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Priming Ability EI to Impact Ability EI, Implicit Theories of EI, and Resilience

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Abstract

This study examines priming as a means to increase emotional intelligence and the relationship between implicit theories of emotional intelligence, ability emotional intelligence, and resilience. Individuals with greater resilience have been connected to high emotional intelligence and growth mindset. The question that guided the study was: can priming emotional intelligence lead to a stronger growth mindset, and thereby also higher resilience? The sample included 71 undergraduate students (59 female, 11 male, one did not answer) from a small university in Ontario. Participants were randomly assigned to a successful emotional competency self-schema prime condition or a control condition. Then they completed two measures for Elder (in progress), an ability measure of emotional intelligence (the MSCEIT), a growth mindset measure, and a resilience measure. There was not a significant difference between the prime condition and the control condition in ability EI, growth mindset, and resilience. There was an interaction between condition and growth mindset for the MSCEIT branch understanding emotions, in that the discrepancy between moderate and high growth mindset was greater for those in prime condition. There were no significant correlations for growth mindset with any of the emotional intelligence scores. The overall emotional intelligence score and the area score for emotional experiencing was correlated to resilience in only the control condition. Multiple limitations in the methodology of the study are discussed that might have led to a lack of significant results. These findings failed to demonstrate an impact of the prime on EI, but extend research on the relationship between implicit theories of EI, ability EI, and resilience.

Keywords: ability EI, growth mindset, implicit theories, resilience

Introduction

An individual's implicit theories about the changeability of various areas of life, including emotional intelligence (EI), have been demonstrated to greatly impact one's life in many positive and negative ways (Dweck, 2012; Blackwell, Trzesniewski, & Dweck, 2007; De Castella, Goldin, Jazaieri, Ziv, Dweck, & Gross, 2013). An implicit theory of emotional intelligence refers to someone's basic underlying beliefs regarding whether or not they believe emotional intelligence can change. These beliefs may or may not reach conscious reflection, so their impact tends to be more implicit than explicit. The implicit theories, or fundamental beliefs, that people have determine how they interpret the world and shape their behavior (Dweck, 2012). Growth mindset (an implicit theory also referred to as incremental theory) and fixed mindset (an implicit theory also referred to as entity theory) are intertwined with EI in their impact on one's motivation, especially as it pertains to resilience. A growth mindset (viewing intelligence or another area of life as malleable) and high emotional intelligence are associated with an orientation toward learning and development (Dweck, 2012; Yeager & Dweck, 2012, Burnette, VanEpps, O'Boyle, & Pollack, 2013), higher academic achievement (Mestre, Guil, Lopes, Salovey, Gil-Olarte, 2006), higher professional achievement (Lopes, Côté, Grewal, Kadis, Gall, and Salovey, 2006; Dweck, 2012), mental health (Cha & Nock, 2009; Rivers, Brackett, Reyes, Mayer, Caruso, & Salovey, 2012; Dweck, 2012), and well-being (Brackett & Mayor, 2003; Dweck, 2012). Very little previous research has examined the relationship between implicit theories and ability emotional intelligence, although in one Spanish study, those with a growth mindset concerning EI scored higher on the MSCEIT compared to those with a fixed mindset concerning EI (Cabello & Fernández-Berrocal,

2015). Additionally, priming ability EI has been demonstrated to improve emotional intelligence as assessed by the MSCEIT (Schutte & Malouff, 2012). Further, a growth mindset and EI have also been associated with an underlying mechanism of resilience (Zeng, Hou, & Peng, 2016; Magnano, Craparo, & Paolillo, 2016). The research question for this current study is: can priming emotional intelligence lead to a stronger growth mindset, and thereby also higher resilience? Significant results could lead to further research regarding self-priming EI and growth mindset to build higher resilience for academic and achievement motivation. Also, the use of priming self-schemas in combination with EI and growth mindset training or intervention programs could prove to be significant.

Growth Mindset

The concept of a growth mindset is based on the idea that people hold implicit theories about the way intelligence works. According to research on the growth mindset, there are two main implicit views of understanding motivation with different goals and outcomes: entity theory and incremental theory (Dweck & Elliott, 1983; Dweck & Leggett, 1988). Individuals with a growth mindset (incremental theory) tend to view intelligence and other personal attributes as malleable, while those with a fixed mindset (entity theory) tend to believe that intelligence, skills, and ability are stable and unchangeable (Dweck, 2000). (The terms incremental theory and entity theory will be used interchangeably with growth mindset and fixed mindset in the current thesis.) Everyone falls somewhere along a continuum from having a more of a growth mindset or more of a fixed mindset (Bostwick, 2017). Individuals with more of a fixed mindset view their ability to handle obstacles, troubles, and academic challenges as indicative of their

ability and intellect. Individuals with more of a growth mindset will perceive these same things as an opportunity to learn, grow, and develop. Dweck (2006) demonstrated that those with a growth mindset have greater positive outcomes academically. Further, the growth mindset has been demonstrated to impact multiple aspects of academic performance. Specifically, those with a growth mindset are less likely to engage in self-handicapping and defensive pessimism (Martin, Marsh & Debus, 2001). Both are strategies students can use to protect their self-worth by shifting the perceived cause of failure away from their ability. The findings were based on a study in which Martin et al. (2001) had 584 Australian first year students complete measures on academic strategies, affective and motivational predictors, and academic outcomes. Students also high in self-handicapping received lower grades than students low in self-handicapping and were less likely to attend school.

Those with a growth mindset obtain higher academic achievement (Blackwell et al., 2007; Dweck, 2012).There were two studies conducted by Blackwell et al. (2007) exploring implicit theories of intelligence in adolescents' mathematics achievement. Study one with 373 middle school students demonstrated that incremental theories predicted an upward trend in grades and entity theories predicted a flat trend in grades. Study two involved an intervention teaching an incremental theory to 48 middle school students that promoted greater motivation towards academic achievement. Students in the control group displayed a negative movement of grades, while those in the intervention group experienced a positive movement of grades.

Martin, Nejad, Colmar, and Liem, (2013) organized a large scale longitudinal study with 969 adolescents from nine high schools to examine adaptability. They

investigated predictors (personality and implicit theories) of adaptability, and the role of

adaptability in predicting academic and non-academic outcomes. Adaptability is defined

as "appropriate cognitive, behavioral, and/or affective adjustment in the face of

uncertainty and novelty" (Martin et al., 2013, p. 728). Their results showed that

personality (conscientiousness and agreeableness— positively; neuroticism—negatively)

and incremental theories predicted adaptability, which in turn positively predicted class

participation, positive school intentions, school enjoyment, self-esteem, life satisfaction,

and a sense of meaning and purpose. Adaptability also negatively predicted self-

handicapping and disengagement. These results demonstrate how many positive

outcomes are possible for someone adaptable who holds an incremental implicit theory of

intelligence.

Emotional Intelligence

Since Salovey and Mayor (1990) published the concept of EI, there have been

multiple theoretical models and instruments created to explain and assess it. The

theoretical models that have received the most attention and usage are mixed (or trait)

models and the ability model (Mayor, Roberts, & Barsade, 2008). Mixed models

formulate EI as a blend of characteristics, including motivation, social skills, persistence,

optimism, and empathy which are typically measured using self-report instruments. The

ability model is a combination of multiple capacities and is defined as: "the ability to

perceive emotions, to access and generate emotions so as to assist thought, to understand

emotions and emotional meanings, and to reflectively regulate emotions so as to promote

both better emotion and thought" (Mayor & Salovey, 1997, p. 5). The best known and

most used measure for ability EI is the Mayor-Salovey-Caruso Emotional Intelligence

Test (MSCEIT; Mayer, Salovey, & Caruso, 2002; Mayer, Salovey, & Caruso, 2003) which examines four branches of EI: perceiving, facilitating, understanding, and managing emotions. Researchers have found the MSCEIT to have strong internal consistency, reliability, and validity (Ashkanasy & Daus, 2005; Daus & Ashkanasy, 2005).

Individuals with high EI also perform better in many areas of life. The importance of EI on academic achievement was examined by Mestre et al. (2006) with 127 Spanish adolescents. They found that MSCEIT branch scores for emotional understanding and managing correlated with teacher ratings of academic achievement, even more than IQ and the Big Five personality traits. Researchers have also suggested that the relationship between MSCEIT scores and academic achievement may be accounted for the overlap between EI and cognitive intelligence or personality measures (Barchard, 2003; Brackett & Mayor, 2003). Research by Garg, Levin, and Tremblay (2016) suggested that the influence of EI on academic achievement may be mediated by adjustment to university. First year students at a Canadian university (N=299) were given measures for parenting style, self-report EI measure (Emotional Quotient Inventory EQ-I), and student adjustment. EI and authoritative parenting style were found to be significant in improving adjustment to university which then impacts academic achievement in university.

Workplace achievement has been shown to be linked to EI (Lopes et al., 2006; O'Boyle, Humphrey, Pollack, Hawver, & Story, 2011; Miao, Humphrey, & Qian, 2017). Research was conducted by Lopes et al. (2006) with 44 analysts and administrative employees from an American insurance company. MSCEIT Total EI was correlated with company rank, higher merit increases, peer and supervisor rated sociability, and rated

contribution to a positive work environment. Côté and Miners (2006) conducted researched with 175 full-time university employees and discovered that MSCEIT scores predicted supervisor-assessed task performance. They also found that EI led to workplace achievement even more so in those with lower cognitive intelligence, which suggests that higher EI may compensate for lower skills in various fields. A study with middle and high school teachers showed MSCEIT scores were positively related with job satisfaction and negatively with burnout (Brackett, Palomera, Mojsa, Reyes, & Salovey, 2010a). Teachers reporting positive emotions at school and perceiving support from their school principal mediated the associations.

There are clear correlations between MSCEIT total EI, psychological well-being, and mental health (Brackett & Mayor, 2003; Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006). Comparing scores on ability EI measures (e.g. MSCEIT) to self-report EI scores on the EQ-I and Self-Report Emotional Intelligence Test (SREIT) reveals that there are significant differences between the measurements. Brackett and Mayor (2003) had 207 American college students complete the MSCEIT, EQ-I, SREIT, a personality measure, a psychological well-being measure, and a subjective well-being measure. They found that ability EI and self-report EI were weakly related and therefore indicated different outcomes for the same individuals. One key conclusion was that the MSCEIT was distinct from measures of personality and well-being, but predicts well-being. In three studies with undergraduate students Brackett et al. (2006) compared self-report EI and ability EI measures in social functioning. They found that there were no strong correlations between self-ratings of EI and ability EI, and that the MSCEIT was associated with interpersonal competence and well-being for men. It has also been found

that MSCEIT EI was related to lower anxiety and distress before a challenging task (Bastian, Burns, & Nettelbeck, 2005). Rivers et al. (2012) completed research for an initial validity test of the MSCEIT-YV (youth version) using student and teacher reports of academic, social, and personal functioning on the Behavioral Assessment System for Children (BASC). They found that students with higher scores on the MSCEIT had less reports from teachers as having externalizing problems (e.g., hyperactivity, aggression, conduct problems), internalizing problems (e.g., anxiety, depression), and school problems. Cha and Nook (2009) suggested that EI is a protective factor for serious psychological problems among adolescents. They conducted a study in which 54 sexually abused teenagers from psychiatric clinics and the community completed the MSCEIT. Higher EI scores revealed less suicidal ideation and attempts.

MSCEIT EI scores have been shown to impact social functioning in positive ways. EI is suggested to "promote positive social functioning by helping individuals to detect others' emotion states, adopt others' perspectives, enhance communication, and regulate behavior" (Brackett, Rivers, & Salovey, 2011, p. 96) Research by Lopes, Brackett, Nezlek, Schutz, Sellin, and Salovey (2004) showed MSCEIT scores positively related with self-perceived supportive relationships with friends and parents, and negatively associated with hostile and conflict relationships with close friends.

Influencing Emotional Intelligence

Studies designed to increase EI through extensive training and interventions have proven to be effective in producing significant improvements in participant's subjective well-being, relationships, mental and physical health, and employability. For example, Kotsou, Nelis, Grégoire, and Mikolajczak (2011) conducted a study on emotional

competence (EC) to see if it could be trained and improved among adults to bring better mental, physical, and social adjustment. EI has been proposed to contain three levels, the knowledge level, ability level, and trait level; how people behave emotionally on a consistent basis. Kotsou et al. (2011) used the Trait Emotional Intelligence Questionnaire (TEIQue) to provide a global EC score. There were 132 participants randomly assigned to an EC-enhancing intervention or to a control group. The intervention group went through a 15-hr intervention, programmed to address four areas of emotional competencies, as well as receiving a follow-up email after four weeks that provided help for applying the training to real situations. The level of emotional competencies was significantly higher in the intervention group compared to the control group after one year. The increase in EC resulted in lower cortisol secretion, enhanced subjective and physical well-being, and improved social and marital relationships (Kotsou et al., 2011).

Building on the work of Kotsou et al. (2011) a study by Nelis, Quoidbach, Hansenne, Kotsou, Weytens, Dupuis, and Mikolajczak (2011) explored whether EC training could improve emotional functioning, create long-term personality changes, and have positive implications for physical, psychological, social, and work adjustment. There were two studies conducted that demonstrated that brief EC training can have powerful results. Study one had 58 undergraduates split between the control and the training group. The EC interventions consisted of three 6-hr sessions (a session on two consecutive days then one session two weeks later) or six 3-hr sessions (one session per week for six weeks) (Nelis et al., 2011). The time between sessions allowed for practical application of the training sessions. Each session focused on a specific emotional competence and consisted of brief lectures, role-playing games, group discussion, and

work in pairs. Participants were also given a journal to record emotional experiences and analyze them according to the information given during the sessions. In addition to the sessions and journals, two emails per week for 6 weeks were sent with theoretical reminders and practical exercises to help the intervention translate into real life. The findings showed that the training group had significant improvement in emotion understanding, emotion regulation, and overall emotional competence directly after the intervention and six months later. The EC intervention also led to a progressive increase in agreeableness and a progressive decrease in neuroticism, which became statistically significant six months after the training. These results show that through intense training personality traits can be changed over time and are malleable even in adulthood. Study two consisted of 92 undergraduates and was similar to study one but included measures of psychological, physical, social, and work adjustment. In addition to the EC training group, and control group, a second control group was created to explore whether participants in the training group in study one had been "inadvertently influenced by experimenter demands, expectations of improvement, and a number of group processes, including contact with a caring instructor and social support provided by the group" (Nelis et al., 2011, p. 358). This second control group took part in drama improvisation training that was similar to the EC training group in length, group dynamics, and relational opportunities. The results show that EC only increased in the training group along with a number of other significant positive consequences reported: increased physical health, mental health, happiness, life satisfaction, global social functioning, and employability. These two studies by Nelis et al. (2011) show that 18 hours of EC training with an email follow-up is sufficient to bring significant lasting change in emotional

functioning, personality changes, psychological well-being, subjective health, quality of social relationships, and work success.

Demographics Related to Emotional Intelligence

There is also a significant amount of research on ability EI revealing gender differences. Many studies have demonstrated that, when ability EI is being measured, women outperform men, but the effect size varies (eg. Mayer, Caruso, & Salovey, 1999; Ciarrochi, Chan, & Caputi, 2000; Brackett & Mayer, 2003; Palmer, Gignac, Manocha, & Stough, 2005; Goldenberg, Matheson, & Mantler, 2006; Farrelly & Austin, 2007; McIntyre, 2010). For example, Cabello, Fernández-Pinto, Sorrel, Extremera, and Fernández-Berrocal (2016) conducted a study with 12,198 adults aged 17 to 76 years, with 56.56% men. Mean scores for ability EI were significantly higher for women than for men on total ability EI scores as well as the four branches of EI (effect size was small for perceiving emotions, facilitating thought, and managing emotions, but the effect size was moderate for understanding emotions and total EI score).

Research regarding ability EI and age demonstrates less conclusive results. It has been reported that older adults have significantly higher ability EI (Mayer et al., 1999), while other research has been unable to find any significant relationship between age and ability EI (Farrelly & Austin, 2007; Webb, Schwab, Weber, DelDonno, Kipman, Weiner, 2013). Farrelly and Austin (2007) had two studies with university students, the first with a mean age of 22.5 and the second 21.14. There were no significant age differences when ability EI was measured. Webb et al. (2013) had 65 adults ranging from 18 to 45, with a mean age of 30. There were no significant age differences when ability EI was measured. Mayor et al. (1999) compared an adolescent sample (age range: 12-16, mean: 13.4) to an

adult sample (age range: 17-70, mean: 23) with the Multifactor Emotional Intelligence

Scale (MEIS) and found that older adults scored higher. This difference in conclusions is

likely due to the narrow age range of samples included in many studies, where

participants are usually university students or younger than 30 years (Cabello &

Fernández-Berrocal, 2015). When a sample of 310 people, with an age range of 18 to 76

and a mean of 42.3, were measured for ability EI using the MSCEIT they found older

adults had lower scores than younger people for total EI and three of the EI branches;

perceiving, facilitating, and understanding emotions (Cabello, Bravo, Latorre, &

Fernández-Berrocal, 2014). They defined older adults as those above 30 and compared

them with those under 30. Age was not associated with the scores for the EI branch of

managing emotions. Cabello et al. (2014) found that educational history protects against

the age-related decline in EI. Age correlated negatively with educational level, so

younger people were more likely to have a university education than older people. For

older adults with a university education there were higher EI scores compared to older

adults with primary or secondary education, and similar scores to younger adults with any

education level (Cabello et al., 2014). A study with 12,198 adults aged 17 to 76 years

(M=37.71) was conducted by Cabello et al. (2016) to examine how ability EI varies with

age. They found the variance in ability EI with age was shaped like an inverted-U curve,

with younger adults (17-31) and older adults (45-76) scoring lower on ability EI than

middle aged adults (32-44), except for the branch of understanding emotions. This study

highlights that ability EI may not be linearly related to age but that it may increase and

then decrease across the adult life span. This study also significantly extends the results

of Cabello et al. (2014) who found a linear negative effect of age on total ability EI and

all EI branches except managing emotions. There is still a need for research to be done examining EI in much older individuals, because most of the research contains participants with an average age below 30 years.

Resilience and Growth Mindset

Previous research has demonstrated a clear relationship between a growth mindset and resilience. As one might expect, the growth mindset has been associated with promoting resilience (Dweck et al., 1995; Dweck, 2006), while the fixed mindset has not been because individuals with a growth mindset may "interpret setbacks, challenges, and effort as effective approaches to improving their ability, intelligence, and experience" (Zeng et al., 2016, p. 2).

For example, Zeng, Hou, and Peng (2016) tested the relationships between growth mindset, school engagement, psychological well-being, and the underlying mechanism of resilience by which growth mindset is believed to influence school engagement as well as psychological well-being. Zeng et al. (2016) conducted a study with 1260 students from both primary schools and middle schools measuring growth mindset, resilience, and psychological well-being. They explained resilience as the capacity to cope effectively with past and present adversity and the capacity to maintain and recover high well-being in the face of life adversity (Zeng et al., 2016). Resilience has been shown in previous research to be connected to the well-being of students (Ryff, Love, Essex, & Singer, 1998) and the underlying mechanism of growth mindset that can guide academic achievement (Yeager & Dweck, 2012). Zeng et al. (2016) found results that supported their hypotheses, that growth mindset is positively associated with resilience, school engagement, and psychological well-being. Specifically, their structural equation model

(SEM) "shows that developing high levels of growth mindsets in students predicts higher psychological well-being and school engagement through the enhancement of resilience" (Zeng et al., 2016, p. 5). They concluded that resilience was a partial mediator between growth mindset, psychological well-being, and school engagement, but there may be other possible intervening variables.

Growth mindset can increase the resilience level of students through self-regulatory processes. Burnette et al. (2013) performed a meta-analysis of implicit theories and self-regulation and found that implicit theories predict distinct self-regulatory processes which then predict goal achievement. Self-regulatory processes are connected to resilience because they promote learning and goal achievement when there are challenges or setbacks. They conceptualized self regulation with three key processes: goal setting, goal operating, and goal monitoring. Burnette et al. (2013) found that the strongest mediators of the connection between incremental theories and achievement are mastery-oriented strategies and the evaluation of goal setting without negative emotions. Mastery-oriented strategies in reaching a goal are described as persistent and tenacious (Dweck, 2000).

Resilience and Emotional Intelligence

For someone to be resilient or exhibit resilient behavior it seems that they must have a certain level of emotional intelligence (Matthews, Zeidner, & Roberts, 2002). In other words, resilience will be produced by the various dimension of EI. This is the view that will be used in the current study. Some see these as so closely related that EI has been theorized to contain resilience as one of its dimensions (Bar-On, 1997). There has been research that explored the relationship between resilience and EI (Armstrong,

Galligan, & Critchley, 2011; Magnano, Craparo, & Paolillo, 2016; Schneider, Lyons, &

Khazon, 2013). It has been suggested that EI is strongly related to resilience because

those who show emotionally intelligent behavior are more adaptive and experience mild

impairment as opposed to suffering significantly under stressful conditions or negative

life events (Armstrong et al., 2011). EI also helps in coping with stressful times because

people are able to "accurately perceive and appraise their emotions, know how and when

to express their feelings, and can effectively regulate their mood states" (Salovey, Bedell,

Detweiler, & Mayor, 1999, p. 191). Armstrong et al. (2011) had 414 adults (24 to 58

years old) complete a self-report EI measure, a psychological distress measure, and a

measure observing how they socially adjusted to negative life events. Participants were

put into three classes: vulnerable, average, and resilient based on the relationship between

life events and distress. Their results revealed that the relationship between negative life

events and ability to adapt varies in four EI dimensions (emotional self-awareness,

emotional expression, emotional self-control, and emotional self-management.) Higher

EI scores, especially emotional self-management, predicted being part of the resilient

class.

Schneider et al. (2013) examined the relationship between EI and stress resilience.

Participants (N= 126) completed an ability measure of EI and then engaged with two

stressors, a mental arithmetic task and a speech task. The researchers also assessed

stressor appraisals, emotions, and physiological stress responses over time.

Undergraduate psychology students completed the MSCEIT online, then were seated in a

sound-dampened chamber and had a physiological baseline measure completed with a

cardiograph and blood pressure monitor. Participants rated their experiences of positive

and negative affect at baseline and after both tasks. Instructions were given for the tasks,

stress appraisals were then assessed with a two-item scale, and then the tasks were

completed. They concluded that the four EI branches of the MSCEIT facilitate resilient

stress responses in men and women. Emotional perception facilitated significantly lower

negative affect for men for the duration of the two stressors. Emotional facilitation was

found to not be related to stress responses, and the authors suggested this was possibly

due to the motivated performance tasks that were evaluated that could be unrelated to

emotional facilitation. Emotional understanding facilitated resilience and it was

demonstrated that higher emotional understanding in men was associated with more

positive affect for the duration of the stressors than lower emotional understanding. Men

high in emotional managing were not threatened by the tasks, compared to men low in

emotional managing that were. Schneider et al. (2013) suggested that women were more

negatively affected by the stressors than men, with "less positive affect after the first task,

more negative affect after both tasks, and had lower cardiac output at baseline" (p. 911).

Women scored higher on all four EI branches than men, especially on the EI branch

emotional managing, but no EI branches were significantly related to appraisals for

women. Schneider et al. (2013) demonstrated that aspects of EI produce benefits for

current stress by facilitating psychological and physiological responses.

Magnano et al. (2016) examined the role of resilience and emotional intelligence

in achievement motivation. Specifically, they focused on exploring resilience and its

relationship to EI in the framework of positive organizational behavior (POB). POB is

the effects of motivation and performance in the workplace. Those who are resilient have

been described as having an optimistic and energetic approach to life, are open-minded

and inquisitive, and have high positive emotionality (Tugade & Fredrickson, 2004; Block & Kremen, 1996; Klohnen, 1996). Magnano et al. (2016) demonstrated that EI is positively related to achievement motivation, EI is positively related to resilience, and resilience mediates the relationship between EI and achievement motivation. They found these results with 488 workers aged between 18 and 55 years by measuring achievement motivation (Achievement Subscale of Work and Organizational Motivation Inventory), resilience (Resilience Scale for Adult – RSA), and emotional intelligence (Self Report Emotional Intelligence Test – SREIT). Their results are significant in understanding the connection between EI and resilience in workplace achievement. They conclude that "the ability to accurately perceive, access and regulate emotions helps to develop some self-regulatory processes (of emotions and motivation) that enable people to deal better with a stressful work environment" (Magnano et al., 2016, p. 15). This means that those who are emotionally intelligent have the potential to form resilience and handle stressful situations in a more helpful way.

Growth Mindset and Emotional Intelligence

The previous cited research has indicated the significant relationship between resilience with growth mindset and resilience with EI. The underpinning commonality between growth mindset and EI demonstrated in the research is resilience, as both growth mindset and EI are shown to be precursors to resilience. Resilience is crucial in school engagement, psychological well-being, and achievement motivation. Individuals with a growth mindset are able to evaluate setbacks, challenges, and effort as helpful methods to cultivating their abilities, intelligence, and experience (eg. Zeng et al., 2016). Those who exhibit high emotional intelligence have the ability to adapt to stressful situations,

appropriately perceive and evaluate emotions, express feelings, and regulate moods (e.g. Armstrong et al., 2011; Salovey et al., 1999). Cabello and Fernández-Berrocal (2015) confirmed that implicit theories about EI and emotions impact performance on the MSCEIT. One of their objectives was to examine how implicit theories of emotion and EI are related to each other, but nonetheless are distinguishably different constructs. Implicit theories of emotions are the underlying beliefs someone has about how malleable emotions are. The focus for implicit theories of emotions pertains to beliefs about the controllability of emotions, which is less broad than implicit theories of EI. Implicit theories of emotions have been found to predict student emotion regulation strategies (Romero, Master, Paunesku, Dweck, & Gross, 2014). Cabello and Fernández-Berrocal (2015) had 688 adults, ranging from 18 to 73 years old, complete the MSCEIT, Implicit Theories of Emotion scale, and Implicit Theories of EI scale. In their study they only used the total EI score from the MSCEIT for statistical analysis. The Implicit Theories of Emotion instrument indicated participants' implicit theories about the malleability of emotions and the Implicit Theories of EI instrument indicated participants' implicit theories about the malleability of EI. Their second hypothesis was confirmed to be true: implicit theories of EI has a greater link to ability EI and is more predictive of ability EI than implicit theories of emotion (Cabello & Fernández-Berrocal, 2015). They found that implicit theories of both emotion and EI correlated significantly with ability EI scores on the MSCEIT, meaning that incremental theorists show higher ability EI. Although implicit theories of emotion and EI are related, a major difference between the two is that theories of EI explained more of the difference in ability EI than theories of emotion.

Effects of Priming

A number of studies have demonstrated that priming can be used to activate schemas and influence an individual's behavior. For example, Langer, Djikic, Pirson, Madenci, and Donohue (2010) demonstrated how subjects primed with information about pilots having better vision and given a chance to role play as pilots using a simulator were found to have better vision than subjects in the control condition. Priming has also been explored in the field of implicit theories of ability.

Thompson and Musket (2005) primed entity theorists and incremental theorists with either social comparison or mastery goals. A three-item measure called the implicit views of ability scale (Hong, Chiu, & Dweck, 1995) was utilized to screen participants' implicit views of ability before the study. Participants were told they had to complete two tasks: a simultaneous discrimination task, and Unicursal tasks. The first task created the experience of success and non-contingent failure by manipulations generated on the computer. They were then put into either the success feedback condition or the failure feedback condition. Prior to participants completing the tasks in the failure condition, they were told explicitly about research that shows that their ability to solve cognitive problems is reliably linked to general intelligence. Before participants in the success condition completed the tasks they were told in neutral language about the possibility for cognitive problems to reveal intellectual ability. In both conditions, participants were presented with four 10-trial simultaneous discrimination tasks on a computer with the letters 'A' and 'T' on either the left or right side of the screen. The letters varied in terms of four features: the letter itself (A or T), the colour of the letter (black or white), the size of the letter (small or large), and the shape of the border in which the letters were

contained (square or circle). Participants had to identify whether one of the four features was present on the left or right side of the screen, which was prearranged by the experimenter. Those in the failure condition were given feedback on the tasks generated by the computer that did not incorporate the participant's actual responses, but rather false feedback (based on a fixed sequence of responses for each of the four problems) that showed participants got 50% correct. Those in the success condition received feedback generated by the computer that corresponded with the response of participants, which led all participants to succeed in solving all four problems. After the simultaneous discrimination task was completed participants were primed for either social comparison goals or mastery goals through a recorded message. Those primed for mastery goals were told that the Unicursal tasks they were about to do were 'problems that can be solved by persistence, just sticking at them until you achieve mastery'. Those primed for social comparison goals were told 'It is up to you how many problems you aim to solve [and that] most people solve around three problems'. The 96 undergraduate students were then given 12 minutes to solve 16 Unicursal (tracing puzzle) tasks.

They found that those with an entity view of ability responded most positively to mastery goal priming compared to social comparison goal priming, whether or not they received success or failure feedback. Students with an incremental view of ability performed well regardless of both the goal orientation prime and if they were initially exposed to success or failure. These outcomes offer support for the advantages of priming students with an entity view of ability to pursue mastery goals. It also shows that students with an incremental view of ability who endorse a mastery goal orientation display

greater persistence than individuals with an entity view of ability who endorse social

comparison goals.

Thompson and Musket's (2005) study is based on implicit theories of ability, goal

orientations, and responses to achievement demands (Elliot & Dweck, 1988). According

to early understandings of the growth mindset, individuals with an entity theory of ability

have goals focused on social comparison or performance, to gain favor from others or

avoid negative feedback (Dweck, 1996). Those with a social comparison goal have a

helpless response, characterized by proving one's ability, avoiding challenge, and not

persisting in the face of failure (Rhodewalt, 1994). Alternatively, those with an

incremental theory of ability have mastery or a learning goal orientation, which is

associated with learning to be competent, adaptive learning patterns, and positive

academic achievement (Anderman & Midgley, 1997; Dweck & Leggett, 1988). A

mastery goal leads to a mastery oriented pattern, which is described as seeking challenge,

persistence, and heightened effort in the face of failure (Rhodewalt, 1994). Thomson and

Musket (2005) demonstrated the effects of goal priming on performance in both

incremental and entity theorists.

Priming implicit theories of math intelligence has been demonstrated to impact

academic performance, perceived performance, academic motivation, and test anxiety.

This was shown in Burns and Isbell (2007) with two studies demonstrating the

relationship between self-theories and different math ability levels. The difference

between the two studies was the first included students highly skilled in math and the

second included students with a wide range of math abilities. Participants were all

measured for their math implicit theories before both studies, so that they could be

categorized as entity or incremental theorists. Study one had 84 female undergraduates skilled in math (possessed high SAT scores between 550 and 730). Study two had 69 female undergraduates with a broad range of math skills (possessed SAT scores between 300 and 750). All participants were primed with either a malleable or fixed view of math intelligence before completing a math test. Those in the malleable condition prime read about how math abilities can be changed depending on the environment and those in the fixed condition prime read about how math abilities are fixed and that it is one form of intelligence. Priming the malleability of math intelligence had more benefits for incremental theorists moderately skilled in math than for those with high math abilities. Priming math intelligence as fixed had more benefits for entity theorists highly skilled in math than for those with an average math ability. In the first study with participants highly skilled in math, they found entity theorists with a malleable prime experienced less pre-test anxiety compared to a fixed prime. Participants also perceived better math test performance when primed with a malleable view compared to a fixed view. Entity theorists with a fixed prime performed better than incremental theorists on the math test. The second study with a variety of skill levels showed incremental theorists in the malleable prime had higher motivation (attempted more math questions) versus the fixed prime. Burns and Isbell (2007) demonstrated the complexity of results for priming malleable and fixed views of math intelligence. Thus, priming the malleability of math intelligence may not benefit everyone in terms of performance.

Priming Ability EI

Schutte and Malouff (2012) explored priming ability emotional intelligence by activating self-schemas for effective emotional functioning. They had 53 university

students assigned to either an emotional ability prime condition or a control condition, and then immediately after, all the participants completed the online MSCEIT. Participants in the prime condition received instructions to write for 5-10 min about "experiences involving perception, understanding, and management of emotion in the self and in others and their own use of emotion" (Schutte & Malouff, 2012, p. 616). The results showed that those in the emotion ability prime condition performed significantly better on the total emotional intelligence tasks compared to the participants in the control writing condition. Analysis of the results revealed that age was not significantly associated with the scores on the MSCEIT (the average age was 35.06 years). Also, there were no significant gender differences in scores for total emotional intelligence scores. Schutte and Malouff (2012) carried out a second study that compared priming successful emotional competency schemas to other primes. These alternative primes included: priming of motivation to show emotional competency, priming of general rather than self-referent emotional competent schemas, and attention to self. The results showed that the activation of successful emotional competency self-schemas were the most influential on the MSCEIT. One practical implication of this study would be to suggest the use of priming emotional intelligence in promoting psychological health and well-being.

Priming Ability EI and Developing a Resilient Growth Mindset

The cited research regarding implicit theories and emotional intelligence has revealed similar positive outcomes for those who exhibit emotionally intelligent behavior and for those who tend to hold a growth mindset. The common underlying mechanism between emotional intelligence and growth mindset is believed to be resilience. The current study attempted to explore the relationship between emotional intelligence and

growth mindset with attention to a resilience measure and the effect of priming ability

emotional intelligence on the MSCEIT and growth mindset measure. Hypotheses for the

study included these predictions: (1) Priming ability EI would positively affect EI,

growth mindset, and resilience, (2) priming ability EI would have greater positive effects

for those with an incremental theory of EI compared to those with an entity theory of EI,

(3) EI would be positively related to growth mindset.

Method

Participants

The sample included 71 undergraduate students (59 female or 83.1%, 11 male or

15.5%, one did not answer) from a small university in Ontario who agreed to participate

in the study. The majority were students from psychology courses in the first semester

during the fall of 2018. They were asked to contribute to the study during the middle of

the semester when midterms take place. Of the 71 that gave permission, one did not

complete all of the measures, leaving 70 completed participants who completed all of the

measures. The median age of the participants was 22.5, with an age range of 18 to 45,

and 75% of participants were in the 18 to 22 range. There were 21 participants in the first

year of their undergraduate degree, 15 students in their second year, 17 students in their

third year, 12 students in their fourth year, and five students in their fifth year. The

sample of students was diverse, with a racial demographic breakdown including 43

students who identified as Caucasian, 12 students who identified as Black, three students

who identified as Chinese, three students who identified as Filipino, three students who

identified as Latin American, two students who identified as Aboriginal, two students

who identified as Korean, two students who identified as South Asian, and one student

who identified as Arab. Thirty-six students were in the prime condition and 34 were in the control condition.

Apparatus

Informed consent form. This was a form created by the researcher with the purpose of notifying participants of the purpose of research, the requirements of involvement in the study, the potential risks of the study, the benefits of the research, the nature of the voluntary participation, an assurance of confidentiality, the incentives for participating, contact information if they have questions, requesting GPA range, and an area to sign to indicate agreement to participate (see Appendix A).

Priming questions – (Schutte & Malouff, 2012). There were questions with the purpose of priming ability emotional intelligence taken directly from Schutte and Malouff's (2012) study (see Appendix B). The prime questions were administered on paper. The emotional intelligence prime contained seven questions asking the participant to recall when they had recently behaved in an emotionally intelligent manner (e.g. "Think of a time during the past several days when you successfully managed (regulated) your own emotion. What was the emotion and how did you manage it?" p. 616). Schutte and Malouff designed the emotional intelligence primes to be based on the model of successful emotional intelligence found in Mayer, Salovey, and Caruso (2004). The control prime contained seven questions about activities done in the previous day (i.e. "What you did between the time you woke up and mid-morning?", Schutte & Malouff, 2012, p. 616). The time anticipated to complete either set of questions was between five and ten minutes (Schutte & Malouff, 2012).

MSCEIT –Mayer-Salovey-Caruso Emotional Intelligence Test (Mayer, Salovey, & Caruso, 2003). This 141-item test measures ability emotional intelligence and tests a person's skill in solving emotionally based problems (see Appendix C for more information on this scale). The test provides a total EI score and two Area scores: Experiential EI and Strategic EI. Experiential EI is based on a person's ability to identify emotions and apply them actively in thinking. Strategic EI is based on a person's ability to consciously process their emotions and to manage their emotions across different social settings. These two area scores are then divided into four branch scores(additional subscores are mentioned in Appendix C): Emotion Perception (Faces and Pictures) and Emotion Facilitation of Thought (Facilitation and Sensations) as part of Experiential EI, with Emotional Understanding (Changes and Blends), and Emotional Management (Emotion Management and Emotional Relations) as part of Strategic EI. The MSCEIT tests emotional reasoning and problem solving through objective questions and real life scenarios of potential problems. The test has been found to have a high level of reliability, with Cronbach's alpha at α= .91 and test-retest reliability at r=.86 found by Brackett and Mayer (2003) (Schutte & Malouff, 2012; Mayer, Salovey, & Caruso, 2012).The MSCEIT is only available through the MHS.com website, and scored results were provided for our analysis through that site.

Demographic information survey. A survey was distributed electronically asking a series of demographic information including, age, year in university, gender, ethnicity, and time spent studying (see Appendix D).

Extra credit form. There was a sheet that provided columns for the names of participants as well as the class they would like to receive the extra credit (see Appendix E).

Personal Implicit Theories of Emotional Intelligence (Cabello and Fernández-Berrocal, 2015; Castella and Byrne, 2015; Dweck, 1999). To measure personal implicit theories of emotional intelligence a scale was adapted from Dweck (1999), originally created to evaluate implicit theories of intelligence (see Appendix F). The current study utilized a scale that has never been used before, based off the combined research of Cabello and Fernández-Berrocal (2015), Castella and Byrne (2015), and Dweck (1999). It includes eight items, four assessing entity theories (e.g. I don't think I personally can do much to increase my emotional intelligence.) and four assessing incremental theories (e.g. With enough time and effort I think I could significantly improve my emotional intelligence level.) The original measure developed by Dweck (1999) evaluated people's implicit theories of intelligence with eight statements on a 6-point Likert scale. An example of a statement from this measure: "You have a certain amount of intelligence, and you can't really do much to change it." Cabello and Fernández-Berrocal (2015) adapted the original Dweck (1999) measure to evaluate implicit theories of EI and the Cronbach alpha was 0.74. They added the word "emotional" before the word "intelligence" on the eight original statements. An example of a statement from this measure: "You have a certain amount of emotional intelligence, and you can't really do much to change it." The original Dweck (1999) measure was also adapted by Castella and Byrne (2015) to measure personal implicit theories of intelligence, which had a reliability of α=0.90. Castella and Byrne (2015) changed the

original Dweck (1999) measure by rewording the eight statements from a second-person perspective to a first-person perspective. The word "you" was changed to the word "I" in the eight statements. An example of a statement from this measure: "I don't think I personally can do much to increase my intelligence." The new scale used in the present study combined the two adaptations to the original implicit theories of intelligence scale by Dweck (1999) into one measure. This means the eight statements contained the word "emotional" and the word "I". The reliability for the newly adapted scale used in this study was found to be α=0.934. The test was taken by participants reporting their agreement to the eight statements on a 6-point Likert scale. The four entity scale items were then reverse scored, and all eight items were summed with higher scores indicating greater endorsement of incremental beliefs about personal emotional intelligence.

BRS - Brief Resilience Scale (Smith et al., 2008). Participants' resilience was measured using the Brief Resilience Scale (BRS), which was developed by Smith et al. (2008) (See Appendix G). The scale is a six item measure (e.g. I tend to bounce back quickly after hard times.) Participants responded to the statements on a 5-point Likert scale. One study found the reliability for the BRS to be α=0.70 (Zeng et al., 2016). In this study the reliability was found to be α=0.871.

Procedures

The research study was approved by the Tyndale Research Ethics Board before beginning. The participants were recruited through word of mouth by the supervisor sharing in her different psychology classes about the study and other psychology professors sharing about the study in their classes. The supervisor and other psychology professors also emailed students in their respective classes informing them about the

study. Posters were placed around the school specifying the dates of the study, where to sign-up online, and a brief description of the focus of the study. The poster was also shared on the Tyndale UC Students Facebook group twice suggesting students to sign-up. The incentive for students to participate was 2% credit in a psychology class in which they were enrolled. Any students interested were allowed to sign up online and choose a time slot to come into a reserved room during an afternoon or evening. There was a maximum of seven participants allowed in each session. The study was conducted in cooperation with Elder (in progress) who was measuring the effects of priming ability emotional intelligence on cognitive text anxiety (this means that participants' data were used to address separate research questions in these two studies). Between October 29th and November 15th, students were asked to come into the computer lab at CH227. The lab was booked for three hours to give them plenty of time to complete the study, filling out the necessary scales online and on paper. When students first came in they were given an overview of all that would be involved if they participated in the study. Students then read and signed the informed consent form to show that they agreed to participate in the study. The prime or control questions were then completed and once all participants had finished they were given a minute math test with addition, subtraction, and multiplication questions for Elder's study (in progress). Participants then completed an assessment for cognitive test anxiety (Cassady & Johnson, 2001), the results of which are reported in Elder (in progress). This concluded the paper portion of the study, and students then completed the online portion, which included the MSCEIT (delivered through the MHS website) and the Personal Implicit Theories of Emotional Intelligence Scale, Brief Resilience Scale, and demographic information survey (delivered via

SurveyMonkey.com). Students had to provide their subject number online so that they could be matched with the information they provided on paper. Once the online part of the study was complete participants were finished with the study and wrote their name and the psychology class they would like to receive 2% credit for on the extra credit form. The whole process took an average of 75 minutes for the participants to complete everything. All participants were given their own copy of the informed consent form to take with them. After all the data was collected by November 15th it was ready to be analyzed by the principal researcher. The supervisor received the results of the MSCEIT tests from the provider of the tests and shared them with the principal researcher.

Results

The first hypothesis was that priming ability EI would positively affect EI, growth mindset, and resilience. To address the impact of the prime on growth mindset and resilience, independent samples t-tests were carried out. First, an independent samples t-test was carried out to test the hypothesis that the prime would influence growth mindset scores. The prime (M=38.0) did not result in significantly higher growth mindset scores than the control (M=37.65), t(68) = .202, p>.05. Next, an independent samples t-test was carried out to test the hypothesis that the prime would influence resilience. The prime (M=2.96) did not result in significantly higher resilience scores than the control (M=3.34), t(68) = -1.749, p>.05. See Table 1 to see the means for growth mindset and resilience. There was not a significant difference between the prime condition and the control condition in ability EI, growth mindset, and resilience. The mean differences were in the right direction (greater mean for prime condition) for the growth mindset scale while the mean differences were in the wrong direction (greater mean for control

condition) for the resilience scale. The prime did not have the desired effect on ability EI, growth mindset, and resilience.

	Growth Mindset	Resilience
Prime (n=36)	38.0	2.96
Control (n=34)	37.65	3.34

Table 1: Means for Growth Mindset and Resilience

In order to test the impact of the prime on EI, and also to test the second hypothesis of the study that priming ability EI would have a greater positive effect for those with an incremental theory of EI (growth mindset) compared to those with more of an entity theory of EI (fixed mindset), a series of seven two-way ANOVAs (growth/fixed mindset x prime/control condition) was carried out for each of the seven main subscores of EI obtained from the MSCEIT. Growth mindset scores were divided into moderate and high growth mindset by examining the growth mindset mean (M=37.83) and putting participants below the mean into moderate growth mindset and participants higher than the mean into high growth mindset. The distribution was negatively skewed and there were very few people with a truly fixed mindset in the sample so participants are referred to as having a moderate growth mindset or high growth mindset. Participants with a moderate growth mindset had a growth mindset score of 39.5 or lower and those with a high growth mindset had a growth mindset score of 40 or higher. The lowest possible score possible on the Personal Implicit Theories of EI Scale is 8 while the maximum is 48.

Estimated Marginal Means of Branch Score = Understanding Emotions
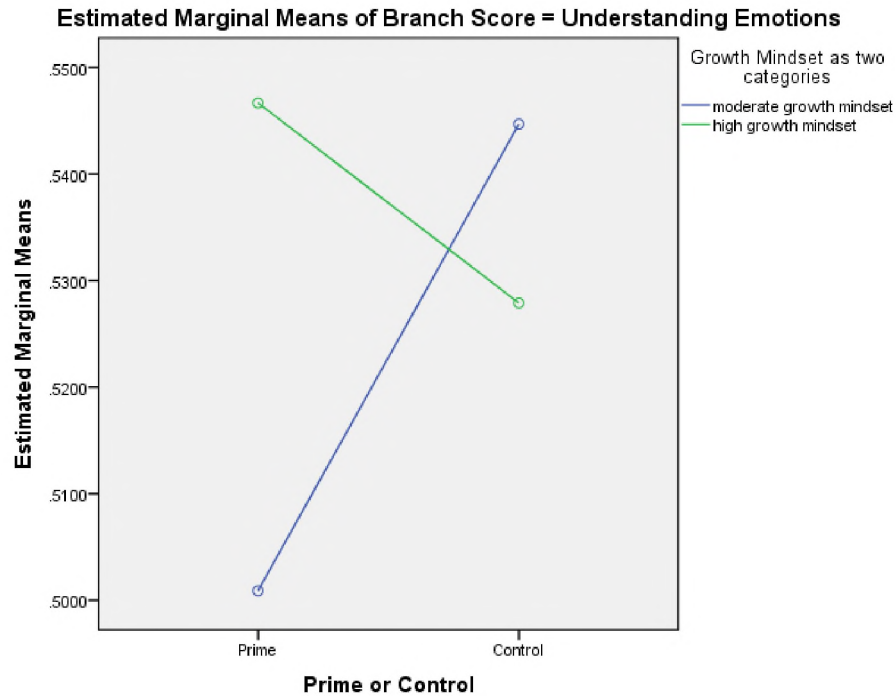
Figure 1

Unfortunately, most of these ANOVAs did not result in significant outcomes. However, one interesting interaction was found, as follows. A two-way (growth mindset x condition) ANOVA was carried out to determine whether the branch emotional intelligence score for understanding emotions was related to growth mindset or condition. There was not a main effect of condition, $F(1, 66) = .662$, $p>.05$. Thus, condition did not influence the branch emotional intelligence score for understanding emotions. There was not a main effect of growth mindset, $F(1, 66) = .889$, $p>.05$. Thus growth mindset did not influence the branch emotional intelligence score for understanding emotions. There was an interaction between condition and growth mindset, $F(1, 66) = 4.141$, $p<.05$. Thus, the discrepancy between moderate and high growth mindset was greater for those in prime condition. See Figure 1 for an illustration of the difference between moderate growth mindset and high growth mindset in both conditions for understanding emotions.

Below are the details documenting the other two-way ANOVA results which did not produce significant findings. A second two-way (growth mindset x condition) ANOVA was carried out to determine whether the branch emotional intelligence score for managing emotions was related to growth mindset or condition. There was not a main effect of condition, $F(1, 66) = .756$, $p > .05$. Thus, condition did not influence the branch emotional intelligence score for managing emotions. There was not a main effect of growth mindset, $F(1, 66) = .107$, $p > .05$. Thus growth mindset did not influence the branch emotional intelligence score for managing emotions. There was no interaction between condition and growth mindset, $F(1, 66) = .127$, $p > .05$. Thus, no interaction between condition and growth mindset influenced the branch emotional intelligence score for managing emotions.

A third two-way (growth mindset x condition) ANOVA was carried out to determine whether the branch emotional intelligence score for using emotions was related to growth mindset or condition. There was not a main effect of condition, $F(1, 66) = 5.391$, $p > .05$. Thus, condition did not influence the branch emotional intelligence score for using emotions. There was not a main effect of growth mindset, $F(1, 66) = 1.071$, $p > .05$. Thus growth mindset did not influence the branch emotional intelligence score for using emotions. There was no interaction between condition and growth mindset, $F(1, 66) = .175$, $p > .05$. Thus, no interaction between condition and growth mindset influenced the branch emotional intelligence score for using emotions.

A fourth two-way (growth mindset x condition) ANOVA was carried out to determine whether the branch emotional intelligence score for perceiving emotions was related to growth mindset or condition. There was not a main effect of condition, $F(1,$

66) = .011, p>.05. Thus, condition did not influence the branch emotional intelligence score for perceiving emotions. There was not a main effect of growth mindset, F (1, 66) = .051, p>.05. Thus growth mindset did not influence the branch emotional intelligence score for perceiving emotions. There was no interaction between condition and growth mindset, F (1, 66) = .163, p>.05. Thus, no interaction between condition and growth mindset influenced the branch emotional intelligence score for perceiving emotions.

A fifth two-way (growth mindset x condition) ANOVA was carried out to determine whether the area emotional intelligence score for emotional experiencing was related to growth mindset or condition. There was not a main effect of condition, F (1, 66) = 1.075, p>.05. Thus, condition did not influence the area emotional intelligence score for emotional experiencing. There was not a main effect of growth mindset, F (1, 66) = .413, p>.05. Thus growth mindset did not influence the area emotional intelligence score for emotional experiencing. There was no interaction between condition and growth mindset, F (1, 66) = .218, p>.05. Thus, no interaction between condition and growth mindset influenced the area emotional intelligence score for emotional experiencing.

A sixth two-way (growth mindset x condition) ANOVA was carried out to determine whether the area emotional intelligence score for emotional reasoning was related to growth mindset or condition. There was not a main effect of condition, F (1, 66) = 1.053, p>.05. Thus, condition did not influence the area emotional intelligence score for emotional reasoning. There was not a main effect of growth mindset, F (1, 66) = .632, p>.05. Thus growth mindset did not influence the area emotional intelligence score for emotional reasoning. There was no interaction between condition and growth

mindset, $F(1, 66) = 2.287$, $p > .05$. Thus, no interaction between condition and growth mindset influenced the area emotional intelligence score for emotional reasoning.

A seventh two-way (growth mindset x condition) ANOVA was carried out to determine whether the total score for overall emotional intelligence was related to growth mindset or condition. There was not a main effect of condition, $F(1, 66) = 1.453$, $p > .05$. Thus, condition did not influence the total score for overall emotional intelligence. There was not a main effect of growth mindset, $F(1, 66) = .002$, $p > .05$. Thus growth mindset did not influence the total score for overall emotional intelligence. There was no interaction between condition and growth mindset, $F(1, 66) = 1.118$, $p > .05$. Thus, no interaction between condition and growth mindset influenced the total score for overall emotional intelligence. Thus, in reference to the prediction from Hypothesis #1, that the prime would impact ability emotional intelligence scores, no evidence of this was found in these analyses. Additionally, in reference to the prediction of Hypothesis #2, that the prime would have a greater impact for those higher in growth mindset, the only evidence of this was found in the interaction between growth mindset and condition on the branch score for understanding emotions.

To test the third hypothesis, which predicted that EI would be positively related to growth mindset, correlations were computed between each EI subscore and growth mindset scores. Since the prime was expected to impact both of these, the correlations were computed separately for the prime and control condition. The results show there were no significant correlations for growth mindset with any of the emotional intelligence scores.

	Total: Overall Emotional Intelligence	Area: Emotional Experiencing	Area: Emotional Reasoning	Branch: Managing Emotions	Branch: Using Emotions	Branch: Understanding Emotions	Branch: Perceiving Emotions
Growth	.002	-.057	.077	.319	-.112	-.136	-.001
Resilience	.358*	.354*	.236	.127	.270	.261	.296

*p< .05. Correlation is significant

Table 2: Correlations between each EI subscore with growth mindset and resilience, for the control condition (n=34).

	Total: Overall Emotional Intelligence	Area: Emotional Experiencing	Area: Emotional Reasoning	Branch: Managing Emotions	Branch: Using Emotions	Branch: Understanding Emotions	Branch: Perceiving Emotions
Growth	-.128	-.213	.035	.022	-.192	.034	-.202
Resilience	-.294	-.258	-.246	-.098	-.226	-.287	-.249

*p< .05. Correlation is significant

Table 3: Correlations between each EI subscore with growth mindset and resilience, for the prime condition (n=36).

An additional hypothesis that was not previously mentioned was that there would be a significant relationship between resilience and emotional intelligence. The overall emotional intelligence score and the area score for emotional experiencing was correlated to resilience in only the control condition. Table 2 contains the control condition and shows the significant correlation values for overall emotional intelligence and emotional experiencing with resilience. Table 3 contains the prime condition and shows that there were no significant correlations for resilience or growth mindset with any of the emotional intelligence scores.

Discussion

The results of the study indicate that the emotional intelligence prime did not have the desired effect. Schutte and Malouff's (2012) study demonstrated that emotional intelligence ability can be primed. They found approximately half a standard deviation

difference in emotional intelligence performance between the successful emotional competency self-schema prime and control condition. Their research study used the active self-schema model formed by Wheeler, DeMarree, and Petty (2007) for interpreting their results. Schutte and Malouff (2012) confirmed the hypothesis that priming parts of the self-schema relating to successful emotional competency leads to higher scores of ability emotional intelligence on the MSCEIT.

There could be multiple reasons for the prime not working in the intended way. The current study had two measures completed in the time between the prime or control condition and the MSCEIT, a performance test of emotional competency. This included the minute math test and the cognitive test anxiety scale for Elder's study (in progress). The estimated time for participants going from the prime or control condition to the MSCEIT is seven minutes. The MSCEIT takes an average of 40 minutes to complete and the effects of the prime are temporary. One possible explanation for the prime not impacting MSCEIT scores, growth mindset, and resilience in a significant way is that too much time elapsed between the prime and the scales. It is also possible that the time taken to complete the MSCEIT, growth mindset scale, and BRS attenuated any priming effects as well. Additionally, the prime could have possibly activated aspects of the self-schema that relates to one's own successful emotional competencies but having to complete the minute math test and cognitive test anxiety scale disrupted this active self-schema. Another possible reason the prime might not have worked as intended is that the instructions given to participants varied slightly from those of Schutte and Malouff (2012). In their study they instructed both the prime and control group to write for five to ten minutes so that the structure and length was the same. In the present study there was

no instruction regarding time given in either the prime or control condition. There was also a difference in environment between the present study and Schutte and Malouff (2012). The present study was done in a room with both prime and control participants answering the questions on paper while Schutte and Malouff (2012) had participants accessing a website to answer the prime or control questions on their own. The expectation according to the first hypothesis was that the prime would positively impact ability EI, growth mindset, and resilience, but the prime did not have the intended effect on EI, and the altered EI did not impact growth mindset or resilience.

The second hypothesis predicted that priming ability EI would have greater impact on those with a high growth mindset rather than a moderate growth mindset. This hypothesis presumes a significant impact of the prime on EI, which did not occur. However, it is also true that the prime did not interact with the degree to which participants showed a growth mindset for their EI. Further, having a growth mindset related to EI did not lead to significantly higher EI scores on the majority of the EI subscales, with the exception of understanding emotions. In this case, for the EI branch of understanding emotions, the discrepancy between moderate and high growth mindset was greater for those in prime condition. This one significant result is similar to Cabello and Fernández-Berrocal (2015) when it was confirmed that implicit theories about EI and emotions impact performance on the MSCEIT. They found that implicit theories of both emotion and EI correlated significantly with ability EI scores on the MSCEIT, meaning that incremental theorists show higher ability EI. This means there is a positive relationship between ability EI and growth mindset; the more malleable you view EI the more emotionally intelligent you are. It is puzzling that there was not more of a positive

relationship between ability EI and growth mindset other than the one branch of EI in the present study.

In the present study there was a negatively skewed distribution with few truly fixed mindset people, while Cabello and Fernández-Berrocal (2015) had more of an even distribution. The present study had a theories of EI mean of 38 in the prime and 37.65 in the control. Cabello and Fernández-Berrocal (2015) had a theories of EI mean of 18.92 and a theories of emotions 19.69. There is a sharp contrast in mean scores for theories of EI between the two studies and this could have to do with the procedure or participants. The present study was conducted with multiple people (minimum one and a maximum of seven) at a time during different sessions held in a computer lab. Participants in Cabello and Fernández-Berrocal (2015) completed the measures themselves at home. This difference in environment is a possible explanation for the difference in large difference in mean scores between the two studies. The present study might have been influenced by social desirability bias, which is a response bias where participants tend to respond in a way that will have them viewed favorably by others. With multiple participants in the room along with one of the principle researchers it is more likely that social desirability bias had an impact on how people respond to the Personal Implicit Theories of EI scale.

Other possible explanations for the differing outcomes between the present study and Cabello and Fernández-Berrocal (2015) are the age range and incentives. Cabello and Fernández-Berrocal (2015) had a wider age range from 18 to 73 years (M=36.02) versus the present study age range of 18-45 (M=22.05). It could be that the greater age range brought in more varied ability EI and theories of EI. The incentive for the present study was 2% extra credit in a psychology class for students enrolled in a psychology class

(almost every participant) and there was no incentive offered in Cabello and Fernández-Berrocal (2015). The incentive in the present study could have slightly reduced the average time to complete the study because of a focus on receiving the incentive rather than altruistic or topic interest reasons.

The findings for hypothesis three showed no significant correlations between growth mindset and EI, with the only significant correlation between resilience and EI (total EI score and emotional experiencing area) in the control group. Magnano et al. (2016) examined the role of resilience and emotional intelligence in achievement motivation and found that EI enables people to deal better with stressful work environments. Inasmuch significant correlations were found between resilience and EI, the findings in the present study are consistent with those of Magnano et al. (2016) showing the significant relationship between resilience and EI. Participants with high emotional intelligence have greater potential to form resilience and handle difficult situations better.

The present study utilized a scale that has never been used before. It was an adaptation of three scales combined to form the Personal Implicit Theories of Emotional Intelligence scale. It is possible that because a new scale was used it led to inaccurate readings of implicit theories of EI. The reliability for the newly adapted scale used in this study was found to be $\alpha=0.93$, although this does mean automatically high validity. It may be that what was intended to be accurately measured (implicit theories of EI) was not actually measured. There might have been a social desirability bias, where people might have felt they should see EI as malleable, whether or not they actually do. This

would have led to the negatively skewed distribution, and also to the lack of a significant relationship between implicit theories of EI and ability EI.

Limitations and Future Directions

There are multiple limitations in the methodology of the study that might have led to a lack of significant results, including: group setting, instructions for prime, number of instruments, and the collaboration with Elder (in progress). The study was conducted with multiple people in a room at the same time so the likelihood that social desirability bias had a negative impact on participants completing the measures is high. Both prime and control condition participants were in the room at the same time so it is possible that some participants were aware of the difference in questions for the conditions and it affected responses. Participants were given explicit instructions in Schutte and Malouff (2012) to take five to ten minutes to complete the prime or control questions on a computer. In the present study, participants were not given explicit instructions regarding the amount of time to complete the prime or control questions on paper. It is possible participants in the present study rushed or did not adequately answer the prime or control questions because they were not given instructions on how long they should take to complete it.

There might have been a lack of significant results because of the minute math test and cognitive test anxiety scale for Elder (in progress) that was completed between the prime and the MSCEIT. The collaboration with Elder might have reduced any possible temporary impact the prime could have had on the MSCEIT, Personal Implicit Theories of EI scale, and the BRS. Respondent fatigue, which occurs when participants become tired of the task of completing measures or surveys and the quality of the data

they provide begins to deteriorate, may also have led to a lack of significant results. The study lasted an average of 75 minutes and it is possible that participants' ability to reflect and put effort into their responses diminished over that time, especially for the final key measures of the study (Personal Implicit Theories of EI and the BRS). The Personal Implicit Theories of EI scale is an eight item measure that contains similar wording in each item but is very slightly different in meaning. For this measure in particular, there is a chance that respondent fatigue occurred because participants felt like each statement was essentially the same.

There were limitations in the demographics of the sample with majority Caucasian female 18-22 years old. A sample with more males, wider age range, and a greater variety in ethnicities would be ideal for future research. One final limitation of the study was the reliance on a single instrument to assess ability EI. An additional ability EI measure might have led to significant relationships which did not occur with the MSCEIT. The Levels of Emotional Awareness Scale (LEAS) by Lane, Quinlan, Schwartz, Walker, and Zeitlin (1990) or Situational Test of Emotional Understanding/Management (STEU/STEM) by MacCann and Roberts (2008) are more specific measures of particular areas associated with ability EI, developed to assess one of the four branches of Mayer and Salovey's (1997) model. It is possible that because these ability EI measures differ in their method of measurement and scoring to the MSCEIT different results could have been produced. It is also difficult to be certain whether implicit theories influence EI or whether EI influences implicit theories.

Future research could examine the relationship between implicit theories of EI and EI over time. It may be possible that those with high EI develop incremental theories

of EI over time. Future research could be done to explore whether manipulating implicit theories of EI permanently increases EI functioning. For example, longitudinal interventional studies could also test whether training that addresses implicit theories of EI can lead to better mental and social functioning than EI training alone.

Future studies should also examine the relationships between implicit theories of EI and self report measures of EI to examine whether the relationship between implicit theories and ability measures of EI also shows up with trait measures of EI. If someone has an incremental theory about their intelligence and emotions, this should help form a path toward learning and development (Dweck, 2012; Yeager and Dweck, 2012). Future research could also explore further the degree to which priming can be used to improve EI. Potentially, priming could be combined with interventions to maximize the many possible benefits of EI for people. The current study failed to demonstrate an impact of the prime on EI, but it furthered research on the relationship between implicit theories of EI, ability EI, and resilience.

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Appendix A

Informed Consent Form

This study has been approved by the Tyndale Research Ethics Board (REB). For any

questions or concerns you may have about participation rights you may contact the

principal researchers at delyeld4@gmail.com, nathank091@hotmail.com or the REB at

reb@tyndale.ca

PROJECT TITLE: The Effect of Priming on Emotional Intelligence and Test Anxiety,

Priming Emotional Intelligence and Developing a Growth Mindset

THE PURPOSE OF THE RESEARCH: To examine the affects of priming on emotional

intelligence, test anxiety, growth mindset, and resilience

PRINCIPAL RESEARCHERS: Deanna Elder, Psychology Student at Tyndale University

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SUPERVISOR: Dr. Nancy Ross, Psychology professor at Tyndale University College

and Seminary, 3377 Bayview Avenue, Toronto, ON. Phone: 416-226-6620 ext.2708.

Email at nross@tyndale.ca

WHAT THE STUDY ENTAILS: You have the choice of participating in this study. If

you choose to do so, you will be asked to fill out a survey, an emotional intelligence

measure, a test anxiety scale, a growth mindset scale, a resilience scale, and one

demographic survey. The estimated time to complete the entire package is one and a half hours. You will have up to two hours to complete the study.

RISKS: There is small risk associated with this study. You may feel psychological or social discomfort answering some questions. If you feel uncomfortable answering any of the questions you may stop and there will be no consequences. There is a risk involved of the principal researcher knowing the identity of the person the student number belongs to, but if it is known there will be the strictest confidence in not sharing the details. You may also feel eye strain or uncomfortable with sitting at the computer for the duration of the study. However, if you feel uncomfortable with this risk, you may choose to not agree to that part of the study and/or drop out of the study altogether with no consequences.

BENEFITS: By partaking in this study, you will help in furthering the research on how different aspects of emotional intelligence, test anxiety, and priming possibly interact with each other which is an area that is currently being developed and explored. Also, exploring how emotional intelligence can be primed has the potential to foster a growth mindset and increase resilience. The information gathered from this study will help those in academia investigate the benefits of programs that encourage skills in emotional intelligence and using primes to possibly ease test anxiety, and enhance growth mindset.

VOLUNTARY NATURE OF PARTICIPATION: Participation in this study is completely voluntary. You may cease to participate in the study at any time and it will not affect your relationship with your academic institution or the researcher in any way at all.

WITHDRAWL: You may choose to withdraw from the study at any moment of time and there will be no consequences in the relationship between you and the researcher, with Tyndale University College and Seminary, or with any other group associated with the study. If you choose to withdraw, all information gathered will be destroyed as soon as possible.

CONFIDENTIALITY: The information given will be held in the strictest confidence by the researcher. The MSCEIT authorized professional will only partake in analyzing the data and will know nothing of the association between the data and the participant. The demographic information will be general to avoid recognition of persons. The student numbers will not be associated with any data. All data will be encoded and will be ensured the greatest level of confidentiality. All published data will not be individually available but will be published as part of a different group score. The data will be kept in locked filing cabinets and will be digitalized on password encrypted files that will be destroyed after five years.

INCENTIVES: If you choose to partake in this study, you will be compensated with extra credit in a designated psychology course of your choosing. Please see the researcher at the end of study to write down the class you would like to receive the credits in and your student number

QUESTIONS: If you have any further questions about the study or your participation, please contact the principal researchers, Deanna Elder or Nathan Koropatwa by email: deanna.elder@mytyndale.ca, Nathan.Koropatwa@mytyndale.ca

SIGNATURES

I, _____, consent to participate in two studies, one on priming, emotional intelligence, and test anxiety, conducted by Deanna Elder, and one on priming, emotional intelligence, growth mindset, and resilience, conducted by Nathan Koropatwa. I know the risks and benefits involved and I accept them. I understand the nature of the study, what it entails, and I wish to participate in it. I understand that my information will be kept totally confidential. My signature ensures my consent to this study. If I agree to giving the researchers my student number, I understand it will be kept completely confidential and I allow them to use it for data collection in this research project. If I do not agree, I understand that there will be no penalties for me doing so.

Signature of participant:_____   Date:_____

Signature of principal researcher:_____   Date:_____

Signature of principal researcher:_____   Date:_____

Student #:_____

Appendix B

Emotional Intelligence Prime Questions - A

1. Think of a time during the past several days when you were aware of what emotion
    you were experiencing. What was the emotion and how did you recognize the
    emotion?

2. Think of a time during the past several days when you were aware of what emotion
    another person was experiencing. What was the emotion and how did you recognize
    the emotion?

3. Think of a time during the past several days when you understood the cause of an
    emotion you were experiencing. What was the emotion and what was the cause?

4.   Think of a time during the past several days when you understood the cause of an
    emotion another person was experiencing. What was the emotion and what was the
    cause?

5.   Think of a time during the past several days when you successfully used an emotion
    to help you think more effectively (for example in solving a problem). What was the
    emotion and how did you use the emotion?

6. Think of a time during the past several days when you successfully managed
    (regulated) your own emotion. What was the emotion and how did you manage it?

7.   Think of a time during the past several days when you successfully managed
    (regulated) another person's emotion. What was the emotion and how did you
    manage it?

Emotional Intelligence Prime Questions - B

1. What you did between the time you woke up and mid-morning?

2. What you did between mid-morning and lunch time?

3. What did you did between lunch time and mid-afternoon?

4. What did you do between mid afternoon and dinner time?

5. What did you do between dinner and the evening?

6. What did you do between the evening and night time?

7. What did you do from the rest of the night until you went to sleep?

Appendix C

The Mayer-Salovey-Caruso Emotional Intelligence Test

MSCEIT™

Mayer-Salovey-Caruso Emotional Intelligence Test™

Personal Summary Report
By John D. Mayer, Peter Salovey & David R. Caruso

Name: **Jill Brown**
Administration Age: 30
Gender: Female
Administration Date: Friday, February 22, 2002

What Is Emotional Intelligence?

Although the term "emotional intelligence" has come to mean many different things, it consists of two parts: emotion and intelligence, as the test authors most recently define it (e.g., Mayer, Salovey, & Caruso, 2000). "Emotions" refer to the feelings a person has in a relationship. For example, if a person has a good relationship with someone else, that individual is happy; if the person is threatened, he or she is afraid. Intelligence, on the other hand, refers to the ability to reason with or about something. For example, one reasons with language in the case of verbal intelligence, or reasons about how objects fit together in the case of spatial intelligence. In the case of emotional intelligence, one reasons with emotions, or emotions assist one's thinking. That is, emotional intelligence, as measured by the MSCEIT™, refers to the capacity to reason with emotions and emotional signals, and to the capacity of emotion to enhance thought.

The Mayer-Salovey Ability Model of Emotional Intelligence

Dr. Peter Salovey and Dr. John D. Mayer first published their work on these concepts in 1990 (Mayer, DiPaolo, & Salovey, 1990; Salovey & Mayer, 1990). They then published a revised theory of emotional intelligence (Mayer & Salovey, 1997). This theory further elaborated the existence of four related areas of emotional intelligence. They called these areas "branches" to illustrate that the abilities were arranged in a hierarchical order from the least psychologically complex to the most psychologically complex. Mayer and Salovey defined these specific abilities as *the ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth* (Mayer & Salovey, 1997). Here is a summary of this four-branch model of emotional intelligence: *Perceiving and Identifying Emotions* - the ability to recognize how you and those around you are feeling. *Using Emotions to Facilitate Thought* - the ability to generate emotion, and then reason with this emotion. *Understanding Emotions* - the ability to understand complex emotions and emotional "chains," and how emotions transition from one stage to another. *Managing Emotions* - the ability to manage emotions in yourself and in others.

What Does the MSCEIT™ Measure?

The MSCEIT™ is a performance test of emotional intelligence. A performance test provides an estimate of a person's ability by having them solve problems. The MSCEIT™ asks you to solve problems about emotions, or problems that require the use of emotion.

Emotional Intelligence In Context

Emotional intelligence is one of hundreds of parts of our personality. Is it the most important predictor of success in life or work? It probably is part of "success" but it is not the sole ingredient, nor is it the most important one.

The Scores You Will See

The MSCEIT™ yields a total emotional intelligence score as well as two area scores (Experiential and Strategic Emotional Intelligence). There are also four Branch scores, for Perceiving Emotion, Facilitating Thought, Understanding Emotion, and Managing Emotion. Finally, scores for eight individual Tasks are reported.
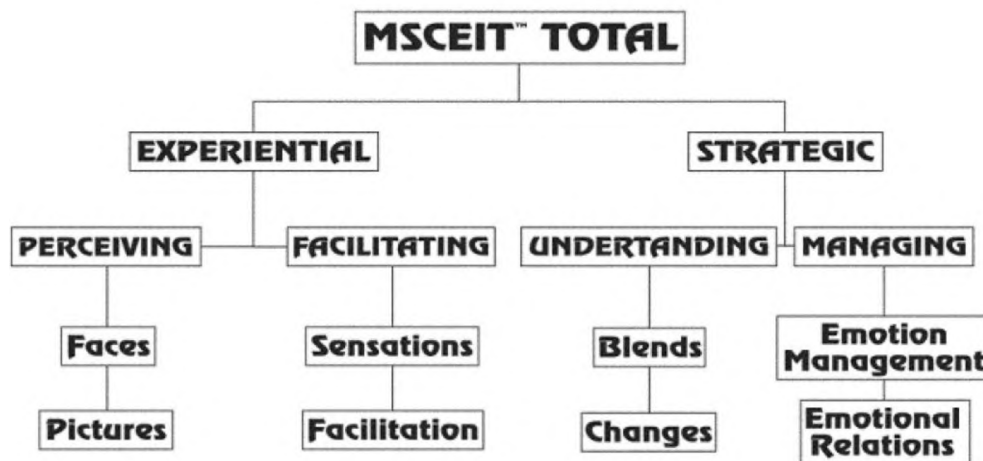
MSCEIT™ Scores

How MSCEIT™ Scores Are Reported

The MSCEIT™ scores are reported like traditional intelligence scales so that the average score is 100 and the standard deviation is 15. If a person obtains a MSCEIT™ score around 100, then they are in the average range of emotional intelligence. A person obtaining a score of 115 is one standard deviation above the mean, or, at the 84th percentile. If someone obtains an overall MSCEIT™ score of 85, they are one standard deviation below the mean, or, at the 16th percentile. Area, branch and task level results are scored in the same manner. As with all tests, the MSCEIT™ compares individuals against the normative sample, not with the population in general.
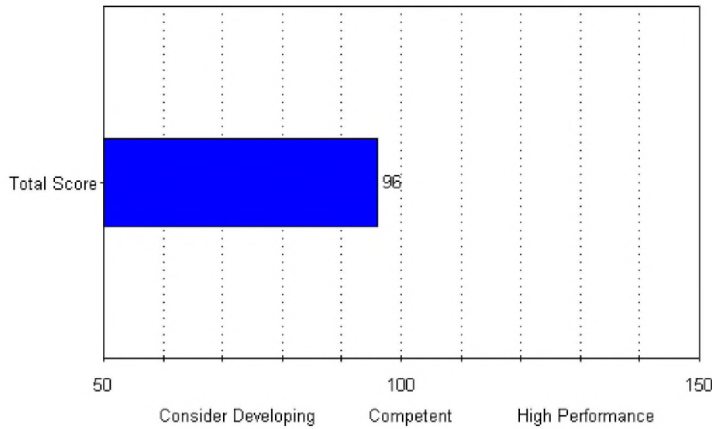
Variability of Scores

Your score is an approximate result. If you were to take the test again, there is a good chance that your score would be different, so please keep that in mind as you interpret your results. Each part of the MSCEIT™ has greater, and less, variability. Your scores are reported along with a 90% confidence interval or range. If you took the test a second time, you could expect with 90% confidence that you would receive a new score within the interval. In addition, test scores represent your actual ability, as well as other factors such as motivation, fatigue, language fluency, and so forth.

Total Emotional Intelligence Score

The following graph shows the standard score for total emotional intelligence. As with any global score, the MSCEIT™ Total score is a convenient summary of a person's performance on this test. The Total score compares an individual's performance on the MSCEIT™ to those in the normative sample. This score is a good place to start when analyzing your level of emotional intelligence.

Your MSCEIT™ Total Score is 96. If you took the test again, your score would likely change somewhat due to the variability that is a part of the testing process. To determine how much your score might change, we have calculated a 90% confidence interval for your MSCEIT™ Total Score. This confidence interval is from 89 to 103 and reflects the range of scores within which you can be 90% confident your true ability falls.

MSCEIT™ Total Score
The Total emotional intelligence score indicates an overall capacity to reason with emotion, and to use emotion to enhance thought. It reflects the capacity to perform well in four areas: (1) the ability to perceive emotions, (2) to access, generate, and use emotions so as to assist thought, (3) to understand emotions and emotional knowledge, and (4) to regulate emotions so as to promote emotional and intellectual growth (after Mayer and Salovey, 1997, p. 8). After the Total Score, the Area Scores provide you with a closer look at your MSCEIT™ performance.

Area Scores
Now, let's look at your two MSCEIT™ Area Scores. These are Experiential Emotional Intelligence and Strategic Emotional Intelligence.
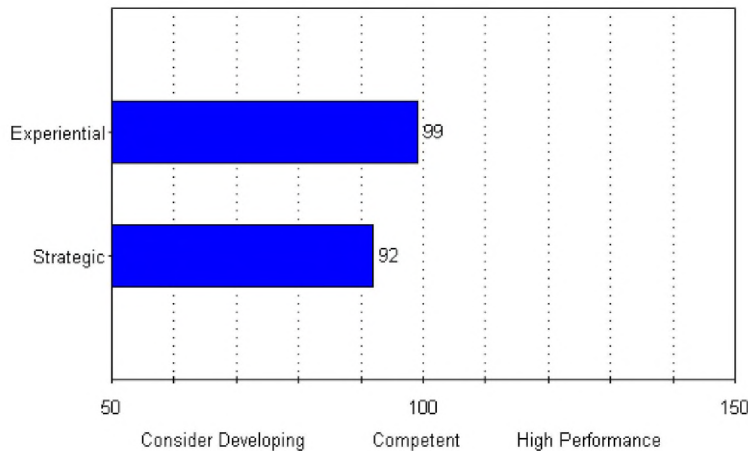
The 90% confidence interval for your Experiential Area score is 91 to 107, and for your Strategic Area score is 84 to 101.

Experiential Emotional Intelligence Score The Experiential Emotional Intelligence Score (EEIS) focuses on the identification of emotion and its productive use in thought. Your EEIS indicates the capacity to feel emotion and to do so productively. It focuses on more basic-level processing of emotion (as opposed to the rational understanding and management of emotion). The EEIS is based on the Perceiving and Facilitation Branches of the emotional intelligence model. These two Branches may rely more on how feelings *feel* and how the individual responds and classifies such feelings.

Strategic Emotional Intelligence Score Strategic Emotional Intelligence involves higher-level, conscious processing of emotions. These Branches require reasoning *about* emotions, how they develop over time, how they may be managed, and how to fit emotional management into social situations. They are strategic in the sense that one may use such information to chart an emotional course for oneself and others according to personal and social needs. The score is based on your performance on the Understanding and Managing Branches of emotional intelligence.

Branch Scores

Recall that the MSCEIT™ is based on the four branch model of emotional intelligence. Next, let's examine your four MSCEIT™ Branch Scores to learn more about your emotional abilities
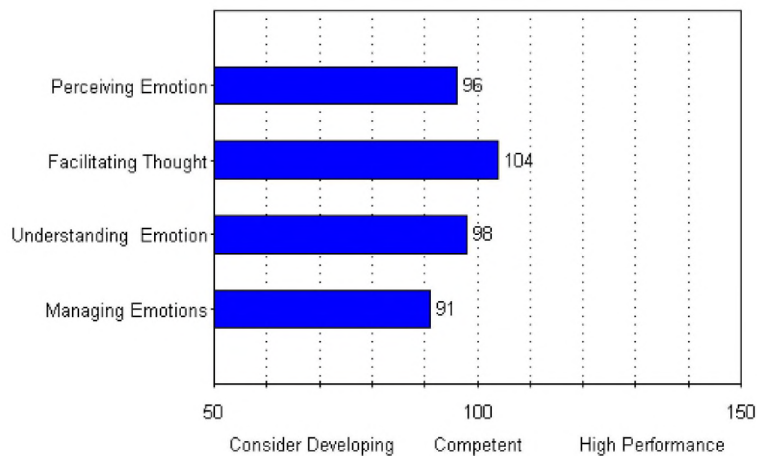
The 90% confidence interval for your Perceiving Emotions Branch score is 88 to 103, for your Facilitation of Thought Branch score is 93 to 115, for your Understanding Emotions Branch score is 87 to 109, and for your Managing Emotions Branch score is 81 to 101.

Perceiving Emotion

The Perceiving Emotions score concerns your ability to recognize how you and those around you are feeling. The first branch of the emotional intelligence model involves the capacity to perceive feelings accurately. Emotional perception involves paying attention to, and accurately decoding, emotional signals in facial expressions, tone of voice, and artistic expressions.

Accurate appraisal of emotions starts with attending to emotional expressions. If a person is uncomfortable with another person's expression of negative emotions, for instance, and they turn away every time they sense another's discomfort, they may not perceive accurately that other person's emotional state. While this Branch of the model also includes accurate appraisal of one's *own* emotions and the expression of emotion, the MSCEIT™ measures the appraisal of emotions in others and in images. Evidence suggests that the accurate appraisal of others is related to accurate perception in oneself as well.

Facilitating Thought
Your Facilitating Thought score is the ability to employ your feelings to enhance the cognitive system (thinking) and, as such, this ability can be harnessed for more effective problem-solving, reasoning, decision-making, and creative endeavors. Of course, cognition can be disrupted by emotions, such as anxiety and fear, but emotions also can prioritize the cognitive system to attend to what is important and even focus on what it does best in a given mood. Emotions also change the way we think, creating positive thoughts when a person is happy and negative when the person is sad. These changes in viewpoint force us to view things from different perspectives. Such shifting viewpoints may foster creative thinking.

Understanding Emotion
Emotions form a rich and complex interrelated symbol set, and many people discuss the existence of an "emotional language." Your score on the Understanding Emotions Branch reflects being able to label emotions and to reason with them at an effective understandable level. Understanding what leads to various emotions is a critical component of emotional intelligence. For instance, annoyance and irritation can lead to rage if the cause of the irritation continues and intensifies. Knowledge of how emotions combine and change over time is important in our dealings with other people and in enhancing our self understanding.

Managing Emotions
Your Managing Emotions score concerns one's capacity to manage emotions successfully, when appropriate. Managing emotions means that you remain open to emotional information at important times, and closed to it at other times. It means successfully managing and coping with emotions. It also means working with feelings in a judicious way, rather than acting on them without thinking. For example, reacting out of anger can be effective in the short-run, but anger that is channeled and directed may be more effective in the long-run.
It is important to understand that the ability to successfully manage emotions often entails the awareness, acceptance, and use of emotions in problem solving. When we speak of emotional regulation, some people understand the term to mean the suppression of emotion, or rationalization of emotion. Managing Emotions involves the participation of emotions in thought, and the ability to allow thought to include emotions. Optimal levels of emotional regulation likely will neither minimize nor exaggerate emotion.

Task Scores
Individual Task scores should be interpreted with caution as they are not, on average, as reliable individually as are the Branch and Area scores. Nonetheless, the individual Task scores may be of use in the interpretative process and are supplied below.
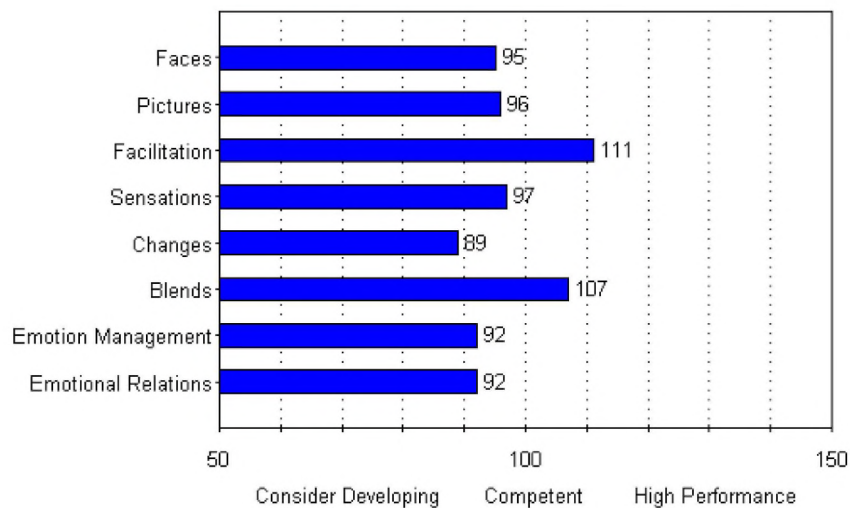
The following sections describe what each of the Task scores measure. You can use these descriptions to help you better understand your results. The scores on these tasks will vary much more than will your other MSCEIT™ scores, and therefore, must be used with great caution.

Perceiving Emotions
Faces Task - In this task, designed to measure Perceiving Emotions, you were asked to identify how a person feels based upon their facial expression.
Pictures Task - Emotional perception also involves determining the emotions that are being expressed in music, art, and the environment around you. This aspect of Perceiving Emotions was measured by the task in which you indicated the extent to which certain images or landscapes expressed various emotions.

Facilitating Thought
Facilitation Task – Different moods assist certain kinds of problem solving. The Facilitation Task measures your knowledge of how moods interact and support our thinking and reasoning.
Sensations Task - This Branch was measured by a task in which you were asked to compare different emotions to different sensations, such as light, color and temperature.

Understanding Emotions
Changes Task – The Changes Tasks measures your knowledge of experiencing possibly conflicting emotions in certain situations and understanding emotional "chains," or how emotions transition from one to another (e.g., how contentment can change into joy).
Blends Task - Understanding emotions refers to being able to connect situations with certain emotions (e.g., knowing that a situation involving a loss might make someone feel sad).

Managing Emotions
Emotion Management Task - The Emotion Management task asked you to rate the effectiveness of alternative actions in achieving a certain result, in situations where a person had to regulate their own emotions.
Emotional Relations Task - This task asked you to evaluate how effective different actions would be in achieving an outcome involving other people.
Remember: Task scores are rough approximations of one's actual ability in these areas. These scores have much greater variability than do your other MSCEIT™ scores.

Supplementary Scales
This section provides the results for the Scatter Score, Positive-Negative Bias Score, and Omission Rates.

Scatter Score
Scatter Score = 90
High standardized scatter scores (>115) indicate a profile where there are large discrepencies in the results for the different tasks. Such scores may indicate a lot of variation in skill in different elements of emotional intelligence. Moderate scores show a typical amount of variation in the task results. Low scores (<85) indicate very consistent scores across the tasks.

Positive-Negative Bias Score
Positive-Negative Bias Score = 89
High standardized bias scores (> 115) indicate a more than typical tendency to respond to the pictorial stimuli by assigning a positive emotion. Moderate scores indicate a typical amount of positive and negative assignments to the pictorial stimuli. Low scores (<85) indicate that more than a typical amount of negative assignments to stimuli have been made.

Omission Rates
Omission Rate Overall = 0.00%
Omission Rate Section A = 0.00% (Faces)
Omission Rate Section B = 0.00% (Facilitation)
Omission Rate Section C = 0.00% (Changes)
Omission Rate Section D = 0.00% (Emotion Management)
Omission Rate Section E = 0.00% (Pictures)
Omission Rate Section F = 0.00% (Sensations)
Omission Rate Section G = 0.00% (Blends)
Omission Rate Section H = 0.00% (Emotional Relations)
If the overall omission rate is greater than 10%, the validity of the administration should be brought into question. If the omission rate for a given task is 50% or more, the score for that section (as well as associated Branch, Area and Total scores) will not be computed.

Percentiles
Some people prefer to view their scores as *percentiles* rather than as IQ-type scores. Percentile scores range from 1 to 99, where a score of 1 means that you would be at the lowest level compared to others, and a score of 99 would mean that your results would place you higher than 99% of the people in the standardization sample.

Total MSCEIT™   : 40

Experiential Area Score   : 48

  Perceiving Emotions Branch   : 38
    Faces Task   : 37
    Pictures Task   : 39

  Facilitating Thought Branch   : 61
    Facilitation Task   : 77
    Sensations Task   : 43

Strategic Area Score   : 30

  Understanding Emotions Branch   : 45
    Changes Task   : 23
    Blends Task   : 69

  Managing Emotions Branch   : 28
    Emotion Management Task   : 29
    Emotional Relations Task   : 29

Scoring Method: General

Demographic Correction: None

In developing the MSCEIT™, we examined several different ways to score the answers. We can compare your answers to those of experts on emotions, called the expert consensus, or to the ratings of other people, called the general consensus (or general scoring).

Our research has shown that the general and expert consensus scoring methods yield almost identical results.

The General Scoring Method was used in your report.

Cautionary Remarks

Scoring of the MSCEIT™ is based on North American data. People from emerging or non-Western nations taking the test, and non-native English language speakers, should be alert to the fact that cultural variation can lower scores on the MSCEIT™, and should check local norms where available. More generally speaking, an individual's personal functioning is the product of many qualities, and no one test captures them all. For that reason, the use of the MSCEIT™ with other psychological assessment instruments is encouraged. In addition, the consideration of MSCEIT™ results should always be considered in the context of consultation with a qualified professional.

Concluding Comments

Emotional intelligence can be defined and measured as an intelligence, or as a set of abilities. The MSCEIT™ provides you with an estimate of these emotional skills. Tests like the MSCEIT™ are designed to help people learn more about themselves and to better understand their strengths. We are excited about the MSCEIT™ and we hope that it will provide you with useful information and insights. Thank you for taking the MSCEIT™!

John (Jack) D. Mayer Peter Salovey David R. Caruso

Item Response Table

The following response values were entered for the items on MSCEIT™.

Item #	Response	Item #	Response	Item #	Response	Item #	Response
1.	1	37.	A	73.	C	109.	5
2.	4	38.	E	74.	B	110.	1
3.	2	39.	E	75.	B	111.	1
4.	1	40.	C	76.	2	112.	5
5.	1	41.	D	77.	2	113.	5
6.	1	42.	C	78.	2	114.	1
7.	4	43.	B	79.	1	115.	4
8.	3	44.	B	80.	1	116.	5
9.	2	45.	C	81.	3	117.	4
10.	1	46.	A	82.	2	118.	5
11.	1	47.	B	83.	1	119.	1
12.	5	48.	B	84.	1	120.	3
13.	3	49.	C	85.	1	121.	E
14.	1	50.	B	86.	1	122.	A
15.	1	51.	D	87.	1	123.	A
16.	4	52.	B	88.	1	124.	E
17.	1	53.	C	89.	1	125.	A
18.	1	54.	D	90.	1	126.	D
19.	2	55.	A	91.	1	127.	D
20.	4	56.	E	92.	1	128.	B
21.	1	57.	E	93.	4	129.	E
22.	1	58.	A	94.	1	130.	E
23.	5	59.	C	95.	3	131.	B
24.	3	60.	D	96.	2	132.	A
25.	5	61.	C	97.	1	133.	E
26.	2	62.	D	98.	1	134.	A
27.	1	63.	B	99.	2	135.	A
28.	1	64.	D	100.	1	136.	E
29.	4	65.	E	101.	1	137.	B
30.	1	66.	D	102.	4	138.	B
31.	1	67.	C	103.	1	139.	D
32.	1	68.	D	104.	1	140.	B
33.	2	69.	E	105.	2	141.	B
34.	4	70.	B	106.	5		
35.	1	71.	B	107.	5		
36.	B	72.	A	108.	1		

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Mayer, J. D., DiPaolo, M. T., & Salovey, P. (1990). Perceiving affective content in ambiguous visual stimuli: A component of emotional intelligence. Journal of Personality Assessment, 54, 772-781.

Mayer, J. D. & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. Sluyter (Eds.), Emotional Development and Emotional Intelligence: Implications for Educators (pp. 3-31). New York: Basic Books.

Mayer, J. D., Salovey, P., & Caruso, D. R. (2000). Models of emotional intelligence. In R. J. Sternberg (Ed.), Handbook of Intelligence (pp. 396-420). Cambridge, England: Cambridge University Press.

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

End of Report

Appendix D

Demographic Information Survey

Please tell us a bit more about yourself.

4. How old are you? Note: you MUST be a legal adult (18+ years old) to participate in this study.

○ 18

○ 19

○ 20

○ 21

○ 22

○ 23

○ 24

○ 25

○ Other (please specify)

[   ]

5. What is your current year of study in university

○ First year

○ Second year

○ Third year

○ Fourth year

○ Fifth year or more

○ Other (please specify)

[   ]

6. Are you an undergraduate student?

○ Yes

○ No

○ Seminary

○ Not sure

7. How much do you usually study for a test?

○ 0-3 hours

○ 4-7 hours

○ 8-11 hours

○ 12-15

○ 16-19

○ 20-23

○ 24+ hours

8. What is your gender?

◯ Male

◯ Female

◯ Prefer not to answer

◯ Other (please specify)

[   ]

9. What ethnicity do you identify as? (Check all that apply)

☐ Aboriginal

☐ Arab

☐ Black

☐ Caucasian

☐ Chinese

☐ Filipino

☐ Korean

☐ Latin American

☐ South Asian

☐ West Indian

☐ Other (please specify)

[   ]

Appendix E

Extra Credit Form

Name	Hours taken to complete study	Class For extra credit *must be a psychology class

Appendix F

Personal Implicit Theories of EI

2. This questionnaire has been designed to investigate ideas about emotional intelligence. There are no right or wrong answers. We are interested in your ideas. Using the scale below, please indicate the extent to which you agree or disagree with each of the following statements. Emotional intelligence (EI) refers to the ability of a person to process, understand, and regulate their own emotions and other people's emotions

	Strongly Disagree	Disagree	Mostly Disagree	Mostly Agree	Agree	Strongly Agree
I don't think I personally can do much to increase my emotional intelligence.	○	○	○	○	○	○
My emotional intelligence is something about me that I personally can't change very much.	○	○	○	○	○	○
To be honest, I don't think I can really change how emotionally intelligent I am.	○	○	○	○	○	○
I can learn new things, but I don't have the ability to change my basic emotional intelligence.	○	○	○	○	○	○
With enough time and effort I think I could significantly improve my emotional intelligence level.	○	○	○	○	○	○
I believe I can always substantially improve on my emotional intelligence.	○	○	○	○	○	○
Regardless of my current emotional intelligence level, I think I have the capacity to change it quite a bit.	○	○	○	○	○	○
I believe I have the ability to change my basic emotional intelligence level considerably over time.	○	○	○	○	○	○

Appendix G

BRS – Brief Resilience Scale

3. Please indicate the extent to which you agree with each of the following statements by using the following scale:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I tend to bounce back quickly after hard times.	◯	◯	◯	◯	◯
I have a hard time making it through stressful events.	◯	◯	◯	◯	◯
It does not take me long to recover from a stressful event.	◯	◯	◯	◯	◯
It is hard for me to snap back when something bad happens.	◯	◯	◯	◯	◯
I usually come through difficult times with little trouble.	◯	◯	◯	◯	◯
I tend to take a long time to get over set-backs in my life.	◯	◯	◯	◯	◯