EMOTIONAL REASONING AND DECISION MAKING

Understanding and regulating emotions that serve people's goals

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(ABSTRACT)

Increasing physical activity and adopting a healthy diet have the goal to enhance consumer welfare. The goal of this set of studies is to contribute to a research agenda that tries to support and enhance the life of consumers, through the exploration of emotional intelligence as a new possible avenue of research related to consumer behavior and health.

Four studies are proposed that look at the possibility to introduce emotional intelligence in decision making and performance related to health (i.e. adoption and maintenance of a healthy diet/weight).

The findings suggest the salient role of *emotional reasoning* (i.e. understanding and regulation of emotions) on decision making and performance related to health. Training on emotional intelligence and health seems to activate mechanisms that help people to use their knowledge in the right direction in order to make better decisions and improve performance related to health (i.e. adoption/maintenance of healthy diet/weight)

DEDICATION

This dissertation is dedicated to:

my *mom*, my role model
my *dad*, my biggest fan
Alessio, my anchor

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CHAPTER 1

1.1 Introduction

Consumer research is moving toward a "transformative consumer research" where the goal is "to make a positive difference in the lives of consumers…"(ACR call for papers 2005). In the spirit, this research on Emotional Intelligence (EI), decision making and performance can result in "helping consumers help themselves" (JPPM Call for papers 2005) and research on consumer welfare (JCR Call for papers, Special Issue June/September 2008).

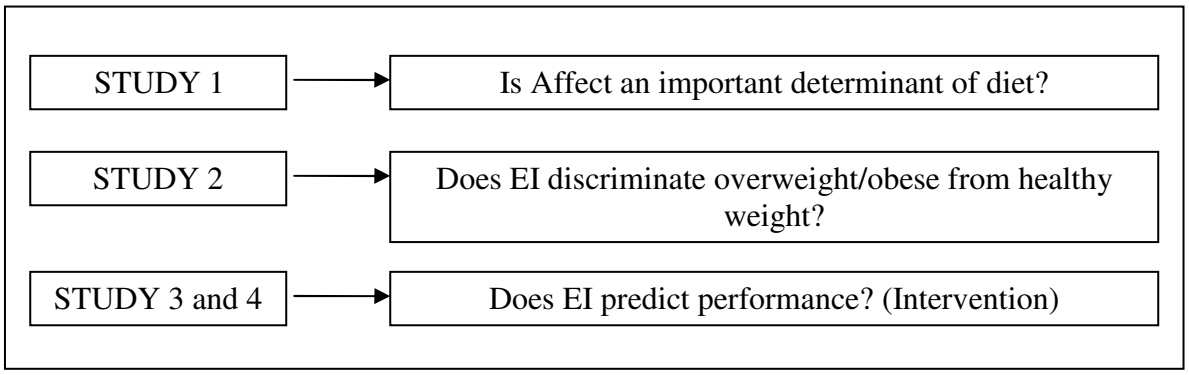
The focus of this dissertation is on the role of EI on decision making and performance in the field of health. The general hypothesis is that emotional intelligence is a significant predictor of the adoption and maintenance of a health related behavior, i.e. healthy diet. EI is the cognitive ability to recognize own's and other's emotions and being able to manage them in the direction of the desired outcome (Goleman 1995).

Several researchers suggest that "relying on cognitively based interventions to increase the adoption of a health behavior may be less effective than desired, because regardless of the level of participation, affective concerns are consistently rated most important (Coupey & Peter 2005). Therefore EI could represent a construct of interest to achieve health related goals.

As stated by Goleman (1995) cognitive intelligence may provide individuals with entry to a setting, but EI plays an important role in determining how successful they are after they enter the setting.

The present plan of studies introduces emotional intelligence in consumer decision making/performance with the focus on health promotion (i.e. healthy diet). Since the focus is on health education and promotion, the plan of studies emulates the different stages characterizing research related to health education and promotion: identification of the most important behavioral determinants related to the health behavior under scrutiny (i.e. diet; study 1 and 2), development of an intervention program based on individual changeable determinants for the behavior under scrutiny (i.e. EI ; study 2) and finally assessment of the effectiveness of this intervention program (i.e. performance as adoption and maintenance of healthy diet/weight; study 3 and 4). Figure 1 provides an overview of the plan of studies.

Figure 1: Plan of Studies



1.2 Outline Dissertation

Substantive domain. A brief overview of obesity as substantive domain is provided in Chapter 2.

Theoretical domain. An overview of the role of emotions considering behavioral determinants related to health (Chapter 3) and consumer behavior (Chapter 4) provides the

argument for emotional intelligence in the domain of health and decision making. Chapter 3 (with the "unified theory" by Fishbein et al 2001) provides the theoretical framework in order to look at the hypothesized role of emotional intelligence on decision making and performance related to health.

Chapter 5 briefly summarizes what emerged by Chapter 3 and 4 in terms of potential for research on emotional intelligence in decision making and performance related to health.

Methodological Domain. Chapter 6 provides an overview of emotional intelligence in terms of theory, measures, performance and training. Emotional intelligence represents the construct we adopt in order to look at the "reasoning ability" related to emotions considering health behaviors.

Research Question and General Hypotheses. Chapter 7 provides an overview of the research question and general hypotheses based on what emerged by the literature review (Chapter 5) and the description of emotional intelligence as the main construct of interest (Chapter 6).

Studies. Chapter 8, 9, 10 and 11 provide the description of studies and results in order to test the general hypotheses. Each study defines its own specific hypotheses.

Conclusion. Chapter 12 provides the overall conclusion for this set of studies and recommendations for future research.

CHAPTER 2

2.1 Obesity

According to WHO (2005) about three-fourths of Americans over 15 years of age in the U.S. are overweight (BMI[1]>25, CDC 2006), four in 10 are obese (BMI>30, CDC 2006), and almost 30% of adolescents are overweight or at risk for overweight/obesity (National Center for Health Statistics 2006).

There are two major, yet preventable causes of obesity: sedentary lifestyle, defined as engaging in no or little leisure-time physical activity (structured exercise, sports, physically active hobbies) in a two-week period and an unhealthy diet, defined as not following the food pyramid (U.S. Department of Agriculture 2006).

Despite many social marketing campaigns to promote healthy nutrition and physical activity, recommendations are not followed by the majority of people (Healthy People 2010). Of particular concern are declines in levels of activity in the teen/young adult age group (i.e., ages 14-20), that seems to be related to the establishment of future sedentary behavior of young adults (Tammelin et al. 2003).

These findings are also supported by data collected between 2004 and 2006 among college students at a large southeastern university where almost 25% of the participants were identified as overweight and/or obese (BMI >25).

[1] BMI, Body Mass Index is a well established measure of healthy weight described by Appendix A (CDC 2006)

CHAPTER 3

3.1 The role of emotions in the adoption of health behaviors

Several researchers examined ways to enhance a healthy lifestyle (i.e. diet and exercise activity). Empirical evidence suggests knowledge as an important construct to motivate the intention to adopt a health behavior (e.g. Brinberg, Axelson & Price 2000). However, studies conducted in 2004 (Coupey & Peter 2005; Peter, Corus, Hampton & Brinberg 2006), suggest that relying only on a pure cognitive/informational based intervention to increase the adoption and maintenance of an health behavior (i.e. engage in physical activity and reduce fat consumption) is not sufficient because the individual assessment of emotions elicited by the task/behavior plays a prominent role.

Data related to factors that influence the decision to exercise (Coupey & Peter 2005) suggest that affective concerns are consistently rated most important. However, preliminary data collected in 2005 (Peter, Hampton, & Brinberg 2005) on behavioral determinants (Fishbein et al. 2001) related to the intent to exercise do not suggest the relevance of emotion in considering the target behavior, i.e. exercise (R-square=.278, $p<.05$).

3.2 Successful interventions

To adopt a health behavior means to be able to recognize, understand, facilitate and regulate what you feel in order to be able to motivate your self and control your desires.

Cognitive-behavioral psychotherapy. This argument is well sustained by weight programs (e.g. WeightWatchers) that consider group meetings as integral part of their "agenda".

These meetings have the goal to teach patients "to make wise choices, eat healthy and enjoy food and exercise" (Weight Watchers 2006). They have also the implicit goal to support patients by helping them to understand, perceive and share the common obstacles that characterize the achievement of health related goals.

These programs have "communities" where patients can share their experience in order to motivate themselves to work out and eat healthily (e.g. Weight Watchers 2006). Empirical evidence of the effectiveness of social groups vs. self-help is provided by Heshka and colleagues (2003).

At the theoretical level, these programs rely on the effectiveness of cognitive-behavioral psychotherapy, which emphasizes the role of our thinking and actions.

Cognitive-behavioral psychotherapy assumes that our feelings and actions are dependent on how we think (source: http://www.nacbt.org/whatiscbt.htm). We define "feeling/affect" as the outcome related to the "reasoning" on emotions.

This approach suggests that the difficulty associated to the adoption of a healthy lifestyle might be caused by an incorrect "reasoning" associated with the emotion elicited by the target behavior (i.e. diet). If we are unable to reach our goals, it is because we might not correctly perceive, facilitate, understand and regulate our emotions in the right direction. Therefore, the overall hypothesis is that the correct perception, facilitation, understanding and regulation of emotions associated with the target behavior will influence performance (i.e. successful adoption of an health behavior).

Tailoring. Recent studies suggest the consideration of tailored communications to promote healthy lifestyles (e.g. Brinberg, Axelson & Price 2000). Research findings

suggest that the personally relevant information in tailored communications motivate people to attend to and process information at a deeper level than non-tailored communications (Brug et al. 1999) and that "tailored communications are significantly more effective in increasing recall, readership, and interest than non-tailored communications (Skinner et al. 1999; Brug, Campbell & van Assema 1999)" (in Peter, Corus, Hampton & Brinberg 2006, p. 2).

"Tailoring is a strategy in which the segment of interest is the individual. Kreuter and colleagues (1999) define tailoring to be "any combination of strategies and information intended to reach one specific person, based on characteristics that are unique to that person, related to the outcome of interest, and derived from an individual assessment." (in Peter, Corus, Hampton & Brinberg 2006, p. 2).

Emotional intelligence represents a new possible avenue of research that considers the individual at the center of preventive health programs.

3.3 Behavioral Determinants related to health

Many cognitive theories of behavior and behavior change have been applied in the domain of health: the Theory of Reasoned Action (Fishbein and Ajzen 1975), the Theory of Planned Behavior (Ajzen 1980), the Health Belief Model (e.g. Becker 1974, 1988; Janz & Becker 1984; Montgomery et al. 1989 in Fishbein et al 2001), Social Cognitive Theory (Bandura 1986, 2001) and the Stages of Change Model (Prochaska, DiClemente & Norcross 1992) just to cite few. These theories are generated from different backgrounds (e.g. public health, social psychology, clinical psychology) but no empirical evidence

exists that posits one theory as a better predictor of behavior than another (Grasso, Cawsey & Jones 2000).

Fishbein et al (2001) suggest these theories as are complementary. Moreover, several constructs overlap; for example what is referred to as outcome expectancies in the theory of self-regulation and self-control (Kanfer & Kanfer 1991) is referred to as attitude in the theory of reasoned action and planned behavior.

Fishbein et al (2001) propose a "unified theory" that tries to identify a finite set of variables we should take into account considering any volitional behavior. The variables identified are: intention, environmental constraints, skills, anticipated outcomes (or attitude), social norms, self-standards, emotion, and self-efficacy.

The factors. Intention, Attitude and Social Norms derive form the Theory of Reasoned Actions (Fishbein &Ajzen 1975). "Intention" is the willingness to perform the behavior. "Attitude" is the product of person's salient beliefs toward an object and the evaluation of those beliefs. "Social norms" are a product of the attitudes of people who are socially important to the respondent (referents) and the respondent's willingness to comply with those wishes.

The Theory of Planned Behavior (Ajzen 1980) introduces two constructs: perceived behavioral control ("Self-efficacy") and actual behavioral control ("Skills"). Perceived behavior control refers to the perception of how hard/easy it is to carry out a given behavior. Actual behavioral control refers to the competences/skills the subjects actually have considering the target behavior. One approach to represent behavioral control (self-efficacy) or competency (skills) is to look at knowledge: perceived knowledge (i.e.,

what an individual believes he or she knows) and actual knowledge. Past research has found these two constructs each influence and relate to choice in independent ways (e.g. Park, Mothersbaugh & Feick 1994). Moreover, skills framed as knowledge represents a variable that can be changed in educational settings.

Environmental constraints and self-standards result from a mix of different health models. "Environmental constraints" originates from the health belief model (Bandura 1986) where barriers are identified as obstacles in taking some course of actions.

"Self-standards" (or self standard discrepancy) is suggested by research of Kanfer (1970, in Fishbein et al 2001) and Bandura (1986). Self-standards is related to the individual characteristics identified salient in performing a certain behavior (e.g. lazy, motivated, etc)

Considering volitional behavior, "emotion" has been recently added as an independent construct from attitude. For example, Bodur, Brinberg & Coupey (2000) found that positive and negative emotions influence attitude, independent of cognitive structure in the prediction of HIV, drinking and driving related behaviors.

Relationship between behavioral determinants. Fishbein et al (2001) suggest that "for a person to perform a given behavior the following must be true: 1) the person has formed a strong positive intention (or made a commitment) to perform the behavior; 2) there are no environmental constraints that make it impossible for the behavior to occur; 3) the person has the skills necessary to perform the behavior…"(Fishbein et al. 2001, p.5). These variables are the ones generally identified as "intention", "environmental constraints" and "skills".

Looking at our target behavior (i.e. healthy diet) and emulating the logic suggested by the authors, if a woman is willing to adopt a healthy diet (intention), has healthy choices available (no environmental constraints) and knows what she should eat in order to adopt an healthy diet (skills), she will most probably adopt a healthy diet (actual behavior).

Fishbein et al (2001) see the other variables (anticipated outcomes or attitude, norms, self-standards, emotion, and self-efficacy) as the ones influencing intention. For example, as suggested by the authors, people will form a strong intention to adopt a healthy diet if the anticipated outcome (i.e. attitude) is favorable (e.g. looking better) and they believe they have the knowledge related to nutrition (i.e. self-efficacy) necessary to adopt a healthy diet.

Fishbein et al (2001) recognize that these variables might be related differently to each other. For example the perceived outcome to look better by adopting a healthy diet might have a direct impact on the actual adoption of the behavior but could also be moderated by what other people think of us adopting the healthy behavior (i.e. social norms). The fact my friends think that adopting a healthy diet is "boring" might influence the strength of the relationship between my attitude or intention related to adopting an healthy diet and the actual adoption of an healthy diet.

As the authors suggest there is a lack of consensus regarding the relationship between these variables and the actual behavior under scrutiny.

In order to overcome this problem we need to define our constructs in relation to the same outcome measure. For example, looking at the adoption of a healthy diet as the outcome measure, we need to identify the constructs that have "variable content" (Fishbein

et al 2001); content dependent on the population considered. These variables are: "outcomes" for the measure of attitude, "referents" for the measure of social norms, "barriers and facilitators" for self-efficacy, "personal characteristics" for self-standard discrepancy and "action alternatives" for skills.

For example, relevant referents might be different considering the college vs. adult population. Thinking about the adoption of a healthy diet, adults might consider relevant referents their spouses, which is unlikely to be applicable for a college population.

An elicitation study is normally conducted in order to create content for the specific population variables related to the behavior under scrutiny. The application of this procedure is described under study 2 (Chapter 9).

The conceptual framework provided by Fishbein et al (2001) offers a model to explore the relationship between salient behavioral determinants related to a specific target behavior. However, it does not provide a direction for the relationship between variables, leaving the doors open for different hypotheses. Moreover, as reported by Fishbein et al (2001) there is a debate at the theoretical and empirical level about the independent role of different constructs related to the same behavioral outcome (e.g. overall attitude and emotion).

Study 1 addresses this concern by demonstrating the independent role of emotions from attitude considering the target behavior (i.e. diet).

"The unified theory" offered by Fishbein et al (2001) relies heavily on traditional cognitive structure related to the behavior under interest. It does not address the affective

ability/intelligence behavior. The model does not address how we reason about the emotion that the hypothesized emotional salient behavior elicits.

CHAPTER 4

4.1 Emotion and consumer behavior

Most of research in consumer behavior has focused on mood rather than the understanding of how consumers define different emotions and their impact on decision making/behavior. Research has examined the salience of mood on: evaluations of brands (e.g. Rashmi 2003); response to advertising (Fisher & Dube 2005); "…information acquisition (Lee & Sternthal 1999); encoding (Bower, Gilligan and Monteiro 1981); recall and recognition (Isen et al. 1978); risk assessments (Johnson and Tversky 1983; Keller, Lipkus, and Rimer, 2002), and attitudes (Cohen and Areni, 1991)" (Nitika, Inman & Vikas 2005, p. 154).

Overall these studies have looked at the valence of affective states on decision making processes. Generally, affect has been considered mood unrelated to the behavior under scrutiny (Cohen & Areni 1991; Isen 1993).

4.2 Emotion and decision making

When we analyze consumer decision making processes, we normally refer to info-processing models (Bettman 1979), reason-based decision strategies (Bettman, Johnson & Payne 1991), and theory of constructive consumer choice (Luce, Bettman & Payne 2001).

One common component of these decision models is both the perceived and actual cognitive knowledge associated with the alternatives in the choice set. Despite the introduction of non traditional elements in decision making models (e.g. goals and motivation) the current trend toward non-traditional factors in decision making has not included an analogous measure of perceived and actual emotional knowledge.

Several studies in consumer behavior, however, seem to suggest the importance of integrating "emotional reasoning" into existing decision making models (Peterson, Hoyer, & Wilson 1986; Mick & Fournier 1998).

Emotional reasoning. The current trend toward non-cognitive factors in decision making has not looked at how people reason about their emotions and the influence on decision making, although Bagozzi, Gopinath & Nyer (1999) suggest the need of appraisal theories in consumer research. They defined emotion as the rate of discrepancy reduction between current and desired state (Carver et al. 1996 in Bagozzi, Gopinath & Nyer 1999). Therefore, emotions have an informational and motivational role and are defined through reasoned evaluation. "Emotions arise in response to appraisals one makes for something of relevance to one's well-being" (Bagozzi, Gopinath & Nyer 1999, p. 185). The assumption is that it is not the event outside the consumer that causes him/her to feel a certain way; it is the thoughts inside the consumer who believes about those outside events that "make" him/her feel in a certain way.

4.3 Emotion regulation

Emotion regulation is defined as "the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions especially their intensive and temporal features, to accomplish ones' goals" (Thomson 1994, p.27). Emotion regulation is important as it predicts behavior.

In consumer behavior, emotion regulation has been first identified in studies that look at coping strategies.

Coping strategies. Coping strategies have been defined as the choice strategy adopted as the result of an event that elicits a certain (normally negative) emotion. Coping strategies depend on person's appraisal of the stressful event (Lazarus 1991, 1999; Ortony, Collins & Clore 1988). Coping is "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resource of the person" (Lazarus & Folkman 1984, p. 141).

In a consumer behavior, coping strategies represent the way consumers deal with difficult trade-offs. Luce, Bettman and Payne (2001) offer us a review of context and strategies related to difficult trade-offs. Coping is defined as problem focused (manage the source of a stressful emotional experience) or emotion focused (manage emotions) experienced as a result of a stressful situation by changing the meaning of the event or regulating the expression of the emotion (Luce, Bettman & Payne 2001).

Luce, Bettman and Payne (2001) analyze decision avoidance as postpone purchase where consumers need to solve the emotional task prior to making a decision. Luce (1998) found that people are more likely to rely on a "status quo options" when they have to take emotionally difficult decisions. Studies on emotion and (biased) decision making (e.g. Luce 1998) suggest the importance of examining the management of emotions, otherwise defined as emotion regulation. Luce (1998) has shown that consumers display differential reliance on avoidance choice strategies and often choose the status quo when looking at negative emotions and decision making.

Regulatory and affective mechanisms. Andrade (2005) provides a general framework to understand how affect influences behavior. He reviews two of the major

theories that seem to explain the relationship between affect and behavior: affect regulation and affect evaluation. Affective evaluation theories look at the influence of affect on judgment, by considering the congruency between the affective valence and the actual behavior. Affective regulation processes look at motivation as driving force predicting the relationship between affect and behavior (for a review see Andrade 2005).

The author underlines how the impact of these mechanisms is moderated by several factors including affect accessibility (salience on the behavior), affect diagnosticity (informational value), competing goals, and the perceived affective consequences of the behavioral activity.

The author admits that "the proposed model allows for potential information processing changes, but it does not make direct predictions at the behavioral level" (p.361). He suggests processing styles as possible new avenue of research that might be integrated in the framework. This raises the argument for the exploration of individual differences considering affective and regulatory mechanisms.

CHAPTER 5

5.1 Emotional intelligence, decision making and performance

No research in the field has looked at cognitive appraisals of emotions as a possible predictor of successful adoption and maintenance of a healthy behavior. However, with the intent to change behavior (and not just beliefs about the behavior), the reasoning ability related to emotions elicited by the behavior under scrutiny need to be considered.

The relevance of emotions, the empirical evidence related to the effectiveness of group programs and the need to look at tailored interventions suggest the need to look at the individual management of emotions to promote the adoption and maintenance of a healthy life style.

Research on consumer behavior and emotion has not considered yet the possible role of the individual differences in the perception, understanding and regulation emotions. In a decision making perspective, Pham et al. (2001) suggest that the reasoning related to emotions (i.e. feelings) toward the target are often a diagnostic pathway in judgment and decision making.

The reasoning associated to the emotions elicited by a certain context/behavior calls for a tailored perspective related to the perception, understanding and regulation of emotion in order to take better decisions. Emotional intelligence offers a conceptual framework that can be integrated in a tailored perspective toward the understanding of reasoning associated to emotions elicited by a certain behavior.

The assumption is that there is a correct perception, understanding, facilitation and regulation of emotions compared to a perceived one. The hypothesis is that the correct

assessment of these four aspects determines good quality decisions for those decisions that carry an “emotional baggage”.

Therefore, we will to consider emotional intelligence as a possible factor in behavior prediction and change models. The next section aims to introduce emotional intelligence as theoretical construct.

CHAPTER 6

6.1 Emotional Intelligence

Emotional Intelligence (EI) is the cognitive ability to recognize own and others' emotions and being able to manage them in the direction of the desired outcome (Goleman 1995). This brief section will provide an overview of EI from its origin intelligence framework, (Thorndike 1920) until its popularization as predictor of performance, (Mayer & Salovey 1997; Goleman 1995).

6.2 EI Theory

Emotional Intelligence has been introduced by Peter Salovey and colleagues in the early 1990's and made popular by Daniel Goleman in his book on Emotional Intelligence (1995). However, the origin of the construct goes back to work related to *social intelligence* proposed by Thorndike in the 1920s. Thorndike defines social intelligence as "the ability to understand and manage men and women, boys and girls—to act wisely in human relations" (Thorndike 1920, p.228). In his definition, Thorndike views social intelligence as a broad spectrum of capacities that individuals possess. In his view, social intelligence represents the skill of getting along with other people.

Social intelligence did not find consensus in terms of avenue of research until late 1980s. In fact research in the field of intelligence between 1900 and 1975 focused on IQ as a pure cognitive ability measure related to information processing and memory identified by an overall unique "general" intelligence index, called "g" (refer to Spearman 1904). The *g* is the result of high correlation between different cognitive tests where the items have been judged by experts. Dimensionalities of IQ scores have been studied by

factor analysis which reveals a single dominant factor underlying the scores on all IQ tests; the g factor. Therefore the notion of *intelligence* corresponds closely to the variation of this overall index, g.

The shift toward social intelligence and later emotional intelligence was promoted by work of Howard Gardner on multiple intelligences (refer to Gardner 1983). In his view, traditional measures of intelligence (IQ) fail to fully explain cognitive ability (Smith 2002).

Five years later Bar-0n (1988) introduced the construct of emotional *quotient* (EQ) as a measure of well-being. Salovey and Mayer reviewed Bar-On work in the 1990s and formally introduced the construct of *emotional intelligence* as a collection of emotional and social knowledge and skills to cope with environmental demands (Salovey & Mayer 1989, 1990). Salovey and Mayer (1990) identified emotional intelligence as the "ability to monitor one's own and other's feelings and emotions, to discriminate among them, and to use this information to guide one's thinking and action" (p. 189). They underlined the need to look at emotional intelligence as a cognitive ability where the core is the "reasoning about feelings" (Mayer & Salovey 1997).

Their cognitive perspective aimed to distinguish Emotional Intelligence from other measures of social traits (Mayer & Salovey 1997). From their perspective, EI should not be considered as a collection of socially desired personality traits (e.g. refer to Big Five), but rather as an intelligence that enhances the processing of certain types of information (Mayer & Salovey 1997).

This general definition of emotional intelligence as the ability to recognize and regulate emotions in ourselves and in others suggests four major EI domains: *Self-Awareness, Self-Management, Social Awareness,* and *Relationship Management* (Goleman 1995). Goleman (2001) defines also two main domain facets related to these specific domains: a) ability (recognition and regulation of emotions) and b) target (self-vs. others).

Looking back at the origin of EI these domains fall within what Gardner (1983) calls *intrapersonal intelligence* (Self-Awareness and Self-Management) and *interpersonal intelligence* (Social Awareness and Relationship Management).

EI is considered as an intelligence that enhances the correct processing of emotional relevant information (Mayer & Salovey 1997). However, unlike IQ which remains fairly stable throughout adult life, EI continues to develop with age and therefore can be learned (Bar-On 1997).

Two broad categorizations reflect the measurement of EI: Ability based measure or Mixed Models (Mayer, Salovey & Caruso 2000a). The next section offers an overview of this broad categorization and introduces some of the most employed EI scales.

6.3 EI Measures

As there are multiple intelligence tests (e.g. Stanford-Binet, Raven's Progressive Matrices, Wechsler Adult Intelligence Scale, Wechsler-Bellevue I, etc) there are also multiple EI measures. Alternative models of EI can be classified into two distinct groups: Ability models and Mixed models (Mayer, Salovey & Caruso 2000a).

In terms of ability models, researchers identify EI as cognitive ability just as is IQ (e.g. Mayer, Salovey & Caruso 2000a); in terms of Mixed Models, researchers identify EI as a combination of perceived abilities and traits (e.g. Schutte et al. 1998; Bar-On 1997)..

Ability-based measures look at maximal performance (best score a subject can achieve on a test) (Mayer, Salovey, & Caruso 2000a; Petrides & Furnham 2000; Dennis, Sternberg & Beatty 2000). Mixed- Models are defined as "mix" since they rely on different constructs, not necessarily related to intelligence (e.g. personality traits).

Ability Models

Salovey and Mayer's original model of emotional intelligence (1990) proposes EI as the result of three conceptually related mental processes involving emotional information: the appraisal and expression of emotion, the regulation or control of emotion, and the utilization of emotion in adaptive ways. Mayer and Salovey (1997) contend that EI should not be considered as a collection of socially desired personality traits, but rather as an intelligence that enhances the processing of certain types of information.

Based on Salovey and Mayer definition, EI should meet the psychometric criteria defining intelligence: it should be related to a set of mental abilities, which should be intercorrelated, have a significant moderate positive correlation to traditional intelligence, and should develop with age and experience (Mayer, Salovey, & Caruso 2000a). Mayer, Caruso and Salovey (2000) provide empirical support that EI meets these criteria of standard intelligence.

Mayer and Salovey's ability model of emotional intelligence (1997) identifies four branches as "ingredients" of EI: perception of emotions (appraisal and expression of

emotions); facilitation/assessment of emotions (the use of emotions to enhance reasoning); understanding of emotions (cognitive processing of emotions-abstract understanding about emotions); and regulation of emotions (the ability to manage emotions in oneself and in others). Perception and facilitation of emotions fall under the area called by the authors as "emotional experiencing or experiencing area"; understanding and regulation of emotions fall under the category called by the authors "emotional reasoning or strategic area".

Based on this conceptualization Mayer, Caruso and Salovey (1999) developed the MEIS (The Multifactor Emotional Intelligence Scale) which consists of twelve performance tasks designed to measure the four branches of their EI construct: Branch I consists of four tests that measure the ability to identify emotions in faces, music, designs and stores. Branch II comprises two tasks designed to measure the ability to assimilate emotions into perceptual and cognitive processes. Branch III consists of four tasks assessing the ability to reason about and understand emotions. Branch IV consists of two tasks that measure the participants' abilities to manage their own emotions and the emotions of others.

The scale has demonstrated good reliability (r = .96; Mayer, Salovey & Caruso 2000a) and significant correlation of the global score EI with measures of verbal intelligence (r = .36), self-reported empathy (r = .33), and parental warmth (r = .23) (refer to Mayer, Salovey & Caruso 2000a). Emotional Intelligence as ability is age dependent, adults score normally higher on EI than young people (Mayer, Salovey & Caruso 2000a).

The MSCEIT (Mayer-Salovey-Caruso Emotional Intelligence Test) is a shortened and improved version of the Multi-Factor Emotional Intelligence Scales (MEIS). The aim

of this scale is to provide objective measures involving a series of emotional problem solving items deemed correct by consensus (MacCann et al. 2004). The items are designed to determine the person's ability to perceive, identify, understand, and manage own's and others' emotion.

There are eight subscales that combine in four pairs to represent four branches of EI. The four branches combine to form two area-levels: strategic and experiential. These two area levels in turn combine to make the MSCEIT total score. The MSCEIT represents a higher-order model of EI. However, interpretation of test results is proposed down to the branch level scores.

Appendix B provides a sample of questions from the ability measure of EI; the MSCEIT (Mayer, Salovey & Caruso Emotional Intelligence Test 2006). The scoring is objectively assessed with consensus and expert scoring (Mayer et al 2001).

The scale has shown good reliability (r = .86, in Brackett & Mayer 2003), good face validity (Pusey 2000, in Mayer, Salovey & Caruso Emotional Intelligence Test 2006), and good discriminant validity with different measures associated with EI. Salovey, Mayer, Caruso and Lopes (in press, in Mayer, Salovey & Caruso Emotional Intelligence Test 2006) found zero and low correlations with some classical measures of IQ (e.g. r = .15 with Vocabulary scale of the WAIS-III). Gohm and Clore (2001) found low correlation between the MSCEIT and the Trait Meta-Mood Scale (r=.29, p< .01). Salovey and colleagues (in press, in Mayer, Salovey & Caruso Emotional Intelligence Test 2006) found non significant or low correlation between the MSCEIT and personality traits: r = -.13 (ns)

with Neuroticism, r = .04 (ns) with Extroversion, r = .33 ($p < .05$) with Agreeableness, r = -.23 ($p < .05$) with Openness, and r = .25 ($p < .05$) with Conscientiousness.

Mixed Models (Self-report measures)

One of the main criticisms of the Mixed-Models is that they are measuring constructs very similar to the ones assessed by personality tests. However, intuitively the relationship between personality traits and EI is not linear. If we think about the relationship between optimism and EI, the two constructs have a positive linear relationship until optimism does not reach the extreme of becoming "unhealthy". There are situations where it is necessary to recognize the need of adopting a behavior that might require a temporary pessimistic view. For example, in the case of trying to lose weight, a person highly optimistic would not recognize the danger associated with having "that extra piece of cake". The hypothesis is that people who are characterized by high optimism will probably rate low on EI. EI is assumed to "drive" us in the right direction.

Bar-On's EQ-I is the most comprehensive self-report measure of EI available. Bar-On originally described the scale as measure of "psychological well-being" (Bar-On 1988 in Bar-On 1997).

The scale became the "Emotional Quotient Inventory" after Salovey and Mayer's conceptualization of emotional intelligence (1990). Bar-On's model of emotional intelligence defines EI "an array of non-cognitive capabilities, competencies, and skills that influence one's ability to succeed in coping with environmental demands and pressures" (Bar-On 1997). Bar-On reviewed personality characteristics that are supposed to determine life-success beyond cognitive intelligence, and identified 5 broad dimensions,

which are further divided into 15 subscales: intrapersonal skills (self regard, emotional self awareness, assertiveness, self-actualization, independence)*;* interpersonal skills (empathy, social responsibility, interpersonal relationships); adaptability (problem solving, reality testing, flexibility)*;* stress management (stress tolerance, impulse control)*;* general mood (happiness, optimism). Clearly, Bar-On's conceptualization includes not only emotion-related mental abilities, but also broader skills and non-ability traits that refer to personality traits and chronic mood. The instrument has been found to be related to academic success and skill at coping with stress (Bar-On 1997).

The EQi technical manual (Bar-On 1997) provides no results for the total score of the scale. However, the manual reports good reliability for the 15 subscales (r from .70 to 87, in Schutte & Malouff 1999) and significant correlation over .50 between the global score and measures related to health and personality factors (Bar-On 1997). "With regard to divergent validity for total EQi scores, the manual cites a low correlation (r.=.12) with WAIS (cognitive intelligence) scores" (Schutte & Malouff 1999, p. 16).In terms of predictive validity the manual reports that "EQi total score significantly discriminated between a) highly successful business people and unemployed individuals; b) military recruiters who met their recruiting goals and military recruiters who came up at least 30% short; c) prisoners and normals; and d) cardiac patients and normals." (Schutte & Malouff 1999, p.16)

Schutte et al. (1998) developed a 33-item self-report non-proprietary scale based on Salovey & Mayer's (1990) early work. The scale assesses the extent to which subjects are able to identify, understand, facilitate, and regulate emotions in themselves and in others.

The items identify the appraisal and expression of emotions in self and others (emotional perception), regulation of emotions in self and other, and use of emotions in solving problems. This scale could be conceptualized as a unidimensional scale of perceived emotional intelligence, although some studies have shown that there are sub domains: optimism/mood regulation, appraisal of emotions (perception), social skills (regulation of others' emotions), and use of emotions (Petrides & Furnham 2000). The scale has demonstrated high internal consistency (Cronbach's alpha ranging from 0.87 to .90), good reliability (r = 0.78) and significant correlation of the global score and subdomain scores with theoretically similar constructs, such as alexithymia, mood repair, optimism, and impulse control (Schutte et al. 1998). Refer to Appendix C for the actual items (Schutte et al 1998).

Limitations

Several researchers have underlined the need to consider trait EI (also identified as emotional self-efficacy by Petrides & Furnham 2001) and ability EI (also identified as cognitive-emotional ability) as different constructs because of their different operationalization and prediction power (Pérez, Petrides & Furnham 2005).

Trait EI builds on answers deemed correct by consensus (subjective knowledge) and Ability EI builds on maximal performance (objective knowledge). However, at the conceptual level both perspectives seem to agree on EI as mental ability related to information processing. This has led to conceptual confusion with the result of contradictory findings.

Both approaches, ability vs. self-report/ mixed models, carry limitations related to the correct answer, the "benchmark" for EI. Ability based measures carry the problem of the consensus. Self-report measures or mixed models carry the problem of social desirability (faking good). An extensive discussion on the strengths of ability-based measures versus self-report measures is provided by Ciarrochi and Mayer (2005).

Both instruments are designed to be a general measure of emotional ability of individuals in a wide range of interpersonal contexts. Little is known about their appropriateness for assessing specific emotional abilities involved in specific contexts; i.e. health related performance. A tailored perspective toward the behavior under scrutiny is necessary if we want to develop programs in order to help people help themselves.

6.4 EI and performance

Emotional intelligence is defined as "intelligence" since it seems to contribute to deal effectively with the environment (source, Wechsler's definition of intelligence). Goleman has introduced EI as *theory of performance* that goes beyond the borders of personality, IQ, and academic achievement (Goleman 1998). Goleman (1995) claims that IQ accounts for only 20% of a person's success. Therefore, by exclusion, Goleman's EI (1995) seems to be "any desirable feature of personal character not represented by cognitive intelligence" (Zeidner, Matthew & Roberts 2004, p. 373). This argument leads toward the belief that EI is a better predictor of "performance" in all sorts of areas, like work, relationships and academic achievement. However, Goleman never explicitly claims this in his book. In fact at the empirical level, "Van Rooy and Viswesvaran (in press) found IQ to be a better predictor of work and academic performance than EI. However,

when it comes to the question of whether a person will become a "star performer (in the top ten percent, however such performance is appropriately assessed) within that role, or be an outstanding leader, IQ may be a less powerful predictor than Emotional Intelligence (Goleman 1998, 2001, 2002)" (Emmerling & Goleman 2003, p.5).

Despite the compelling argument at the theoretical level and the effort at the research level, empirical evidence does not fully support the causal role of EI on decision making and performance. The problem is that most of these studies lack a theoretical framework that considers the salience of emotions and emotional intelligence for the behavior under scrutiny.

6.5 Training on EI

Looking at the educational field, researchers have recognized social and emotional learning (SEL) as a new educational perspective that needs to be fostered to promote an healthy development of young adults (Elias & Arnold 2006). Empirical evidence on the positive impact of SEL has been found on academic achievement, incidence of problem behaviors, and quality of the overall school environment (Elias at al., 1997 in Elias & Arnold 2006). Social Emotional Learning represents a program that aims to reach three goals: "1) Develop self-awareness and self-management skills to achieve school and life success; 2) Use social-awareness and interpersonal skills to establish and maintain positive relationships; 3) Demonstrate decision-making skills and responsible behaviors in personal, school, and community contexts" (Dunn & Ruiz 2006, in http://www.isbe.state.il.us/ils/social_emotional/standards.htm).

The Illinois State Board of Education website (source: http://www.isbe.state.il.us/ils/social_emotional/standards.htm) provides an overview of specific skills that need to be developed from early elementary to late high school considering these three goals.

At the college level, MBA programs have started to recognize the importance of the correct development of emotional skills in determine the future success of the students. These programs focus on the development of self-awareness, self-Management, social awareness and relationship management. These skills seem to be the core of management abilities. The aim is to "fabricate" the experience where the perception, understanding, facilitation and regulation of emotion play a key role in the individual performance. Teaching EI requires the ability of promoting class discussion, peer interaction and role playing and the stimuli are normally case studies.

In the business world more and more companies are investing in the development of the Emotional Intelligence of their employees. EI applications in business have increased revenues through the reduction of turnover, absenteeism and low performance (Freedman & Everett 2006). The assumption is that employees with higher EI are better able to identify and manage their emotions when dealing with internal and external challenges. However, these cases lack of a strong methodological procedure to determine the causality of the training of EI on performance.

Training is offered by commercial institutions (e.g. http://www.emotionaliq.org/Training.htm). What is interesting is that these programs do not claim to be able to necessarily increase the overall emotional quotient.

6.6 Conclusion

Training programs related to EI suggest that a development of EI competencies should improve decision making and performance. However, the increase on EI score is not necessarily expected. The reason why is not well defined. Therefore the argument is open to empirical validation.

Context based approach. We believe that an approach that considers the salience of the behavior under scrutiny might address the limitations encountered by actual research on EI, decision making and performance. Actual research seems to suggest that a high score on EI should determine a high performance considering an indefinite number of behaviors. Let's take two scenarios as examples: adopting a healthy diet and dealing with a car sales representative.

Both behaviors are assumed to carry an "emotional baggage" therefore the hypothesized salience of EI. Present research on EI seems to suggest that a high score on EI should determine a high performance on both behaviors but there is lack of evidence in this direction. In fact someone could be extremely good in adopting a healthy diet but terrible in dealing with car sales representatives, despite having a good score of EI.

The definition of the behavior under scrutiny, the understanding of which specific branches related to EI comes into play when we consider a specific behavior and the ability of EI to discriminate between "poor" performers and "star" performers might represent a way to offer empirical validation of EI as predictor of performance.

CHAPTER 7

7.1 Research question

The aim of this set of studies is to examine whether EI predicts success (i.e. performance) in the adoption and maintenance of a health behavior. It tries to investigate whether training on EI has a beneficial impact on health related performance.

Research related to obesity and the role of emotions in consumer behavior suggests the possibility to consider EI as a new avenue of research. The unified theory of behavioral determinants (Fishbein et al. 2001) and research related to EI offers us the theoretical framework to look at the role of EI on behavior and behavior change.

From a methodological perspective, research related to EI suggests the need to consider experimental and longitudinal designs (Schulze & Roberts 2005).

Research Question

Does training on EI have a positive effect on decision making and performance (i.e. adoption and maintenance of healthy diet/weight) for those behaviors that have significant emotional content (i.e. diet)?

In order to answer the research question, four studies are proposed. Study 1 explores the impact of affect on the intent to diet. Study 2 investigates whether emotional intelligence discriminate healthy, unhealthy weight people and moderates the relationship between knowledge (perceived and actual) and weight. Study 3 and 4 look for the possibility to train people on EI and health and have an impact on their performance (i.e. adoption and maintenance of an healthy weight).

7.2 General Hypotheses

In order to answer the general research question and test for the general hypothesis, four hypotheses need to be tested based on the conceptual framework and some of the gaps identified in the literature.

Diet as emotional salient behavior. Research on obesity and tailoring health messages suggests the cognitive appraisal of emotions as one of those factors that need to be considered in the development of educational programs aimed to improve decision making and performance related to health.

Based on the Theory of Reasoned Action (Fishbein and Ajzen 1975) the first study will test for the independent role of cognitive appraisal of emotions (i.e. affect) on the intent to adopt a health behavior (i.e. diet). The aim of this study is to demonstrate the salience of emotion for the behavior under scrutiny by testing the independent role of affect (positive and negative) and overall attitude on the intent to diet.

Hypothesis 1

Positive and negative affect play an independent role from overall attitude considering the intent to diet. (Study 1)

Emotional intelligence and performance. The cognitive-behavioral psychotherapy that seems to underline the success of some commercial weight loss programs (e.g. Weight Watchers) suggests the importance to look at the "reasoning" associated to what we feel when considering the goal of weight maintenance or weight loss. The correct reasoning related to emotions is what we define as emotional intelligence: the ability to perceive,

facilitate, understand and regulate emotions in the right direction (Mayer and Salovey 1997). Emotional intelligence has been positively associated with healthy lifestyle and performance (Tsaousis & Nikolaou 2005; Goleman 1998). Therefore our second hypothesis:

Hypothesis 2

EI discriminates between healthy and non-healthy weight people. Healthy weight people show higher levels of EI than non-healthy weight people. (Study 2)

Emotional intelligence and decision making. Research related to decision making and health suggests knowledge as a necessary but not sufficient condition to motivate the intention to adopt a health behavior. From a consumer behavior perspective, research on emotion regulation and coping strategies suggest "reasoning abilities" related to emotions as a new possible avenue of research. Based on the "unified theory" presented by Fishbein et al (2001) the second study tests for the moderating role of emotional intelligence on knowledge (perceived and actual) on performance (i.e. BMI).

Hypothesis 3

EI moderates the relationship between knowledge (actual and perceived) and performance (i.e. adoption and maintenance of an healthy diet/weight). (Study 2)

The specific hypotheses related to the direction of the moderator effects are presented under study 2.

Learning emotional intelligence. No studies have provided empirical evidence of the possibility to increase EI. Moreover, no research has look at the influence of a training on EI and health on decision making and performance related to health (i.e. diet/weight). Therefore based on results from study 2, our intervention study (study 3 and 4) will look at the possibility to increase EI and have an impact on decision making and performance related to health (i.e. adoption and maintenance of healthy diet/weight).

Hypothesis 4

Subjects who receive a training on EI and health improve decision making and performance related to health (i.e. adoption and maintenance of healthy diet/weight).
(Study 3 and 4)

CHAPTER 8 - STUDY 1

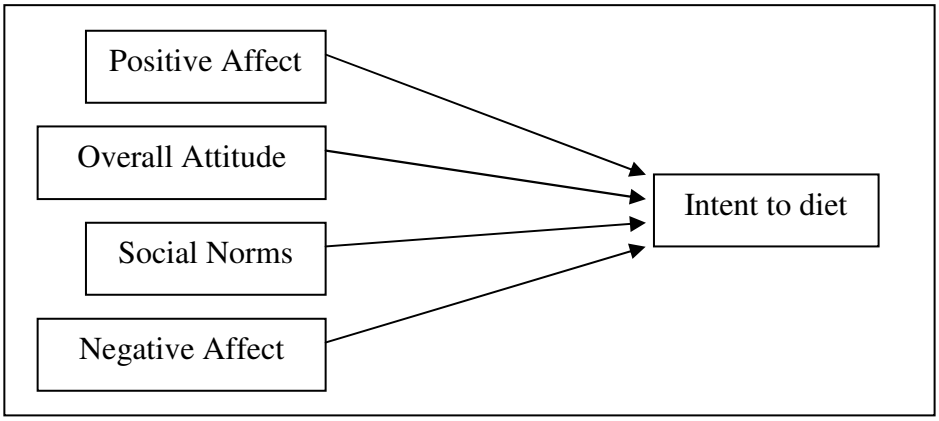
Overview. The present study aims to introduce "diet" as emotional salient behavior by looking at the independent role of positive and negative affect from overall attitude. It relies on the Theory of Reasoned Action (TRA, Fishbein & Ajzen 1975) where overall attitude and normative pressure are identified as key variables in predicting the intention to adopt the behavior under scrutiny.

Eagly and Chaiken (1993) report the application of the TRA to create a wide variety of health public campaigns, including anti-smoking and AIDS campaigns and family planning behavior. However, these campaigns have not reported the results expected. A possible reason might be related to the highly cognitive structure characterizing TRA. In fact this model does not address the emotion that might be elicited by the behavior.

Recent research supports the independent role of emotion from overall attitude on the intention to perform the behavior (e.g. Bodur, Brinberg & Coupey 2000; Peter, Brinberg, Schulz & Mantegazzi 2004). However, no research to our knowledge has considered the complementary role of positive and negative valence of emotions (positive and negative emotions) considering the target behavior.

Therefore our model will consider the intent to diet as the result of the overall attitude toward the intent to diet, what salient referents (e.g. friends) think about us performing the behavior and our motivation to comply to them (social norms), and the role of positive and negative emotions elicited by the idea to diet. Figure 2 reports the hypothesized model for study 1.

Figure 2: Hypothesized behavioral determinants related to the intent to diet



8.1 Sample and Procedure

A total of 96 undergraduate business students from a large southeastern university participated in the study. The sample included students in an introductory marketing class participating in an extra credit opportunity. The sample was characterized by juniors and seniors from a variety of business majors (e.g. marketing, management, and finance) with the majority (83%) being from North America.

BMI and Gender. Table 1 provides an overview of demographics characterizing the sample in terms of BMI (Body Mass Index[2]) and gender. 70% (65/93) of students register a normal weight and 24% (22/93) of the students are overweight or obese. This is consistent with previous data collected between 2004 and 2006 (Peter, unpublished data). Looking at gender, only 10% (5/51) of females are overweight/obese against 40% (17/42) of males who are overweight/obese.

[2] Formula, Appendix A

Table 1: BMI by Gender – Study 1

BMI	Male	Female	Total
Underweight	1	5	6
Normal Weight	24	41	65
Overweight	14	5	19
Obese	3	0	3
Total	42	51	93

Instrument. The instrument was an online survey about behavioral determinants related to the intent to diet. For the actual measures refer to next section (8.2).

Each respondent was taking the online questionnaire from the comfort of his/her home. The survey took approximately 15-20 minutes to complete.

8.2 Measures

Intention was measured by asking respondents "Overall, all things considered, I intend to diet in the next month." using a 7-point probability scale anchored with extremely unlikely/extremely likely.

Overall Attitude was assessed by asking, "Overall, all things considered, my intent to diet in the next month is." Five 7-point semantic differential scales anchored with extremely bad/extremely good, extremely beneficial/extremely harmful, extremely unpleasant/extremely pleasant, extremely worthless/extremely valuable, extremely unenjoyable/extremely enjoyable. An average score was computed after running exploratory and confirmatory factor analysis (section 8.3)

Affect (positive and negative) was assessed using a list of twelve emotional responses (fearful, surprised, nervous, active, anxious, happy, pleased, astonished,

satisfied, elated, excited, aroused) that have been demonstrated by Watson and Tellegen (1985) to be a universal and encompassing set of emotions for most behaviors. Respondents rated the extent to which they might feel each emotion, "About the intention to diet in the next month, I feel ____." A 5-point scale was used (1 = not at all, 2 = a little, 3 = moderately, 4 = quite a bit, 5 = very much).

Social norms was measured by first multiplying a respondent's belief that a particular referent thinks the respondent should or should not (7-point scale) diet/exercise by the motivation to comply (7-point scale) with that referent. Products were then summed to attain a measure of normative influence. The referents considered were the ones identified by previous research on reducing fat consumption (Hampton 2002): friends, boyfriend/ girlfriend, family, diet groups (i.e. Weight Watchers), doctors, and athletic teams.

8.3 Results

Data reduction-Behavioral determinants. Exploratory and confirmatory factor analysis was run for affect and overall attitude.

Table 2 reports the results for Affect. Varimax rotation method was used for the principal component analysis.

Results suggest positive affect as the composite measure of satisfied and happy (Cronbach's alpha=.862). Negative affect as the composite measure of nervous and fearful (Cronbach's alpha=.801).

Table 2: Exploratory Factor Analysis for Affect – Study 1

	Component		
	1	2	3
ASTONISHED	-.087	.025	.956
NERVOUS	.067	.923	-.042
SATISFIED	.886	.019	-.036
ACTIVE	.726	.068	-.171
ELATED	.811	.107	-.021
ANXIOUS	.324	.798	-.033
EXCITED	.814	.146	-.090
HAPPY	.910	.046	-.069
FEARFUL	-.114	.857	.012
PLEASED	.803	.010	-.074
SURPRISED	-.049	-.074	.949
AROUSED	.682	.006	.128

Table 3 reports the results for overall attitude. Varimax rotation method was used for the principal component analysis.

Results suggest Overall Attitude as the composite measure of good, valuable and beneficial (Cronbach's alpha=.942).

Table 3: Exploratory Factor Analysis for Overall Attitude – Study 1

	Component	
	1	2
BENEFICIAL	.938	.080
PLEASANT	.211	.934
GOOD	.930	.244
VALUABLE	.911	.281
ENJOYABLE	.174	.945

Distribution-Behavioral determinants. A preliminary analysis indicates that all the measures do not deviate substantially from normality. None of the measures, except social norms, had skewness or kurtosis values greater than 2 (see Bodur, Brinberg & Coupey,

2000 for a brief discussion of this approach to assess normality). Appendix D-Study 1 reports the statistics for these measures.

Main Analysis. In order to look at the hypothesized model, regression analysis was performed. All variables were mean centered before running the regression analysis in order to reduce multicollinearity problems.

All the independent variables showed a positive relationship with the intent to diet (Table 4). The overall model is significant (R-square=.546, F (4, 86) = 28.12, p<.001). Results do no report any multicollinearity problem (indices > .20).

Table 4: Behavioral determinants related to the intent to diet – Study 1

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
Constant	.015	.138		.107	.915		
Positive Affect	.464	.121	.294	3.827	.000	.855	1.169
Negative Affect	.564	.122	.354	4.630	.000	.862	1.161
Social Norms	.050	.022	.180	2.321	.023	.838	1.194
Overall Attitude	.329	.103	.275	3.198	.002	.681	1.469

8.4 Discussion

The aim of this study was to determine whether emotions were a significant determinant of the intent to diet. In order to do so, we considered the theory of reasoned action (Fishbein & Ajzen 1975) and we introduced the independent role of positive and negative affect on the intent to diet.

A simple regression analysis reveal that positive and negative affect, overall attitude and social norms all contribute to the intent to diet.

The intent to diet elicits both a positive and negative affect independent from the overall attitude associated to the idea to perform the behavior. Therefore we are confident that diet is an emotional salient behavior. Our first hypothesis has been verified.

Limitations. A limit related to this study is the possible "confounding" given by the general definition of "diet". As suggested by Fishbein et al (2001) it is very important to be specific in the definition of different constructs, especially the outcome variable (i.e. intent).

A preliminary study conducted after this data collection with 97 subjects suggests different meanings associated to "diet". Just to cite a few, diet has been defined as "*changing your eating habits to manipulate your weight", "eating less and healthy", "not eating fat"," limiting calories intake"," exercise more and eat less"," restrictive eating", etc.*

Therefore, the need is toward a more specific definition of the outcome variable. The next studies will substitute "diet" with "reducing food consumption".

We believe that a focus on reducing food consumption will increase the chances of an impact at the performance level (weight maintenance/loss). Weight maintenance/loss is associated to different individual differences we cannot have an impact on (e.g. metabolism). Reducing food consumption as the target behavior should have an impact on performance assuming constant other individual differences.

CHAPTER 9-STUDY 2

Overview. Research on the role of emotions and consumer behavior suggests that emotions prompt careful information processing and influence behavior (Nitika, Inman & Vikas 2005). However, to our knowledge, no research seems to have suggested the possibility to look at the "reasoning ability" related to emotions considering the intent to adopt an emotional salient behavior.

The aim of this study is to look at the role of EI in discriminating between people who have a healthy weight and people who are overweigh/obese. Research related to intervention effectiveness on weight loss/maintenance and empirical evidence related to EI suggests EI as related to healthy lifestyle and performance (Tsaousis & Nikolaou 2005; Goleman 1998). Therefore, the first specific hypothesis:

People with healthy weight (18.5<=BMI<25) have a higher overall score of ability EI (MSCEIT) than subjects who do not have a healthy weight (BMI>=25). (EI-Health)

Research on consumer behavior, health and decision making suggests knowledge (actual and perceived) as a necessary but not sufficient condition to motivate the intent to adopt a health behavior.

Emotional intelligence as cognitive ability to perceive, facilitate, understand and regulate emotions (Mayer & Salovey 1997) is suggested as one of those factors that might help people overcome obstacles characterizing goal attainment (i.e. adoption health behavior).

The overall hypothesis of this study is that emotional intelligence plays an active role together with other behavioral determinants (e.g. intention, social norms, attitude, affect) on the adoption and maintenance of a healthy weight.

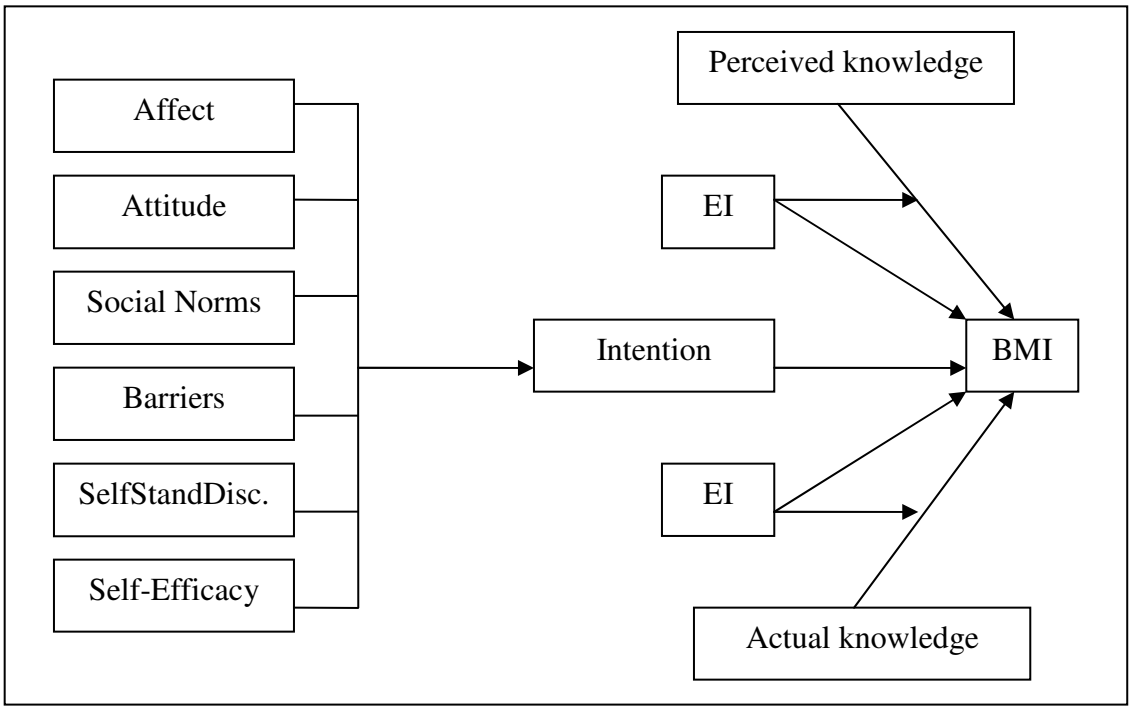
Most of the intervention campaigns related to healthy diet/nutrition promote knowledge as the main variable of interest in order to make people adopt a healthy diet. Those interventions have just been partially successful.

Considering "bad performance" related to a certain behavior (e.g. failure to adopt and maintain healthy diet/weight) literature on EI, consumer behavior and decision making suggests that often people have the knowledge necessary to adopt the behavior, however they seem to not be able to reach their goals because they are not able to "use" their knowledge in the right direction (Mayer & Salovey 1997).

Therefore, thinking about the willingness to adopt and maintain a healthy diet/weight, we hypothesize that emotional intelligence might help people to overcome obstacles characterizing the goal attainment even if they have the actual knowledge or they think they have the actual knowledge (perceived knowledge) related to the emotional salient behavior under scrutiny. EI might represent one of those constructs able to influence the "use" of perceived and actual knowledge in the right direction for emotionally salient behavior under scrutiny (i.e. reducing food consumption).

Figure 3 reports the hypothesized relationship between behavioral determinants related to reducing food consumption, EI and performance (i.e. BMI).

Figure 3: Hypothesized relationship between EI, behavioral determinants related to reducing food consumption and BMI – Study 2



Based on the literature related to EI and performance (Mayer & Salovey 1997) EI should help people to make better decisions.

Many researchers suggest the independent role of actual and perceived knowledge on actual behavior and the possibility of a low or negative correlation between the two constructs (e.g. Radecki and Jaccard 1995). Considering the adoption and maintenance of a health behavior we hypothesize the relationship between actual knowledge and BMI to be negative and the relationship between perceived knowledge and BMI to be positive (high levels of BMI).

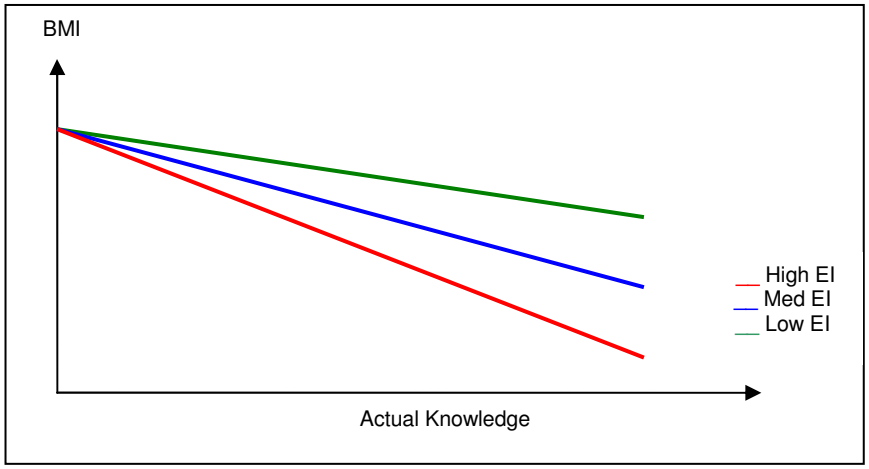
For actual knowledge, we rely on findings related to tailoring health messages and the positive role of knowledge in the adoption of a desirable health behavior (Eagly and

Chaicken 1993). Considering perceived knowledge we hypothesize that more people adopt and maintain an unhealthy weight (high levels of BMI) the more they are willing to use their perceived knowledge to justify their actual behavior.

These relationships are moderated by EI. EI is hypothesized as having a positive impact on the use of knowledge (actual and perceived) in the right direction (lower levels of BMI).Therefore our specific hypotheses:

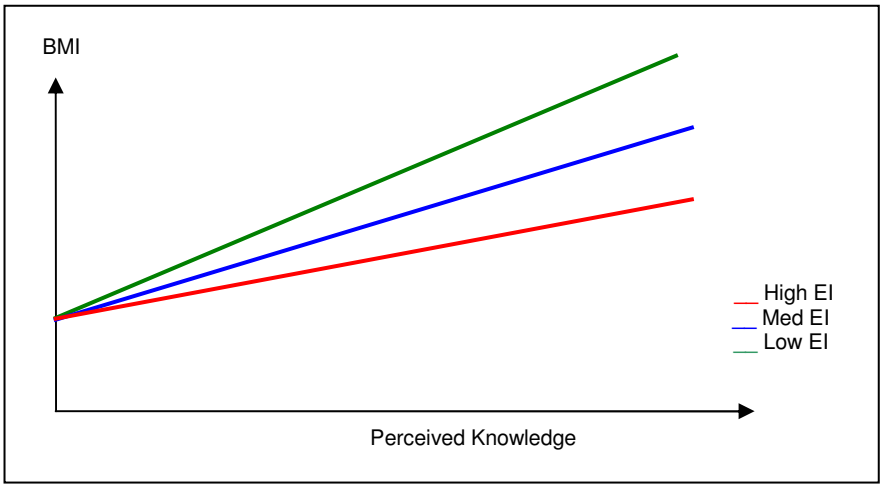
For people with high levels of EI, the relationship between actual knowledge and BMI should be negative and more important than for people with medium or low levels of EI (AK-EI; Figure 4)

Figure 4: Hypothesized relationship between actual knowledge and BMI with high, medium and low levels of EI – Study 2



Perceived knowledge for people with high levels of EI is less important in predicting unhealthy weight (higher levels of BMI) than for people with low/medium levels of EI.
(PK-EI; Figure 5)

Figure 5: Hypothesized relationship between Perceived Knowledge and BMI with high, medium and low levels of EI – Study 2



9.1 Pilot-test

Preliminary data have been collected to assess the relationship between emotional intelligence and healthy weight (18.5<=BMI<25). Because of the proprietary nature of the classic ability measure of EI we considered the self-estimated measure of emotional intelligence as offered by Schutte and colleagues (1998).

Sample and Procedure. A total of 68 students (51 females and 17 males) from a southeastern university completed an online questionnaire for extra credit. The questionnaire consisted of the 33 items scale of Schutte and colleagues (Schutte et al.

1998) and traditional measures related to health (i.e. BMI by height and weight computed by the researcher).

BMI differences. GLM procedure was adopted to look at the hypothesized relationship between BMI (underweight: BMI< 18.5, normal weight: 18.5<=BMI<25, overweight: 25=<BMI<30, obese: BMI>=30) and EI considering the possible confounding of gender (R squared= .330; adjusted R squared = .251). Table 5 reports the results for the tests between subjects.

Table 5: Tests of Between-Subjects Effects for EI score – Study 2

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3.484	6	.581	4.191	.002
Intercept	265	1	265	1912.546	.000
Gender	.054	1	.054	.390	.535
BMI	2.098	3	.699	5.048	.004
Gender x BMI	.061	2	.030	.220	.803
Error	7.067	51	.139		
Total	856.105	58			
Corrected Total	10.551	57			

The GLM procedure does not show any significant result in terms of interaction of Gender by BMI. Therefore ANOVAs were used to test for EI differences among the four groups: underweight (BMI<18.5), normal weight (18.5<=BMI<25), overweight (25=<BMI<30) and obese (BMI>=30).

The groups were found to be significantly different (Table 6); therefore Fisher's protected LSD was conducted to uncover which pairs of groups were different (Table 7).

Table 6: ANOVA EI score – Study 2

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.288	3	1.096	8.148	.000
Within Groups	7.263	54	.135		
Total	10.551	57			

Table 7: Multiple Comparisons (LSD) for EI and BMI – Study 2

(I) BMI	(J) BMI	Mean Difference (I-J)	Std. Error	Sig.
Underweight	Normal Weight	-.26212	.26574	.328
	Overweight	.29697	.28408	.301
	Obese	.22727	.29945	.451
Normal Weight	Underweight	.26212	.26574	.328
	Overweight	.55909	.12967	.000
	Obese	.48939	.16056	.004
Overweight	Underweight	-.29697	.28408	.301
	Normal Weight	-.55909	.12967	.000
	Underweight	-.06970	.18939	.714
Obese	Underweight	-.22727	.29945	.451
	Normal Weight	-.48939	.16056	.004
	Overweight	.06970	.18939	.714

Results suggest the significance related to healthy weight people (18.5<=BMI<25) and non-healthy weight people (BMI>=25). Therefore the following analysis will focus on these two particular groups.

EI differences. An independent simple t-test between healthy weight people (18.5<=BMI<25) and non-healthy weight people (BMI>=25) was conducted. The results reveal that people who are overweight or obese (BMI>=25) do have a lower EI than people who have a normal weight (18.5=<BMI=<25) (t=-4.926, p<.01). Table 8 reports the group statistics.

Table 8: Group Statistics EI and BMI– Pilot Study 2

BMI	N	Mean	Std. Deviation	Std. Error Mean
>= 25.00	16	3.4413	.36498	.09124
< 25.00	40	3.9742	.36766	.05813

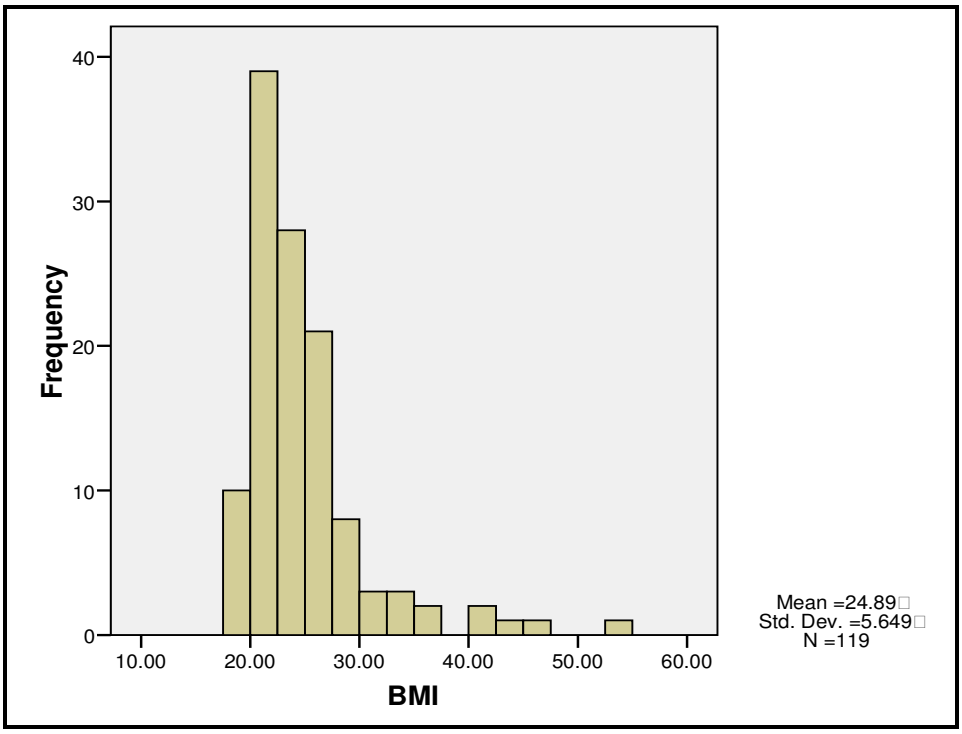
Discussion. These preliminary results suggest that EI discriminates between people who have a healthy weight and people who are obese or overweight.

We recognize that due to the characteristics of this particular sample (44 females vs. 17 males) we still need to take into account gender in the following analysis.

9.2 Sample Characteristics

A total of 120 students participated in the study. The BMI of students ranged from 18.3 to 53.58: 2% of the sample was underweight (BMI<18.5), 64% reported a healthy weight (18.5<=BMI< 25), 25% was overweight (25<=BMI<30), 5 % was obese (30<=BMI<40) and 4 % was morbidly obese (BMI>= 40). The distribution of BMI for this sample is reported by Figure 6.

Figure 6: Distribution of BMI - Study 2



This data closely emulates the BMI characterizing the US population (refer to National Health and Nutrition Examination Survey 1999-2000).

Students completed the classic measure of EI (MSCEIT) and behavioral determinants related to reducing food consumption based on the hypothesized model reported above.

For an overview of the demographics characterizing the sample, please refer to Table 9.

Table 9: Demographic Characteristics – Study 2

Variable	Percentage
Gender	
Female	56%
Male	44%
Age	
19-20	73%
21-22	24%
23-25	3%
Ethnicity	
Caucasian	83%
Hispanic	1%
Asian	8%
Black-Afro-American	3%

Table 10 provides an overview of BMI by Gender. Males seem to be characterized more by an unhealthy weight (BMI>=25) than females.

Table 10: BMI by Gender – Study 2

	Males	Females	Total
Underweight	1	0	1
Normal weight	23	48	71
Overweight	17	12	29
Obese	5	3	8
Very Obese	4	1	5
Total	51	66	117

Gender differences in terms of EI. Females show higher EI than males (Table 11 and 12) and more men are obese/overweight than females (refer to Table 10).

Table 11: ANOVA EI and Gender – Study 2

		Sum of Squares	df	Mean Square	F	Sig.
EI_Perceive	Between Groups	2262.330	1	2262.330	8.857	.004
	Within Groups	29375.294	115	255.437		
	Total	31637.624	116			
EI_Facilitate	Between Groups	2378.332	1	2378.332	10.398	.002
	Within Groups	26302.983	115	228.722		
	Total	28681.314	116			
EI_Understand	Between Groups	1491.294	1	1491.294	8.916	.003
	Within Groups	19235.678	115	167.267		
	Total	20726.972	116			
EI_Regulate	Between Groups	5331.325	1	5331.325	30.791	.000
	Within Groups	19911.966	115	173.148		
	Total	25243.291	116			
EI_EXPERIENTAL	Between Groups	3373.713	1	3373.713	10.271	.002
	Within Groups	37772.220	115	328.454		
	Total	41145.933	116			
EI_REASONING	Between Groups	3403.691	1	3403.691	21.880	.000
	Within Groups	17889.375	115	155.560		
	Total	21293.065	116			
EI_TOTAL	Between Groups	4994.738	1	4994.738	21.439	.000
	Within Groups	26791.438	115	232.969		
	Total	31786.176	116			

Table 12: Descriptives EI by Gender – Study 2

	Gender	N	Mean	Std. Deviation	Std. Error
EI_Perceive	Male	51	94.44	14.771	2.068
	Female	66	103.31	16.855	2.075
	Total	117	99.44	16.515	1.527
EI_Facilitate	Male	51	94.64	15.176	2.125
	Female	66	103.73	15.083	1.857
	Total	117	99.77	15.724	1.454
EI_Understand	Male	51	92.71	14.532	2.035
	Female	66	99.91	11.554	1.422
	Total	117	96.77	13.367	1.236
EI_Regulate	Male	51	91.24	13.077	1.831
	Female	66	104.86	13.221	1.627
	Total	117	98.92	14.752	1.364
EI_EXPERIENTAL	Male	51	93.39	17.485	2.448
	Female	66	104.22	18.599	2.289
	Total	117	99.50	18.834	1.741
EI_REASONING	Male	51	90.77	13.973	1.957
	Female	66	101.65	11.182	1.376
	Total	117	96.91	13.548	1.253
EI_TOTAL	Male	51	90.02	16.505	2.311
	Female	66	103.19	14.235	1.752
	Total	117	97.45	16.554	1.530

Misperception of weight. Exploratory analysis conducted on the self-perception of weight ("Do you consider yourself overweight/obese?") BMI and Gender indicates that an important portion of the sample has a misperception of their actual weight (Table 13).

38% (27/71) of students who have a normal weight consider their selves overweight and more alarming, 67% (23/34) of students who are overweight/obese or seriously obese do not consider their selves overweight. Looking at gender, it seems that the misperception of weight is more salient for men than women.

Table 13: BMI by Self-perception of weight by Gender-Study 2

		Overweight Perception		
Gender	BMI	no	yes	Total
Male	missing	1	0	1
	normal weight	14	9	23
	obese	1	4	5
	overweight	10	7	17
	very obese	3	1	4
Female	missing	2	0	2
	normal weight	29	18	47
	obese	1	2	3
	overweight	8	4	12
	very obese	0	1	1
	Total	69	46	115

The independent sample t-test conducted in order to test for EI differences between people who have a misperception of weight and people who do not is not significant.

9.3 Procedure

Elicitation-behavioral determinants. We first conducted an open-ended elicitation with a sample from the population of interest to develop the content for the population-specific variables. Questions from the elicitation explored perceived outcomes (salient beliefs), relevant referents (understanding of the source of normative pressure), barriers and facilitators (environmental constraints, skill sets, and problem situations surrounding the behavior), and personal characteristics. Ten undergraduates (6 females and 4 males) were asked to complete the elicitation. The format used for this elicitation was derived from Fishbein et al. (2001). Responses that were given by at least 20% of the sample were kept for use in the questionnaire (Table 14).

Table 14: Elicitation Study 2 – Answers given by at least 20% of sample

Salient beliefs	**Relevant referents**
look better, feel better, raise self-esteem, result unhealthy diet, missing out foods that taste good, limit nutrients	friends, boyfriends, family, doctors, athletic teams
Barriers and Facilitators	**Personal characteristics**
demand on time by school, availability of food, possibility to exercise regularly, meal portions	lazy/motivated and careless/meticulous

Pretest-Knowledge questions. We conducted a pretest to identify a set of knowledge questions that provide adequate differentiation among high and low knowledge respondents. With a sample of 25 students (age mean= 21.5; 16 females and 9 males; 30% overweight/obese), not included in the final study, a total of 12/21 knowledge questions

(source USDA 2006) were generated by partitioning the sample of questions into quartiles based on the number of items answered correctly. A one-way ANOVA using each question as a dependent variable was conducted. Items that were too difficult or too easy and that did not have a linear term in the ANOVA were eliminated. We kept measures that had a linear term (respondents with higher overall knowledge scores will be more likely to answer the question correctly). The list is provided by Appendix E.

An exploratory analysis was conducted in order to look at any gender or misperception of weight differences in terms of BMI and knowledge and knowledge differences in terms of BMI. No significant results emerged. Therefore we feel confident in using the selected knowledge questions.

9.4 Measures

Dependent Variables: Performance: healthy weight, BMI-computed by the researcher (Formula, refer to Appendix A). Emotional Intelligence: classic ability measure of EI – MSCEIT (Appendix B provides a sample of questions).

Independent Variables: Intention: "Overall, all things considered, I intend to reduce my consumption of food in order to reduce my weight in the next six weeks" using a 7-point probability scale anchored with extremely unlikely/extremely likely. Affect was assessed using a list of twelve emotional responses: fearful, surprised, nervous, active, anxious, happy, pleased, astonished, satisfied, elated, excited, aroused (Watson & Tellegen, 1985). A 5-point scale was used. Attitude* ($\Sigma b_i e_i$) was measured by assessing the belief of the likelihood of some perceived outcome multiplied by the evaluation of that

* The items were identified from the elicitation study

outcome. Respondents used a 7-point probability scale to express the belief and the evaluation of each outcome. Barriers* (environmental constraints and skill deficiencies) was assessed with a 5-point scale by asking, "When you are trying to reduce your food consumption in the next six weeks how often do each of the following occur?". Normative Pressure* was measured by first multiplying a respondent's belief that a particular referent thinks the respondent should or should not (7-point scale) reduce his/her food consumption by the motivation to comply (7-point scale) with that referent. Products were then summed to attain a measure of normative influence. Self-Standards discrepancies* was assessed using five 7-point scales anchored by two opposing characteristics of a person (lazy/motivated and careless/meticulous). Respondents were first asked to rate themselves on each scale. Next, they were asked to rate a college student/referent who always watches his/her reduction of food consumption. An absolute discrepancy score was determined by summing the absolute differences for each pair of scales. Self-Efficacy* was measured using a probability scale from 0 to 100: "On a scale from 0 to 100, what is the likelihood, that if you try, you will manage to reduce your consumption of food in order to reduce your weight in the next six weeks?" and "On a scale from 0 to 100, what is your best estimate, that an attempt on your part to reduce your consumption of food in order to reduce your weight in the next six weeks will be successful?". Perceived knowledge, respondents were asked to indicate the degree he/she has all the information necessary to reduce his/her consumption of food in order to reduce his/her weight in the next six weeks on a 0 to 100% scale. Actual knowledge, a total of 12 knowledge questions was generated.

For the procedure, in order to identify the knowledge questions refer to *Pretest knowledge questions* above.

The questions related to behavioral determinants are reported by Appendix F.

9.5 Results

Data reduction-Affect. Exploratory and confirmatory factor analysis was run for Affect. Table 15 reports the results for the principal component analysis using Varimax rotation. Results suggest positive affect as the composite measure of excited and happy (Cronbach's alpha=.771). Negative affect as the composite measure of nervous, fearful and anxious (Cronbach's alpha=.714).

Table 15: Exploratory Factor Analysis for Affect – Study 2

	Component		
	1	2	3
FEARFUL	-.125	.672	.477
SURPRISED	.001	.158	.859
NERVOUS	-.088	.817	.114
ACTIVE	.414	-.514	.091
PLEASED	.732	-.406	.003
ASTONISHED	.165	.157	.837
SATISFIED	.779	-.216	-.211
ELATED	.736	.019	.315
ANXIOUS	-.072	.608	.266
EXCITED	.820	.037	.103
HAPPY	.849	-.245	.012
AROUSED	.570	.484	-.003

Distribution-Behavioral determinants. A preliminary analysis indicated that all the measures do not deviate substantially from normality. None of the measures had skewness

or kurtosis values greater than 2 (see Bodur, Brinberg, & Coupey 2000 for a brief discussion of this approach to assess normality). Appendix D-Study 2 reports the statistics for these measures.

EI and BMI. A simple one way ANOVA was performed in order to look at differences of EI between normal weight (18.5<=BMI<25) and overweight/obese (BMI>=25) students (Table 16).

Table 16: ANOVA BMI and EI – Study 2

		Sum of Squares	df	Mean Square	F	Sig.
EI_Understand	Between Groups	691.655	1	691.655	3.800	.054
	Within Groups	20934.136	115	182.036		
	Total	21625.791	116			
EI_Regulate	Between Groups	873.338	1	873.338	4.166	.044
	Within Groups	24106.013	115	209.618		
	Total	24979.351	116			
EI_REASONING	Between Groups	1061.399	1	1061.399	5.921	.017
	Within Groups	20616.479	115	179.274		
	Total	21677.878	116			
EI_TOTAL	Between Groups	994.711	1	994.711	3.743	.055
	Within Groups	30560.905	115	265.747		
	Total	31555.616	116			

The overall score of EI (EI_TOTAL) approaches significance (p<.06). Looking at the two areas characterizing the ability measure of EI (emotional reasoning and emotional experiencing), emotional reasoning is significant (EI_REASONING, p<.02). At the branch level emotion understanding (EI-Understand) and emotion regulation (EI_Regulate) are significant (p<.06 and p<.05 respectively)

The overall score of EI, Emotional Reasoning and the individual branches related to EI make the difference in the expected direction (normal weight people, BMI<25, are better able to understand and regulate emotions than overweight/obese people, BMI>=25). Table 17 provides an overview of the significant group statistics.

Table 17: Group Statistics BMI and EI- Study 2

	BMI	N	Mean	Std. Deviation	Std. Error Mean
EI_Understand	>= 25.00	42	93.94	14.277	2.203
	< 25.00	77	98.93	12.904	1.470
EI_Regulate	>= 25.00	42	95.65	13.669	2.109
	< 25.00	77	100.96	15.007	1.710
EI_REASONING	>= 25.00	42	93.38	13.496	2.082
	< 25.00	77	99.40	13.327	1.519
EI_TOTAL	>= 25.00	42	93.86	16.223	2.503
	< 25.00	77	99.70	16.410	1.870

The results above suggest the significance of overall EI and emotional reasoning (understanding and regulation) in discriminating between overweight/obese students and normal weight students.

Gender and Misperception of weight. In order to explore the role of Gender and Misperception of weight on EI between normal weight (18.5<=BMI<25) and overweight/obese (BMI>=25) students, a univariate GLM was conducted. The three-way and two-way interaction between Gender, BMI (considering the two groups) and self-perception of weight was not significant.

EI and Behavioral Determinants. In order to test the hypothesized model related to behavioral determinants and BMI (Figure 3), we ran a simple regression analysis. Eight out of twelve knowledge questions formed the overall knowledge indicator based on the same analysis performed during the pre-test (refer above). The variables were all mean-centered prior to creating the product terms to reduce the multi-collinearity in the model. Results do not report any multicollinearity problem (indices > .20).

Table 18 reports the significant results. Looking at BMI as the outcome variable the overall model was significant (R = .552, R-square=.304, F (13, 85) = 2.85; p < .003). Social norms and the interaction terms were the only significant behavioural determinants related to BMI (p<.05).

Table 18: Behavioral determinants predicting BMI – Study 2

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	.200	.501		.400	.690		
Social Norms	-.308	.070	-.476	-4.421	.000	.707	1.414
Positive Affect	.040	.520	.008	.078	.938	.709	1.411
Negative Affect	-.380	.706	-.055	-.538	.592	.780	1.283
Attitude	.079	.135	.059	.588	.558	.815	1.227
Barriers	.266	.156	.195	1.708	.091	.631	1.584
Self-Efficacy	.003	.021	.017	.161	.872	.719	1.391
Self-Standard Discrepancy	-.750	.591	-.163	-1.270	.208	.498	2.006
Actual Knowledge	4.089	3.149	.138	1.298	.198	.728	1.373
Perceived Knowledge	-.532	.444	-.123	-1.197	.235	.774	1.291
Intent	.196	.330	.074	.596	.553	.534	1.871
Emotional Intelligence	-.034	.032	-.106	-1.064	.290	.817	1.223
Perceived Knowledge * EI	.094	.028	.364	3.373	.001	.702	1.425
Actual Knowledge * EI	-.526	.207	-.269	-2.539	.013	.727	1.376

The results suggest that EI does not directly predict performance (BMI); however, it significantly moderates the relationship between perceived knowledge and BMI and actual knowledge and BMI.

Because of the significant effect of the interaction terms, we looked at the relationship between knowledge, perceived knowledge and BMI when EI is low, medium and high to see if it is in the hypothesized direction (Figure 4 and Figure 5).

EI and Actual Knowledge. Looking at actual knowledge, Figure 7 draws on the equations reported by Table 19.

Figure 7: Interaction Plot for BMI, Actual Knowledge and EI – Study 2

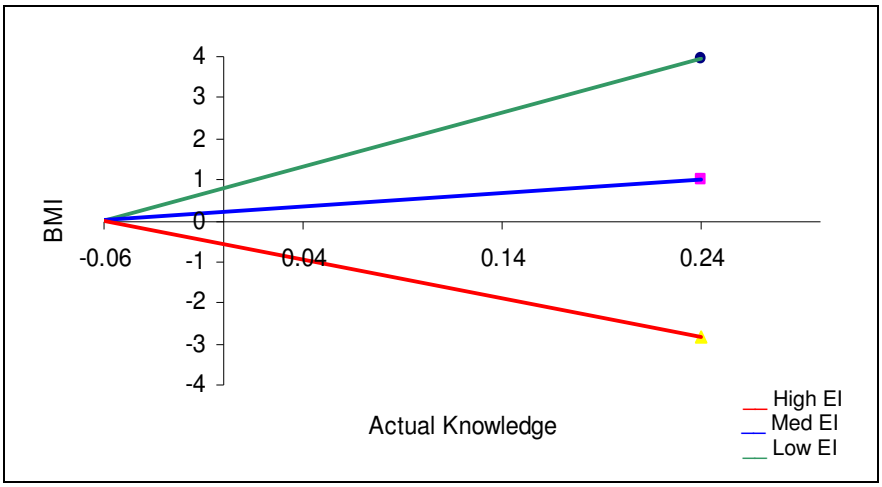
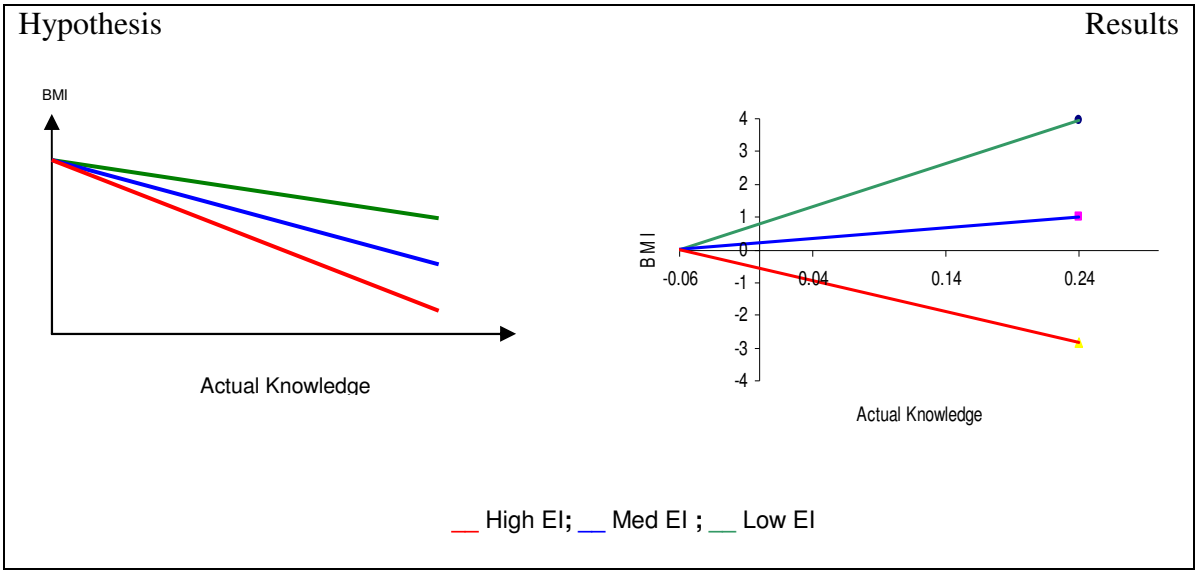


Table 19: Interaction effects in multiple regression for Actual Knowledge – Study 2

Input Equation	
Y = 0.174 + 2.706 X + -0.033 Z + -0.551 XZ	
Moderator value	Equation
Low value EI = -19	Y = .801 + 13.175 X
Medium value EI = -1	Y = .207 + 3.257 X
High value EI = 22	Y = -.552 + -9.416 X

Results are in the hypothesized direction (Figure 8) for subjects with high EI.

Figure 8: Hypothesized vs. actual relationship AK-EI-BMI – Study 2



An increase in knowledge corresponds to a significant decrease in BMI. Therefore, high levels of EI help people to "use" actual knowledge in the "right direction"- maintenance of a healthy weight (lower level of BMI).

For people with low EI, an increase in knowledge corresponds to an increase in BMI. People who register a higher BMI do actually have more knowledge about nutrition but since the level of EI is low, it seems they are not able to use this knowledge in the right direction (maintenance of a healthy weight).

For people with medium level of EI, an increase in knowledge corresponds to a lower increase in BMI compared to people with low EI. However the direction is the same. A higher BMI corresponds to a higher knowledge related to nutrition. Therefore again, for

a moderate level of EI, it seems that people are not able to use their knowledge in the right direction (maintenance of a healthy weight).

EI and Perceived Knowledge. Looking at perceived knowledge, Figure 9 draws on the equations reported by Table 20.

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Figure 9: Interaction Plot: BMI, Perceived Knowledge and EI – Study 2

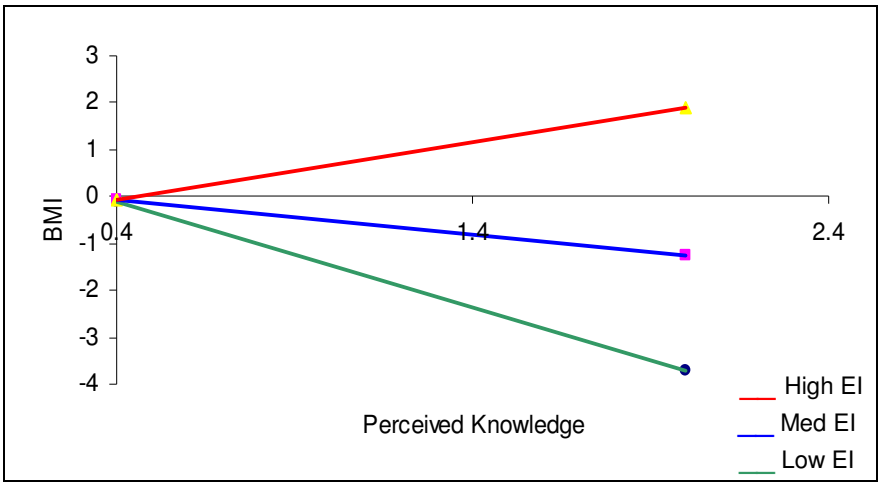
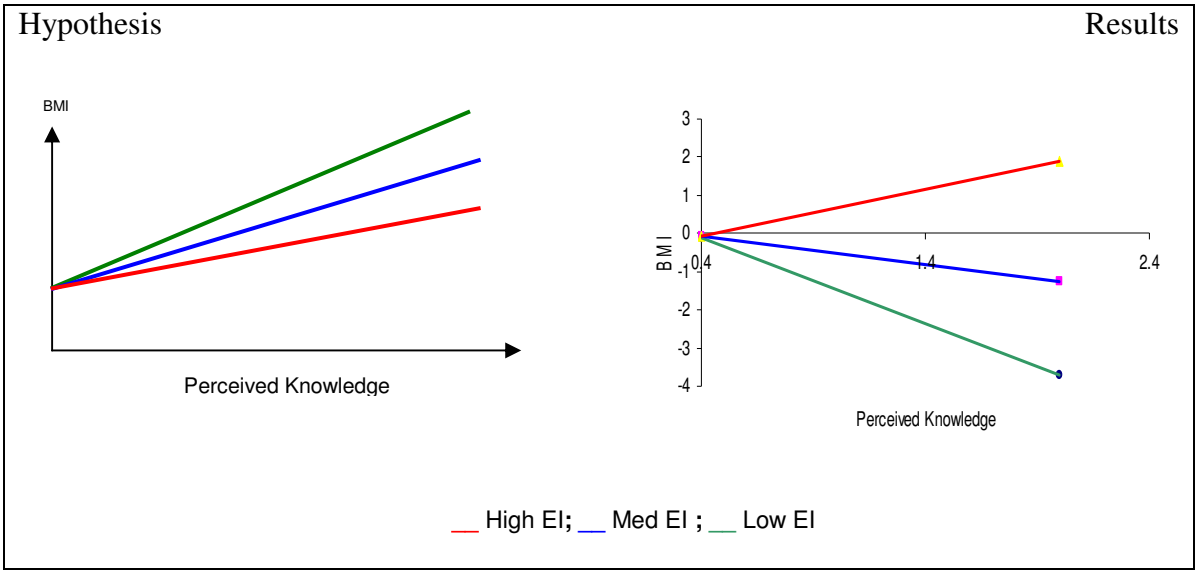


Table 20 Interaction effects in multiple regression – Perceived Knowledge – Study 2

Input Equation	
Y = 0.174 + -0.651 X + -0.033 Z + 0.085 XZ	
Moderator value	Equation
Low value EI = -19	Y = .801 + -2.266 X
Medium value EI = -1	Y = .207 + -.736 X
High value EI = 22	Y = -.552 + 1.219 X

Results are in the hypothesized direction for subjects with high EI (Figure 10).

Figure 10: Hypothesized vs. actual relationship PK-EI-BMI – Study 2



The relationship between perceived knowledge and BMI is positive and the slope value is less important than for people with low or medium levels of EI (refer to the slope indices, Table 20).

However, for people with low/medium levels of EI, an increase in perceived knowledge (how confident you are to have all knowledge necessary to reduce your food consumption) seems to correspond to the adoption and maintenance of a healthy weight.

Because of the significance of the moderator terms and the direction for perceived and actual knowledge we considered the three way interaction in the regression analysis. The interaction was non significant.

9.6 Discussion

The aim of this study was to provide empirical evidence for the salience of emotional intelligence on decision making performance related to health (BMI).

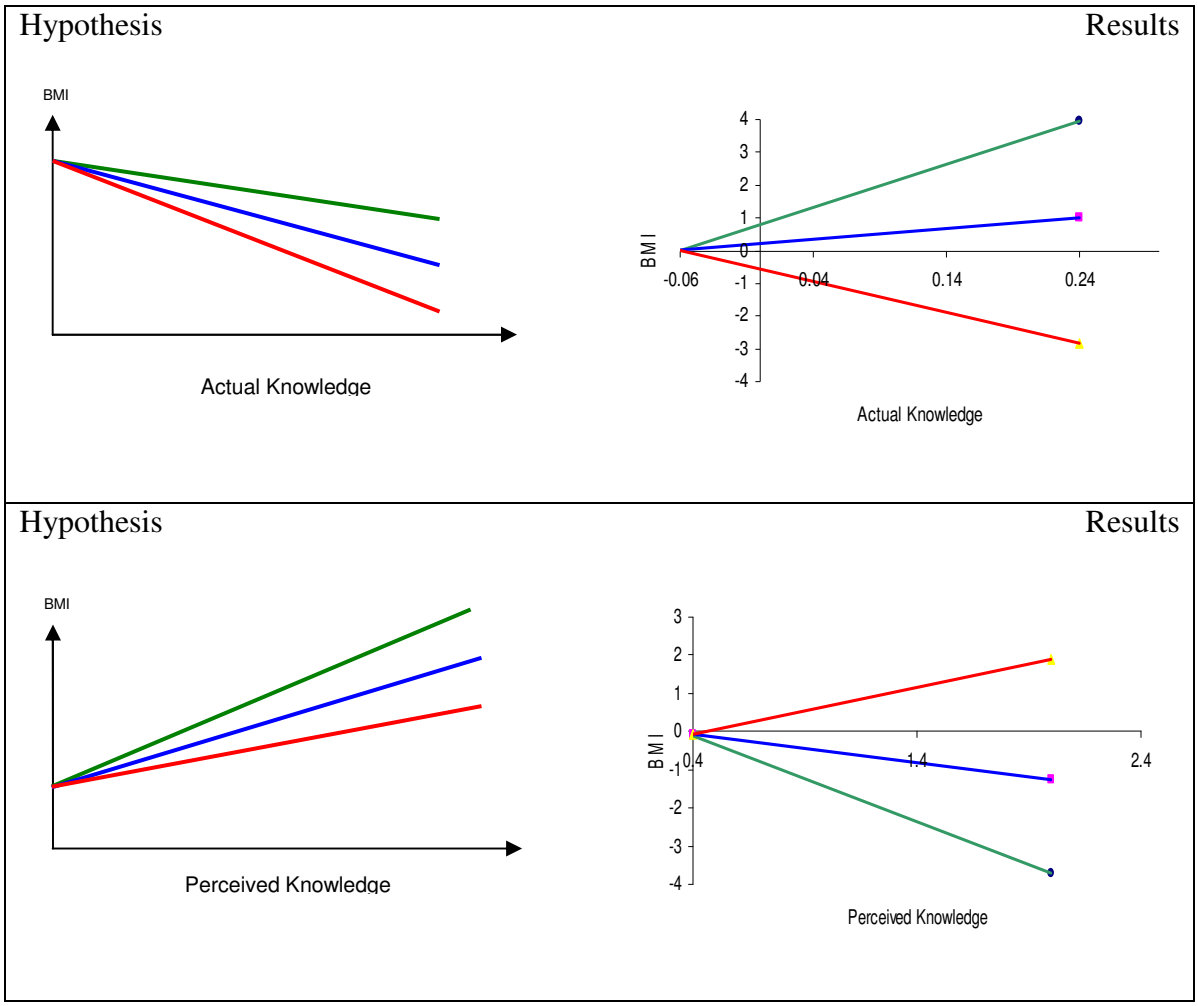
Results suggest that EI discriminates between people who have a healthy weight (18.5<=BMI<= 25), and people who are obese or overweight (25<BMI <40) using the classic measure of EI.

Findings provide support for an intervention toward emotional reasoning (understanding and regulation) related to the adoption and maintenance of a healthy weight (BMI<25). In terms of gender difference, more men are obese and overweight than females. Females show higher EI than males (general, area and branch level).

Behavioral determinants. Looking at behavioral determinants related to the adoption and maintenance of a healthy weight, what other people think about use performing the target behavior (social norms related to reducing food consumption) and the interaction terms (Actual and Perceived Knowledge by EI) do predict the adoption and maintenance of an healthy weight (i.e. BMI).

EI as moderator. Looking at the relationship between perceived knowledge and actual knowledge related to reducing food consumption and the hypothesized moderating role of EI on BMI; high levels of EI moderate the relationship between actual knowledge, perceived knowledge and BMI in the expected direction for high levels of EI (Figure 11).

Figure 11: Hypothesized vs. actual relationship AK/PK-BMI-EI – Study 2



Therefore we are confident that training on EI might actually help people to make better decisions concerning the adoption and maintenance of a healthy weight.

Unexpected results. Our hypotheses have been verified considering high levels of EI. However, considering low/medium levels of EI the results are not in the expected direction.

Looking at actual knowledge, we were hypothesizing a negative/null relationship between actual knowledge and BMI for low/medium levels of EI. The results show that people who have low/medium levels of EI are actually using their knowledge in the wrong direction.

Relating to perceived knowledge we were expecting a positive relationship between perceived knowledge and BMI for all three levels of EI (low, medium and high) with high level of EI having a diminishing effect on the influence of perceived knowledge on BMI. As hypothesized the slope characterizing the relationship between perceived knowledge and BMI is not as important as for people with low levels of EI. However, for people with low/medium levels of EI the relationship between perceived knowledge and BMI is negative. The data suggest that people who have low or medium value of EI successfully use the confidence in their knowledge (perceived knowledge) in order to motivate their selves to adopt and maintain a healthy weight.

CHAPTER 10- STUDY 3

Overview. The present study builds on results from study 2 where we examined whether EI predicts the adoption and maintenance of a healthy weight.

It is a first attempt to investigate whether a training on EI has a beneficial effect on decision making and performance related to health (adoption and maintenance of a healthy weight) based on results emerged from study 2.

Study 2 demonstrates the salient role of EI in discriminating between overweight/obese people (BMI>=25) and normal weight people (18.5=<BMI<25). Moreover, it suggests that training on emotional reasoning (understanding and regulation of emotions) might help people to better use their knowledge in the right direction (adoption and maintenance of a healthy weight).

The pilot study will focus on the development of emotional understanding and regulation (branches related to emotional reasoning) for a small sample of overweight/obese students.

Research by Bar-On (1997) suggests that EI might be learned. Moreover, EI has been positively associated with healthy lifestyle and performance (Tsaousis & Nikolaou 2005; Goleman 1998). However, no studies have provided empirical evidence of the results associated with training on EI on the adoption and maintenance of a healthy diet.

At the educational level, research on the effectiveness of SEL (Social Emotional Learning) programs suggest that physical and psychological health may be enhanced with the development of good social-emotional skills (Durlak & Weissberg 2005)

EI as ability might represent one of those variables that might help people improve decision making and performance related to health. However, no empirical evidence exists on the possibility to increase EI.

Therefore this study aims to explore the possible impact of training on emotional reasoning (understanding and regulation of emotions) in the context of health on actual score related to EI and performance related to health (adoption of an healthy diet). Because of the exploratory nature of this study we will also explore the intervention influence on behavioral determinants related to reducing food consumption in order to refine the procedure for the actual intervention study. In particular, we hypothesize that:

Overweight/obese people (BMI>=25) who got a training on EI will register a higher EI score than obese/overweight people who got a bogus effort training related to health.

(EI-Learning)

Overweight/obese people (BMI>=25) who got a training on EI will perform better (decrease weigh and calories/fat intake) than obese/overweight people who got a bogus effort training related to health.

(EI-Performance)

Considering behavioral determinants, Fishbein et al (2001) suggest intention and barriers as having a direct impact on actual behavior (i.e. performance). Therefore, we consider intention and barriers at time 1 as covariates. BMI at time 1 also represents a variable that should be controlled together with emotional experience and emotional reasoning at time 1.

Since the salience of self-perception of weight emerged by study 2, we will explore the influence of a training on EI and nutrition on self-perception of weight. On behalf of that we hypothesize that

Overweight/obese people (BMI>=25) who got a training on EI will become better calibrated on their weight than obese/overweight people who got a bogus effort training related to health.

(EI-Calibration)

10.1 Design

It is a longitudinal study of 6 weeks with two conditions (intervention/active control group). A repeated measures design was used and all participants completed measures prior (week 1) to and following (week 6) the completion of the program. Participants were divided into two groups. One group was the focus of the experiment (i.e. EI) and one group was the active control group (i.e. bogus effort).

10.2 Sample and Procedure

A sample of 15 overweight or obese (BMI>=25) female junior students from a south eastern university participated to the study. The BMI of students ranged from 25 to 42: 10 students were overweight (25<=BMI< 30), 4 obese (30<=BMI <40) and 1 morbidly obese (BMI>= 40).

The students had to participate in two sessions over a six week period and complete two questionnaires twice from the comfort of their home (at the beginning and at the end of the study).

The incentive to participate in the study was a free fitness pass for the following semester (value $45)[3].

During the first week all participants completed the classic measure of EI and standard health measures (such as behavioral determinants, diet and weight).

During the second week the participants were randomly assigned to the effort and intervention condition. The intervention group received a training of 1h15min on health recommendations (20 min, e.g. Healthy People 2010) and EI (55min) based on literature related to the development of EI (e.g. Cherniss & Adler 2000) and results emerged from study 2. Appendix G provides a description of the training programs on EI and Health.

The active control group received a training on health recommendations (source: Healthy People 2010) and the rest of the time was dedicated to a bogus effort exercise related to food portions and nutrition (knowledge questions, source: USDA 2006 and Healthy People 2010).

Performance was explored by looking at weight difference and actual diet prior to the training session and at the end of the program. Actual measure of weight was taken three times: at the beginning of the program, after 4 weeks (before Thanksgiving break) and at the end of the program (6th week). Actual weight was recorded by the researcher at the same time (evening) the same day of the week for all subjects.

10.3 Measures

Dependent Variables: Weight (week1, week 4 and week 6); Calories and Fat (24 diet recall, week 1 and week 6; "Please, list what you have eaten and the amount you have

[3] Offered by the recreation and sport department of the same university

eaten in the past 24 hours"); Emotional Intelligence: (week 1 and week 6, classic ability measure of EI – the MSCEIT; sample of questions in Appendix B).

Control Variable: Effort: "How *effortful* would you describe the training session (only the training session) as a whole?" using a 9-points scale anchored with very little/very much (Axsom and Cooper 1985). Emotional intelligence at time 1.

Independent Variables: Behavioral determinants related to reducing food consumption as identified under study 2 (Appendix F)

Stimuli. Training on EI and health (Appendix G)

10.4 Results

Data reduction-Affect Exploratory and confirmatory factor analysis was run for Affect (week 1 and week 6).

Week 1. Table 21 reports the results considering week 1 for the principal component analysis using Varimax rotation.

Table 21: Week 1 - Exploratory Factor Analysis for Affect – Study 3

	Component			
	1	2	3	4
FEARFUL	-.144	.534	-.422	.668
SURPRISED	.244	.080	.133	.908
NERVOUS	-.304	.832	.118	.032
ACTIVE	-.353	-.091	.755	.077
PLEASED	.286	-.027	.638	-.356
ASTONISHED	.269	.809	.049	-.096
SATISFIED	.355	.301	.750	.103
ELATED	.568	.025	.730	-.037
ANXIOUS	-.024	.887	-.067	.323
EXCITED	.930	-.119	-.001	.075
HAPPY	.929	.027	.262	.080
AROUSED	.530	.462	.206	-.483

Results suggest positive affect as the composite measure of excited and happy (Cronbach's alpha= .926). Negative affect as the composite measure of nervous and anxious (Cronbach's alpha=. 817).

Week 6. Table 22 reports the results considering week 6 for the principal component analysis using Varimax rotation.

Results related to week 6 suggest positive affect as the composite measure of pleased and satisfied (Cronbach's alpha= .880). Negative affect as the composite measure of nervous and anxious (Cronbach's alpha= .844).

Table 22: Week 6 - Exploratory Factor Analysis for Affect-Study 3

	Component				
	1	2	3	4	5
FEARFUL	-.152	.414	-.815	-.216	-.096
SURPRISED	-.134	.035	-.270	.353	-.842
NERVOUS	-.173	.908	-.218	.015	-.266
ACTIVE	.797	-.296	.164	-.299	.074
PLEASED	.941	.050	-.005	.194	.073
ASTONISHED	.049	.149	.177	.917	-.114
SATISFIED	.906	-.082	.095	.177	.212
ELATED	.671	-.175	.584	-.084	.149
ANXIOUS	-.061	.936	.142	.152	.118
EXCITED	.157	.350	.824	.217	-.155
HAPPY	.645	-.021	.323	.610	.106
AROUSED	.267	-.092	-.393	.235	.792

Distribution of performance measures over time. A preliminary analysis indicates that all the performance measures (weight, calories, fat) do not deviate substantially from normality. None of the measures has skewness or kurtosis values greater than 2 (see

Bodur, Brinberg, & Coupey 2000 for a brief discussion of this approach to assess normality).Table 23 reports the statistics for weight, fat and calories over time.

Table 23: Statistics for Weight (pounds), Fat (grams) and Calories over time-Study 3

	Weight week 1	Weight week 4	Weight week 6	Calories week 1	Fat (g) Week 1	Calories week 6	Fat (g) week 6
Mean	179.93	170.54	180.40	1853.20	43.40	1380.06	33.46
Std. Deviation	42.02	25.61	43.74	1451.36	24.27	651.75	23.69
Skewness	1.78	-.086	1.64	2.43	1.19	.883	.939
Std. Error of Skewness	.580	.597	.580	.580	.580	.580	.580
Kurtosis	4.74	-.812	4.25	6.71	1.54	-.103	.070
Std. Error of Kurtosis	1.12	1.15	1.12	1.12	1.12	1.12	1.12
Minimum	127.80	127.80	124.40	650.00	12.00	480.00	5.00
Maximum	302.60	213.00	305.80	6351.00	104.00	2747.00	85.00

Looking at the distribution of weight before the intervention (week 1), 2 weeks after (week 4) and at the end of the study (week 6) it seems that people actually gained weight. We assume the gain of weight to be due to the actual time between week 4 and week 6 – Thanksgiving break. Therefore in order to explore for the intervention effectiveness we will consider the first weight in (week1) and 2 weeks after the training session (week 4).

Distribution-Behavioral determinants week 1 and week 6. A preliminary analysis indicates that all the measures do not deviate substantially from normality. None of the measures has skewness or kurtosis values greater than 2 (see Bodur, Brinberg, and Coupey 2000 for a brief discussion of this approach to assess normality).Appendix D – Study 3

reports the statistics for behavioural determinants before the training session (week 1) and at the end of the study (week 6).

Manipulation check-EI and Effort: One way ANOVA was used to test for the possible EI (prior intervention) and effort differences between the two group's conditions (intervention and bogus) after the training session. The groups were not found to be significantly different.

Learning EI. We tested with GLM the change of EI total, EI reasoning, EI understanding and EI regulation over time with training code as between subjects factor. No significant results emerged. Because of the exploratory nature of this study and the small sample size we looked at the direction of the results even not significant. Table 24 reports the results.

Table 24: EI by Condition by Week - Study 3

	Training	Week	Mean	Std. Error	95% Confidence Interval	
EI_TOTAL	EI	1	104.387	4.373	94.939	113.836
		6	104.080	4.363	94.654	113.505
	Control	1	104.125	6.185	90.763	117.486
		6	107.892	6.170	94.563	121.221
EI_REASONING	EI	1	100.261	2.385	95.109	105.414
		6	98.188	2.536	92.710	103.667
	Control	1	99.605	3.373	92.319	106.892
		6	105.710	3.586	97.962	113.458
EI_Understand	EI	1	98.067	2.171	93.376	102.758
		6	98.510	2.595	92.905	104.115
	Control	1	100.683	3.071	94.049	107.318
		6	103.829	3.669	95.902	111.756
EI_Regulation	EI	1	101.455	2.661	95.706	107.203
		6	97.935	3.165	91.098	104.772
	Control	1	97.995	3.763	89.866	106.125
		6	103.329	4.476	93.660	112.998

Intervention effectiveness-Performance: A repeated measure design was used in order to test for the intervention effects on calories, fat and weight controlling for the two areas related to EI (emotional experience and emotional reasoning), intention, barriers and BMI.

None of the interaction factors were significant. However, the means seem to be in the expected direction for calories. Students who got the training on EI seem to have reduced their calorie intake more than the ones who got the training on food and nutrition (i.e. Control, Table 25).

Table 25: Calories by Condition by Time – Study 3

Condition	week	Mean[4]	Std. Error	95% Confidence Interval	
EI	1	1975.856	429.087	961.227	2990.485
	6	1334.466	269.984	696.055	1972.877
Control	1	1750.460	623.526	276.054	3224.865
	6	1516.761	392.327	589.055	2444.466

Looking at fat and weight, it seems that the training on EI helped subjects to reduce fat intake and lose weight in their diet. However, looking at the effort condition it seems the training influenced the results in the opposite direction (Table 26 and 27)

[4] Covariates: Intent1 = 2.3571, Barriers1 = 8.6071, BMI = 30.3785, EI_Experiental = 106.3515, EI_Reasoning = 99.5168

Table 26: Fat (grams) by Condition by Time – Study 3

Condition	week	Mean[5]	Std. Error	95% Confidence Interval	
EI	1	47.465	8.913	26.389	68.542
	6	30.677	8.057	11.625	49.729
Control	1	36.572	12.952	5.946	67.199
	6	37.382	11.708	9.695	65.068

Table 27: Weight (pounds) by Condition by Time – Study 3

Condition	week	Mean[6]	Std. Error	95% Confidence Interval	
EI	1	169.890	9.542	146.541	193.239
	4	168.652	9.232	146.061	191.242
Control	1	181.647	16.261	141.858	221.437
	4	182.884	15.733	144.386	221.382

Overall program effectiveness. Paired sample t-test was used to explore the impact of the overall program on EI (overall and branch level), behavioral determinants and actual weight, calories and fat differences. Table 28 reports the significant results.

Table 28: Paired Sample t-test behavioral determinants – Study 3

	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
AK1 - AK2	-.12821	.14279	.03960	-3.237	12	.007
Barriers1 - Barriers2	-2.08929	3.96815	1.06053	-1.970	13	.071
PK1 - PK2	1.73333	1.62422	.41937	4.133	14	.001

[5] Covariates: Intent1 = 2.3571, Barriers1 = 8.6071, BMI = 30.3785, EI_Experiental = 106.3515, EI_Reasoning = 99.5168.
[6]Covariates: Intent1 = 2.4615, Barriers1 = 8.8654, BMI = 28.3635, EI_Experiental = 105.2704, , EI_Reasoning = 99.9782.

Data reveal the positive effect of the overall intervention program on barriers (decrease), actual knowledge (increase) and perceived knowledge (decrease) related to reducing food consumption (Table 29)

Table 29: Paired Statistics on behavioral determinants related to reducing food consumption – Study 3

	Mean	N	Std. Deviation	Std. Error Mean
AK1	.5641	13	.13674	.03792
AK2	.6923	13	.08596	.02384
Barriers1	8.6071	14	2.87348	.76797
Barriers2	10.6964	14	3.52488	.94206
PK1	3.9333	15	1.57963	.40786
PK2	2.2000	15	.86189	.22254

Misperception of weight. We ran a paired sample t-test in order to explore the possible impact of the intervention on self-perception of weight. It seems that both training (control and EI) are helping people to become better calibrated on their weight (Table 30).

Table 30: Paired samples t-test Misperception of weight – Study 3

		Mean	Std. Deviation	t	df	Sig. (2-tailed)
Control	Actual Weight1 -Perceived Weight1	.88000	.67231	2.927	4	.043
	Actual Weight2 – Perceived Weight2	2.10000	2.76405	1.520	3	.226
EI	Actual Weight1 – Perceived Weight1	1.06000	1.59736	2.098	9	.065
	Actual Weight2 – Perceived Weight2	.32000	1.46424	.691	9	.507

Considering the first week there is a significant difference between self perception of weight (Perceived Weight1) and actual weight taken by the researcher (Actual Weight1). Considering actual weight and self-perception of weight at the end of the program (week 6) the difference is not significant anymore. Therefore, the intervention program overall seems to have a positive effect on "calibration" of weight.

To test for the significant intervention effects we run a repeated measure design in GLM. Looking at the mean difference between self perception of weight and actual weight at week 1 and week 6, the difference approaches significance (Table 31; $p<.08$)

Table 31: Tests of Within-Subjects Contrasts for Misperception of weight – Study 3

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Time	.240	1	.240	.173	.684
Time * Condition	5.103	1	5.103	3.685	.079
Error(time)	16.617	12	1.385		

If we consider the different training programs, it seems that the training on EI is effective in making people better calibrated on their weight. Looking at the control group, it seems that subjects are becoming less calibrated on their actual weight (Table 32).

Calibration is reported as the difference between self-perception of weight and actual weight registered by the researcher.

Table 32: Calibration of weight by Condition by Time – Study 3

Condition	Week	Mean	Std. Error	95% Confidence Interval	
EI	1	-1.060	.453	-2.048	-.072
	6	-.320	.593	-1.612	.972
Control	1	-.950	.717	-2.512	.612
	6	-2.100	.938	-4.143	-.057

10.5 Discussion

The present study was a first attempt to look at training on EI and health and its impact on performance. The results look promising even if the data related to the control group point in the opposite direction.

Despite the very small sample, the results suggest the positive impact of an intervention on emotional intelligence in the context of health (emotional reasoning) on performance related to health (i.e. reducing food consumption- calories/fat/weight).

Performance. Students register a lower amount of calorie intake after participating to the EI session compared to students in the active control group. For weight and fat intake the results seem to be in the opposite direction for the active control group.

Behavioral determinants. Looking at behavioral determinants, it seems that the training (without making the significant distinction between EI and effort condition) has a positive impact in the expected direction: increase of knowledge, decrease in barriers and decrease in perceived knowledge.

Calibration. In terms of misperception of weight the GLM procedure seems to suggest that an intervention on EI should have a positive impact on misperception of weight. However, the results for the control group are in the opposite direction. We hope

that the actual intervention study considering also gender will point the results in the right direction.

Learning EI. In terms of learning EI the exploratory analysis does not show significant results. Moreover the results are not in the expected direction.

Limitations. The main limitation of this study is related to the sample size (only 15 subjects) and the fact that we were able to recruit only female students. The actual intervention study will be conducted considering both males and females since the salience of the problem (i.e. unhealthy weight) for males is much greater than for females. Moreover study 2 indicates that males have a lower EI score than females.

Besides the sample size, another limitation is related to the procedure adopted by this study. All data collection and training have been conducted by the researcher, which creates a possible observant bias effect. The actual intervention study (study 4) will take this into account and introduce a second instructor unaware of the research hypotheses who will conduct the different training sessions (EI and health). Weight will be recorded by research assistants unaware of the research hypotheses.

CHAPTER 11- STUDY 4

Overview. The present study builds on results from previous studies where we explored the relationship between EI and behavioral determinants related to reducing food consumption (Study 2) and the hypothesized influence of EI on the adoption and maintenance of a health behavior (Study 3).

Study 3 investigated whether training on EI has a beneficial impact on performance. Results were not significant but promising for reducing calorie intake. Study 3 also investigated the impact of the training program on behavioral determinants. The overall program seemed to be effective in increasing knowledge, decrease barriers and decrease perceived knowledge. Therefore the present procedure will emulate the one adopted by the pilot study (study 3) but consider the limitations encountered by that study. Males will be introduced in the analyses.

Overweight/obese subjects (BMI>=25) who got a training on EI register a higher EI score than obese/overweight subjects who got a bogus effort training related to health. Moreover the effect should be more important for males than females since they register a lower EI score.

(EI-Gender-Learning)

Overweight/obese subjects (BMI>=25) who got a training on EI perform better (decrease weight and calories/fat intake) than obese/overweight subjects who got a bogus effort training related to health.

(EI-Performance)

The same controlling variables as defined in study 3 are considered: initial BMI, EI (reasoning and experiential), Intent and Barriers. In terms of the procedure the present study emulates the procedure adopted by the pilot study but it will introduce an external instructor unaware of the research hypothesis who will carry both training sessions (EI and control).

The pilot study has focused on obese/overweight females. The present intervention study will focus both on males and females since the results revealed by study 2. It will also test for the program effectiveness on misperception of weight.

Overweight/obese subjects (BMI>=25) who got a training on EI become better calibrated on their weight than obese/overweight subjects who got a bogus effort training related to health.

(EI-Gender-Calibration)

11.1 Design

It is a longitudinal study of 6 weeks with two conditions (intervention/active control group). A repeated measures design was used and participants completed measures prior (week 1) to and following (week 6) the completion of the training program.

11.2 Sample Characteristics

A total of 146 participated to the study. However, only 49 subjects were considered for the analysis since the goal of the present study were overweight or obese individuals (BMI>=25).

Looking at the overall sample, 62% of the students register a normal weight and 35% of the students are overweight or obese. This is consistent with previous data collected between 2004 and 2006 (Peter, unpublished data).

Looking at the sample of interest (BMI >=25) and gender, more males are overweight/obese (63%) than females. Also in terms of obesity, more men are obese than females (Table33).

Table 33: BMI by Gender –Study 4

BMI	male	female	Total
Obese	8	2	10
Overweight	23	16	39
Total	31	18	49

Three subjects reported to have health problems that influence their weight therefore they won't be considered in the following analyses.

Gender differences in terms of EI at time 1 and 2. Table 34 and 35 report the significant difference for EI at the general, area and branch level for time 1 (week 1) and time2 (week 6) between males and females. The only significant differences are at time 1. Therefore the results are promising in terms of effectiveness of the training program overall.

Table 34: Significant ANOVA for EI and Gender at Time 1 and Time 2 – Study 4

		Sum of Squares	df	Mean Square	F	Sig.
EI_Understand	Between Groups	979.835	1	979.835	8.299	.007
	Within Groups	3542.181	30	118.073		
	Total	4522.015	31			
EI_Regulate	Between Groups	530.560	1	530.560	3.695	.064
	Within Groups	4307.388	30	143.580		
	Total	4837.948	31			
EI_REASONING	Between Groups	875.252	1	875.252	6.535	.016
	Within Groups	4018.282	30	133.943		
	Total	4893.533	31			
EI_TOTAL	Between Groups	679.116	1	679.116	3.414	.075
	Within Groups	5966.977	30	198.899		
	Total	6646.093	31			

As in study 2, females show higher EI than men at different levels of EI (emotional reasoning: understanding and regulation of emotions; Table 35)

Table 35: Descriptives EI by Gender at Time 1 – Study 4

	Gender	N	Mean	Std. Deviation	Minimum	Maximum
EI_Underastand	male	18	88.67	11.841	69	108
	female	12	98.70	9.609	86	115
	Total	30	92.68	11.924	69	115
EI_Regulate	male	18	87.16	13.354	61	108
	female	12	94.21	10.227	73	109
	Total	30	89.98	12.511	61	109
EI_REASONING	male	18	87.39	12.892	62	109
	female	12	96.54	9.666	80	116
	Total	30	91.05	12.397	62	116
EI_TOTAL	male	18	88.98	15.504	65	111
	female	12	95.38	10.316	78	114
	Total	30	91.54	13.837	65	114

Misperception of weight. As revealed in study 2, exploratory analysis conducted on misperception of weight ("Do you consider yourself overweight/obese?") BMI and Gender indicates that an important portion of the sample has a misperception of their actual weight (Table 36). In fact almost 50% of males who are obese/overweight do not consider their selves obese/overweight. Females seem to be "better calibrated" on their weight (less than 10% of the sample does not think themselves to be overweight or obese). Therefore we will explore also the effectiveness of the training program in this direction.

Table 36: BMI by Self-perception of weight by Gender – Study 4

		Self-perception Weight		
Gender	BMI	no	yes	Total
Males	obese	1	7	8
	overweight	15	8	23
Females	obese	0	2	2
	overweight	2	14	16
	Total	18	31	49

11.3 Procedure

All students enrolled in an introductory health education class were invited to participate in the study. The study was advertised as a 6 weeks opportunity for healthy students (18-26) to improve decision quality related to food and possibly lose weight. Total compensation available for completion of all components for the data collection period was 15% of course points. The participants were randomly assigned to an active control group or intervention condition. Subjects with a BMI>=25 were randomly assigned to the two different conditions.

Comparing the present procedure to the one adopted by the pilot study (study 3), subjects might not have the same motivation to lose weight as subjects who participated to the pilot study. In fact the motivation for them was a free fitness pass and the participation to the study was completely voluntary. In the present study, subjects are participating in the study in order to earn points for a health related class. So in order to control for this possible confounding, we selected students (BMI>=25) who are trying to reduce food consumption in the next six week. Table 37 reports the statistic for this variable (that we consider a proxy for motivation) considering BMI.

Table 37: BMI by Motivation – Study 4

BMI	Trying to reduce food consumption in the next 6 weeks		Total
	No	Yes	0
Obese	0	10	10
Overweight	11	28	39
Total	11	38	49

The data seems to suggest that the majority of the sample (78%) is trying to lose weight. Therefore we are confident that the procedure adopted by the pilot study is appropriate to test for the specific research hypotheses related to this study even if the incentive is different.

Description sessions. During the first week subjects had to fill a questionnaire from the comfort of their home related to behavioral determinants and standard health measures (such as their weight and diet).

Obese and overweight subjects had to fill out also the classic measure related to EI always from the comfort of their home. In order to avoid possible order effects, these students where randomly assigned to receive the EI questionnaire or behavioral determinants questionnaire first (same as study 2, Appendix F). An e-mail for each questionnaire was sent out during different days in order to reduce possible "fatigue" effects.

During the same week subjects were asked to go to a weigh in session during two time frames given by the researcher (for details refer to the consent form, Appendix H).

The actual weigh in was conducted by three different research assistants unaware of the research hypotheses and conditions. During the same week the subjects had to participate in a training session (1h15min). The questionnaires on EI and behavioral determinants had to be completed before the participation to the training session.

In order to control for the potential experimenter's bias, the two training sessions (EI and bogus effort) were conducted by two different instructors (researcher and instructor unaware of research hypotheses). Subjects were randomly assigned to one of the four conditions: instructor 1/effort condition; instructor 2/EI condition; instructor 1/ EI condition; instructor 2/ effort condition. For details related to the training session refer to Appendix G.

During week 6, subjects had to fill out the same questionnaires they got during the first week and go for the final weigh in (same procedure as during week 1)

11.4 Measures

Dependent Variables: Weight (week1and week 6); Calories and Fat (24 diet recall, week 1 and week 6; "Please, list what you have eaten and the amount you have eaten in the past 24 hours"); Emotional Intelligence: (week 1 and week 6, classic ability measure of EI-the MSCEIT; sample of questions in Appendix B).

Control Variable: Effort: "How *effortful* would you describe the training session (only the training session) as a whole?" using a 9-points scale anchored with very little/very much (Axsom and Cooper 1985). Emotional intelligence at time 1.

Stimuli. Training on EI and health (Appendix G)

11.5 Results

Manipulation check-Conditions: One way ANOVA was used to test for the possible influence of the different conditions on the effort associated with the training sessions, EI (total and area prior to the training session) and actual knowledge prior to the training session. No significant differences were found.

The same analysis was conducted considering gender as a covariate in GLM and again no significant results emerged.

Learning EI. We consider gender and interviewer as covariate and tested with GLM the change of EI total, EI reasoning, EI understanding and EI regulation over time with training code as between subjects factor. No significant results emerged. However, because of the small sample size we looked at the direction of results (Table 38).

Table 38: EI by Condition by Time – Study 4

	Condition	Week	Mean[7]	Std. Error	95% Confidence Interval	
EI_TOTAL	EI	1	90.268	3.522	83.054	97.482
		6	84.652	5.283	73.831	95.473
	Control	1	96.179	3.761	88.474	103.884
		6	81.237	5.642	69.680	92.794
EI_REASONING	EI	1	90.398	2.863	84.534	96.263
		6	81.856	5.126	71.355	92.356
	Control	1	93.815	3.058	87.551	100.079
		6	81.578	5.475	70.363	92.792
EI_Understand	EI	1	92.434	2.711	86.880	97.988
		6	80.538	4.881	70.541	90.536
	Control	1	94.807	2.896	88.875	100.739
		6	83.328	5.213	72.651	94.005
EI_Regulation	EI	1	89.178	2.980	83.073	95.282
		6	86.783	4.089	78.407	95.158
	Control	1	92.540	3.183	86.020	99.060
		6	82.748	4.367	73.803	91.693

Performance obese/overweight. As in study 3, GLM was used in order to test for the intervention effects on performance (calories, fat and weight) controlling for the two areas related to EI (emotional experience and emotional reasoning), intention and barriers for overweight and obese students (the argument is illustrated under study 3). For weight we also considered gender as a covariate.

The interaction considering weight and fat do not show any significance. However, the results are in the expected direction for fat for people who got the training on EI (Table 39) but in the opposite direction for the control group.

[7] Covariates: interviewer = 1.4688, Gender = 1.44.

Table 39: Fat (grams) by Condition by Time – Study 4

Condition	Week	Mean[8]	Std. Error	95% Confidence Interval	
EI	1	61.146	5.253	46.561	75.731
	6	49.789	9.363	23.793	75.785
Control	1	32.193	4.208	20.508	43.877
	6	54.871	7.501	34.045	75.697

Looking at weight, it seems there is no important change for both the EI and the control group (Table 40).

Table 40: Weight (pounds) by Condition by Time – Study 4

Condition	week	Mean[9]	Std. Error	95% Confidence Interval	
EI	1	185.891	5.413	174.600	197.181
	6	186.588	5.624	174.857	198.320
Control	1	183.635	5.199	172.789	194.481
	6	183.424	5.402	172.155	194.693

The interaction considering calories is significant and in the expected direction for the group who got the intervention on EI (Table 41). However, the effort group seems to have increased the calorie intake (Table 42). Therefore, the significant effect might be salient also because of the increase of calorie intake in the effort condition.

[8] Covariates: Intent1 = 2.4167, Barriers1 = 10.0000, EI_Experiental = 95.83, EI_Reasoning = 94.95, interviewer = 1.7500, BMI = 28.6489

[9] Covariates: Intent1 = 2.5172, Barriers1 = 9.3017, EI_Experiental = 98.28, EI_Reasoning= 93.85, interviewer = 1.4483, BMI = 27.7500, Gender = 1.48.

Table 41: Test of Within-Subjects Contrasts for Calories – Study 4

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
time	54488.041	1	54488.041	.251	.638
time * interviewer	107352.130	1	107352.130	.495	.513
time * Barriers1	268481.307	1	268481.307	1.237	.317
time * Intent1	361684.619	1	361684.619	1.667	.253
time * BMI	684985.618	1	684985.618	3.157	.136
time * EI_EXP	197390.243	1	197390.243	.910	.384
time * EI_REA	961177.156	1	961177.156	4.429	.089
time * Training	1707291.914	1	1707291.914	7.868	.038
Error(time)	1084989.224	5	216997.845		

Table 42: Calories by Condition by Time – Study 4

Condition	week	Mean[10]	Std. Error	95% Confidence Interval	
EI	1	2243.743	232.979	1644.852	2842.634
	6	1358.733	195.461	856.285	1861.182
Control	1	828.649	211.040	286.152	1371.146
	6	1319.800	177.056	864.664	1774.936

[10] Covariates: interviewer = 1.6923, Barriers1 = 9.9808, Intent1 = 2.4615, BMI = 28.6776, EI_EXP = 94.38, EI_REA = 95.61.

Misperception of weight. To test for the intervention effects on misperception of weight we conducted a repeated measure design in GLM. We considered gender as a covariate because of the salience of the issue for males. Looking at the mean difference between self perception of weight and actual weight at time 1 and 2 (Calibration of weight at time 1 and time 2) the results are not significant but in the right direction (Table 43).

Table 43: Calibration of weight by Condition by Time w/ gender as covariate – Study 4

Condition	week	Mean[11]	Std. Error	95% Confidence Interval	
EI	1	2.078	1.813	-1.509	5.664
	6	-.152	1.044	-2.219	1.914
Control	1	-1.237	1.841	-4.879	2.405
	6	.788	1.061	-1.311	2.886

Without considering gender as covariate the results approach significance (Table 44; p<.08).

Table 44: Tests of Within-Subjects Contrasts for Calibration of weight w/o gender as covariate – Study 4

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Time	.428	1	.428	.003	.953
Time * Training	375.111	1	375.111	3.010	.085
Error(TIME)	16324.638	131	124.616		

[11]Covariates: Gender = 1.55.

If we consider the different training programs, it seems that the training on EI is effective in making people better calibrated on their weight than people who got the effort condition (i.e. control group, Table 45)

Table 45: Calibration of weight by Condition by Time w/o gender as covariate – Study 4

Condition	week	Mean	Std. Error	95% Confidence Interval	
EI	1	2.106	1.779	-1.414	5.626
	6	-.350	1.030	-2.389	1.689
Control	1	-1.357	1.820	-4.957	2.243
	6	.938	1.054	-1.147	3.024

Looking at gender separately, the results seem to be in the right direction for females. For males the training on EI has a positive impact but not for the control condition (Table 46).

Table 46: Gender differences considering Calibration of weight by Condition by Time – Study 4

Gender	Condition	week	Mean	Std. Error	95% Confidence Interval	
Males	EI	1	-.472	1.031	-2.536	1.592
		6	.704	2.450	-4.202	5.610
	Control	1	-.876	.884	-2.647	.894
		6	2.059	2.101	-2.148	6.265
Females	EI	1	3.781	2.973	-2.146	9.708
		6	-.895	.507	-1.906	.115
	Control	1	-1.884	3.460	-8.783	5.015
		6	-.290	.590	-1.467	.886

11.6 Discussion

The present study strengthens the results related to the pilot study and advocates for the positive impact of a training on emotional intelligence in the context of health (emotional reasoning).

The results are significant in terms of calories and misperception of weight. Training on EI and health seems to activate mechanisms where people become better calibrated on their actual health status and use knowledge in the right direction. The outcome is the successful adoption and maintenance of a health behavior (i.e. performance, calories intake).

Performance. For calories, training on EI seems to have a positive impact in the expected direction but if we consider the effort condition the results point in the opposite direction. People who got training on EI seem to have successfully reduced their calorie intake but the significance might be due to the fact that the effort group drastically increased calorie intake. Looking at the direction of results (even not significant) for weight and fat it seems that the training (overall) did not impact people's weight. Considering fat intake it seems that the training on EI had a positive impact; however the results are in the opposite direction for the effort group.

Learning EI. As the pilot study suggests, we do not have any change in terms of EI between session 1 and 2. Moreover the results are not in the expected direction.

Calibration. In terms of misperception of weight the results are significant and in the hypothesized direction. People who got training on EI became better calibrated on their weight. If we consider gender as a covariate, because of the salience of the "problem" for

males, the significance disappears. Looking at the two groups separately in terms of gender, the training on EI has definitely a positive effect for females. For males the positive direction might be masked by the results of the effort group.

CHAPTER 12

12.1 Contributions

In many consumption cases, people are consumers of bad behaviors which they rationally know are bad but they can't overcome because they are not able to recognize and manage what they are feeling. To our knowledge, no research has established a direct link between successful adoption of a health behavior and emotional intelligence. Especially, no research has tested for the role of EI on obesity from an intervention perspective.

Increasing physical activity and adopting a healthy diet have the goal to enhance consumer welfare. The goal of this set of studies was to contribute to a research agenda that tries to support and enhance the life of consumers, through the exploration of emotional intelligence as a possible avenue of research.

The findings suggest EI as an activator of mechanisms that will direct cognitive processes in the right direction for the behavior under scrutiny. As Mayer and Salovey contend (1997), EI should be considered as an "intelligence" that enhances the processing of certain types of information.

Looking at the adoption and maintenance of an healthy diet, emotional reasoning as the understanding and regulation of emotion seem to play a salient role on decision making and performance related to reducing food consumption.

The present research supports the need to look at the role of EI for specific emotionally salient behavior. In order to be effective and have a positive impact in the expected direction, training on EI needs to be linked to a specific emotional salient behavior.

Considering the substantive domain (i.e. obesity) Moorman and Matulich (1993) suggest that control over health behaviors is an effective predictor of health behaviors. Therefore health programs should focus on control over health behaviors, not control over health outcomes (Moorman and Matulich 1993). In this line, emotional intelligence and its application to consumer behavior and health might open the doors to a new approach toward tailoring preventive health programs. From a public policy perspective emotional intelligence may be applied to educational programs and might represent a possible intervention toward the incredible raise of obesity between kids and eating disorders among adolescents.

12.2 Summary of Findings

Four studies were proposed in order to answer the research question:

Does training on EI have a positive effect on decision making and performance (i.e. weight maintenance and loss) for those behaviors that have significant emotional content (i.e. diet)?

Based on what is stated by the conceptual framework and some of the gaps identified in the literature related to health behaviors, obesity, emotions and consumer behavior and emotional intelligence, four hypotheses were formulated: diet as emotional salient behavior, the significant role of EI on performance related to health, the significant role of EI on decision making related to health and the possibility to train people on EI and have an impact on their performance related to health (i.e. achievement of health related goals).

Diet as emotional salient behavior. Considering the Theory of Reasoned Action (Fishbein and Ajzen 1975) study 1 demonstrates the independent role of positive and negative affect on the intent to diet.

Emotional intelligence and decision making. Based on the framework proposed by Fishbein et al (2001) and the hypothesized role of EI considering behavioral determinants related to reducing food consumption, study 2 suggests that high levels of EI moderates the relationship between actual knowledge, perceived knowledge and performance. In specific, people who have high levels of EI seem to better use their actual and perceived knowledge in the "right" direction (i.e. adoption of a healthy weight) than people who have low or medium level of EI.

Results related to study 3 and 4 support the positive role of training on EI and health on decision making related to health considering misperception of weight. Obese/overweight subjects who received training on EI became better "calibrated" on their perception of weight than people who received a training of knowledge related to food and nutrition.

Emotional intelligence and performance. Results from study 2 support the hypothesis that emotional intelligence discriminates between people who have a healthy weight (18.5<=BMI<= 25) and people who are obese or overweight (25<BMI <40) using the classic measure of EI. Results provide support for an intervention toward emotional reasoning (understanding and regulation) related to the adoption and maintenance of a healthy weight (BMI<25). Females show higher scores of EI at all levels (total, area, branch).

Learning emotional intelligence. The third and fourth study examine whether EI can actually be learned and predict successful achievement of health related goals (i.e. adoption and maintenance of healthy diet/weight). No change in terms of EI score is registered. Looking at the effects of the training on EI on performance (i.e. calories intake) the results look promising.

12.3 Limitations and direction for future research

Sample size and control group. The main limitation of this plan of studies is related to the sample size characterizing study 3 and 4. Due to the difficulty associated to the recruitment of overweight/obese subjects and the procedure associated to the study (commitment to a 6 weeks program) we registered many dropouts. The main reason seems to be associated to the incentive and the different steps required by this particular research program. Some of the subjects did not complete the 24 diet recall, others forgot to show up at the weigh in, others did not attend the training session and others refused to complete the EI questionnaire. Therefore from a sample size of 49 subjects, sometimes we ended up with a few cases to consider in the analyses.

Nevertheless, findings look promising. Therefore we believe that future research should consider the possibility to replicate the findings using a larger sample.

Because of the possible confounding of the results due to the active control group, research should consider the possibility to introduce a third condition as passive control group.

Length of the intervention program. Another limitation is related to the length of the intervention study (study 3 and 4): 6 weeks. We believe that future research should

consider the possibility to look at the effect of a training on EI and especially emotional reasoning considering the adoption and maintenance of a healthy weight as long term goal (> 6weeks). The present results look promising considering decision making related to health (moderator effects, Study 2 and calibration on self-perception of weight, Study 2, 3 and 4). As many weight loss maintenance programs suggest the main problem seems to be associated with the maintenance of a healthy weight over time. Therefore, there is the need to test the present findings for programs that last more than 6 weeks. The introduction of multiple training sessions is also advised.

Different contexts/behaviors. The present plan of studies has looked at the application of EI in decision making and performance related to health. Because of the promising results we believe that future research should look at the role of EI in different contexts; considering other behaviors that carry an "emotional baggage". Moreover, research is needed toward the understanding of the activation mechanisms that seem to underlie the relationship between EI and performance.

REFERENCES

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior* (Paperback ed.). Englewood Cliffs, N.J.: Prentice-Hall.

Andrade, E. B. (2005). Behavioural consequences of affect: combining evaluative and regulatory mechanisms. *32*(3), 355-358.

Axsom, D., & Cooper, J. (1985). Cognitive dissonance and psychotherapy: The role of effort justification in inducing weight loss. *Journal of Experimental Social Psychology, 21*(2), 149-160.

Bagozzi, R. P., Gopinath, M., & Nyer, P. U. (1999). The Role of Emotions in Marketing. *Journal of the Academy of Marketing Science, 27*(2), 184-206.

Bandura, A. (1986). *Social foundations of thought and action: a social cognitive theory*. Englewood Cliffs, N.J.: Prentice-Hall.

Bandura, A. (2001). Social cognitive theory: An agentive perspective. *Annual Review of Psychology, 52*, 1-26.

Bar-On, R. (1997). *The Emotional Quotient Inventory (EQ-i): Technical manual.* (Multi-Health Systems, Inc. ed.). Toronto, Canada.

Bettman, J. R. (1979). *An Information processing theory of consumer choice*. Reading, Mass.: Addison-Wesley Pub. Co.

Bettman, J. R., Johnson, E. J., & Payne, J. W. (1991). Consumer Decision Making. In *Handbook of Consumer Behavior*, 50-84, Prentice Hall.

Bodur, H. O., Brinberg D., and Coupey E. (2000). "Belief, Affect, and Attitude: Alternative Models of the Determinants of Attitude." *Journal of Consumer Psychology*, 9, 17-28.

Brackett, M. A., & Mayer, J. D. (2003). Convergent, Discriminant, and Incremental Validity of Competing Measures of Emotional Intelligence. *Personality and Social Psychology Bulletin, 29*(9), 1147-1158.

Brinberg, D., Axelson, M. L., & Price, S. (2000). Changing food knowledge, food choice, and dietary fiber consumption by using tailored messages. *Appetite, 35*(1), 35-43.

CDC (2006)- Centers for Disease Control and Prevention (2006). "How is BMI calculated and interpreted?". Retrieved December 2006 from: http://www.cdc.gov/nccdphp/dnpa/bmi/adult_BMI/about_adult_BMI.htm#Interpreted

Cherniss, C., & Adler, M. (2000). *Promoting emotional intelligence in organizations: make training in emotional intelligence effective*. Alexandria, VA: ASTD.

Ciarrochi, J., & Mayer, J. D. (2005). Can Self-Report Measures Contribute to the Study of Emotional Intelligence? A Conversation between Joseph Ciarrochi and John D. Mayer. *Emotional Intelligence Information*. Retrieved January 2006 from: http://www.unh.edu/emotional_intelligence/ei%20Controversies/ei%20can%20self%20report%20contribute.htm.

Cohen, J. B., & Areni, C. S. (1991). Affect and Consumer Behavior. In *Handbook of Consumer Behavior*, 188-240. Englewood Cliffs, NJ: Prentice-Hall.

Coupey, E., & Peter, P. C. (2005). Understanding the Decision to Exercise: Shifts in Reason Importance Based on Temporal Focus. *Paper presented at the Marketing and Public Conference 2005, Washington DC*.

Dennis, M. J., Sternberg, R. J., & Beatty, P. (2000). The Construction of "User-Friendly" Tests of Cognitive Functioning: A Synthesis of Maximal- and Typical-Performance Measurement Philosophies. *Intelligence, 28*(3), 193-211.

Dunn, R. J. D., & Ruiz, J. H. (2006) Illinois Learning Standards for Social/Emotional Learning(SEL). Retrieved June 2006 from: http://www.isbe.state.il.us/ils/social_emotional/standards.htm

Durlak, J. A., & Weissberg, R. P. (2005, August). *A Major Meta-Analysis of Positive Youth Development Programs.* Presentation at the Annual Meeting of the American Psychological Association. Washington, D.C.

Elias, M. J., & Arnold, H. (2006). *Educator's Guide to Emotional Intelligence And Academic Achievement: Social-emotional Learning in the Classroom* (31st March 2006 ed.): SAGE Publications Inc (USA) - Corwin Press

Emmerling, R. J. & Goleman, D. (2003). Emotional Intelligence: Issues and Common Misunderstandings. *Issues in Emotional Intelligence,* 1(1). Retrieved December 2006 from: www.eiconsortium.org.

Eagly, A. and Chaiken, S. (1993). *The Psychology of Attitudes*, Fort Worth, TX: Harcourt Brace Jovanovich.

Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research.* Reading, MA: Addison-Wesley.

.

Fishbein, M., Triandis, H. C., Kanfer, F. H., Becker, M. H., Middlestadt, S. E., & Eichler, A. (2001). Factors influencing behavior and behavior change. In *Handbook of Health Psychology* (pp. 3-17). Mahwah NJ: Erlbaum.

Fisher, R. J., & Dube, L. (2005). Gender differences in responses to emotional advertising: a social desirability perspective. *Journal of Consumer Research, 31*(4), 850-859.

Freedman, J., & Everett, T. (2006). EQ at the Heart of Performance: The Business Case for Emotional Intelligence. *Institute for Organizational Performance*. Retrieved June 2006 from: http://www.eqperformance.com/.

Gardner, H. (1983). *Frames of mind: the theory of multiple intelligences*. New York: Basic Books.

Goleman, D. (1995). *Emotional intelligence*. New York: Bantam Books.

Goleman, D. (1998). *Working with emotional intelligence*. New York: Bantam Books.

Goleman, D (2001). Emotional intelligence: Issues in paradigm building. In C. Cherniss & D. Goleman (Eds.), *The emotionally intelligent workplace* (pp. 13-26), Jossey-Bass: San Francisco.

Grasso, F., Cawsey, A. and Jones, R. (2000). Dialectical argumentation to solve conflicts in advice giving: a case study in the promotion of healthy nutrition. *International Journal of Human-Computer Studies*, l53, 1077-1115

Hampton B. M. (2002). *Tailoring Messages within the Stages of Change.* Master's Thesis. Virginia Tech.

Healthy People 2010. Retrieved May 2006 from: http://www.healthypeople.gov/

Heshka, S., Anderson, J. W., Atkinson, R. L., Greenway, F. L., Hill, J. O., Phinney, S. D., et al. (2003). Weight Loss With Self-help Compared With a Structured Commercial Program: A Randomized Trial. *Journal of the American Medical Association*, 289, pp. 1792-1798.

Isen, A. M. (1993). Positive affect and decision making. In *Handbook of emotions* (pp. 261-277). New York: Guilford.

Kanfer, R.,& Kanfer, F.H. (1991). Goals and self regulation: Applications of theory to work settings. In M. L. Maehr & P. R.Pintrich (Eds.), *Advances in motivation and achievement* (Vol. 7, pp. 287–326). Greenwich, CT: JAI Press.

Lazarus, R. S. (1991). *Emotion and adaptation*. New York: Oxford University Press.

Lazarus, R. S. (1999). *Stress and emotion : a new synthesis*. New York: Springer Pub. Co.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer Pub. Co.

Luce, M. F. (1998). Choosing to avoid: coping with negatively emotion-laden consumer decisions. *Journal of consumer research, 24*(4), 409-425.

Luce, M. F., Bettman, J. R., & Payne, J. W. (2001). "*Emotional decisions: tradeoff difficulty and coping in consumer choice"*. *Monographs of the Journal of consumer research.* Chicago, IL: University of Chicago Press.

MacCann, C., Roberts, R. D., Matthews, G., & Zeidner, M. (2004). Consensus scoring and empirical option weighting of performance-based Emotional Intelligence (EI) tests. *Personality and Individual Differences, 36*(3), 645-662.

Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence. In *Emotional development and emotional intelligence: Educational implications* (pp. 3-34). New York: Basicbooks, Inc.

Mayer, J. D., Salovey, P., & Caruso, D. R. (2000a). Emotional intelligence as zeitgeist, as personality, and as a standard intelligence". In R. Bar-On & J. D. A. Parker (Eds.), (pp.). . In *Handbook of emotional intelligence* (pp. 92-117). New York: Jossey-Bass.

Mayer, J. D., Salovey, P., Caruso, D. R., & Sitarenios, G. (2001). Emotional Intelligence as a Standard Intelligence. *Emotion, 1*(3), 232-242.

Mick, D. G., & Fournier, S. (1998). Paradoxes of Technology: Consumer Cognizance, Emotions, and Coping Strategies. *Journal of Consumer Research, 25*(2), 123-143.

Moorman, C., & Matulich, E. (1993). A model of consumers' preventive health behaviors: the role of health motivation and health ability. *Journal of Consumer Research, 20*(n2), 208-221.

National Health and Nutrition Examination Survey (1999-2000). Retrieved November 2006 from: http://www.cdc.gov/nchs/about/major/nhanes/nhanes99_00.htm

Nitika, G., Inman, J. J., & Vikas, M. (2005). Incidental and Task-Related Affect: A Re-Inquiry and Extension of the Influence of Affect on Choice. *Journal of Consumer Research, 32*, 154-160.

Ortony, A., Collins, A., & Clore, G. L. (1988). *The cognitive structure of emotions*. Cambridge ; New York: Cambridge University Press.

Park, C.W., Mothersbaugh, D., & Feick, L. (1994). Consumer knowledge assessment. *Journal of Consumer Research*, *21*, 71-82.

Pérez, J. C., Petrides, K. V., & Furnham, A. (2005). Measuring trait emotional intelligence. In *International Handbook of Emotional Intelligence*, 123-143, Cambridge, MA: Hogrefe & Huber.

Peter, P. C., Brinberg, D., Schulz, P., & Mantegazzi, P. (2004). Increasing the intent to sign an organ donation card by overcoming negative feelings. *Paper presented at the Winter Conference, Society for Consumer Psychology, St. Pete Beach, Florida*.

Peter, P. C., Corus, C., Hampton, B., & Brinberg, D. (2006). Did we tailor wrong all along? Stage of change as moderator of message effectiveness. Unpublished paper; target: *Journal of Consumer Psychology*.

Peter, P. C., Hampton, B., & Brinberg, D. (2005). Applying stages of change to create tailored health messages. *Unpublished paper*. Virginia Polytechnic Institute and State University.

Peterson, R. A., Hoyer, W. D., & Wilson, W. R. (1986). *The Role of affect in consumer behavior: emerging theories and applications*. Lexington, Mass.: Lexington Books.

Petrides, K. V., & Furnham, A. (2000). On the dimensional structure of emotional intelligence. *Personality and Individual Differences, 29*(2), 313-320.

Petrides, K. V. & Furnham, A. (2001). Trait emotional intelligence: Psychometric investigation with reference to established trait taxonomies. *European Journal of Personality, 15,* 425-448.

Pham, M. T., Cohen, J. B., Pracejus, J. W., & Hughes, G. D. (2001). Affect Monitoring and the Primacy of Feelings in Judgment. *Journal of Consumer Research, 28*(2), 167-189.

Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992). In search of how people change: Applications to addictive behaviors. *American Psychologist*, 47(9), 1102-1114.

Radecki, C. M. & Jaccard J(1995), Perceptions of Knowledge, Actual Knowledge, and Information Search Behavior, *Journal of Experimental Social Psychology*, 31(March), 107–138.

Rashmi, A. (2003). How good gets better and bad gets worse: understanding the impact of affect on evaluations of known brands. *30*(3), 352-316.

Salovey, P., & Mayer, J. D. (1990). Emotional Intelligence. *Imagination, Cognition and Personality, 9* (3), 185-211.

Schulze, R., & Roberts, R. D. (2005). *Emotional intelligence: an International Handbook*. Cambridge, MA ; Toronto, Ont.: Hogrefe & Huber.

Schutte, N. S., & Malouff, J. M. (1999). *Measuring emotional intelligence and related constructs*. Lewiston [N.Y.]: E. Mellen Press.

Schutte, N. S., Malouff, J. M., Hall, L. E., Haggerty, D. J., Cooper, J. T., Golden, C. J., et al. (1998). Development and validation of a measure of emotional intelligence. *Personality and Individual Differences, 25*(2), 167-177.

Smith, M. K. (2002) Howard Gardner and multiple intelligences. Retrieved April 2006 from: http://www.infed.org/thinkers/gardner.htm

Spearman, C. (1904). General Intelligence, Objectively Determined and Measured. *The American Journal of Psychology, 15*(2), 201-292.

Tammelin, T., Nayha, S., Hills, A. P., & Jarvelin, M.-R. (2003). Adolescent participation in sports and adult physical activity. *American Journal of Preventive Medicine, 24*(1), 22-28.

Thorndike, E. L. (1920). Intelligence and its uses. *Harper's Magazine, 140*, 227-235.

Tsaousis, I., & Nikolaou, I. (2005). Exploring the relationship of emotional intelligence with physical and psychological health functioning. *Stress and Health, 21*(2), 77-86.

USDA (2006) - U.S. Department of Agriculture. "Steps to a Healthier You (Food and Nutrition)". Retrieved October 2006 from: www.usda.gov

Watson, D. D., & Tellegen, A. U. o. M. (1985). Toward a Consensual Structure of Mood. *Psychological Bulletin, 98*(2), 219-235.

Weight Watchers (2006). Weight Watchers International, Inc. (2006). Retrieved June 2006 from: http://www.weightwatchers.com

Zeidner, M., Matthews, G., & Roberts, R. D. (2004). Emotional intelligence in the workplace: A critical review. *Applied Psychology: An International Review*, 53, 371–399.

APPENDIX A
BMI

BMI Formula

weight (lb) / [height (in)]^2 x 703

BMI Interpretation

BMI	Weight Status
Below 18.5	Underweight
18.5 – 24.9	Normal
25.0 – 29.9	Overweight
30.0 and above	Obese

APPENDIX B
Sample of questions related to the ability measure of EI

Identifying Emotions

Indicate how much of each emotion is expressed by this face
Happiness/Anger/Fear/Excitement/Surprise (None1 - Very Much)

Using/ Facilitation

What mood(s) might be helpful to feel when meeting in-laws for the very first time?

a) Tension	1	2	3	4	5	(1Not Useful - Useful)
b) Surprise	1	2	3	4	5	
c) Joy	1	2	3	4	5	

Understanding Emotions

Tom felt anxious, and became a bit stressed when he thought about all the work he needed to do. When his supervisor brought him an additional project, he felt ____. (Select the best choice.)

Overwhelmed/Depressed/Ashamed/Self Conscious/Jittery

Managing Emotions

Debbie just came back from vacation. She was feeling peaceful and content. How well would each action preserve her mood? (Very Ineffective 1- 5 Very Effective)

Action 1: She started to make a list of things at home that she needed to do.
Action 2: She began thinking about where and when she would go on her next vacation.
Action 3: She decided it was best to ignore the feeling since it wouldn't last anyway.

APPENDIX C
Self-Estimated Measure of EI

1. I know when to speak about my personal problems to others
2. When I am faced with obstacles, I remember times I faced similar obstacles and overcame them
3. I expect that I will do well on most things I try
4. Other people find it easy to confide in me
5. I find it hard to understand the non-verbal messages of other people*
6. Some of the major events of my life have led me to re-evaluate what is important and not important
7. When my mood changes, I see new possibilities
8. Emotions are one of the things that make my life worth living
9. I am aware of my emotions as I experience them
10. I expect good things to happen
11. I like to share my emotions with others
12. When I experience a positive emotion, I know how to make it last
13. I arrange events others enjoy
14. I seek out activities that make me happy
15. I am aware of the non-verbal messages I send to others
16. I present myself in a way that makes a good impression on others
17. When I am in a positive mood, solving problems is easy for me
18. By looking at their facial expressions, I recognize the emotions people are experiencing
19. I know why my emotions change
20. When I am in a positive mood, I am able to come up with new ideas
21. I have control over my emotions
22. I easily recognize my emotions as I experience them
23. I motivate myself by imagining a good outcome to tasks I take on
24. I compliment others when they have done something well
25. I am aware of the non-verbal messages other people send
26. When another person tells me about an important event in his or her life, I almost feel as though I have experienced this event myself
27. When I feel a change in emotions, I tend to come up with new ideas
28. When I am faced with a challenge, I give up because I believe I will fail*
29. I know what other people are feeling just by looking at them
30. I help other people feel better when they are down
31. I use good moods to help myself keep trying in the face of obstacles
32. I can tell how people are feeling by listening to the tone of their voice
33. It is difficult for me to understand why people feel the way they do*

5 point scale (1:strongly disagree – 5: strongly agree)
*These items are reverse scored

APPENDIX D
Statistics for behavioral determinants

STUDY 1

	Overall Attitude	Intent	Positive Affect	Negative Affect	Social Norms
Mean	3.7333	3.05	2.8750	2.8802	8.0468
Std. Deviation	1.33887	1.921	1.23331	1.22204	6.96606
Skewness	-.198	.479	-.110	-.091	2.064
Std. Error of Skewness	.246	.246	.246	.246	.249
Kurtosis	-.159	-1.021	-1.033	-1.029	7.164
Std. Error of Kurtosis	.488	.488	.488	.488	.493
Minimum	1.00	1	1.00	1.00	.60
Maximum	7.00	7	5.00	5.00	44.80

STUDY 2

	Barriers	Self-efficacy	Perceived Knowledge	Self Standard Discrepancy	Actual Knowledge
Mean	10.0776	65.6333	2.4576	-.1026	.5508
Std. Deviation	4.20124	27.51239	1.23097	1.15508	.17696
Skewness	.659	-.868	1.274	.694	-.147
Std. Error of Skewness	.225	.221	.223	.224	.223
Kurtosis	.678	.029	1.678	2.041	-.632
Std. Error of Kurtosis	.446	.438	.442	.444	.442
Minimum	1.00	.00	1.00	-3.00	.13
Maximum	23.25	100.00	7.00	4.00	.88

	Positive Affect	Negative Affect	Intent	Social Norms	Attitude
Mean	2.5798	1.9040	3.90	19.6817	12.6496
Std. Deviation	1.07747	.80608	2.002	7.72488	3.98998
Skewness	.358	1.226	.360	.123	.138
Std. Error of Skewness	.222	.223	.222	.285	.224
Kurtosis	-.593	2.364	-1.262	-.588	-.034
Std. Error of Kurtosis	.440	.442	.440	.563	.444
Minimum	1.00	1.00	1	1.00	2.71
Maximum	5.00	5.00	7	36.40	24.29

STUDY 3

Week 1	Intent	Actual Knowledge	Attitude	Barriers	Self-Efficacy
Mean	2.4000	.5641	11.0571	8.6071	72.7000
Std. Deviation	.91026	.13674	4.31885	2.87348	20.95983
Skewness	-.315	-.233	-.133	1.294	-.758
Std. Error of Skewness	.580	.616	.580	.597	.580
Kurtosis	-.714	-1.170	-.900	2.963	-.453
Std. Error of Kurtosis	1.121	1.191	1.121	1.154	1.121
Minimum	1.00	.33	4.14	5.25	34.50
Maximum	4.00	.75	18.71	16.25	99.50

Week 1	Perceived Knwoledge	Self-Standard Discrepancy	Social Norms	Positive Affect	Negative Affect
Mean	3.9333	-.6333	17.3600	3.0714	2.1667
Std. Deviation	1.57963	.51640	10.60787	1.41227	1.06346
Skewness	.251	-.282	.852	-.002	.986
Std. Error of Skewness	.580	.580	.580	.597	.580
Kurtosis	-1.629	-.917	-.289	-1.427	.361
Std. Error of Kurtosis	1.121	1.121	1.121	1.154	1.121
Minimum	2.00	-1.50	2.40	1.00	1.00
Maximum	6.00	.00	37.80	5.00	4.50

Week 6	Intent	Social Norms	Actual Knowledge	Attitude	Barriers
Mean	2.3571	41.2800	.6889	13.3905	10.6500
Std. Deviation	1.33631	25.48241	.10190	3.46598	3.40142
Skewness	1.034	.822	-.317	.139	.084
Std. Error of Skewness	.597	.580	.580	.580	.580
Kurtosis	.447	-.329	-.993	-.820	-.693
Std. Error of Kurtosis	1.154	1.121	1.121	1.121	1.121
Minimum	1.00	8.00	.50	7.86	4.75
Maximum	5.00	92.80	.83	19.57	16.50

Week 6	Self-Efficacy	Self-Standard Discrepancy	Perceived Knowledge	Negative Affect	Positive Affect
Mean	71.0667	-.5667	2.2000	2.4667	2.8667
Std. Deviation	21.58527	.94239	.86189	1.24595	1.09327
Skewness	-.537	1.255	.340	.375	-.175
Std. Error of Skewness	.580	.580	.580	.580	.580
Kurtosis	-.438	3.154	-.112	-.636	-.001
Std. Error of Kurtosis	1.121	1.121	1.121	1.121	1.121
Minimum	25.00	-2.00	1.00	1.00	1.00
Maximum	98.00	2.00	4.00	5.00	5.00

APPENDIX E
Actual Knowledge questions and correct answers

Question	Correct Answer
1. Given a constant level of exercise and calories intake, in order to reduce my weight I have to reduce the intake of fat in my diet. true False	true
2. Margarine contains 3 times less fat than butter per serving. true false	false
3. One hamburger contains more fat than one slice of pizza. true False	true
4. A balanced nutrition is composed by: 60% Carbohydrates, 30% Fat, 10% Proteins 40% Carbohydrates, 50% Fat, 10% Proteins 20% Carbohydrates, 20% Fat, 60% Proteins	60% Carbs 30% Fat 10% Proteins
5. A 12oz can of beer has more calories than 12oz can of cola soda true False	true
6. To maintain healthy levels of weight and fitness, in terms of caloric expenditure, experts recommend a minimal threshold of approximately _____ calories burned each week from exercise 1000 1200 1500	2000
7. Lower intensity exercise utilizes _____ as the primary energy source. Proteins Carbohydrates Fats	Carbs
8. To help manage body weight and prevent gradual, unhealthy body weight gain in adulthood: Engage in approximately _____ minutes of moderate- to vigorous-intensity activity on most days of the week while not exceeding caloric intake requirements. 20-30 30-60 60-90	30-60
9. A baked sweetpotato (146 g) has more calories than a medium banana true False	true
10. The same moderate amount of activity can be obtained in longer sessions of moderately intense activities (such as 30 minutes of brisk walking) as in shorter sessions of more strenuous activities (such as 15-20 minutes of jogging) true False	true
11. Any form of exercise will burn fat. True False	false
12. Proteins provide between 50%- 65% of the fuel for exercise. True False	false

APPENDIX F
Behavioral determinants questions

(SOCIAL NORMS)

Most of the people important to me think that I should or should not reduce my consumption of food in order to reduce my weight in the next six weeks.
1 Should/7 Should not

Most people who are important to me reduced their consumption of food in order to reduce their weight in the last six months.
1 Completely true/7 Completely false

My family thinks that I should or should not reduce my consumption of food in order to reduce my weight in the next six weeks.
1 Should/7 Should not

Generally speaking, how much do you want to do what your family thinks you should do?
1 Very much/7 Not at all

My boyfriend/girlfriend thinks that I should or should not reduce my consumption of food in order to reduce my weight in the next six weeks.
1 Should/7 Should not N/A

Generally speaking, how much do you want to do what your boyfriend/girlfriend thinks you should do?
1 Very much/7 Not at all N/A

My friends think that I should or should not reduce my consumption of food in order to reduce my weight in the next six weeks.
1 Should/7 Should not

Generally speaking, how much do you want to do what your friends think you should do?
1 Very much/7 Not at all

My peers think that I should or should not reduce my consumption of food in order to reduce my weight in the next six weeks.
1 Should/7 Should not

Generally speaking, how much do you want to do what your peers think you should do?
1 Very much/7 Not at all

(INTENTION)

Overall, all things considered, I intend to reduce my consumption of food in order to reduce my weight in the next six weeks.
1 Extremely likely/7 Extremely unlikely

(AFFECT)

The following scale consists of a number of words that describe different feelings and emotions. We want to know the extent to which you would feel each of these emotions if you were to try reducing your consumption of food in order to reduce your weight in the next six weeks. Next to each emotion, indicate the extent to which you would feel the emotion if you were to reduce your consumption of food in order to reduce your weight:

1 Not at all/ 5 Very much fearful

FEARFUL
SURPRISED
NERVOUS
ACTIVE
PLEASED
ASTONISHED
SATISFIED
ELATED
ANXIOUS
EXCITED
HAPPY
AROUSED

(ATTITUDE)

My reducing my consumption of food in order to reduce my weight in the next six weeks will make me look better.
1 Extremely likely/7 Extremely unlikely

Looking good is:
1 Extremely good/7 Extremely bad

My reducing my consumption of food in order to reduce my weight in the next six weeks will make me feel better.
1 Extremely likely/7 Extremely unlikely

Feeling good is:
1 Extremely good/7 Extremely bad

My reducing my consumption of food in order to reduce my weight in the next six weeks will raise my self-esteem.
1 Extremely likely/7 Extremely unlikely

Raising my self-esteem is:
1 Extremely good/7 Extremely bad

My reducing my consumption of food in order to reduce my weight in the next six weeks will make me healthier.
1 Extremely likely/7 Extremely unlikely

Being healthy is:
1 Extremely good/7 Extremely bad

My reducing my consumption of food in order to reduce my weight in the next six weeks will result in an unhealthy diet:
1 Extremely likely/7 Extremely unlikely

Being on an unhealthy diet is:
1 Extremely good/7 Extremely bad

My reducing my consumption of food in order to reduce my weight in the next six weeks will make me missing out on foods that taste good.
1 Extremely likely/7 Extremely unlikely

Having limited food choices is:
1 Extremely good/7 Extremely bad

My reducing my consumption of food in order to reduce my weight in the next six weeks will limit the nutrients necessary for a good diet.
1 Extremely likely/7 Extremely unlikely

Not getting the nutrients that my body needs is:
1 Extremely good/7 Extremely bad

(BARRIERS/ENVIRONMENTAL CONSTRAINTS)

I expect my activities at school will place high demand on my time in the forthcoming six weeks.
1 Strongly disagree/7 Strongly agree

My school activities placing high demands on my time in the forthcoming six weeks would make it_____for me to reduce my consumption of food in order to reduce my weight in the next six weeks.
1 Difficult/7 Easy

I expect that the availability of foods I like will lead me to temptation during the forthcoming six weeks.
1 Strongly disagree/7 Strongly agree

The availability of food I like would make it_____for me to reduce my consumption of food in order to reduce my weight in the next six weeks.
1 Difficult/7 Easy

I expect that the possibility for me to exercise regularly during the next six weeks will increase.
1 Strongly disagree/7 Strongly agree

The possibility to exercise would make it____for me to reduce my consumption of food in order to reduce my weight in the next six weeks.
1 Easy/7 Difficult

I expect that the meal portions served when eating out will decrease during the next six weeks.
1 Strongly disagree/7 Strongly agree

Smaller meal portions when eating out would make it____for me to reduce my consumption of food in order to reduce my weight in the next six weeks.
1 Easy/7 Difficult

(ACTUAL KNOWLEDGE)

Refer to Appendix E

(SELF-EFFICACY)

On a scale from 0 to 100, what is the likelihood, that if you try, you will manage to reduce your consumption of food in order to reduce your weight in the next six weeks? Please indicate a number between 0 and 100.

On a scale from 0 to 100, what is your best estimate, that an attempt on your part to reduce your consumption of food in order to reduce your weight in the next six weeks will be successful? Please indicate a number between 0 and 100.

(PERCEIVED KNOWLEDGE)

How confident are you that you have adequate knowledge to reduce your consumption of food in order to reduce your weight in the next six weeks.
1 Extremely confident/ 7 Extremely unconfident

(SELF-STANDARD DISCREPANCY)

I am___when thinking of reducing my consumption of food in order to reduce my weight in the next six weeks.
1Extremely motivated /7 Extremely unmotivated

I am___when thinking of reducing my consumption of food in order to reduce my weight in the next six weeks.
1Extremely meticulous /7 Extremely careless

College student/referent who always watches my food consumption thinks I am___when thinking of reducing my consumption of food in order to reduce my weight in the next six weeks.
1Extremely meticulous /7 Extremely careless

College student/referent who always watches my food consumption thinks I am___when thinking of reducing my consumption of food in order to reduce my weight in the next six weeks.
1Extremely motivated /7 Extremely unmotivated

APPENDIX G
Description Training sessions

Treatment: Training on EI and health (Emotional Reasoning)

33ppt (1h15min)
Subjects where asked to bring the ppt to the training session (blank spaces in their version)
High interaction instructor and class

Topics

- Introduction: Why "Diets" don't work
- MyPyramid
- Knowledge questions from questionnaire

- **Emotions and Food: the role of EI**
  - **Let's increase our knowledge: EI Test!**

- Tips for Weight and Eating Management
  - Using a food diary + Variety
  - Reward your self + Reduce food portion
  - **Listen to your emotions and use them in the right direction**

Control group: Training on Food and Nutrition

33ppt (1h15min)
Subjects where asked to bring the ppt to the training session (blank spaces in their version)
High interaction instructor and class

Topics:

- Introduction: Why "Diets" don't work
- MyPyramid
- Knowledge questions from questionnaire

- **Food Portions and nutrition**
  - **Let's increase our knowledge: Food portion!**

- Tips for Weight and Eating Management
  - Using a food diary + Variety
  - Reward your self
  - Reduce food portion

APPENDIX H
Informed Consent Study 4

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
Informed Consent for Participants in Research Projects Involving Human Subjects

Title of Project: **Diet/Exercise Study**
Investigator(s): Paula Peter and David Brinberg

I. Purpose of this Research/Project
All students enrolled in EDHL 1514 for Spring 2007 will be invited to participate in this study. The purpose of this study is to identify behavioral determinants related to diet that might predict the successful adoption and maintenance of an health behavior. It is a longitudinal study that aims to improve decision quality related to food and possibly help to lose weight. The study aims to involve healthy students (age 18-26) who would like to improve decision quality related to food and possibly lose some weight.

II. Procedures
There will be several steps you will need to take. The total time commitment for filling out questionnaires, participate to a training session and get your body measurements is about 2 hours and 45 minutes.
Things you will be asked to do.

Jan29-Feb2, 2007 a) *Get your weight registered*. The researcher will communicate to you a specific day to come for this measurement (you will be able to show up at your convenience during a 4 hours time frame). You will be asked to have not eaten yet that day and have only a max of 1 cup (8ounces) of beverage that day. If you have diabetes, hypoglycemia, or any other condition that requires eating on a regular schedule, please inform the researchers ahead of time – you may eat that morning, and your food intake for that morning will be recorded on the form along with your weight. Your weight will be taken at the gym or in a faculty office (Location TBA) by either Paula Peter or a research assistant. You will keep your clothes on but will be asked to remove any outer clothing such as hat, coat, sweater and shoes.

b) *Complete one or two online questionnaires* sent to you by the researcher during different days for a total of max 45min from the comfort of your home.

c) *Participate to a Training session*. You will need to attend a training program of 1h15 min offered by the researcher on behavioral determinants related to health decision making (Tuesday, Jan 30 or Wednesday Jan 31, 7-8.15pm) The day will be communicated to you.

Feb19-22, 2007 Repeat points a) and b) above.

March 19-20 A random group of 100 students will be asked to get their weight registered again

III. Risks
The proposed research presents no known risks to subjects.

IV. Benefits
This is a great opportunity in order to increase your decision quality related to food and possibly lose weight. However, no promise or guarantee of personal benefits has been made to encourage you to participate.

V. Extent of Anonymity and Confidentiality
All of your information from the study will be confidential. Your name will not be used on the questionnaire, food and activity record, weight measurement or any other collection forms. Instead, you will be given a special code number that will be on these forms. The researchers will keep a list of names and code numbers in a locked file cabinet. This list is to make sure that the correct code number is related to your data. Published results will not contain results for individual subjects.

VI. Compensation
Total compensation available for completion of all components for the data collection period is 15% of course points for the on-campus EDHL 1514 section.

VII. Freedom to Withdraw
You are free to withdraw from a study at any time without penalty. You are free not to answer any questions or respond to experimental situations that you choose without penalty.

VIII. Subject's Responsibilities
I voluntarily agree to participate in this study

IX. Subject's Permission
I have read the Consent Form and conditions of this project. I have had all my questions answered. I am 18 years of age or older have read and understand the Informed Consent and conditions of this project. I had all my questions answered and have been given a copy of this form to keep. I hereby acknowledge the above and give my voluntary consent:

_____ Date_____
Subject signature

Subject information

Printed Name:_____

Phone number:_____ E-mail address:_____

Should I have any pertinent questions about this research or its conduct, and research subjects' rights, and whom to contact in the event of a research-related injury to the subject, I may contact:

__Paula Peter_____540-231-1902/papeter@vt.edu_____
Investigator(s) Telephone/e-mail

__David Brinberg_____540-231-6949/brinberg@vt.edu_____
Departmental Reviewer/Faculty Advisor Telephone/e-mail

__David M. Moore_____540-231-4991/moored@vt.edu_____
IRB Chair Telephone/e-mail

VITA

Paula C. Peter graduated with *summa cum laude* from Universita della Svizzera Italiana (Switzerland) in 2002 with a four years B.S. in Corporate and Institutional Communication.

In January 2003, she embarked in the MS program offered by the Marketing Department at Virginia Tech. She received her Master in 2004 and she continued her academic pursuit as a doctoral student under the guidance of Dr. David Brinberg.

She was recently selected as the recipient of the 2007 Pamplin College Outstanding Graduate Student Award.

Upon graduation she will relocate to San Diego CA where she will start her appointment as assistant professor tenure track in the Marketing department at San Diego State University.