think of me.
- ___ 20. If I don't set the highest standards for myself, I am likely to end up a second-rate person.
- ___ 21. If I am to be a worthwhile person, I must be truly outstanding in at least one major respect.
- ___ 22. People who have good ideas are more worthy than those who do not.
- ___ 23. I should be upset if I make a mistake.
- ___ 24. My own opinions of myself are more important than others' opinions of me.
- ___ 25. To be a good, moral, worthwhile person, I must help everyone who needs it.
- ___ 26. If I ask a question, it makes me look inferior.
- ___ 27. It is awful to be disapproved of by people important to you.
- ___ 28. If you don't have other people to lean on, you are bound to be sad.
- ___ 29. I can reach important goals without slave-driving myself.
- ___ 30. It is possible for a person to be scolded and not get upset.
- ___ 31. I cannot trust other people because they might be cruel to me.
- ___ 32. If others dislike you, you cannot be happy.
- ___ 33. It is best to give up your own interests in order to please other people.
- ___ 34. My happiness depends more on other people than it does me.
- ___ 35. I do not need the approval of other people in order to be happy.
- ___ 36. If a person avoids problems, the problems tend to go away.
- ___ 37. I can be happy even if I miss out on many of the good things in life.
- ___ 38. What other people think about me is very important.
- ___ 39. Being isolated from others is bound to lead to unhappiness.
- ___ 40. I can find happiness without being loved by another person.

APPENDIX W: BIDR measure of Desirable Responding

Read each statement, and write the number that best describes you beside each statement, from *Not True* to *Very True* about you.

- | | 1 | 2 | 3 | 4 | 5 |
|-----|-----------------|---|---|---|------------------|
| | Not True | | | | Very True |
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35. _____ I have done things that I don't tell other people about.
36. _____ I never take things that don't belong to me.
37. _____ I have taken sick-leave from work or school even though I wasn't really sick.
38. _____ I have never damaged a library book or store merchandise without reporting it.
39. _____ I have some pretty awful habits.
40. _____ I don't gossip about other people's business.

APPENDIX X: Debriefing Form for Study 3

Participant Feedback “Assessing Personality Differences”

As we told you at the beginning of the study, the purpose of this research was to assess a number of different personality variables. What we did not tell you is that we are testing the validity of an individual difference measure we constructed to assess “all-or-nothing” (AON) thinking.

This measure of AON thinking is to capture individual differences in people’s desires to achieve certain (high) standards but to abandon goals when they don’t reach or maintain these standards. People high in AON have a narrow definition of success and a broad definition of failure. Therefore, even a minor setback will be perceived as a failure because one has low tolerance for mediocrity. Most people have probably engaged in AON thinking and behaviour at different times in their lives but what we’re trying to capture with this scale is a chronic tendency to do so.

In this study, you may have completed some measures besides AON thinking, including: depression, personality, optimism, perfectionism, impulsivity, dysfunctional attitudes, self-esteem and deception. The purpose of this is to test to ensure that our AON scale corresponds with constructs that are theoretically related (e.g., perfectionism) but that it does not correspond with constructs that are not theoretically related (e.g., deception). That is, we are testing convergent and discriminant validity of the AON measure, respectively.

Sometimes people find the subject matter of these questionnaires disturbing. If answering any of these questions led you to feel distressed and you would like to speak to someone about your thoughts, please contact one of the following:

	Phone Number
Queen’s Student Counseling Service	533-2506
TALK Distress & Information Line	544-1771

If you would like to learn more about research related to AON thinking, see the reference information for pertinent articles, below:

Burns, D.D. (1980, November). The perfectionist’s script for self-defeat. *Psychology Today*, 13, 34-52.

Van Wormer (1988). All-or-nothing thinking and alcoholism: A cognitive approach. *Federal Probation*, 52, 23-33.

You are free to withdraw your data now if you do not want your responses to this study to be used. If you wish to have your data withdrawn, please inform the experimenter before you return your questionnaire and leave the study today.

As stated earlier, your responses to the questionnaire items will be confidential and anonymous. No names can be associated with any individual responses by any of the researchers, so therefore the data is completely anonymous. If you have any questions in the future about the study, please contact the researcher, Lianne McLellan, at 2LM15@qmlink.queensu.ca or her supervisor, Dr. Tara MacDonald, at 533-2873. You may also contact the Head of the Department of Psychology Queen’s University at 533-2492 or the Chair of Queen’s Research Ethics Board, at 533-6288.

Please do not tell other students the details of this study before April 2005.

It is very important that other participants are not aware of the full purpose of the study before they participate, so please honour our confidentiality.

Thank you for your participation!

APPENDIX Y: Recruitment Announcement at Fitness Classes

Hi, I'm Lianne. I'm a graduate student in the department of psychology and I'm also a fitness instructor here. I'm here to invite you to participate in a study that I'm conducting for my doctoral research. In this study, we'll keep track people's participation at these group fitness classes from now until reading week. It's really easy to participate in this study; all you have to do is fill out a couple of questionnaires at the end of this class and then from now until reading week, after each fitness class you attend, you'll write a personalized code on your fitness bracelet and deposit it in this box before you leave the studio.

If you want to take part in this study, there are just 2 things you need to be eligible:

1. You have just decided recently that you want to start exercising regularly.
2. You are planning to use these group fitness classes as your primary source of exercise.

So if you fit these 2 criteria, we would really appreciate your participation in this research. It's easy to do and there's ALSO some incentive for you. You could win one of three cash prizes of \$100. The draw will be done at the end of the study, just before reading week, so you'll have some extra cash right before the break.

I'll be back at the end of the class today and you can sign up then. It only takes about 5-10 min.

Thanks for your time!

APPENDIX Z: Letter of Information for Study 4

Letter of Information “Tracking group fitness class participation”

This research is part of a project being conducted by Lianne McLellan under the supervision of Dr. Tara MacDonald in the psychology department at Queen’s University. The purpose of this study is to examine the effects of different personality characteristics on attending group fitness classes. Although we cannot tell you what we are specifically examining right now because it may affect your responses, we will provide complete information about the purpose of the study via email when it is complete.

The length of the initial session (which will take place immediately) will be approximately 10 minutes. This session involves answering a short questionnaire about different aspects of your personality, and about your fitness goals for this term. **You do not have to answer any questions that you find objectionable, or that make you feel uncomfortable.** Over the course of the next 6 weeks you will be asked to report your attendance at group fitness classes. The way you will do this is by printing a personalized code on your participation bracelet and depositing your bracelet in a box placed at the exits of the lower studio and dance studio at the end of your class. The researcher will collect bracelets on a daily basis and your participation will be documented using these bracelets. The researcher will also email you once a week to remind you to continue depositing your bracelet with your personalized code in the boxes provided at the end of each class you attend. You will be asked to indicate your name and personalized code on the consent form, and then only your personalized code on the questionnaire and the wristbands. This way, we will be able to match your questionnaire responses to the code on your wristbands, but none of your data will be stored with identifying information. When the study is completed (in 6 weeks) the researcher will email you with complete information regarding the purpose of the study and you may contact her (via email or phone) if you have any further questions about the study. If you decide to participate, you will receive a ballot in a draw to win one of 3 prizes, each worth approximately \$100. You are free to withdraw from this study at any time without penalty. Your name will still be entered in the draw for the prizes.

There are no known risks associated with your participation in this study.

All data collected from this study will be used for research purposes and there will be no disclosure of your responses to anyone but authorized researchers. Completed questionnaires will be kept confidential in a secure laboratory to which only authorized researchers have access. Questionnaires will be destroyed after 7 years, in accordance with the standards of the American Psychological Association. The results of this study may be presented for academic purposes, such as at a conference or in an academic journal. Results will be presented in aggregate form, so no individual responses will be published.

This study has been approved by the Queen’s Research Ethics Board. If you have any comments or questions about your participation in this study, please contact the researcher, Lianne McLellan, at 2lm15@qmlink.queensu.ca or her supervisor, Dr. Tara MacDonald at tmacdon@post.queensu.ca or by phone at 533-2873. You may also contact the Head of the Department of Psychology Queen’s University, at 533-2492 or the Chair of Queen’s Research Ethics Board, at 533-6288.

APPENDIX AA: Consent Form for Study 4

Consent Form
 “Tracking group fitness class participation”

I, _____, hereby state that I have volunteered for a study of personality and group fitness class attendance. I will be asked to complete a 10-minute questionnaire about my personality and fitness goals today. **I do not have to answer any questions that I find objectionable, or that make me feel uncomfortable.** I will also be asked to deposit my bracelet with my personalized code printed on it in the box provided, at the end of each group fitness class I attend for the next 6 weeks. I also give consent to the researcher to email me once a week as a reminder to continue depositing my bracelet in the boxes provided at the end of each class I attend. An explanation of the full purpose of this study will be emailed to me at its completion in 6 weeks.

I have read the Letter of Information and have had any questions answered to my satisfaction.

For my participation in this study, I will receive a ballot in a draw to win one of three prizes worth approximately \$100 each. If I withdraw from the study before its completion, my name will still be entered in the draw.

By signing below, I indicate that I understand the nature of the study, and consent to participate voluntarily as a research participant. I understand that I am free to discontinue participation in this study at any time, without penalty. I understand that my responses to the items will remain confidential and that only authorized researchers will have access to the data.

I am aware that I can contact the researcher (Lianne McLellan) at 2LM15@qmlink.queensu.ca, her supervisor (Tara MacDonald) at tmacdon@post.queensu.ca or by phone at 533-2873, the Head of the Department of Psychology Queen’s University at 533-2492, or the Chair of Queen’s Research Ethics Board at 533-6288, should I have any questions, complaints or comments about my participation in this study.

The general procedure of this study has been explained to me. I have read and understood the above statement. I freely consent to participate in this study.

Signature: _____

Date: _____

*Email address: _____

*The researcher will email you once a week to remind you to continue depositing your bracelet in the box provided at the end of the fitness classes you attend. The researcher will email you full information about the purpose of the study at its completion in 6 weeks. You will also be contacted via email if you win one of the 3 prizes in the draw to take place in 6 weeks.

APPENDIX BB: Intake Questionnaire for Study 4

STUDY "GROUPFIT"

Your personal ID code:

The first 2 letters of your mother's name and the last 4 digits of your staff/student number.

Example: If your mother's name is Mary, and your student number is 4653090, your personal ID code would be MA3090.

Please write your personal ID code here: _____

1. Last term (Sept. – Dec. 2004), about how many times **per week** did you engage in vigorous exercise (for at least 30 min.)?

2. About how many fitness classes **per week** would you *ideally* like to attend over the next 6 weeks? (until reading week)

3. About how many fitness classes **per week** do you *realistically* think you will attend over the next 6 weeks? (could be the same as #2 above)

4. Please write a number to indicate how **confident** you feel about achieving your goals for your fitness class attendance over the next 6 weeks on a scale of 0 (not at all confident) to 100 (extremely confident). **Confidence = certainty that you will meet these goals.*
_____ (please write a number from 0 to 100)

5. Please write a number to indicate how **committed** you are to achieving your goals for your fitness class attendance over the next 6 weeks on a scale of 0 (not at all committed) to 100 (extremely committed). **Commitment = resolve to meet these goals.*
_____ (please write a number from 0 to 100)

6. Please use the space below to explain any factors that you think may **help or hinder** reaching your group fitness attendance goals.

Please write your personal ID code on your bracelet (or a slip of paper) and place it in the box provided at the end of every fitness class you attend, until reading week. Thank you! ☺

APPENDIX CC: Debriefing Form for Study 4

Participant Feedback
“Tracking group fitness class participation”

At the beginning of this study, you were asked to complete a personality questionnaire and to report how many fitness classes you plan to attend over the following 6 weeks. The personality questionnaire you completed was to assess the individual difference of “All-or-Nothing” thinking. All-or-nothing (AON) thinking can be described as people's propensity to set high standards and to initially work hard to achieve goals, but to abandon their goals when a setback occurs. There is plenty of anecdotal evidence suggesting that many people engage in AON thinking at some point in their lives. For example, consider a person who decides to start exercising. She goes to the gym almost every day for a month, but after missing a week of going to the gym she consequently stops exercising altogether. We argue that this is because she thinks there is no point in pursuing her goal anymore if she can't attain her high standards (i.e., if she can't do it *all*, she'll do *nothing*). In the current study, we examined the effects of being high or low in AON thinking, and adherence to exercise goals.

We have 2 main predictions in this study. First, participants high in AON thinking will set their goals higher (i.e., report plans to attend more classes) than participants low in AON thinking. Second, we expect that participants who score high in AON thinking who experience a setback (i.e., who don't attend as many classes as they had originally planned) will be more likely to abandon their exercise goals than participants who score relatively low in AON thinking and experience a setback (who will be more inclined to continue with their exercise even after a setback).

If participating in this study caused you to experience mental or emotional distress and you would like to talk to someone about it, you may contact Queen's Counseling Services at 545-2893.

If you would like to learn more about the topic of exercise adherence, see the reference information for a pertinent article, below:

Lombard, D.N., Lombard, T.N., & Winett, R.A. (1995). Walking to meet health guidelines: The effect of prompting frequency and prompt structure. *Health Psychology, 14*, 164-170.

As stated earlier, the data collected will be kept confidential. You may contact the researcher (Lianne McLellan) at 2LM15@qmlink.queensu.ca, her supervisor (Tara MacDonald) at tmacdon@post.queensu.ca or by phone at 533-2873, the Head of the Department of Psychology Queen's University at 533-2492, or the Chair of Queen's Research Ethics Board at 533-6288, should you have any questions, complaints or comments about your participation in this study. If you would like to learn more about this study (including how the results turned out) please feel free to contact the researcher or her supervisor.

Thank you very much for your participation in this study!

APPENDIX DD: Letter of Information for Study 5

Letter of Information
“Clubs and Activities Involvement”

This research is part of a project being conducted by Lianne McLellan under the supervision of Dr. Tara MacDonald in the psychology department at Queen’s University. The purpose of this study is to examine the effects of different personality characteristics on becoming involved with clubs at Queen’s. Although we cannot tell you what we are specifically examining right now because it may affect your responses, we will provide complete information about the purpose of the study via email when it is complete.

The length of the initial session (which will take place immediately) will be approximately 10 minutes. This session involves answering a short questionnaire about different aspects of your personality, your experience at Clubs Night, and your intentions to become involved with clubs and activities this academic year. You do not have to answer any questions that you find objectionable, or that make you feel uncomfortable. In March 2007, you will be contacted via email to complete a short (2 minute) follow-up questionnaire. Your responses to this questionnaire will remain confidential. When the study is completed the researcher will email you with complete information regarding the purpose of the study and you may contact her (via email or phone) if you have any further questions about the study. If you decide to participate, you will receive a ballot in a draw to **win one of 3 prizes of \$100 cash**. You are free to withdraw from this study at any time without penalty. Your name will still be entered in the draw for the cash prizes.

There are no known risks associated with your participation in this study.

All data collected from this study will be used for research purposes and there will be no disclosure of your responses to anyone but authorized researchers. Completed questionnaires will be kept confidential in a secure laboratory to which only authorized researchers have access. Questionnaires will be destroyed after 7 years, in accordance with the standards of the American Psychological Association. The results of this study may be presented for academic purposes, such as at a conference or in an academic journal. Results will be presented in aggregate form, so no individual responses will be published.

This study has been approved by the Queen’s Research Ethics Board. If you have any comments or questions about your participation in this study, please contact the researcher, Lianne McLellan, at 2lm15@qmlink.queensu.ca or her supervisor, Dr. Tara MacDonald at tmacdon@post.queensu.ca or by phone at 533-2873. You may also contact the Head of the Department of Psychology Queen’s University, at 533-2492 or the Chair of Queen’s Research Ethics Board, at 533-6288.

APPENDIX EE: Consent Form for Study 5

Consent Form
 “Clubs and Activities Involvement”

I, _____, hereby state that I have volunteered for a study of personality and involvement in clubs and activities. I will be asked to complete a 10-minute questionnaire about my personality and my experience at Queen’s Clubs night today. I do not have to answer any questions that I find objectionable, or that make me feel uncomfortable. I will also be asked to participate in a short follow-up questionnaire in March 2007. I may choose to opt out of participating in this follow-up questionnaire. An explanation of the full purpose of this study will be emailed to me upon its completion.

I have read the Letter of Information and have had any questions answered to my satisfaction.

For my participation in this study, I will receive a ballot in a draw to win one of three prizes of \$100. If I withdraw from the study before its completion, my name will still be entered in the draw.

By signing below, I indicate that I understand the nature of the study, and consent to participate voluntarily as a research participant. I understand that I am free to discontinue participation in this study at any time, without penalty. I understand that my responses to the items will remain confidential and that only authorized researchers will have access to the data.

I am aware that I can contact the researcher (Lianne McLellan) at 2LM15@qmlink.queensu.ca, her supervisor (Tara MacDonald) at tmacdon@post.queensu.ca or by phone at 533-2873, the Head of the Department of Psychology Queen’s University at 533-2492, or the Chair of Queen’s Research Ethics Board at 533-6288, should I have any questions, complaints or comments about my participation in this study.

The general procedure of this study has been explained to me. I have read and understood the above statement. I freely consent to participate in this study.

Signature: _____

Date: _____

Email: _____

APPENDIX FF: Intake Questionnaire for Study 5

Part 1 – Paper Questionnaire

1. Gender: **female** ____ **male** ____
2. Age: _____
3. Academic program: _____ Year of study: _____
4. How many different clubs did you inquire about tonight? (i.e., how many did you give your contact information for?) _____
5.
 - a) How many of these clubs do you *plan* to get involved with this academic year? (may be the same as #4 above) _____
 - b) How *confident* are you that you will become involved with this many clubs? *Confidence* means your *certainty* that you will become involved with the number of clubs you indicated in 5a).
How confident are you on a scale of 0 (not at all confident) to 100 (extremely confident). _____ (please write a number from 0 to 100)
 - c) How *committed* are you that you will become involved with this many clubs? *Commitment* means your *resolve* to become involved with the number of clubs you indicated in 5a).
How committed are you on a scale of 0 (not at all committed) to 100 (extremely committed). _____ (please write a number from 0 to 100)
6. Please use the space below if you want to mention any factors that you think may **help** or **hinder** your involvement with the clubs you want to join.

Help: _____

Hinder: _____

(Measures of target constructs here. See Appendix H.)

Please answer 2 more questions regarding your future involvement with clubs at Queen's.

1. Of the clubs you enquired about tonight, how many would you *ideally* like to become involved with this academic year? _____

2. Of the clubs you enquired about tonight, how many clubs do you *realistically* think you will become involved with this academic year? (may be the same as #1 above) _____

Part 2 – Online Questionnaire

Part 2 of this study involves completing a short (2-minute) online questionnaire. It will take place at the end of the academic year, in April 2007. Responses to this questionnaire will remain confidential. Only your participant code will link your responses today to those from the online questionnaire. No identifying information will be used.

If you would like to participate in Part 2 of this study, please indicate your name and email address below so we can email the questionnaire to you. Your email address will be kept confidential and will be used solely for the purposes of contacting you about Part 2 of this study. Your name and email address will be stored separately from the rest of this questionnaire.

Name: _____

Email address: _____

Thank you! We appreciate your cooperation! ☺

APPENDIX GG: Follow-up Questionnaire for Study 5

1. Please enter your participant number (indicated in the email sent to you):

2. At Queen's Clubs Night in September 2006, you may have inquired about a number of different clubs. Of the clubs about which you inquired, with how many did you become involved this academic year (September 2006 to March 2007)? Include all clubs for which you signed up, even if you didn't stay involved for the whole year. Please type the number below.

3. Type the name of the first club here, or skip ahead to page 10 if not applicable.

4. During your involvement with this club, approximately how many HOURS PER WEEK did you devote to it?

5. Are you still involved with this club?

6. If no, approximately when did you discontinue your involvement? (Month/Day)

7. How committed were you to this club? Rate your commitment on the following 7-point scale:

Not at all	-	-	Moderately	-	-	Extremely
committed			committed			committed

8. How enthusiastic were you about your involvement with this club? Rate your enthusiasm on the following 7-point scale:

Not at all	-	-	Moderately	-	-	Extremely
enthusiastic			enthusiastic			enthusiastic

9. How enjoyable was your involvement with this club? Rate your enjoyment on the following 7-point scale:

Not at all	-	-	Moderately	-	-	Extremely
enjoyable			enjoyable			enjoyable

(Questions 3 through 9 were repeated for each club, up to club #6.)

APPENDIX HH: Debriefing Form for Study 5

At the beginning of this study, in September 2006, you were asked to complete a personality questionnaire and to report how many clubs with which you plan to become involved over the following 6 months. The personality questionnaire you completed was to assess “All-or-Nothing” thinking. All-or-nothing (AON) thinking can be described as people's propensity to set high standards and to initially work hard to achieve goals, but to abandon their goals when a setback occurs. In the current study, we examined the effects of being high or low in AON thinking, and commitment to various clubs and activities over a 6 month period. Your responses today will be linked to the responses you gave to the survey in September (using an anonymous participant number, so you will not be identified) so we can assess relationships between your survey responses today and your responses from the survey in September.

We have 2 main predictions in this study. First, participants high in AON thinking will set their goals higher (i.e., report plans to join more clubs) than participants low in AON thinking. Second, we expect that participants high in AON thinking will be less committed than participants low in AON thinking. That is, high AON thinkers won't follow through with their involvement in as many clubs as will low AON thinkers. The reason we predict this is because we believe people who are low in AON thinking will set more moderate, attainable goals and therefore be more likely to follow through with them.

If participating in this study caused you to experience mental or emotional distress and you would like to talk to someone about it, you may contact Queen's Counseling Services at 533-2506.

If you would like to learn more about the topic of All-or-Nothing Thinking, see the reference information for a pertinent article, below:

Van Wormer (1988). All-or-nothing thinking and alcoholism: A cognitive approach. *Federal Probation*, 52, 23-33.

As stated earlier, the data collected will be kept confidential. You may contact the researcher (Lianne McLellan) at 2LM15@qmlink.queensu.ca, her supervisor (Tara MacDonald) at tmacdon@post.queensu.ca or by phone at 533-2873, the Head of the Department of Psychology Queen's University at 533-2492, or the Chair of Queen's Research Ethics Board at 533-6288, should you have any questions, complaints or comments about your participation in this study. If you would like to learn more about this study (including how the results turned out) please feel free to contact the researcher or her supervisor.

Thank you very much for your participation in this study!