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IMPULSIVITY AND ENTREPRENEURSHIP: CAN A NEGATIVE TRAIT PRODUCE POSITIVE RESULTS?

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ABSTRACT

Self-control is the capacity to override an impulse and to respond appropriately. Entrepreneurs must exercise the self-discipline required to undertake innovative actions. This paper offers a self-control technique called pre-commitment agreements in which individuals freely make decisions that are intended to bind or constrain themselves in the future. Such directives are often referred to as "Ulysses contracts" after Homer's story of Ulysses who commanded his crew to fasten him to the mast of his ship and ignore him should he beg to be released after hearing the songs of the Sirens. Sometimes, however, adaptive traits such as self-control have a dark side, and dark traits such as impulsivity have a bright side. We explore this paradox by examining the relationship between entrepreneurship and attention-deficit/hyperactivity disorder (ADHD).

INTRODUCTION

> *"You are very lucky. You are blessed with an extraordinarily powerful mind. You have the equivalent of a Ferrari engine for a brain. That's why you are a major winner in the making, a potential champion. But you must address one major problem. You have the brakes of a bicycle; you have difficulty controlling the power of your brain. Sometimes it runs away with you, so you may crash into walls or fail to slow down or stop when you should. This can cost you the race."*
>
> *—Ned Hallowell (2014)*

Self-control touches on nearly all aspects of healthy living: eating right, exercising, avoiding drugs and alcohol, studying more, working harder, spending less. Self-control is another name for managing and changing the self (Baumeister, 2015) and is often used to alter responses such as modifying one's thoughts, emotions, task performance, or impulses. According to Baumeister and Tierney (2011), most of the problems that plague modern Americans—addiction, overeating, crime, domestic violence, prejudice, transmitted diseases, debt, unwanted pregnancy, educational failure, poor performance at work and school, lack of savings, failure to exercise—have some degree of self-control failure as a central aspect.

The words in the epigraph by psychiatrist Ned Hallowell directed to entrepreneurs suggest that self-control issues may be problematic for them. Indeed, Kets de Vries (1985) and Soutschek et al. (2017) have indicated that self-control deficiencies are dysfunctional. Self-control is essential for startup intentions to develop into concrete activities and that the higher the level of self-control, the more likely it is for a person intending to become an entrepreneur to do so (van Gelderen, Kautonen, & Fink, 2015). The ability to maintain control means that emotions are less likely to

cloud their judgment which is critical as doubt, fear, and aversion are common feelings that can come into play when building an enterprise.

Given that self-control appears to be particularly important for entrepreneurs, this paper examines how such individuals may exercise self-control using what is called a precommitment strategy—an approach in which people bind or attempt to restrict beforehand, their future behavior and set of options. First, a discussion of self-control is presented followed by a review of the precommitment method, and then how a protocol can be implemented. The paper then examines how self-management, while desirable, in general, may have problematic consequences for some entrepreneurs. The article closes with a summary of recent research suggesting that entrepreneurs with attention-deficit/hyperactivity disorder (ADHD), often associated with individuals thought to be impulsive and lacking in self-control, may be beneficial.

SELF-CONTROL

Self-control is one of the defining qualities that distinguish human beings from other species (Fujita, 2011). Self-control is defined as the ability of individuals to alter their states and responses, including exerting control over thoughts, emotions, impulses, desires, and performance (Carver & Scheier, 1982; Metcalfe & Mischel, 1999; Tangney, Baumeister, & Boone, 2004). Many also consider self-control to be the deliberate, conscious, and effortful subset of self-regulation that is central to people's ability to get along with others, and achieve goals that may require sacrifices (Baumeister, Vohs, & Tice, 2007), as is the case with starting a new business venture.

Self-control involves an individual's capacity to alter or override dominant response tendencies and to regulate behavior, thoughts, and emotions (Bandura, 1989; Metcalfe & Mischel, 1999; Rothbaum, Weisz, & Snyder, 1982). Researchers often use different labels (e.g., willpower, self-discipline, self-management, impulse control, impulsiveness control, delay of gratification, inhibitory control, conscientiousness, self-regulation, affect regulation, behavior regulation, desire regulation, effortful control, coping, thought control) to refer to ostensibly similar processes. Although substantive differences distinguish some of these constructs, they are all relevant to the concept of self-control.

Low self-control has been associated with risky and deviant behavior (Vazsonyi, Pickering, Junger, & Hessing, 2001), procrastination (Steel, 2007), criminal behavior (Burton, Evans, Cullen, Olivares & Dunawaye, 1999), and some psychiatric disorders including addiction and obesity (Stutzer & Meier, 2015). High self-control individuals, by contrast, are better able to control their thoughts, regulate their emotions, and inhibit their impulses better than low self-control people (Baumeister, Bratslavsky, Muraven, & Tice, 1998), and can focus on strategic goals instead of seeking instant gratification of their needs. Concentrating on the long-term, sticking to a plan, and not getting distracted might be keys to better performance. Therefore, this trait promotes desirable behavior and inhibits undesirable conduct (De Ridder, Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012).

Mischel and other colleagues (e. g., Mischel, Shoda, & Peak, 1988; Shoda, Mischel, & Peake, 1990) showed that children at the age of 4 or 5 who could resist one marshmallow immediately for two marshmallows in the future (e. g., 15-minutes) showed greater academic success, better ability to plan, enhanced ability to deal with frustration and stress, and increased

social competence ten years later, compared to the children that were not able to wait. This suggests that individuals better in controlling their impulses will be able to persist in a task and stick to a planning event when tempting distractions are at hand. Wolfe and Johnson (1995) found that self-control was the only one of 32 personality variables that contributed significantly to the prediction of the grade point average of university students. Additionally, Tangeny et al. (2004) found that self-control predicted many positive outcomes including interpersonal success, school achievement, adjustment, and emotional stability. A study by Hofmann, Luhmann, Fisher, Vohs, and Baumeister (2014) also positively linked self-control to life satisfaction. Moreover, these effects were linear suggesting that higher levels of self-control the more beneficial were such outcomes. Moffitt et al. (2011) likewise found that there does not appear to be a level of self-control beyond which no more benefits are received.

HARNESSING SELF-CONTROL

Because the subjective value of a reward declines as the delay to its receipt increases (Kalenscher & Pennartz, 2008), people are often tempted toward choosing small immediate rewards over larger delayed ones, even when such choices are clearly against their best interests. Developing self-control usually involves preventing short-term temptations from upsetting long-term goals and can be implemented in various ways. In the battle for self-regulation, two techniques have often been used to combat low self-control: willpower and precommitment.

Willpower

Willpower is very important and has been characteristic of humans since Adam and Eve lost paradise. For many, self-control entails the exertion of willpower—the inhibition of impulses when presented with immediate temptations. The classical self-management dilemma implies a battle between a proverbial angel on one shoulder and a devil on the other. Considerable research on self-control has focused on the ability to resist tempting impulses through willpower (also known as "delay of gratification"; Metcalfe & Mischel, 1999; Muraven & Baumeister, 2000); that is, the ability to inhibit an impulsive response that nullifies one's commitment (e.g., to bypass dessert or to forgo tobacco). People can frequently successfully resist temptations even from a very young age (Mischel et al., 1989) and research indicates that the regular practice (interspersed with rest) of small acts of inhibiting moods, urges, thoughts or feelings could increase self-control strength (Muraven, Baumeister, & Tice, 1999). This increased strength should generalize to all tasks that require self-control. Hence, the specific self-control task practiced is unimportant, providing it requires the individual to override or inhibit a response. However, willpower is far from invincible. Research has shown that willpower can be disrupted by emotions and is less successful during "hot" emotion-linked states and it falters when persons are tired or stressed, and can be depleted over time (Loewenstein & O'Donoghue, 2004; Metcalfe & Mischel, 1999; Muraven & Baumeister, 2000).

Research also suggests that attempting to overcome temptation with willpower alone may prove futile, therefore a problematic strategy (e.g., Muraven & Baumeister, 2000; Wegner, 2009). Inhibition is a reactive self-control strategy, engaged *after* a temptation impulse is already

activated and must be restrained. Fortunately, individuals can deploy alternative self-control strategies like precommitment, the voluntary restriction of access to impending temptations. This approach more *proactively* engages potential conflicts and is less susceptible to exhaustion.

Pre-commitment

While most research on self-control has focused on the ability to resist temptation impulses through willpower (Soutschek et al., 2017), evidence indicates that pre-commitment represents a valid alternative that enables humans to make binding choices and thereby avoid impulse control failures in many situations of everyday life (Fujita, 2011; Kalenscher & Pennartz, 2008). Taking away a future choice from oneself to avoid anticipated willpower failures is referred to as pre-commitment (Kurth-Nelson & Redish, 2012; Soutschek et al., 2017). Pre-commitment can be an effective tool to help people follow through on decisions by making it harder for their future self to succumb to temptation. Pre-commitment behaviors can involve many forms, ranging from purely external mechanisms like flushing cigarettes down the toilet, making a promise to oneself that one is unwilling to break, to activities like making a public statement about one's intentions. Precommitment is ubiquitous in human behavior.

Possibly the earliest example of pre-commitment is cited in *The Odyssey* (Homer, 800 B. C. E.) in which Ulysses ordered his seamen to plug their ears with wax and bind him to the mast, so that, no matter how tempting the Sirens' song, it would be impossible for him to cast himself into the sea. Pre-commitment is also known as a Ulysses pact or Ulysses contract and is a freely made decision that is intended to bind oneself in the future. Consider too the Spanish explorer and conquistador, Hernán Cortés, who in 1519, in his quest to conquer the Aztec Empire of Mexico and plunder their riches, gave the order to burn his own ships to eliminate any future means of desertion or any thought of retreat—and to ensure his men were wholly committed to his mission and quest for riches. While Cortés undoubtedly increased the risk to his own life and that of his men, the removal of possible escape brought out the very best of the fighting spirit in his men, leading to dramatic victories. The option of failure was gone because there was no choice, no fallback—conquer as heroes or die. Incredibly, they succeeded in this unlikely defeat of a much larger foe (Wagorn, 2014). The ships were sunk and by doing this, the level of commitment of the men was raised to an extreme degree. The path forward was clear for everyone to see—all or nothing; 100% commitment.

More recent examples of pre-commitment contracts or Ulysses pacts involve the use of advance directives which are legal documents that permit a person to spell out their decisions about end-of-life care ahead of time and to express their wishes to family, friends, and healthcare professionals to avoid confusion later. Other less dramatic examples of binding behaviors, include people placing their alarm clock out of our reach so they will have to get out of the warm bed in the morning, positioning ice cream out of sight, putting money into a retirement account with withdrawal penalties, walking a different way to avoid seeing a store where they could be tempted to buy something, frequenting health retreats where some foods are not permitted, saving in non-interest-bearing Christmas clubs, or buying small packages of cigarettes to limit consumption (Wertenbroch, 1998). Schelling (1992) provided an extreme example in which drug addicts would send self-incriminating letters to an individual they fear the most will find out about their addiction

if there was a relapse into drug use. Russians also have a treatment for alcoholism known as the Dovzhenko method, after a Russian psychiatrist (Finn, 2005), that involves a precommitment contract. The arrangement invites alcoholics to agree to have a small pill implanted underneath their skin, which contains the chemical Disulfiram that has the effect of causing an array of horrible symptoms to those who consume even a trivial amount of alcohol while the treatment is active. In Australia, Canada, and Norway many gambling devices require the gambler to pre-set a limit on his or her bets, after which the slot machine deactivates (Ladouceur, Blaszczynski, & Lalande, 2012).

What characterizes binding behavior is the voluntary imposition of constraints (that are costly to overcome) on one's future decisions in a strategic attempt to resist future enticements and impulses. At its core, precommitment is an accountability system between an individual's future self and their present self to resist temptation. It gives people a way to incentivize their future self into making the best choice when faced with "hot" situations, which Metcalf and Mischel (1999) describe as the "basis of emotionality, fears, as well as passions—impulsive and reflexive—[that], undermines efforts at self-control" (p. 3). A cool system is "cognitive, emotionally neutral, contemplative, flexible, integrated, coherent, spatiotemporal, slow, episodic, and strategic" (p. 3) and the seat of self-regulation and self-control. According to Schelling (1992), there exists a farsighted and cool self that can anticipate that its myopic, impulsive twin will not resist, for example, a drink at a party. Therefore, the future self-increases the costs of consuming alcohol by pre-committing to abstinence; it swallows the drug Antabuse that causes vomiting upon consuming alcohol.

Furthermore, studies by Crockett and her collaborators (e.g., Crockett et al., 2013; Soutschek et al., 2017) found that precommitment was superior to willpower in enhancing self-control. It was more reliable than willpower, actively preserves it for later use when it may be needed, and helps everyone, especially the people with impulse control, make better decisions. In the Crockett et al. (2013) study these researchers presented volunteers with a choice: they could have a small reward immediately or a larger reward for a delay. In the willpower test, the volunteers had to use the strength of will to resist choosing the small reward while they waited for the more significant outcome. But in the pre-commitment condition, they had the option to "pre-commit" to the more substantial prize and thus removing the possibility of choosing the inferior small reward while they waited. Pre-commitment turned out to be the winning strategy. When participants were given the opportunity to pre-commit, they were more likely to wait for the larger reward as opposed to relying on willpower alone. Moreover, the benefits of pre-commitment were most evident for those with the worst willpower. After examining participant's brain scans, they found that simply giving people the option to pre-commit activated their brain's reward network. Enhancing precommitment, therefore, has the potential to increase individual and societal well-being in many respects, especially for impulsive agents (Kurth-Nelson & Redish, 2012), such as entrepreneurs.

IMPLEMENTING A PRE-COMMITMENT STRATEGY

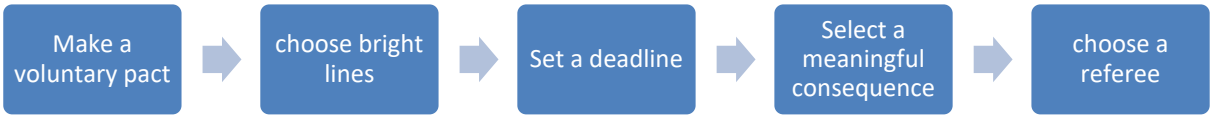
Thus, it seems that precommitment contracts have considerable merit. Two studies suggest some principles that should be considered when developing such an agreement. John, Norris, and

Norton (2014) reported that people who drew up a contract in stickK.com (n. d.; a company that enables users to undertake commitment bonds or promises that they will do something [lose weight, quit smoking, etc.] to reach their personal goals) without stakes was 42.7 percent effective; and with money at risk, it was 82.8 percent successful. If the money was going to a charity the user disliked, the success rate was even higher, 87.1 percent. And the persons who risked more than one hundred dollars did better than those who chanced less than twenty dollars.

Other clues for creating pre-commitment pacts can be garnered from Giné, Karlan, and Zinman (2010). These economists randomly offered some Philippine smokers a precommitment contract with a bank which would give them a weekly opportunity to deposit money into an account paying no interest. Smokers were encouraged to put the amount of money ordinarily spent on cigarettes in the bank, but the level was strictly voluntary—each week they could contribute as much as they wanted, or nothing at all. At the end of six months, the people would submit to a urine test. If the analysis found any nicotine in their body, they would forfeit all the money in the account. Compared to a control group offered a different stop-smoking program, the smokers offered a pre-commitment contract were nearly 40 percent more likely to be nicotine-free after a year. "What began as a pre-commitment turned into something permanent and more valuable: a habit" (Baumeister & Tierney, 2011, p. 154).

These studies offer a blueprint that can contribute to the effectiveness of a pre-commitment contract. At its core, pre-commitment is an accountability system between an individual's future self and their present self to resist temptation. As can be seen below in Figure 1, many of these principles are consistent with goal setting theory (Locke & Latham, 2002):

Figure 1. The Pre-commitment contract



The important first step in the pre-commitment contract is to make it a voluntary pact. In fact, all acts of self-control must, at some point in time, have been self-initiated (Duckworth et al., 2017; Wood, Labrecque, Lin, & Rünger, 2014). Most of the popular theories of self-regulation focus on personal/self-set/voluntary (as opposed to assigned) goals as the most direct determinant of behavior. For example, control theory (Carver & Scheier, 1982), goal theory (Locke, Latham, Smith, & Wood, 1990), and self-efficacy (Bandura, 1989) all recognize the importance of self-set goals and argue that assigned goals affect performance only through affecting one's personal goals. Second self-set person goals can affect one's commitment. For example, Tubbs and Dahl (1991) argued that the discrepancy between one's own goal and an assigned goal was an accurate measure of commitment to the assigned objective and that this discrepancy measure was strongly related to performance. Research by Wright, Hollenbeck, Walz, and McMahan (1995) found that personal self-set goals were accurate predictors of performance. In addition, Erez, Gopher, and Arzil (1990) found self-set goals led to the highest performance levels.

The second step in the pre-commitment agreement calls for bright lines. Bright lines are a metaphor for clear, simple, unambiguous rules (goals) that help self-control. A bright line is specific and measurable. It simplifies decision making and shapes behavior. People cannot help but notice when they cross a bright line (Baumeister & Tierney, 2011). Bright lines allow no room for interpretation, no space for arguing over ambiguity. The choice a person faces is clear: either they follow the rule, or they do not; without any degree of flexibility. For example, an individual who promises himself or herself to drink or smoke "moderately" has not established a bright line, but rather a vague boundary with no obvious point at which an individual goes from moderation to excess. Because the transition is so gradual and the human mind is so adept at overlooking its failings, individuals may not notice when they have gone too far. The unconscious mind works best with clear, explicit, unequivocal rules and plans. Too much ambiguity exists when following the rule, for instance, to drink temperately. Conversely, zero tolerance is a bright line: total abstinence with no exceptions anytime. Examples of bright lines in business could include "I will return all customer calls within 24 hours," or "I will have a one-on-one talk with each direct report each week."

In step three, choosing a deadline, researchers recommend that a person starts with something small and doable. Thirty days may be long enough to establish a habit and not highly difficult to achieve. A short agreement could last for 30-60 days. This timeframe suggests a small win's approach (Soper, Von Bergen & Sanders, 1996; Weick, 1984) in which the scale with which people think about problems affect their ability to solve them. A small win's approach appears less formidable than more comprehensive change tactics and mobilizes action rather than producing perceptions of helplessness by focusing on more local, immediate, and achievable goals. A small success builds on concrete, complete, implemented outcome of moderate importance. As an example, rather than wiring one's jaws shut to prevent overeating one might consider less drastic measures such as dieting or exercise programs before considering surgery or other extreme action.

Perhaps the most successful individual change initiative ever developed is based on a small win's approach. One rule that Alcoholics Anonymous uses is: "don't have a drink today" (Kaskutas, 2009, p. 147). By having the alcoholic's mind focus on simply getting through "today," the task becomes more attainable and achievable. It may not be effortless, but it can be accomplished. When an alcoholic makes it through one day, that day becomes a small win for him or her. They often obtain a sense of accomplishment and begin to feel confident that they can make it through another day, then another, and perhaps a month, six months, or even an entire year or lifetime without having a drink.

Step four of the pre-commitment contract requires that something of value be at stake. Some suggest that it should be significant to the individual. The emphasis on aversive outcomes in many precommitment strategies appears to be consistent with prospect theory research which indicates that individuals are more motivated to avoid a loss than to gain or, as cognitive scientists Tversky and Kahneman (1991) reported, "losses loom larger than corresponding gains" (p. 1047). In other words, bad is more potent than good (Baumeister, Bratslavsky, Fikenauer, & Vohs, 2001). Moreover, individuals tend to feel a loss about twice as severely as they experience again (Schurenberg, n. d.). More formally, loss aversion is the notion that the disutility experienced from a loss is greater than the utility felt from a gain of the same magnitude; for instance, the thought

of losing $100.00 is more impactful (motivating) than the idea of gaining $100.00. The greater impact of negatively framed incentives is also predicted by the negativity bias which finds that people are *less* motivated when an incentive is framed to accrue a gain as compared with when the same incentive that is framed to avoid a loss (Goldsmith & Dhar, 2013).

Finally, individuals should select someone who will hold the precommitment maker accountable and not free them from the obligation they established. Perhaps a family member, a best friend, or someone similar could act as a referee. Increasingly, however, websites like stickK.com (n. d.) can fulfill the role of human referees. For individuals who find it hard to resist online websites like Facebook and YouTube, tools such as SelfControl (n. d.) will temporarily block a person's access to distracting websites so that s/he can work on the things that matter. RescueTime (n. d.) gives an individual an accurate picture of how they spend their time to help them become more productive every day. Similarly, Covenant Eyes (n. d.) is an accountability software program that tracks an individual's web browsing and then emails a list of the sites the person visited anyone the individual designated in advance—like their boss or spouse. To assist dieters some individuals publicly post their weight every week on Facebook or Twitter and potentially humiliate themselves before friends, family, ex-spouses, church members, and co-workers who view these posts.

SELF-CONTROL, IMPULSIVITY, AND ENTREPRENEURIAL ADHD

The very nature of self-control entails overriding some impulses and desires. Often there can be severe, pervasive, and discernable risks to those acting impulsively. To counteract these effects, precommitment contracts can assist entrepreneurs to enhance their self-control. An accumulating body of indicators has depicted that the effects of exercising self-control may be detrimental and harmful (Baumeister & Alquist, 2009). For example, Zabelina, Robinson, and Anicha (2007) found that high self-control dampens affective responding and that individuals high in self-management were perceived as less spontaneous and extraverted than individuals low in self-control. Similarly, Alquist, Ainsworth, Baumeister, Daly, and Stillman (2015) showed that individuals described the most self-controlled person they knew as significantly less open to experiences than the least self-controlled person they identified. Interestingly, however, traits such as spontaneity, extraversion, and openness to experience characterize effective entrepreneurs (Zhao & Seibert, 2006) suggesting the counterintuitive idea that successful entrepreneurs may be low in self-control.

Individuals low in self-control acted impulsively—without much thought and based on what they are currently feeling. Impulsivity has commonly been considered a negative trait that often leads to problems in life (e.g., Nelson & Birkimer, 1978), but research by Dickman (1990) has found two kinds of impulsiveness. Functional impulsivity is a tendency to make quick decisions when optimal and beneficial ("I benefit from unexpected opportunities where I have to do something immediately or lose my chance"). This impulsivity is in contrast to dysfunctional impulsivity, which is a tendency to make quick decisions when not optimal ("Often I don't spend enough time thinking about a situation before I act"). Although both types of impulsiveness can be associated with inaccurate results, functional impulsivity is often considered a positive because it can help individuals take full advantage of opportunities. Increased activity, adventurousness,

enthusiasm, and extraversion (Smillie & Jackson, 2006) are characteristic of functional impulsivity because such individuals are shown to have enhanced executive functioning overall (Perez, Sanchez de Leon, Mota, Luque, & Garcia, 2012). In contrast, dysfunctional impulsivity is said to be more closely linked with problem behaviors, as this type of activity equates with negative consequences for the individual. For example, disorderliness, poor appraisal of facts, and lack of concern for the results of actions were indicative of people exhibiting the dysfunctional style of impulsivity (Morgan & Norris, 2010). Dickman's (1990) findings illustrate an important issue often overlooked—not all impulsive behavior is problematic. Indeed, one might wonder how obviously impulsive patterns of behavior have remained intact through evolutionary history if they are as pathological as is sometimes depicted. Such a viewpoint is consistent with Evenden (1999) who discussed varieties of impulsivity.

An important factor which separates functional from dysfunctional impulsiveness is the difference in ability to inhibit competing and contradictory pieces of information that are detrimental to individuals' decision making. Specifically, those high in functional impulsivity benefitted from increased information processing (for most tasks), whereas those more inclined to dysfunctional impulsivity were poor at excluding the competing and often contradictory information which often leads to adverse outcomes (Brunas-Wagstaff, Bergquist, Morgan, & Wagstaff, 1996). Additionally, impulsive behaviors are at the core of an ADHD diagnosis which is often defined by three primary symptoms: inattentiveness, hyperactivity, and impulsivity (American Psychiatric Association, 2013). While the attention deficit symptom is not beneficial, the hyperactivity and the impulsivity symptoms are helpful. The advantage of hyperactivity involves work capacity because it enables individuals with ADHD to focus and work day and night. Individuals with the disorder also tend to be hyper-focused risk-takers, which makes them ideal entrepreneurs. ADHD traits might lead entrepreneurs to focus intently on tasks such as building their dream company. Entrepreneurs and individuals with ADHD are both commonly risk-takers who seize opportunities. The benefit of impulsivity symptom is an action orientation. In entrepreneurship, people must act.

Many personal accounts of a relationship between ADHD symptoms and entrepreneurship can be found in the literature. The popular press, such as *The New York Times* and *USA Today*, has highlighted many examples of entrepreneurs who claim to have benefited from their diagnosed or presumed ADHD while successfully creating and developing their companies (Turner, 2003). Prominent examples include David Neeleman (JetBlue airlines), Sir Richard Branson (Virgin), Paul Orfalea (Kinko's, now FedEx Office), and Ingvar Kamprad (Ikea). Furthermore, ADHD symptoms have been related to entrepreneurial characteristics, including opportunity recognition and innovative achievement (White & Shah, 2011), risk-taking (Mäntylä, Still, Gullberg, & DelMissier, 2012), action orientation (Flach, 1997), and entrepreneurial intentions (Verheul et al., 2015). Likewise, Thurik, Khedhaouria, Torrès, and Verheul (2016) found evidence (in their sample of 306 French small firm owners) of a link between ADHD symptoms and entrepreneurial orientation, which is known to be a crucial antecedent of entrepreneurial success of small firm survival and growth (Wiklund, Patzelt, & Shepherd, 2009). Similarly, Wiklund and associates (e.g., Wiklund, Patzelt, & Dimov, 2016; Wiklund, Yu, Tucker, & Marino, 2017) found ADHD to be characteristic of some entrepreneurs.

ADHD symptoms, particularly impulsivity, then, can be viewed as a personal trait with both functional (i.e., desirable) and dysfunctional (i.e., undesirable) features that can impact entrepreneurial achievement (Judge, Piccolo, & Kosalka, 2009). Impulsivity (dysfunctional impulsivity) may compromise entrepreneurial effectiveness in general but may also enhance productivity and success (functional impulsivity) in specific situations (e. g. impulsive entrepreneurs may take control of ambiguous conditions due to their willingness to take risks; Judge et al., 2009).

It should be noted that precommitment strategies can be advantageous regardless of whether high or low levels of self-control may be beneficial to entrepreneurs. In part, this is because of the proactive nature of precommitment agreements. Duckworth et al. (2017) observed that as a general rule early intervention to activate self-control is best. For instance, quick response, when the impulse to eat donuts is still budding, is wiser than waiting until the desire has grown so high that Herculean efforts are required to make a healthier choice. Regrading his hot temper, Montaigne (1580/2003) considered it better to intervene proactively, rather than procrastinate: “The infancies of all things are feeble and weak. We must keep our eyes open at their beginnings” (p. 1154; for similar arguments, see Hofmann & Kotabe, 2012; Sheppes & Gross, 2011). Because temptations tend to grow stronger over time, precommitment strategies "can nip a tempting impulse in the bud" (Duckworth, 2016, p. 35) making them especially useful in preventing undesirable action.

CONCLUSION

“Self-control is another name for changing ourselves” (Baumeister, 2015, p. 60) and research abounds confirming the benefits of self-control. Self-controlled individuals have deep-rooted "good" habits (e.g., to study, exercise, eat healthfully), and these practices in turn help describe the benefits of self-control for positive life outcomes (Galla & Duckworth, 2015). As suggested here, precommitment contracts/Ulysses pacts consist of self-imposed, present-day costs or restrictions that are aimed at enhancing one's welfare in the future and are used as a mechanism for overcoming (dysfunctional) impulsivity and exercising self-control (Kurth-Nelson & Redish, 2012). Such traits are needed by entrepreneurs and are posited to be the engine of success and essential psychological attributes that foster achievement at work and play—and in overcoming life's hardships (Baumeister, 2015; Baumeister & Tierney, 2011; Mischel, 2015).

While self-control for entrepreneurs is desirable in general, there may be circumstances where low levels of self-control (i.e., impulsiveness) may be helpful even though in the clinical literature, impulsivity has been shown to be a transdiagnostic feature of many forms of psychopathology (Johnson, Carver, & Joormann, 2013). It may be that the dark trait of impulsivity potentially has a bright side for entrepreneurs because individuals with ADHD (in which impulsivity is a distinguishing feature) have symptoms that coincide with innovativeness, risk-taking behavior, and proactiveness, which can contribute to entrepreneurs’ successful pursuit of their ambition (Verheul et al., 2015). Thus, it may be helpful to create an appropriate environment in which individuals with ADHD symptoms can exploit their particular gifts (Biederman et al., 2005). Entrepreneurs have multifaceted personalities, with positive traits potentially having a dark side, and dark traits, such as impulsivity, possibly having a bright side (Judge et al., 2009).

Future research could explore the relative efficacy of different self-control strategies in different contexts. Additionally, the relationship between ADHD and entrepreneurship needs further study, especially how different problems entrepreneurs encounter are impacted by impulsivity and self-control. Also, the constructs of functional and dysfunctional self-control within the entrepreneurial setting seem like a fruitful avenue for further research. Finally, tests for curvilinearity should be explored more thoroughly because of the inconsistent findings regarding the effectiveness (or ineffectiveness) of high levels of self-control for entrepreneurs and other occupational specialties.

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THE IMPACT OF ENTREPRENEURIAL OPTIMISM ON EMPLOYEES

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ABSTRACT

Optimistic employees often show positive outcomes, such as happiness, job satisfaction and commitment. While entrepreneurs generally are considered to be optimists, the concept of whether entrepreneurs can transfer their optimism to their employees in order to improve the state optimism of their employee has not been studied. The concept of state optimism, entrepreneur expressivity and relationship quality are discuss in relation to this study. Hypotheses were developed based on the suggested impact aspects of entrepreneur expressivity and relationship quality would affect the transfer of optimism from the entrepreneur to their employees. Our research intends to fill such a research gap by studying employees at 328 SMEs. We find that entrepreneur's optimism is indeed contagious and does improve employee state optimism. We discuss the implications of our findings, and make suggestions for future research.

Key words: entrepreneur, employee, optimism, contagious, transfer

INTRODUCTION

People generally face a variety of situations or decisions with the possibility of negative or positive outcomes. For example, these situations may be in regards to their businesses succeeding, getting healthy while facing an illness, or whether or not to trust someone in their lives. With optimism, individuals are able to mentally cope with a difficult situation because they believe there will eventually be a favorable outcome (Scheier & Carver, 1985). Optimism can lead to perseverance in goal determination and positive attribution about current success and future success (Scheier & Carver, 1985; Luthans, Vogelsang & Lester, 2006).

Since Scheier and Carver (1985), scholars have been calling for research on the positive effects of optimism on organizational outcomes (Wright, 1997). The positive consequences of optimism have been linked to employees' happiness, perseverance and achievement (Peterson, 2000), satisfaction with one's performance (Werenfels, 2006), relationship satisfaction (Field, 2004), affective commitment (Kleumper et al, 2009), and job satisfaction (Al-Mashaan, 2003).

Previous research indicates that entrepreneurs are optimistic in skills, abilities, and prospects (Busenitz & Barney, 1997; Camerer & Lovallo, 1999). Entrepreneurs must try to overcome uncertainty and one way this is achieved is by having optimistic beliefs which in turn influences entrepreneurial activity (Fraser & Greene, 2006). However, most of the researchers have focused on the individuals being optimistic (Tiger, 1979), having psychological well being, and coping with health issues (Scheier & Carver, 1992; Salovey et al,2000). We could not find research on the impact of the entrepreneur's optimistic behavior on his/her employees' optimism.

We intend to fill the research gap by answering the following questions: Can optimism be transferred from entrepreneurs to employees? If so, what entrepreneurial characteristics influence

such a transfer? Our research is significant because while researchers have shown that entrepreneurial optimism can have a negative impact on new venture (firm) performance (Hmieleski and Baron, 2009), the question of how optimistic entrepreneurs can transfer their optimism to their employees remains to be answered. We identify a few factors that may impact such transfer.

Optimism has been considered a positive emotion (McColl & Kennedy, 2002; Cardon 2008). McColl-Kennedy and Anderson (2002) stated that emotions varies from extremely positive such as joy and optimism to extremely negative such as anger and frustration. The focus of this study is on small and medium sized firms. In future research similar research can be done on large and established firms. The paper is structured as follows. In the next section, we review the relevant literature. Then, we develop our hypotheses and explain our methodology. Subsequently, we present our data analysis and a discussion of the results. Finally, we conclude with suggestions for future research.

LITERATURE REVIEW

Companies could no longer could rely on being the incumbent organization, they needed to focus on continuous innovation, implementation and assessments in order to be competitive (Hamel, 2000). The competitive advantage has become a necessity for many businesses and is likely to emerge from the human aspect of the company (Hitt & Ireland, 2002; Pfeffer, 1998). In a new business, it is the entrepreneur that establishes the vision and the guidelines for navigating the terrain in which the company finds itself. One element that can be controlled is the people hired and how they are managed. Baum et al. (1998) confirmed the importance of an entrepreneur's ability to impart a clear vision to his/her employees. In sharing that vision he/she will have to expose them to his/her optimism, which employees will absorb as they work for him/her and as the business eventually establishes itself (Brown, 2014). Leadership can be categorized intrinsically as an emotional process, where the leaders make emotional displays in an effort to exact emotions from its members (Dasborough & Ashkanasy, 2002). Through these displays to the employees, they develop their own emotions through social interaction.

Cardon (2008) describes two types of contagion in which the passion (including the optimism mindset) are passed on from the entrepreneur to the employees. Passion as utilized by Cardon (2008) is an emotion or overmastering feeling. Optimism is considered a state or trait that has an effect on emotions, and not an emotion in itself. These two avenues of contagion are emotional mimicry and social comparison. Through emotional mimicry, the employees may become very positive when mimicking the positive vibes and behavior of the entrepreneur. When the entrepreneur makes an emotional display it invokes the emotions of the employees so that they will at least mirror that display (Neumann & Strack, 2000). As these emotions are repeated, the employee mimicry of the emotions will become internalized and actual emotions may develop (Lazarus, 1991).

Social Cognitive Theory (SCT) states that the conduct/objective representation of the human being is formed by the exchanges amongst other behavior, cognition, and the atmosphere/environment (Bandura, 1986). Bandura (1986) intimated that an individual's behavioral activity can be affected by some aspect in the environment which would alter the

individual's cognition, or aptitude, to complete a specific task. An individual's behavior will be influenced by the exposure to particular stimuli (Bandura, 1989). What is being theorized about the optimism contagion is that as the optimism trait of the entrepreneur is being constantly displayed in presence of or towards the employees, they will internalize it when this event occurs repeatedly; thus, they themselves will become more optimistic towards the business and job outcomes.

The other contagion as discussed by Cardon (2008) is social comparison (e.g. Sullins, 1991). This occurs when an employee's emotional reactions to a particular stimuli are subjective to the entrepreneur's emotional reaction when the employee encounters a similar situation that the entrepreneur faced, or at least an encounter of a similar nature. This experience can also arise when the entrepreneur and the employee exert their efforts together to engage a common ordeal or threat, and thus, the employee begins to identify with the venture or the entrepreneur in a momentous manner (Cardon, 2008). The employees evaluate their emotions with significant others (the entrepreneur and other employees) and utilize the social information they have gathered to determine how they themselves should feel towards a specific task or issue (Barsade, 2002). The employee would try to determine why the entrepreneur feels a sense of optimism and determine if they too should feel optimistic towards the specific task or business. One limitation is that the employee must share an identity connection with the entrepreneur in order to absorb some level of state optimism from him or her. This issue should be resolved with good recruitment and selection of employees.

It is important to recognize that for the success of a business entrepreneurs don't act alone; thriving recruitment and supervision of employees are vital factors impacting the successes of the emerging venture itself (Baron and Hannan, 2002; Deshpande & Golhar, 1994; Hornsby and Kuratko, 1990). There exists only anecdotal evidence in relation to the role that emotions and feelings of employees play in impacting an entrepreneurial organization's success or survival (Cardon, 2008) which is outside the scope of this paper. However we focus entrepreneurial optimism and the transfer of state optimism to the employee and the moderating factors that impact this transfer.

HYPOTHESIS DEVELOPMENT

In this transfer of state optimism, the employees are intentionally or inadvertently being trained by the entrepreneur to be optimistic through the use of the entrepreneur's behaviors towards impeding issues at the organization. This ability to be trained to be optimistic has been empirically verified by Seligman (1998, 2006) and Schulman (1999). As stated earlier, optimism has a trait and a state component (Luthans & Youssef, 2007). Given that the trait optimism represents the general level of optimism an individual has based on disposition, this may not be as easily transferable as state optimism (which relates to optimism based on situational or contextual factors). Trait optimism specifically relates to general topics, such as long term health; whilst state optimism relates to context specific topics such as job related outcomes in the workplace (Kluemper et al, 2009). Given that we are specifically focusing on an entrepreneurial optimism contagion, we are concentrating on the work place for the employees, and therefore, the transfer of state optimism is more relevant. Trait optimism, which relates to a general disposition, may not

be transferable or may require many years of social comparison and emotional mimicry before the optimism contagion takes effect. This is because it may require years of successful completion of tasks by the individual for his/her general disposition to change. Below, we will hypothesize this optimism contagion from entrepreneur to employee.

Hypothesis 1: Employees absorb significant levels of state optimism from the entrepreneur.

Entrepreneur's Expressivity

Entrepreneurial leadership is an interactive process that depends on the leader and the followers (Graen & Scandura, 1987). Roomi and Harrison (2011) also provide insight into the concept of entrepreneurial leadership. They define entrepreneurial leadership as "having and communicating the vision to engage teams to identify, develop and take advantage of opportunity in order to gain a competitive advantage" (Roomi & Harrison, 2011, pg 2). A good entrepreneurial leader is able to rally others around his/her vision and convert it into reality (Kao, 1989). Entrepreneurs need to prolong and nurture commitment over time so that the business continues to exist (Jensen & Luthans, 2006). Brundin et al (2008) noted that it has been empirically shown that the entrepreneur's display of positive vibes, such as being satisfied with overcoming a challenge enhances an employee's willingness to act entrepreneurially (Cardon, 2008). Entrepreneur's displayed behaviors to their employees are based on their emotional expressivity. We theorize that the level of the optimism contagion is affected by the emotional expressivity.

Emotional expressivity is defined as the behavioral expressions (e.g. postural, facial, vocal) that are connected with the occurrence of an emotion (Gross & John, 1995). According to Gross and John (1995), emotional expressivity involves three facets: impulse strength, positive expressivity and negative expressivity. These facets of the particular entrepreneur will impact the optimism contagion.

Impulse strength refers the extent of the emotional physical and behavioral reactions that a person demonstrates. Guerrero, Anderson and Trost (1998) argue that sometimes emotions are experienced but sometimes not expressed; however, by nature, emotions are usually interpersonally expressed. Gross and John (1995) stipulated that individuals who grow up in the same culture with similar cultural rules may express their emotions in a different manner. These differences in behavior are based on the impulse strength of the individual. Entrepreneurs with high impulse strength for their optimism are likely to be more expressive of this emotion. Conversely entrepreneurs with low impulse strength demonstrate more restraint of their optimism and thus are less expressive. The higher the impulse strength then the more expressive the entrepreneur is, and, in turn, the greater the optimism contagion to the employee.

The second facet of emotional expressivity is positive expressivity. Positive expressivity is defined as the extent to which upbeat emotional reaction predisposition are behaviorally expressed (Gross & John, 1997; King and Emmons, 1990). Entrepreneurs will vary in their level of expressing positive vibes dependent on social rules that they observe or individual temperament. Optimism in itself is a positive trait and thus the extent to which the entrepreneur expresses his positive trait impacts the overall optimism contagion to the employees. The greater the tendency

of the entrepreneur to express positive behavior the greater the level of the optimism contagion to the employees.

The third and final facet is negative expressivity. Negative expressivity can be defined as the extent to which downbeat emotional reaction predisposition are behaviorally expressed. These behaviors include expressions of fear, anger, upset or nervousness as well as pessimism. Social rules or individual temperament may dictate the expression of these emotions. In the case of the optimism contagion the extent of negative expressivity can adversely affect the optimism contagion. Negative events evoke stronger signals which can result in stronger and lasting emotional reactions (Cacioppo & Berntson, 1994). Employees will tend to put more credence on negative vibes than on positive vibes (Barsade, 2002).The more the entrepreneur expresses negative vibes to his/her employees the lesser extent is the transfer of optimism to the employees.

Hypothesis 2a: The absorption of optimism from entrepreneur to employee is moderated by impulse strength of the emotional expressivity such that the contagion is stronger when the entrepreneur's impulse strength is high compared to when the entrepreneur's impulse strength is low.

Hypothesis 2b: The absorption of optimism from entrepreneur to employee is moderated by positive expressivity such that the contagion is stronger when the entrepreneur's positive expressivity is high compared to when the entrepreneur's positive expressivity is low.

Hypothesis 2c: The absorption of optimism from entrepreneur to employee is moderated by negative expressivity such that the contagion is weaker when the entrepreneur's negative expressivity is high compared to when the entrepreneur's negative expressivity is low.

Relationship Quality

Leader Membership Exchange (LMX) theory discusses the quality of the social interactions between supervisor and employee. Therefore we theorize that through these social interactions some level of optimism may be acquired or passed on to the employees as discussed above. This is achieved through emotional mimicry or social comparison, as well as moderating the employee optimism relationship with his/her perception of the business due to an identity connection between the business and the entrepreneur that the employee makes. The optimism transfer can be either a positive or negative impact because often, both negative and positive cues are displayed by the entrepreneur towards the employee. The negative cues for the purpose of this paper relate to the pessimism which would pertain to the entrepreneur who behaves in a negative or discouraging way towards his/her employees. Individuals tend to put a heavier weight on negative cues than they do with positive ones (Barsade, 2002), so it is important that entrepreneurs display a higher level of optimism towards various challenges than pessimism. The level of pessimism or optimism displayed by the entrepreneur determines the overall effect of the transfer, which could prove to be positive if he displays more optimistic behavior and negative if he displays more discouraging (pessimistic) behavior. It must be made clear that the employee already has a certain level of optimism or pessimism, depending on his/her disposition. Burt (1987) introduced the concept of the Cohesion Model (CM) which suggests that the extent to which individuals interact is determined by whether they tend to share similar beliefs, attitudes, and/or behaviors. The importance of the CM is that it stresses the connections between characters that are in close

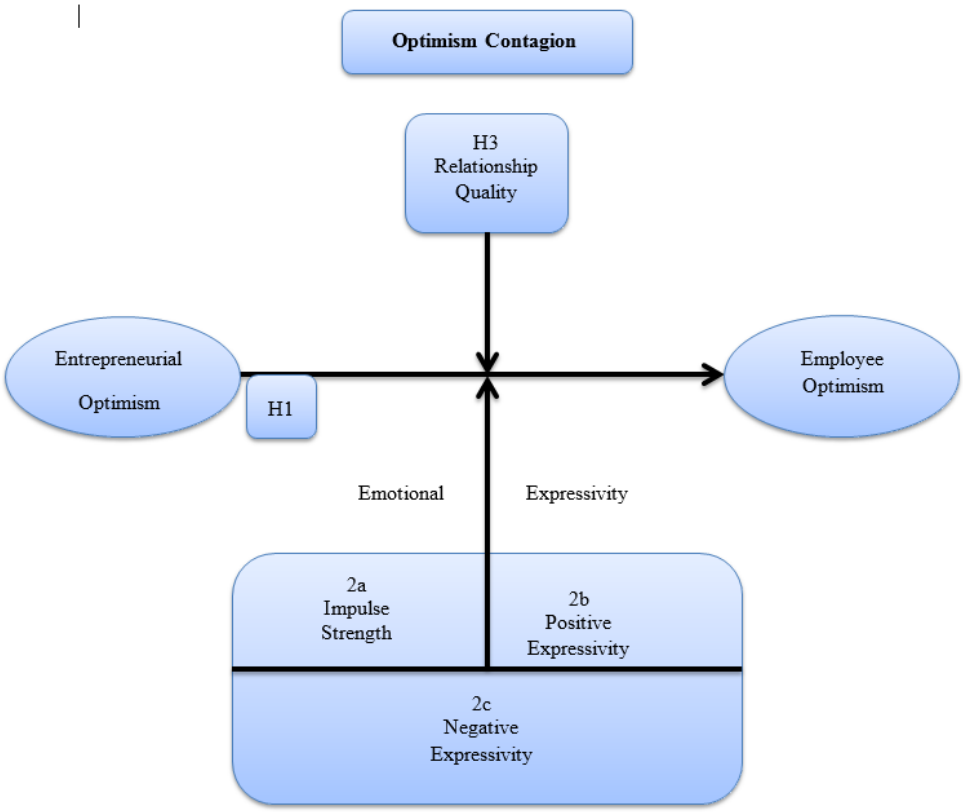
relational proximity (Burkhardt, 1994). Individuals will often form dense cliques in which there are strong ties that lead to information sharing and provide intense pressure towards uniformity (Erikson, 1988).

In LMX, there are two groups within the organization, the in- group and the out-group. These relationships are formulated by the social exchanges between the boss and the employee (Spar & Sonnentag, 2008). Those employees that claimed they had high quality exchanges with the leader were classified as being in the in-group and those that had low quality exchanges with the leader where classified as being in the out-group (Graen & Uhl-Bein, 1995). The in-group members tend to have a lot of mutual respect and are attuned to their obligations towards their leader. The out-group members focused on doing the minimal requirement of their job (Zalesny & Graen, 1987). Hollander (1978) found that the in/out group phenomenon exists in many organizations (Yu & Liang, 2004). Given that the in-group is expected to have high quality exchanges with the leader, it is expected that the subordinates would engage in behaviors that would benefit the leader/manager directly (Gouldner, 1960). The leader, in return, is compelled to provide remuneration or privileges to his/her employees. Through this exchange, it is theorized that optimism contagion is moderated. The in-group subordinates are likely to have more positive exchanges with the entrepreneur, and thus, a higher level of optimism is most likely to be transferred than with individuals that have lower levels of social exchanges (out-group). When a leader energizes his/her subordinates by being excited and enthusiastic he/she is affecting how his/her followers feel (George & Brief, 1992) and conversely if a leader is under distress he/she is likely to transmit negative emotions to his/her subordinates (George, 2000; Rajah, Song & Arvey, 2011). The subordinates with whom the entrepreneur has stronger emotional ties (the in-group) are more likely to feed off the optimism of the entrepreneur. The optimism contagion will be less effective amongst employees that the entrepreneur has less high quality interactions with (out-group). In combining the CM and LMX theory, we posit that the in-group will be more likely to become more optimistic based on exchanges with the entrepreneur and wanting to please the entrepreneur, as opposed to out-group members who will do the minimum and will not be as strongly influenced by the entrepreneur. Leaders who provide support for their employees tend to illicit feelings of optimism whilst those employees without leadership support tend to become pessimistic (Gross & John, 1995). Based on this theory, this study proposes that the in/out-group classification of the employee is a moderating factor in the optimism contagion between the entrepreneur and the employees, hence the following hypothesis:

> *Hypothesis 3: The in/out group classification (relationship quality) of the employee has a moderating effect on the optimism contagion between the entrepreneur and the employee such that the stronger the employee's relationship with the entrepreneur the stronger the contagion.*

Figure 1 depicts our theoretical model.

Figure 1: Theoretical model



METHODOLOGY

Data Collection

In this study, data on small and medium sized businesses in the United States was obtained from Hoovers, a Dunn and Bradstreet subsidiary company. Hoovers is a recognized research company that has been in existence since 1990 and has data on 66 million companies. Hoovers provides detailed company data to marketing, sales and business development professionals who constitute a majority of their subscribers. Less detailed company data is available to non-subscribers. We utilized Survey Gizmo, who in turn hired a private research company, Cint Company that has access to a wide array of employees from companies listed in the Dunn and Bradstreet database in the USA and Canada. Four hundred and eleven random employees were solicited via email to fill out the web-based survey prepared for this research. The employees were first asked to verify whether or not they are from a small or medium sized company based on specific criteria (annual sales below $500 million). Small sized companies are companies with annual sales below $25 million and medium sized companies are companies with annual sales ranging from $25 million to $500 million (Roth, 1992). If they belonged to a small or medium sized company they were allowed to continue to fill out the survey, if not they were not allowed to respond to the rest of survey.

Through the employment of the services of Survey Gizmo who reached out to random employees from the Dunn and Bradstreet listing there were 411 respondents with 328 fully completed surveys. This provides a response rate of 80%. Non response bias is not considered a problem if there is a response rate over 70% (Singleton & Straits, 2005; Babbie, 2007). The high response rate was due to Survey Gizmo using a company (Cint) that had access to the email of a population of employees in small and medium sized firms. The research response rate of web based surveys has varied over the years from 75% (Kiesler & Sproull, 1986) to 6% (Tse et al, 1995).

Armstrong and Overton (1977) stated that the most common way to deal with non-response bias is the reduction of the non-response itself. In terms of deciding what to do with the data and the missing values it is recommended by Hair, Black, Babin, Anderson & Tatham (2006) that a diagnostic tests to determine the level of randomness be executed and the appropriate measures to resolve this be taken. Little (1998) has provided a test in order to determine whether the data are missing completely at random or not. Little's test is a chi-squared test and if the resulting value is significant then it indicates that the data are not missing completely at random.

Through SPSS the Little's MCAR test was carried out on the data and results were as follows: a Chi-squared of 3160.174, DF 3269 and Sig. = .912. Based on this result given that degrees of freedom are 3269 and the significance is .912 the data are missing completely at random because the results are not significant. Hair et al (2006) recommends the complete approach or an imputation method using replacement values. Given that 90 cases had incomplete data, we felt this to be a large group of cases to delete if one was to only use the completed cases, so therefore imputation was selected as method of choice. One of the methods recommended for calculating the replacement values is the regression imputation method (Hair et al, 2006). The premise of this method is to predict the missing value of a variable based on that variables relationship with other variables in the data set.

Common Method Variance

Common method variance is the spurious variance that stems from the method of conducting the measurement and not the constructs that are being measured (Podsakoff, Mackenzie, Lee & Podsakoff, 2003). Before testing the hypothesis it is important to test for common method variance. According to Krishnavena and Deepa (2013), Harman's single factor test is one of the most popular used methods to diagnose common method variance. In accordance with this test, common method variance is present if (a) one single factor materializes from the factor analysis or (b) one single factor represents the majority of the covariance amongst the variables (Aulakh & Gencturk, 2000; Schreisheim, 1979; Andersson & Bateman, 1997). Using SPSS, the Harman's single factor test was done via performing an exploratory principle component analysis with a varimax rotation to ensure that one single factor did not explain a majority of the variance. From the factor analysis ten factors materialized that had eigenvalues greater than one and these ten factors explained 63.9% of the cumulative variance. The first factor accounted for 30.6% of the variance. Since more than one factor emerged from the test and no single factor accounted for a majority of the variance this author concluded that there is no significant common method variance present in this study.

Fifty-five percent of the respondents were female, 44% were male and 1% did not give a response. 19% of the respondents just had a high school diploma, 36% had some college or an associate's degree, 33% had a bachelor's degree, and 12% had post graduate degrees. Also, 6.5% of the respondents were between the ages of 18-25 years, 22% between the ages of 26-35 years, 20% between the ages of 36-45 years, 26.5% between the ages of 46-55 years, and 25% were over the age of 55 years.

Dependent Variable

Optimism transfer

One early measure used to differentiate between the two subscales of optimism and pessimism is the Life Orientation Test (LOT). Developed by Scheier and Carver in 1985, the LOT has 8 coded items, plus some stuffing items. The LOT respondent deals with a 50/50 split of optimistic and pessimistic framed statements in which they must indicate if they agree or disagree, based on a multi-point scale (Carver, 2010). One of the problems with the LOT is that it is believed to form two factors for optimism and pessimism that is not always robustly correlated (Marshall and Lang, 1990). Due to this issue and other minor issues, the LOT was later replaced by the Life Orientation Test- Revised (LOT-R) developed by Scheier et al in 1994. We chose LOT-R as our optimism instrument. For T1, respondents are being asked to indicate their general agreement with statements such as "*When I started the job I was very optimistic of my future*" using a five point scale from 1 (strongly disagree) to 5 (strongly agree). For T2, respondents are being asked to reflect their general agreements with statements such as "*After working with my boss I am more optimistic about my future*" also using a five point scale ranging from to (I Disagree a lot) to 5 (I agree a lot). The Cronbach Alpha (measure of internal consistency) for the LOT-R state optimism at T2 was measured and the average was .71, which reflects the measure's stability (Kluemper et al, 2009)

Independent Variables

Entrepreneur's optimism (entrepre)

The employees also rated a few statements about the entrepreneurs. Questions include "No matter how nervous or upset my boss is, he/she keeps a calm exterior", and "When my boss is happy, his/her feelings show" where strongly disagree as 1 and strongly agree as 5.

Emotional Expressivity

Respondents were requested to complete questions rating their entrepreneur's emotional expressivity using the 16 item Berkeley Expressivity Questionnaire (BEQ) developed by Gross and John (1997). The BEQ covers questions that give insights into the rater's view on the three facets of emotional expressivity; impulse strength (impulse), positive expressivity (pos_expre), and negative expressivity (neg_expre). An example of an item that respondents would rate is "*whenever X (the entrepreneur) is happy, his/her feelings show*". Respondents were told that their responses would be kept confidential and the information gathered would be concealed from the targeted individual. From the sample data collected the measure of reliability (the coefficient alpha) for the BEQ was as follows: .74 for Impulse Strength, .72 for Positive expressivity, .7 for

Negative Expressivit. Respondents rated their views based on a five point scale ranging from 1 (strongly disagree) to 3(neutral), continuing to 5 (strongly agree).

Relationship Quality (relation)

Respondents were being asked to rate their LMX quality using a 7 item LMX-7 scale developed by Graen and Uhl-Bein (1995). An example of items that respondents would rate is "*My supervisor recognizes my potential*". Respondents rated their view based on a 5 point Likert-scale ranging from 1 (strongly disagree) to 5 (strongly agree). According to Hooper and Martin (2008), the level of internal consistency ranged from .89 to .91. From the sample collected the level of internal consistency was measured at .92. An additional item was added to further assess relationship quality. In this item, respondents were asked to indicate if their relationship quality with their leader could be categorized as 1 (very poor), 2 (poor), 3 (satisfactory), 4 (good), and 5 (very good). This item was obtained from the research of Hooper and Martin (2008). LMX is aligned with the quality of a relationship exchange between the leader and the employee (Schriesheim et al, 1999).

Control Variables

Age, gender, education, job position, and tenure may all influence optimism (Field, 2004). Job position consists of four categories, entry level, supervisory, middle and senior management. Male is coded as 1 while female 0. Education has four layers, high school, bachelor, master, and Phd/DBA. Tenure measures how long the employees have been working for the current company.

DATA ANALYSIS AND RESULTS

For testing the hypotheses, hierarchical regression was employed because it allows the researcher to calculate the value of the dependent variable based on given values of multiple independent variables (Hair, 2006; Field, 2009). Hierarchical regression was selected because one of the advantages to using it is that independent variables can be entered in blocks rather than forcibly entered one at a time. The results reflect the variance accounted for on the dependent variable due to each independent variable. In this study, we wanted to control for variables such as age, position, gender, education and job tenure and test our hypothesis, therefore hierarchical regression analysis was appropriate.

The sample of 328 completed responses was used to conduct the hierarchical regression. One of issues that researchers should be concerned about is multicollinearity. The independent variables should not be highly correlated amongst themselves or else multicollinearity exists and will distort the results (Hair, 2006, Field, 2009). To test for multicollinearity, tolerance and variance inflation factors (VIF) were calculated when performing the regression. All VIF scores are lower than 5 indicating no multicollinearity problem.

The results are shown in Table 1. Model 1 contains all the control variables. Model 2 consists of all main effects in addition to the control variables. In hypothesis 1, we predict that entrepreneurial optimism can be transferred. Entrepreneurial optimism is positively related to how much the employees gain through their interaction with the entrepreneurs ($p<0.05$). Hypothesis 1

receives strong support. Hypotheses 2a to 2c propose that impulse strength and positive expressivity positively moderate the relationship between entrepreneurial optimism and optimism transfer while negative expressivity negatively influences that association. Results for Model 2 shows that none of the hypotheses are significant even though they are all in the predicted direction. Hypothesis 3 is supported ($p<0.05$). Relationship quality strengthens the transfer of optimism from entrepreneurs to employees. In other words whether an employee is in the in group or the out group can impact the level of the optimism transfer from the entrepreneur to the employee.

Table 1: Hierarchical regression of entrepreneurial optimism on optimism transfer to employees

	Model 1	Model 2	Model 3
Age	0.04	0.06**	0.05
Gender	-0.00	-0.01	-0.06
Education	-0.12*	-0.08	-0.01
Tenure	-0.02	-0.01	-0.02
Position	0.22***	0.14***	0.25
Entrepre		0.39***	0.40***
Impulse		-0.11***	-0.12***
Pos_expre		0.06	0.07+
Neg_expre		-0.11+	-0.10+
Relation		0.19***	0.19***
Entrepre*impulse			-0.04
Entrepre*pos_expre			0.05
Entrepre*neg_expre			-0.08
Entrepre*relation			0.08*

DISCUSSION

Optimism has been reflected in the literature as a trait, an individual trait that is impacted by environmental factors making it predominantly a learned trait (Vaughan, 2000). One of the key challenges of this study is linking optimism with contagion research in an organizational setting. This research addresses this issue of bridging the gap in terms of examining whether an optimism contagion exists in an entrepreneurial setting. Our study also highlighted factors that may moderate this contagion from the entrepreneur to the employees.

Specifically the results of the research support the view that an optimism contagion does exist between the entrepreneur and the employees. These results are consistent with Cardon's (2008) discussion of an entrepreneurial passion that is passed on to employees. Our research extends the boundaries of this research by testing if an optimism contagion exists between the entrepreneur and the employees as well as looking at moderating factors such as expressivity and

LMX. Though Cardon (2008) discussed the existence of an entrepreneurial passion that can be passed on to employees no research to date has done to effectively test this theory. Though this research is based on optimism and not passion it does show that the environmental factor of "the boss" can have an impact on an individual state optimism. Our study makes an important contribution to optimism and organizational behavioral research demonstrating how an entrepreneur can positively impact an employee's mental disposition towards his/her work. It is important for entrepreneurs and employers alike to recognize that their mental disposition does have an impact on the employee's disposition and therefore on outcomes such as performance. Past research has been done to provide empirical evidence that positive disposition has an impact on organizational behavior and outcomes (Stajkovic & Luthans, 1998; Yousef and Luthans, 2007). Therefore it is paramount for entrepreneurs to understand that there optimism disposition has an impact on the state optimism of the employee and ultimately the employee's performance and job satisfaction.

In addition to the finding of an existing optimism contagion, our research provided empirical support for various moderating factors. The type of relationship that the entrepreneur has with the particular employees moderates the optimism contagion. Utilizing LMX theory, we were able to determine that the strength of the relationship between the entrepreneur and the employee impacts the overall strength of the contagion such that "in-group" employees reflected stronger contagion effects than "out-group" employees. The nature of the Leader Member Exchange relationship impacts the decision influence, performance, access to resources, subordinates responsibility (Forsyth, 2009), and, now shown empirically, the state optimism of the employee towards their job. It is important for entrepreneurs in small businesses and medium-sized firms to make a concerted effort to keep all their employees in the "in-group" so that it will lead to a stronger contagion and ultimately a greater positive state optimism which would in turn improved employees performance and work settings (Seligman, 1998; Luthans et al, 2005).

CONCLUSION

While employees' optimism leads to positive organizational outcomes, no studies have examined how entrepreneurs can transfer their optimism to the employees. Our research takes a small step in this direction. This is a research topic worthy investigation. We hope entrepreneurship scholars will help expand such research stream.

LIMITATIONS, FUTURE DIRECTIONS AND PRACTICAL IMPLICATIONS

Our research is limited in several ways. First, we used online survey; therefore, data may be collected with social desirability influence. However, prior management researchers have used these types of agencies for data collection and found they are reliable (Ayyagari, Grover & Purvis, 2011; Thau, Bennett, Mitchell & Marrs, 2009). Second, we did not measure entrepreneurs' optimism directly. Rather, we asked employees how they view the entrepreneurs' optimism. Future researchers may want to collect data from both the employees and the entrepreneurs, which may give a more accurate picture of entrepreneurs' optimism.

Our findings may be useful for entrepreneurs. When entrepreneurs want to pass their optimism to their employees, they should focus more on the quality of relationship with their employees. In future studies it is hoped it is determined if the entrepreneurs' organizational characteristics may or may not be more important than his/her expressivity.

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GENDER DIFFERENCES IN ENTREPRENEURIAL LEADERSHIP SKILLS TRAINING

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ABSTRACT

Effective entrepreneurship requires proficiency in leadership skills. This research empirically tests the relationship between perceived gender gaps and pedagogy with respect to the development of perceived leadership effectiveness in women and communication effectiveness in men. We use innovative technology to develop training experiences that facilitate experiential learning in a controlled environment and then empirically evaluate the transferability and, use, of these skills for the study's participants. The results of this study suggest that the use of computer game-based simulations to teach the experience and practice of leadership may be particularly effective in improving communication skills in men and improving leadership effectiveness skills among women. Implications for entrepreneurship training are delineated.

INTRODUCTION

Entrepreneurship research has noted gender differences, especially in terms of the number of entrepreneurs, with women typically outnumbered by men two to one. The trend is changing, but slowly (Acs, Arenius, Hay, & Minniti, 2004). Entrepreneurs are by nature 'leaders' as they lead the effort to launch new ventures, create the vision, select a team that will carry out the vision, and managing the team (Chen, 2007). Most universities are offering courses, minors, and majors in entrepreneurship. However, little attention has been given that links entrepreneurship education with leadership (Roomi & Harrison, 2011). We seek to address this under-researched area by examining methods to develop leadership communication and leadership effectiveness competencies.

There is a voluminous amount of research on gender as it relates to the characteristics of leaders, the situations leaders face, and the relationship between leadership and followers (Bass & Stodgill, 1990). However, there are still significant questions regarding the development of leadership skills among women as opposed to men. Stereotypes and perceptions contribute to the notion that women, as a rule, are less effective as leaders than are their male counterparts. Similarly, research has also concluded that the depth and breadth of male communication acumen is weaker than that of the communication competencies of females. These gender stereotypes are common in entrepreneurship, with entrepreneurs having a more masculine stereotype (Gupta, Turban, Wasti & Sikar, 2009). Thus, there is a perceived gender gap for women with respect to leadership effectiveness skills and for men with respect to effective leadership communication skills.

In this research, we grapple with the challenge of developing leadership effectiveness and leadership communication competencies within undergraduate women and men. Often the classroom is a coeducational experience and the pedagogy applied is not gender-centric. Although

a number of studies suggest that men and women differ with respect to communication skills and leadership styles, little research has been conducted to investigate whether these skills develop in men and women the same way. Also, as a matter of pedagogy, when a particular classroom experience is provided, little research has been conducted to determine whether both genders learn similarly.

This paper examines the impact of pedagogy on learning as it relates to gender. We generate hypotheses about the impact of a traditional versus a technologically-driven approach to student learning. The tested pedagogies are designed to develop both leadership effectiveness and leadership communication competencies that are relevant for aspiring entrepreneurs. Our primary research question is: Does pedagogy impact students of different genders differently? First, we build and present our hypotheses based on learning theory. Then we report the results of an empirical test of two pedagogical approaches.

PEDAGOGY AND GENDER

Do men and women learn differently and/or have different preferred ways of learning? Despite the passion, emotional debate, and political correctness engendered by this question, the answer may alter dramatically the ways in which subject matter is taught.

Most learning theories recognize that faculty must have knowledge of the learner and his/her characteristics to be effective (Slater, Lujan and DiCarlo, 2007). Slater et al. (2007) report that gender is among a number of factors (along with age, academic achievement, brain processing, culture and creative thinking) that influence student learning style. Many pedagogical techniques, however, are applied unilaterally in the classroom assuming uniform effectiveness without regard to gender diversity.

Attention to the impact of pedagogy across genders may help clarify whether men and women have different learning experiences and/or learning styles. "Learning style" is defined as an individual's characteristic way of processing information, feeling, and behaving in a learning situation (Philbin, Meier, Huffman, and Boverie, 1995). In addition, how to bridge gender skills gaps in light of different learning experiences and/or learning styles is an important consideration for instructors.

This paper examines the relationship between gender and learning experience with respect to the reported skill gaps in leadership effectiveness (for women) and leadership communication (for men), then compares the learning outcomes for the two gender groups.

EXPERIENTIAL LEARNING THEORY AND LEADERSHIP PEDAGOGY

At the undergraduate level, a primary form of competency development within the curriculum is information-based; what Habermas (1970) referred to as technical learning. Pedagogically, technical learning is achieved through identifying the specific set of concepts and behaviors needed to achieve a level of competence. However, Nirenberg (2003) criticizes the technical and mechanistic pedagogies used in business schools. He likens instruction that emphasizes the memorization of Fiedler's (1967) contingency situations and Vroom and Yetton's (1973) decision-making methodology to driver education classes that do not place the student behind the wheel of a car (Nirenberg 2003). He argues that students will know much descriptively about complicated models but nothing about how to use them. To counter the limitations of mechanistic pedagogies, Kolb and Kolb (2005) suggest implementing experiential learning processes in higher education. This argument is echoed by others who suggest that entrepreneurs

are action oriented and learn by doing (Kolb & Kolb, 2005; Lester, Tomkovick, Wells & Flunker, 2005; Middleton, 2005; Minniti and Bygrave, 2001; Rae and Carswell, 2000; Cope and Watts, 2000; Smilor, 1997), thus rendering experiential learning particularly relevant for entrepreneurship education.

Experiential learning is a "process in which internalized reflection follows concrete experience, resulting in an adaptation revealed in further experience" (Quay, 2004, p. 108). Or stated another way, experiential learning is a continuous process in which learning is created through the transformation of experience (Kolb, 1984). The experiential learning process consists of four stages: Concrete experience, observation and reflection, forming abstract concepts, and testing in new situations (Kolb, 1984). In the concrete experience stage, the learner actively engages in an experience, which is followed by observation and reflection on the experience. After this reflective stage, the learner forms abstract conceptualizations about what has occurred. Finally, the abstract conceptualizations formed provide guidance for future experiences.

The experiential learning process is often replicated in simulations. These simulations have become powerful tools in business, psychology, and sociology (Anderson, Rauthbaum, & Hodges, 2001; Gordon & Yukl, 2004; Sawyer, 2003). Traditional pedagogies, even experientially-based, rarely allow students to examine the impact of their actions and decisions on others. Computer-based simulations, however, can create this effect and thus may be a useful alternative to traditional methods for entrepreneurship education and management education in general.

Clark Aldrich (2004) describes the development of such a simulation for the business context in his new book: Simulations and the Future of Learning: An Innovative (and Perhaps Revolutionary) Approach to e-Learning. The book offers insights on leadership and how to develop leadership skills based on his experience building a leading-edge leadership training tool, SimuLearn's *Virtual Leader*™.

Virtual Leader™ represents leading-edge integration of technology and business. The purpose of the simulation is to provide an opportunity for the student to play the role of leader in the context of a meeting. The goal of the simulation is to identify and promote ideas that will accomplish the "right" work and to prevent the "wrong" work from being done. The level of sophistication of this simulation allows the student-as-leader to engage in conversations around various ideas that emerge during meetings. The goal of the simulation is for the student to experience interactions with others in such a way as to practice conversations (ways of speaking, reacting, and deciding) that are productive in promoting her/his goals for the meeting. From an experiential learning perspective, the student is able to determine the impact of the application of their theories in use and make revisions in the next game or at the next level in the game.

FOCAL HYPOTHESES OF THIS STUDY

We tested the impact of two pedagogical approaches on the development of practical leadership skills among undergraduate students, both male and female, at a public, historically-black university in the southeastern United States. One pedagogical approach is based on a blend of technical and traditional pedagogical tools such as lecture, self-assessment, case analysis, and facilitated discussion. This approach was enhanced through the use of online rather than paper-based cases. In this paper, we refer to the group of students that engaged in this pedagogical approach as the "traditional group." The second approach used only the game-based experiential simulation, the *Virtual Leader* ^{TM}, described above, supplemented by facilitated discussion of the experience. We refer to the group of students engaged in the *Virtual Leader* ^{TM} as the "experiential group."

Since the conceptual content of both training programs is the same, we might expect that the two student groups would exhibit similar schema change, or in other words, might exhibit similar learning. Kolb's (1984) work, however, would suggest that the opportunity to practice application of leadership skills (concrete experience) using the software would lead to reflective observation and abstract conceptualization by the learner. This process might result in a different perception of what leadership is and how leaders act. This leads to the following hypotheses.

H1a: There will be a greater degree of change in leadership schema for women participants of the experiential group compared to women in the traditional group.

H1b: There will be a greater degree of change in leadership schema for men participants of the experiential group compared to men in the traditional group

The experiential simulation models certain leadership behaviors by allowing the leader to engage in conflict management strategies, create tension, and directly utilize power and influence to accomplish work, practices crucial for an entrepreneur and in which women historically have been assumed to be less effective than men. Female participants in the simulation would be encouraged to be more assertive, accept their responsibilities for managing conflict productively, and challenging non-productive behaviors. The simulation would model and affirm those leadership behaviors that are considered more assertive such as conflict management.

For men, the simulation models the use of effective interpersonal skills through coaching, nurturing, and inviting "deep" conversation in order for leaders to motivate and engage subordinates/employees. In fact, by embedding interpersonal behaviors in a leadership simulation, and highlighting the importance of team-building and social interaction in getting work done, the leadership behaviors for male participants are projected to be significantly altered. Due to the simulation pedagogy, we would expect that male participants in the simulation would be perceived as exhibiting more effective interpersonal skills than their counterparts in the traditional group. Thus, we hypothesize different patterns of learning for men and women across pedagogy as follows:

H2a: Women trained in the experiential condition will be perceived as more effective leaders than women trained in the traditional condition.

H2b: Men trained in the experiential condition will exhibit a greater degree of interpersonal interaction than men trained in the traditional condition.

RESEARCH METHOD

This research used a quasi-experimental design with random assignment to test our hypotheses. The research proceeded in two phases. In the first phase, the control group (traditional pedagogy) and the experimental group (experiential pedagogy) were trained using the assigned pedagogy. Data were collected before and after the intervention to determine their perceptions of ideal leader behavior. In the second phase, approximately 10 weeks after the completion of the training intervention, participants engaged in a complex role play simulation where they were encouraged to apply what they had learned from the training. Data on leader effectiveness and data on interpersonal interaction were collected and analyzed.

Although the training interventions, data collection, and subsequent role play simulation were done with mixed samples of men and women, for the purposes of this research, we treat this

data as though the two gender groups are separate. Thus, we compare data for women undergoing the traditional pedagogy with women undergoing the experiential pedagogy. Likewise, we compare data for men undergoing the traditional pedagogy with men undergoing the experiential pedagogy. This separation of the data by gender is consistent with our goal to assess the impact of different pedagogy on male and females. It is not our intent, in this research, to compare scores of males and female. Rather our goal is to examine patterns of learning that may be experienced by the women students and the men students and draw inferences on the relative impact of these pedagogies on each gender group.

Sample

To test these hypotheses, 38 undergraduate honors students (23 women and 15 men) at a Mid-Atlantic university in the U.S. were enrolled in a two-day leadership training program. Students who agreed to participate were randomly assigned to either the traditional or experiential condition.

Experimental Manipulation

Both groups received the same lecture introducing the concepts. Both groups were engaged in 12 hours of training over the course of two contiguous Saturdays. In the experiential group, the initial introductory lecture/discussion was followed by an online tutorial to train how to play *Virtual Leader*. After the online training, students were asked to play practice rounds and engaged in a facilitated discussion regarding their experience in the game.

In the traditional pedagogy condition, the material was presented in four components; the introductory component and three areas of content. Each area of content was supplemented by an in-class exercise, an online case study, and a facilitated discussion of the online case. The underlying algorithm of the *Virtual Leader* that was adapted for the traditional pedagogy condition consisted of material covering topics relevant to entrepreneurship including: emotional intelligence and leadership, managing creativity and conflict, and using power and influence.

Phase 2 – Impact of the Training

To test the impact of the training, approximately 10 weeks after the initial training program interventions the participants were taken to the Center for Creative Leadership (CCL) in Greensboro, NC to participate in the Looking Glass, Inc. simulation. We used Looking Glass, Inc. (McCall & Lombardo, 1982) because prior research has clearly suggested that this simulation provides a very realistic and challenging venue to examine an individual's leadership skills (Chatman and Barsade, 1995). The Center for Creative Leadership is internationally recognized by both academics and practitioners for its leadership training using the Looking Glass, Inc. simulation. Looking Glass Inc. is a fictitious glass manufacturing company with three divisions[1].

Data Collection

[1] This is not a computer simulation; it requires the participants to communicate extensively with each other through different mechanisms and to discuss many issues. It reflects the realities of complex leader decision making and takes a lot of time for the participants to understand the issues, prioritize them, identify various potential solutions, and make decisions on the variety of issues.

Each student was required to complete one assessment instrument prior to phase 1 of the training and three assessment instruments after phase 1 of the training. One instrument, the Ideal Leader Behavior Description Questionnaire XII (Stodgill, 1974), was completed both prior to phase 1 of the training and again at the conclusion of phase 1. This instrument was used because it captures information about the participant's perceptions as to how leaders behave. In addition, a learning assessment was completed at the end of phase 1 of the training to determine the students' perceptions of their learning. Finally, a program evaluation instrument was completed by all students to determine that both groups' experiences were equally satisfactory. At the end of the Looking Glass, Inc. simulation data was collected using two instruments used by CCL. One instrument resulted in a socio-gram for each participant showing the network of relationships and interactions during the simulation. The second instrument asked each student to rate the effectiveness of each other.

Participants were assigned to either a "traditional" pedagogy training intervention or to an "experiential" training intervention using the *Virtual Leader* software. The change in the leadership schema of the participants was measured using the LBDQ XII (Stodgill, 1963). Students were asked to complete this survey prior to the training to determine their a priori leadership schema. Students were asked to complete the same questionnaire at the conclusion of training.

Students responded to specific questions regarding their perceived learning about the specific concepts covered in phase 1 of the training. Both groups were asked the same questions. For each of 16 items, students were asked about the adequacy of coverage of that idea using a 3 point scale ranging from excellent coverage (3) to inadequate coverage (1). Also for each of the 16 items, students rated their level of learning on a 5 point scale ranging from 5 representing "substantial increase in understanding" to 1 representing "no increase in understanding at all". This allows us to determine if there are differences in perceived learning based on the two pedagogical interventions. In this research, we examine the impact of pedagogy on the men's perceptions of their learning and the impact of pedagogy on the women's perceptions of their learning. The program evaluation instrument measured the students' satisfaction with their experience in the training program. Fourteen items were included in the program evaluation. Responses were based on a 5-point scale with 5 representing "excellent" and 1 representing "inadequate".

Leader effectiveness was measured using a 360 assessment tool designed for use in the Looking Glass, Inc. simulation. Each student who participated in the Looking Glass, Inc. simulation at CCL was asked to evaluate the other members of the simulation within their division. Each individual had an average score, ranging from 1-5 from 3 sources, a subordinate, a supervisor, and a peer. These averages were summed to create a leader effectiveness score ranging from 3-15. Low numbers indicated ineffectiveness.

Interpersonal effectiveness was evaluated by examining the self-reported interactions among all members of the Looking Glass, Inc. simulation. Each participant was asked to indicate the people in the division with whom they had an important relationship through drawing a socio-gram and answering questions about the relationship. This data was recorded; and the number of relationships within the division, outside the division, and vertically or horizontally were calculated for each participant. To adjust for differences in size of divisions, the numeric calculation was the number of relationships reported over the number of possible relationships at that level within the division. This measurement was intended to determine if there were any

differences in behavior exhibited across the two training groups. High numbers indicate that there were more interactions among the participants.

ANALYSIS AND RESULTS

As a manipulation check, we examined the program evaluation completed by the participants at the end of phase 1 of the training (Table 1). There were no statistically significant differences in student satisfaction across the two groups.

An additional manipulation check was done regarding perception of coverage of topics (Table 2). The male participants' evaluations of coverage were not statistically significantly different across the two conditions. The women participants' responses showed that coverage of the importance of objectives and the role of creative thinking was perceived more strongly by women in the traditional condition.

Table 1
MANIPULATION CHECK
Program Evaluation Results

	Mean	
	n=17	n=20
Program Evaluation	**Traditional**	**Experimental**
Topics covered	4.53	4.65
Visual aids in the classroom	4.53	4.55
Length of the program.	4.53	4.55
Physical facilities	3.41	3.60
Quality of instruction	4.53	4.60
Quality of food and beverages	4.65	4.60
Interaction among participants	3.88	4.10
Materials and handouts	4.06	4.30
Professionalism of the faculty and staff	4.94	4.90
The use of technology in this course	4.88	4.80

Table 2
MANIPULATION CHECK AND SELF-REPORTED ASSESSMENT OF TOPIC COVERAGE
Gender by Pedagogical Condition

		MEN				WOMEN			
		Coverage Mean							
		N	Mean	Std. Deviati	Stat. Sig.	N	Mean	Std. Deviation	Stat. Sig.
1. Making tradeoffs between the uses of Power, Tension, Ideas, and Work.	Traditional	7	2.86	0.38	n.s.	10	2.800	0.422	n.s.
	Experiential	6	2.83	0.41		15	2.800	0.414	
2. Understanding and using tactics to uncover ideas.	Traditional	7	2.57	0.54	n.s.	10	2.700	0.483	n.s.
	Experiential	6	2.50	0.55		15	2.800	0.414	
3. Understanding and using tactics for handling tension or conflict.	Traditional	7	2.86	0.38	n.s.	10	2.800	0.422	n.s.
	Experiential	6	2.50	0.55		15	2.733	0.458	
4. Understanding the need for listening and sharing power with others.	Traditional	7	2.86	0.38	n.s.	10	2.700	0.483	n.s.
	Experiential	6	2.83	0.41		15	2.867	0.352	
5. Importance of matching your specific tasks (work) to organizational goals and priorities.	Traditional	7	2.71	0.49	n.s.	10	2.700	0.483	n.s.
	Experiential	6	2.50	0.55		15	2.667	0.617	
6. Understanding and using tactics for gaining power and influence.	Traditional	7	3.00	0.00	n.s.	10	2.800	0.422	n.s.
	Experiential	6	3.00	0.00		15	2.867	0.352	
7. Considering the objectives of others in order to complete your goals.	Traditional	7	2.86	0.38	n.s.	10	3.000	0.000	p<.08
	Experiential	6	2.83	0.41		15	2.733	0.458	
8. Understanding the role of creative thinking.	Traditional	7	2.71	0.49	n.s.	10	2.800	0.422	p<.08
	Experiential	6	2.50	0.55		15	2.333	0.724	
9. Understanding that basic leadership behaviors are supporting or opposing ideas, and supporting or opposing others.	Traditional	7	3.00	0.00	n.s.	10	2.800	0.422	n.s.
	Experiential	6	2.83	0.41		15	2.933	0.258	
10. Understanding that the goal of a leadership situation is getting the right work done.	Traditional	5	3.00	0.00	n.s.	10	3.000	0.000	n.s.
	Experiential	5	3.00	0.00		14	2.929	0.267	
11. Understanding that there are ideas out in the open and there are hidden ideas.	Traditional	5	2.80	0.45	n.s.	10	2.400	0.516	n.s.
	Experiential	5	2.80	0.45		14	2.929	0.267	
12. Understanding the application of the "directing" leadership style.	Traditional	5	2.60	0.55	n.s.	10	2.900	0.316	n.s.
	Experiential	5	3.00	0.00		14	2.929	0.267	
13. Understanding the application of "participating" leadership style.	Traditional	5	2.80	0.45	n.s.	10	2.800	0.422	n.s.
	Experiential	5	3.00	0.00		14	2.929	0.267	
14. Understanding the application of "delegating" leadership style.	Traditional	5	2.80	0.45	n.s.	10	2.900	0.316	n.s.
	Experiential	5	3.00	0.00		14	2.714	0.469	
15. Understanding the differences between "directing, participating, and delegating" leadership styles.	Traditional	5	2.60	0.55	n.s.	10	2.800	0.422	n.s.
	Experiential	5	3.00	0.00		14	2.786	0.426	
16. Understanding the role of critical reasoning.	Traditional	5	2.60	0.55	n.s.	10	2.300	0.483	n.s.
	Experiential	5	2.40	0.89		14	2.643	0.497	

Do Men and Women Show Evidence of Difference in Learning?

For the men, the two pedagogies had similar results. There were no statistically significant differences based on the training intervention, thus rejecting H1b. For the female participants, there were two areas where learning was perceived differently based on the intervention. The female participants in the experiential condition indicated that they learned significantly more ($p<.01$) about the importance of ideas in leading organizations and the role of leaders in searching out ideas of others, even when they are not voluntarily offered (Table 3). Thus, for the women, there was agreement that these topics were covered equally in both interventions, but the women in the experiential conditions reported significantly higher levels of learning awareness around a particular topic thus supporting H1a.

Were There Differences in Perception of Leadership?

To examine changes in perception of leadership across the two training interventions, we examined differences between responses on pre- and post- LBDQ-XII questionnaires. First, we used an ANOVA to determine if there were statistically significant differences within the male and the female groups and across the two conditions prior to the training. Essentially, we wanted to see if the participants started from similar positions. For the women in this research, there were no statistically significant differences in a priori perceptions of ideal leader behavior across the two pedagogical conditions (Table 4). For the men, their perceptions of the ideal leader behavior were not statistically different prior to training with the exception of items associated with the importance of consideration. Men who were assigned to the experiential condition were more likely to think that these behaviors were part of their ideal leader schema ($p<.01$). Over all, the groups of men and women assigned to the two conditions were remarkably similar in their perceptions of the ideal leader prior to the training (Table 5).

Table 3
SELF-REPORTED LEARNING ASSESSMENT
Gender by Pedagogical Condition

		N	Learning Mean	Std. Deviation	Stat. Sig.	Mean	Std. Deviation	Stat. Sig.
1. Making tradeoffs between the uses of Power, Tension, Ideas, and Work.	Traditional	7	4.43	0.79	n.s.	4.10	0.876	n.s.
	Experiential	6	4.00	0.63		4.20	0.561	
2. Understanding and using tactics to uncover ideas.	Traditional	7	4.29	0.76	n.s.	3.60	0.843	p<.01
	Experiential	6	3.67	0.82		4.47	0.743	
3. Understanding and using tactics for handling tension or conflict.	Traditional	7	4.43	0.98	n.s.	4.20	1.033	n.s.
	Experiential	6	4.17	0.98		4.20	0.775	
4. Understanding the need for listening and sharing power with others.	Traditional	7	4.29	0.76	n.s.	3.90	0.994	n.s.
	Experiential	6	3.67	1.03		4.00	1.000	
5. Importance of matching your specific tasks (work) to organizational goals and priorities.	Traditional	7	4.29	0.76	n.s.	3.89	0.928	n.s.
	Experiential	6	4.00	0.89		4.13	0.915	
6. Understanding and using tactics for gaining power and influence.	Traditional	7	4.71	0.76	n.s.	4.10	0.738	n.s.
	Experiential	6	4.33	0.82		4.07	0.884	
7. Considering the objectives of others in order to complete your goals.	Traditional	7	4.00	1.00	n.s.	4.30	0.949	n.s.
	Experiential	6	4.00	1.10		3.73	1.033	
8. Understanding the role of creative thinking.	Traditional	7	4.14	0.69	n.s.	3.90	1.197	n.s.
	Experiential	6	3.67	1.03		3.47	1.246	
9. Understanding that basic leadership behaviors are supporting or opposing ideas, and supporting or opposing others.	Traditional	7	4.29	1.11	n.s.	4.20	0.789	n.s.
	Experiential	6	4.50	0.55		4.60	0.507	
10. Understanding that the goal of a leadership situation is getting the right work done.	Traditional	5	4.80	0.45	n.s.	4.00	1.054	n.s.
	Experiential	5	4.40	0.89		4.43	0.938	
11. Understanding that there are ideas out in the open and there are hidden ideas.	Traditional	5	3.60	1.34	n.s.	3.80	1.033	p<.01
	Experiential	5	4.00	1.23		4.64	0.497	
12. Understanding the application of the "directing" leadership style.	Traditional	5	3.80	0.84	n.s.	4.40	0.516	n.s.
	Experiential	5	4.40	0.89		4.14	0.864	
13. Understanding the application of "participating" leadership style.	Traditional	5	4.00	1.00	n.s.	4.20	0.632	n.s.
	Experiential	5	4.60	0.55		4.36	0.842	
14. Understanding the application of "delegating" leadership style.	Traditional	5	4.00	1.00	n.s.	4.20	0.632	n.s.
	Experiential	5	4.60	0.55		3.64	1.082	
15. Understanding the differences between "directing, participating, and delegating" leadership styles.	Traditional	5	4.20	1.10	n.s.	4.30	0.675	n.s.
	Experiential	5	4.20	1.30		4.29	0.914	
16. Understanding the role of critical reasoning.	Traditional	5	4.00	1.00	n.s.	3.60	0.843	n.s.
	Experiential	5	3.60	1.14		3.86	0.949	

Table 4
MANIPULATION CHECK
A PRIORI PERCEPTIONS OF IDEAL LEADER BEHAVIORS – WOMEN
Analysis of Variance
DV = Ideal Leader Behavior

		N	Mean	Std. Deviation	Statistical Significance
Factor 1: Representation	**Traditional**	9	1.93	0.37	n.s
	Experiential	14	2.07	0.35	
Factor 2: Demand Reconciliation	**Traditional**	9	1.44	0.41	n.s
	Experiential	14	1.60	0.33	
Factor 3: Tolerance of Uncertainty	**Traditional**	9	2.13	0.57	n.s
	Experiential	14	2.29	0.76	
Factor 4: Persuasiveness	**Traditional**	9	1.80	0.33	n.s
	Experiential	14	1.76	0.27	
Factor 5: Initiation of Structure	**Traditional**	9	1.59	0.39	n.s
	Experiential	14	1.77	0.30	
Factor 6: Tolerance of Freedom	**Traditional**	9	2.11	0.36	n.s
	Experiential	14	2.39	0.49	
Factor 7: Role Assumption	**Traditional**	9	1.89	0.30	n.s
	Experiential	14	1.85	0.20	
Factor 8: Consideration	**Traditional**	9	2.02	0.26	n.s
	Experiential	14	2.02	0.60	
Factor 9: Production Emphasis	**Traditional**	9	2.09	0.49	n.s
	Experiential	14	2.15	0.42	
Factor 10: Predictive Accuracy	**Traditional**	9	1.80	0.26	n.s
	Experiential	14	1.86	0.36	
Factor 11: Integration	**Traditional**	9	1.58	0.29	n.s
	Experiential	14	1.79	0.35	
Factor 12: Superior Orientation	**Traditional**	9	1.76	0.37	n.s
	Experiential	14	1.81	0.25	

Table 5
MANIPULATION CHECK
A PRIORI PERCEPTIONS OF IDEAL LEADER BEHAVIORS – MEN
Analysis of Variance
DV = Ideal Leader Behavior

		N	Mean	Std. Deviation	Statistical Significance
Factor 1: Representation	Traditional	9	2.00	0.49	n.s.
	Experiential	5	1.88	0.23	
Factor 2: Demand Reconciliation	Traditional	9	1.73	0.46	n.s.
	Experiential	5	1.48	0.41	
Factor 3: Tolerance of Uncertainty	Traditional	9	2.48	0.52	n.s.
	Experiential	5	2.32	0.50	
Factor 4: Persuasiveness	Traditional	9	1.78	0.46	n.s.
	Experiential	5	1.76	0.36	
Factor 5: Initiation of Structure	Traditional	9	1.57	0.32	n.s.
	Experiential	5	1.78	0.44	
Factor 6: Tolerance of Freedom	Traditional	9	2.10	0.36	n.s.
	Experiential	5	2.04	0.17	
Factor 7: Role Assumption	Traditional	9	1.91	0.48	n.s.
	Experiential	5	1.84	0.27	
Factor 8: Consideration	Traditional	9	2.19	0.45	p<.10
	Experiential	5	1.80	0.12	
Factor 9: Production Emphasis	Traditional	9	2.00	0.47	n.s.
	Experiential	5	2.18	0.54	
Factor 10: Predictive Accuracy	Traditional	9	1.67	0.35	n.s.
	Experiential	5	1.76	0.26	
Factor 11: Integration	Traditional	9	1.69	0.45	n.s.
	Experiential	5	1.64	0.17	
Factor 12: Superior Orientation	Traditional	9	1.76	0.42	n.s.
	Experiential	5	1.66	0.36	

To determine if the men and women respectively had their perceptions affected by the training, we conducted an ANOVA to see if there were statistically significant changes. For the men participants, four factors showed significant shifts in terms of their schema of leaders across the two pedagogical conditions. Factor 2, associated with Demand Reconciliation, represents behaviors associated with resolving conflict. Consistent with the techniques of *Virtual Leader*, where the leader is encouraged to manage conflict in order to create an appropriate degree of tension to enhance productivity, the male students in the experiential condition were more likely to de-emphasize the value of Demand Reconciliation while the male students in the traditional condition were more likely to emphasize it ($p<.045$). This same pattern was repeated whereby Traditional students were more committed to Consideration behaviors, but experiential (VL) students were less likely to value these behaviors ($p<.058$).

Men in both traditional and experiential conditions changed their evaluation of the importance of the role of the leader, but for the men, the change was more pronounced in the

experiential condition (p<.058). Men in the traditional conditions were less likely to value behaviors associated with production while men in the experiential condition were more likely to value them (p<.046). One conclusion from this analysis is that the experiential condition impacted the males in a variety of ways. The behaviors modeled in the game-based simulation and the underlying values present in the game were easily picked up by the participants. Though the same information was covered in the traditional training intervention, the impact on the men's leadership schema was very different for the experiential pedagogy as compared to the traditional pedagogy. Table 6 shows the results of this analysis for men and Table 7 shows the results for women.

Table 6
CHANGE IN LEADERSHIP SCHEMA BY PEDAGOGY: MEN
Analysis of Variance
DV: Degree of Change in Perception of Ideal Leader Behavior

		N	Mean	Std. Dev.	Statistical Significance
Factor 1: Change in Representation	**Traditional**	7	-0.029	0.423	n.s
	Experiential	5	-0.080	0.729	
Factor 2: Change in Demand Reconciliation	**Traditional**	7	-0.200	0.400	p<.045
	Experiential	5	0.440	0.573	
Factor 3: Change in Tolerance of Uncertainty	**Traditional**	7	-0.114	0.348	n.s
	Experiential	5	0.120	0.349	
Factor 4: Change in Persuasiveness	**Traditional**	7	-0.200	0.337	n.s
	Experiential	5	0.040	0.288	
Factor 5: Change in Initiation of Structure	**Traditional**	7	0.257	0.472	n.s
	Experiential	5	0.060	0.416	
Factor 6: Change in Tolerance of Freedom	**Traditional**	7	0.029	0.236	n.s.
	Experiential	5	0.240	0.568	
Factor 7: Change in Role Assumption	**Traditional**	7	0.014	0.329	p<.058
	Experiential	5	0.500	0.464	
Factor 8: Change in Consideration	**Traditional**	7	-0.229	0.330	p<.051
	Experiential	5	0.200	0.332	
Factor 9: Change in Production Emphasis	**Traditional**	7	0.400	0.271	p<.046
	Experiential	5	-0.100	0.489	
Factor 10: Change in Predictive Accuracy	**Traditional**	7	-0.171	0.315	n.s.
	Experiential	5	0.000	0.424	
Factor 11: Change in Integration	**Traditional**	7	-0.171	0.454	n.s.
	Experiential	5	0.200	0.616	
Factor 12: Change in Superior Orientation	**Traditional**	7	-0.171	0.423	n.s.
	Experiential	5	-0.040	0.261	

Table 7
CHANGE IN LEADERSHIP SCHEMA BY PEDAGOGY: WOMEN
Analysis of Variance
DV: Degree of Change in Perception of Ideal Leader Behavior

		N	Mean	Std. Dev	Statistical Sig.
Factor 1: Change in Representation	**Traditional**	9	-0.044	0.445	n.s
	Experiential	14	-0.014	0.546	
Factor 2: Change in Demand Reconciliation	**Traditional**	9	0.111	0.376	n.s
	Experiential	14	0.086	0.366	
Factor 3: Change in Tolerance of Uncertainty	**Traditional**	9	-0.011	0.306	n.s
	Experiential	14	-0.143	0.293	
Factor 4: Change in Persuasiveness	**Traditional**	9	0.089	0.558	n.s
	Experiential	14	-0.007	0.329	
Factor 5: Change in Initiation of Structure	**Traditional**	9	0.133	0.374	p<.025
	Experiential	14	-0.150	0.187	
Factor 6: Change in Tolerance of Freedom	**Traditional**	9	0.056	0.265	n.s.
	Experiential	14	-0.114	0.363	
Factor 7: Change in Role Assumption	**Traditional**	9	0.078	0.402	n.s.
	Experiential	14	0.086	0.321	
Factor 8: Change in Consideration	**Traditional**	9	-0.067	0.265	n.s.
	Experiential	14	-0.036	0.217	
Factor 9: Change in Production Emphasis	**Traditional**	9	-0.078	0.415	n.s.
	Experiential	14	-0.057	0.394	
Factor 10: Change in Predictive Accuracy	**Traditional**	9	0.089	0.459	n.s.
	Experiential	14	-0.229	0.443	
Factor 11: Change in Integration	**Traditional**	9	0.111	0.376	n.s.
	Experiential	14	-0.071	0.412	
Factor 12: Change in Superior Orientation	**Traditional**	9	0.000	0.206	n.s.
	Experiential	14	-0.107	0.276	

The pattern for the women participants between the pre- and post- LBDQ XII questionnaires was quite different from that for the males. Women in the experiential condition were more likely to have changed perception of "initiation of structure" than women in the traditional condition ($p<.025$). The shift combined with their perceived learning regarding the importance of proactive search and generation of ideas, might suggest that women students in the experimental condition experienced a more substantial change in schema on this dimension of leader behavior.

These results show that although both men and women participated in the exact same training experience, at the same time, and with similar a priori assumptions about leaders, men and women seemed to show different patterns of learning based on the pedagogy. Men in the experiential condition indicated a greater magnitude of changes in their perceptions of ideal leader behaviors than did women. Also, men in the experiential condition seemed to learn something that influenced their schemas of leadership in ways that were different than men in the traditional condition. This pattern also occurred in the sample of women but not along the same dimensions

as the men. The learning and schema of both genders were impacted by the use of the experiential pedagogy. The fact that there were more statistically significant changes in factors for the men suggests that the men's schema were impacted by the training to a greater extent than the women.

Did The Training Result in Differences in Leader Effectiveness by Gender?

Differences in perception of Leader Effectiveness were examined using ANOVA. For each gender-based sample, Group was entered in the model as a categorical variable. Results of the analysis are shown in Table 8.

Table 8
EVALUATION OF LEADER EFFECTIVENESS
Analysis of Variance
DV = Perceived Leader Effectiveness

MEN

DV= Perceived Leadership Effectiveness

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.32	1	1.32	0.808	0.386
Within Groups	19.595	12	1.633		
Total	20.915	13			

	N	Mean	Std. Deviation
Traditional	9	12.26	1.32
Experimental	5	12.90	1.19

WOMEN

DV= Perceived Leadership Effectiveness

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.375	1	9.375	3.547	0.074
Within Groups	55.513	21	2.643		
Total	64.889	22			

	N	Mean	Std. Deviation
Traditional	9	11.04	1.16
Experimental	14	12.35	1.86

This analysis shows an interesting gender effect from examining the two pedagogies. When the male participants were examined, perception of leader effectiveness as determined by the 360 assessment was not statistically significantly different across the two conditions. The mean rating for men in both conditions was very similar (Trad mean = 12.26, Exp mean = 12.9, p=.386). This

suggests that perceptions of the leader effectiveness of the men were not impacted by the training intervention in phase 1 of the study. Men's understanding and execution of leader behavior were perceived similarly regardless of the training condition. For the women, though, there was a statistically significant difference in the leader effectiveness scores from the two training conditions. For women trained in the traditional way, the leader effectiveness score was significantly lower than women trained using the experiential pedagogy (Trad mean = 11.04, Exp mean = 12.35, p=.07), thus providing weak support for H2a.

This result suggests that the use of game-based simulations that emphasize role play may be particularly valuable for improving the perceived effectiveness of women in the workplace. The simulation provides two benefits. First, it provides a safe environment for women to try different approaches to accomplishing their tasks. Practicing the art of challenging employees/workers or raising tension in a meeting may provide the confidence needed to engage in this kind of behavior in a more realistic setting. Second, within the simulation, the women are rewarded for more aggressive behavior that results in production rather than being sanctioned for such behavior. Thus, this feedback teaches women that initiating actions are perceived positively if they result in improved results. Combined with the results that women in the experiential group learned about the importance of offering and seeking out ideas, as well as the shift regarding their perceptions of leader behaviors associated with initiating structure, these results suggest that these types of simulations can be effective in teaching women how to practice these behaviors associated with providing more specific guidance on policy and leadership issues within the new venture. Given prior research that shows that women are less likely to inject themselves into vigorous business discussions, using a more experiential pedagogy for development of women leaders rather than conventional classroom pedagogy may help women begin to break through the glass ceiling in larger numbers.

Did The Training Result in Differences in Interpersonal Effectiveness by Gender?

In this research, we also examined possible differences in behaviors as indicated by the level of interaction among the people in the model. One of the elements of good leadership is communication and networking. For this analysis a total of 10 possible measurements were created from the socio-grams completed by the participants. The measurements capture multiple ways an individual could interact with others in the simulation. In Table 9 and Table 10 are the results of an ANOVA which shows differences for each gender sample across the two pedagogical conditions.

Table 9
EVALUATION OF LEADER EFFECTIVENESS
Analysis of Variance
DV = Interpersonal Effectiveness

MEN

Important Relationships	Group	N	Mean	Std. Deviation	Statistical Significance
% of all relationships possible	**Traditional**	9	0.38	0.02	n.s.
	Experimental	5	0.41	0.12	
% of all possible relationships in division	**Traditional**	9	0.94	0.08	n.s.
	Experimental	5	0.88	0.18	
% of all possible relationships outside division	**Traditional**	9	0.13	0.04	n.s.
	Experimental	5	0.22	0.10	
% of possible vertical relationships inside division	**Traditional**	9	0.94	0.11	n.s.
	Experimental	5	0.85	0.20	
% of possible horizontal relationships inside division	**Traditional**	8	0.94	0.18	n.s.
	Experimental	3	1.00	0.00	
% of possible vertical relationships outside division	**Traditional**	9	0.00	0.00	p<.05
	Experimental	5	0.20	0.14	
% of possible horizontal relationships outside division	**Traditional**	9	0.37	0.26	n.s.
	Experimental	5	0.41	0.38	
% of times mentioned by others - Inside division	**Traditional**	9	0.67	0.17	n.s.
	Experimental	5	0.70	0.20	
% of times mentioned by others - outside division	**Traditional**	9	0.09	0.08	p<.001
	Experimental	5	0.27	0.07	
% of times mentioned by others - total	**Traditional**	9	0.27	0.07	p<.001
	Experimental	5	0.39	0.04	

Table 10
EVALUATION OF LEADER EFFECTIVENESS
Analysis of Variance
DV = Interpersonal Effectiveness

WOMEN

Important Relationships	Group	N	Mean	Std. Deviation	Statistical Significance
% of all relationships possible	**Traditional**	9	0.27	0.10	n.s.
	Experimental	14	0.31	0.08	
% of all possible relationships in division	**Traditional**	9	0.69	0.21	n.s.
	Experimental	14	0.76	0.22	
% of all possible relationships outside division	**Traditional**	9	0.10	0.08	n.s.
	Experimental	14	0.11	0.12	
% of possible vertical relationships inside division	**Traditional**	9	0.68	0.16	n.s.
	Experimental	14	0.72	0.24	
% of possible horizontal relationships inside division	**Traditional**	7	0.64	0.48	n.s.
	Experimental	13	0.81	0.38	
% of possible vertical relationships outside division	**Traditional**	9	0.00	0.00	n.s.
	Experimental	14	0.05	0.11	
% of possible horizontal relationships outside division	**Traditional**	9	0.38	0.40	n.s.
	Experimental	14	0.24	0.30	
% of times mentioned by others - Inside division	**Traditional**	9	0.80	0.18	n.s.
	Experimental	14	0.70	0.15	
% of times mentioned by others - outside division	**Traditional**	9	0.10	0.06	n.s.
	Experimental	14	0.09	0.09	
% of times mentioned by others - total	**Traditional**	9	0.30	0.06	n.s.
	Experimental	14	0.27	0.07	

Traditionally, women are considered the gender which has better networking and communication skills. Consistent with this stereotype, there was not a pedagogical impact associated with interpersonal interaction among the women. The women trained under both conditions showed similar patterns of engagement and networking across the fictitious setting. In contract, the statistically significant difference among the sample of men suggest that while the experiential pedagogy may not change their perceived effectiveness as leaders, men trained in the experiential condition showed greater levels of networking and interpersonal engagement than those trained using the traditional pedagogy, thus supporting H2b.

DISCUSSION

While many entrepreneurship research efforts have examined differences in men and women, this research is framed to examine the differential impact of pedagogical interventions on men and women for leadership. Thus, the purpose is not to examine how male and female entrepreneurs differ from each other, but rather how men and women may perceive and experience pedagogy differently. This analysis has shown that in circumstances where men and women are

simultaneously experiencing the same pedagogies, differences in learning and behavior may result. In this research, we found that pedagogy impacted women differently than men. Women in the experiential condition were perceived as more effective leaders by their colleagues than women who were trained using traditional pedagogy. This suggests that the actions of women in phase 2 of the training were noticeably different as a result of which pedagogy was used in phase 1. The levels of social interaction by women trained with different pedagogies, however, were not statistically significantly different.

Regardless of type of training in phase 1, men in phase 2 were perceived as similarly effective by their peers in terms of their overall leadership abilities. The experiential pedagogy, however, did seem to impact positively the reported social interactions of men. Men who were trained in phase 1 using the experiential pedagogy communicated more with others in phase 2 than did those undergoing the traditional pedagogy.

Men also seemed to be more impacted by the learning itself, in that there were greater changes in their leadership schema with the experiential condition than with the traditional condition. Men tended to revise their model of leadership differently depending upon what pedagogy was used. Again, although the content itself was similar across the two training interventions in phase 1, what was learned by the students varied by gender.

This study indicates the need for substantially more evaluation of the impact of pedagogy in general, and game-based simulations in particular, and on learning as it is related to gender differences. New technology provides opportunities for new pedagogical tools. Computer-based simulations have long been part of business pedagogy; however, most of these have focused on decision making in organizations (strategy, international business, marketing, etc.). Simulations that involve interpersonal behavior have traditionally been used in the form of simple role plays or in-basket exercises. With the greater sophistication that exists today in the area of computer games and the lifelike avatars that exist in virtual worlds, a new era of simulations has arrived.

If colleges and schools of business are truly to engage in the type of preparation to empower men and women students to be successful entrepreneurs through the development of practical leadership and interpersonal communication competencies, then this study indicates that adoption of more experiential learning pedagogy may have a strong and positive effect in general. Moreover, this research suggests that experiential learning pedagogy based on computer-based simulation may have promise in closing gender-related skill gaps- specifically in helping females improve their perceived leadership effectiveness and in helping males improve their perceived interpersonal communication skills, which are critical skills for entrepreneurs.

LIMITATIONS AND FUTURE RESEARCH

Although the game-based simulation shows much promise in this study, this research is not without limitations. The first of these potential limitations is the quasi-experimental design. As is characteristic of all experiments, this design embodies a certain degree of artificiality since no experiment can capture all of the emotional and psychological factors involved in real life situations. Additionally, while the quasi experimental design has been shown to be effective, there was no true “control” group in this study. A control group would have consisted of a group of students who had no preparation at all. Future research that includes a control group in a replication study could prove beneficial in validating the results of the current study.

Another limitation of this study involved using a relatively small sample of students at one university. This may limit the generalizability of the findings. Future research should focus on replicating this study utilizing larger sample sizes, with varying demographic profiles. A larger,

diverse sample could improve the statistical significance of the findings, and increase the generalizability of the study.

This research also highlights other potential items for future research to address. At a minimum, this research indicates that simulation research should capture and control for gender differences. Additionally, we do not know if the associated learning will eventually be extinguished or if it will be long-lived. Future research might focus on assessments that are carried out over longer periods of time to evaluate whether the findings of this study remain constant over time.

An interesting project would be to repeat this experiment using experienced entrepreneurs. The process of acquiring entrepreneurship skills may eliminate the differences in leadership and communication between genders. However, it is possible that experiences might heightened the differences. Using a sample with experienced entrepreneurs would help to answer this question.

The same basic set-up for the experimentation could be used to test additional skills relevant to entrepreneurs (e.g., self-promotion, negation, self-efficacy) to determine whether there are gender differences that would have an impact on pedagogy. This knowledge could significantly facilitate more effective entrepreneurship education.

Finally, much work is needed to tease out gender differences for role playing, simulation and experiential projects. Do the gender differences for leadership and communication grow as education methodologies increase in complexity? A small difference noted for role-playing within the classroom may be exacerbated when students move to consulting projects with a real world situation or for an internship. The role-playing exercises and simulations can be used to help develop needed skills that may then be practiced in more real world settings.

CONCLUSION

If entrepreneurs are to be successful in an increasingly volatile business environment, they must be empowered to develop skills needed to be effective and productive. Moreover, it is important that universities incorporate training that targets specific gaps in students' skills, including those attributed to gender. This research is significant because we attempt to empirically test our ability to systematically and purposefully develop leadership effectiveness skills in women and interpersonal communication skills in men. We used innovations in technology to develop a training experience to facilitate experiential learning in a controlled environment and then empirically evaluated the transferability, use, and retention of the learning for each gender. The results of this study suggest that computer simulation games may be particularly effective in developing effective leadership skills in women and effective communication skills in men.

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BOOTSTRAPPING AND NEW-BORN STARTUPS PERFORMANCE: THE ROLE OF FOUNDING TEAM HUMAN CAPITAL

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ABSTRACT

This study examines the influences of bootstrapping approach on new-born startup performance by investigating the interactive effects of founding team human capital. The sample includes new-born startups at 3 years of age, an initial stage of business development. Data was collected from the longitudinal panel data from Kauffman Firm Survey conducted by the Ewing Marion Kauffman Foundation over the period of 2005-2007. Results indicate that bootstrapping approach is negatively related to a new-born startup's profitability and revenue growth. Types of founding team human capital has various moderating impacts on startup performance. Startup teams' industry experiences and startup experiences have significant growth constrains on bootstrapping startup firms; while teams' education and entrepreneurial expertise facilitate bootstrapping startups to achieve positive revenue growth.

Keywords: Bootstrapping, founding team, human capital, new-born startups, performance, profitability, growth

INTRODUCTION

It has been widely documented in the entrepreneurship literature that startups suffer from a liability of newness. One of the reasons for this liability is the limited resources available to new firms (Bruton & Rubanik, 2002). Financing constrain is being attributed as a principal reason that new ventures fail (Reuber & Fischer, 1999; Rujoub, Cook, & Hay, 1995; Ucbasaran, Shepherd, Lockett, & Lyon, 2013). Although there are large amounts of financial resources from external investors available such as venture capitalists, business angels, and other financial institutions, most new startups often experience limited access to external finances due to market imperfections, information asymmetries, or high transaction costs (Cassar, 2004; Cosh, Cumming, & Hughes, 2009; Venkataraman & Low, 1994). As a consequence, many startup firms respond with bootstrapping, through which they find creative ways to minimize cash requirements and reduce the need for external capital. For some other startups, pursuing bootstrapping approach is not due to the limited chances of accessing external finance, but a result of venturing strategic choice that is aiming for a complete control over their own firms by avoiding external finance (Sapienza, Korsgaard, & Forbes, 2003).

A pioneering study by Winborg and Landstrom (2001) found empirical evidence that startups bootstrapping activities can minimize cash requirements as well as the overall cost of operations; reduce the need for external capital; improve cash flows; and have greater use of internal financing. A growing body of literature has documented that bootstrap financing activities are creative routes of resource mobilization that lead to new startups' success (Grichnik,

Brinckmann, Singh, & Manigart, 2014; Jones & Jayawarna, 2010; Schildt, Maula, & Keil, 2005). Although entrepreneurship scholars have argued that bootstrapping activities can substantially reduce the amount of working capital and increase profitability through more efficient cash management practices, the entrepreneurship academic community has not fully understood the influences of bootstrapping on startup performance (Jones & Jayawarna, 2010; Lahm Jr & Little Jr, 2005; Patel, Fiet, & Sohl, 2011). There is a competing hypothesis explaining that bootstrapping would negatively influence the success of startups. This line of research argues that bootstrapping behaviors will hamper future investments, and the costs associated with bootstrap maybe higher than traditional sources of finance because entrepreneurs spend valuable time on implementing marginal savings but neglecting other more critical tasks in their firms; thereby, bootstrapping approach could hinder entrepreneurs from identifying and exploiting new opportunities and constrain subsequent venture growth (Carpenter & Petersen, 2002; Cassar, 2004; Vanacker, Manigart, Meuleman, & Sels, 2011).

To address this debate, the current study contributes the existing entrepreneurship literature by examining the moderating role of founding team human capital in the relationship between bootstrapping and new-born startup performance. It argues that the inconsistent results of the impacts of bootstrap are contingent in startup team human capital. Given the fact that most startups are typically launched and grown by teams but not individuals (Khan, Breitenecker, & Schwarz, 2015; Klotz, Hmieleski, Bradley, & Busenitz, 2014), entrepreneurial founding team plays a pivotal role in launching and growing high potential firms. Founding team human capital determines startups' accessibility of information and resources, influences choices of venturing strategies, and leads to various paths of venture creation and associated performance (Dess, Lumpkin, & Covin, 1997; Lu & Beamish, 2001; Sandberg & Hofer, 1987; Shane, 2000). Human capital at individual level can affect a person's knowledge, skills, ability of problem-solving, discipline, motivation, and self-confidence (Cooper, Gimeno-Gascon, & Woo, 1994). Once individuals form a founding team, each member's human capital is accumulated and transited into the team that improves the startup's ability of coping with uncertainty, choosing better strategies, and thereby these firms are more likely to success than solo-teamed firms (Cooper et al., 1994; Dahlqvist, Davidsson, & Wiklund, 2000; Davidsson & Honig, 2003; Wright, Hmieleski, Siegel, & Ensley, 2007). Therefore, founding team human capital can assist startups in searching creative solutions for resource constrains and offset the negative impacts of bootstrapping approach on startup performance.

A common practice of the available empirical literature on startup performance is using data on incumbents or established young firms but not startups at the initial stages of business development. Incumbent firms are survivors of startups in the marketplace. The positive impacts of bootstrapping on firm performance among incumbent firms are hardly generated to the whole startup population due to the survivorship bias of firms (Hyytinen, Pajarinen, & Rouvinen, 2015). According to the data of The Bureau of Labor Statistics and Business Dynamics Statistics of Census Bureau, 69% businesses survive 2 years or more (Regmi, Ahmed, & Quinn, 2015) and 49% small businesses survive 5 years or more (Robb & Farhat, 2013). Put in another way, about 31% startups are out of business in the third year, and 51% are out in the fifth years. Year 3-5 is a vital stage which startups must develop through. If bootstrapping has negative influences on

startup firms' performance, but a positive association between bootstrapping and growth is still found in incumbent firms, the growing startup firms that adopt bootstrapping approach are more likely to have a set of other strengths that enhance their performance. If this set of other strengths are not considered into the research, it will create larger error term in the regression model. To better understand how new-born startups survive and grow in their infant age, it must focus on a new-born startup sample. Findings from the investigation on the startup sample will provide more practical implementations to new-born startup entrepreneurs who are bootstrapping and struggling for the survival of the firm.

This study makes an important contribution to the literature by applying both resource-based view and human capital theory in the context of new-born startup settings. Specifically, it has empirical contribution to the literature by providing a document of the interdependent effects of founding team human capital and bootstrapping approach on new-born startups' profitability and revenue growth. Findings of this study also has practical implementations for entrepreneurs when they make venturing decisions in the very early stage of business development.

The rest of the article is organized as follows. The first following section presents the literature review and hypotheses development. The second section outlines the methods, data analysis, and findings. Discussion of the results is presented in the last.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Bootstrapping Activities And New-born Startup Performance

It is well acknowledged that new ventures suffer from the liability of newness. Entrepreneurship scholars argued that financial constrain was one of the major reasons that cause new venture to fail (R. B. Carter & Van Auken, 2005; Rujoub et al., 1995; Ucbasaran et al., 2013). Previous entrepreneurship literature has documented that startups respond to the problem in securing long-term external finance by creatively conduct bootstrapping activities (Neely & Van Auken, 2012). Winborg and Landstrom (2001) defined financial bootstrapping as "the use of methods for meeting the need for resources without relying on long-term external finance from debt holders and/or new owners". Bootstrap financing activities include a range of highly creative ways of acquiring resources without borrowing money or raising equity financing from traditional sources. Startups that take bootstrapping strategy typically involve the use personal savings, credit-card debt, loans from friends and family and other nontraditional forms of capital (Harrison, Mason, & Girling, 2004; Lahm Jr & Little Jr, 2005; Malmström, 2014; Winborg & Landstrom, 2001). Bootstrapping activities also include borrowing equipment; buying used equipment instead of new; delaying payments to suppliers, or carrying personal favors to secure the resources needed etc. (Malmström, 2014).

The existing literature has documented that as many as 80-95% of startups carry out some forms of bootstrapping activities (Harrison et al., 2004; Winborg & Landstrom, 2001). Although bootstrapping approaches are widespread in actual practice among start-ups, the effects of bootstrapping on the success of entrepreneurial startups are debatable. One stream of research outlines the importance of bootstrapping to startups. They argued that bootstrapping can be both financially and emotionally rewarding to entrepreneurs (Worrell, 2002). By applying

bootstrapping strategic practices, entrepreneurs find creative ways to avoid the need for external financing through reducing overall costs of operation, improving cash flow, or using internal financial supports to the company (Ebben & Johnson, 2006). Bootstrapping can help entrepreneurs develop cash management skills (Smith, Smith, Smith, & Bliss, 2011). Therefore, through changing dependence on external finance, startup firms can improve their chances of survival and success (Ebben & Johnson, 2006). Moreover, bootstrapping approach can be a major competitive advantage by creating a "discipline of leanness" (Timmons, 1999 : 39).

On the other hand, another stream of research is holding a competing argument by considering bootstrapping as a risky approach to startup performance (Lahm Jr & Little Jr, 2005). They argue that bootstrapping hampers future investments because bootstrappers usually emphasize marginal savings but neglect new opportunities (Baker & Nelson, 2005). Via bootstrapping approaches such as "do-it-yourself" model, entrepreneurs spend too much time learning how to perform or perform tasks that are worth less than other tasks (Lahm Jr & Little Jr, 2005). In addition, obtaining accesses to cheap resources might bring imperfect resources to the frim (Baker & Nelson, 2005). As a consequence, the business may not realize its full potential. Furthermore, as a way of ad hoc reduction of the operating costs of the business, bootstrapping may constrain firms from growing as fast as they might be in the same cases that instead use other strategic approaches (Harrison et al., 2004). Brush, Carter, Gatewood, Greene, and Hart (2006) examined the correspondence between bootstrapping and stage of business development. Their results show that, depending on stage of business development, significant different uses of bootstrapping options exist among women-led ventures, but the correspondence between bootstrapping activities and early growth of business was not supported.

Taking together, bootstrapping practices are viewed as startups' responses to the capital constrains (Winborg & Landstrom, 2001), or to a strategic intention of avoiding external finance in order to keep a complete control over the firm (Sapienza et al., 2003). Indeed, in the absence of substantial resources, startup firms are forced to utilize bootstrapping method as a means of survival (Ebben & Johnson, 2006). Entrepreneurs conduct bootstrapping activities to access resources necessary for business development, either to reduce the need for financial capital or to provide alternative sources of capital. Resources acquired through bootstrapping financing are largely insufficient to finance growth, especially in new startups that already tend to be undercapitalized (Vanacker et al., 2011). Through adopting bootstrapping approaches, startups utilize firm resources very cautiously and adopt a conservative path rather than a risk-taking one toward the future. Bootstrapping startups may rely on free or cheap access to obtain imperfect resources, and choose less desirable way for business implementation. As a consequence, these startup firms are unable to identify or exploit entrepreneurial opportunities thereby constrains the firm's growth potential. For new-born startups that are at very early stage of business development, taking the conservative approach will take longer time for them to get the return from the market. Thus, even though as the first research stream holds that bootstrapping may have some cost benefits in the short run, it may trade off a firm's competitive advantages. Furthermore, although bootstrapping helps develop cost management skills, it will take time for entrepreneurs to learn these skills and transit what they have learned into value created activities. At the very early stage of business development, the benefits of bootstrapping may not be able to appear in

startup performance. In this vein, bootstrapping activities are inherently associated with financial constrain and profitability, and consequently correspond to growth constrain of the firm. Furthermore, as young firms develop, they will gain leverage with outside parties and obtain legitimacy with their operations (Ebben & Johnson, 2006). These changes in their leverage with banks, investors, customers, and suppliers will also change the firm's desirability to apply bootstrapping techniques, or these techniques may not be available any more. Thus, along with this logic, bootstrapping strategy has a negative relationship with the profitability and growth of a new-born startup firm at initial stage of business development.

According, I hypothesize that

H1: Bootstrapping approach is negatively associated with new-born startup firm's profitability.

H2: Bootstrapping approach is negatively associated with new-born startup firm's growth.

The Interactive Effects of Founding Team Human Capital

Human capital theory maintains that knowledge leads more productive and efficient individual activities by increasing their cognitive abilities (Becker, 1964). According to this theory, human capital is defined as the accumulation of personal attributes such as knowledge, abilities, experiences etc. that allow human beings to function (Pena, 2002). Put in another way, human capital comprises the stock of knowledge and skills that resides within individuals (Becker, 1964). It derives from investments that individuals make in themselves, often through education, formal and occupational experiences, and trainings (N. Carter, Williams, & Reynolds, 1997). Furthermore, human capital can be developed over time and transferred between individuals, which differentiates it from other individual characteristics, such as traits that have been found to have less impacts on new venture output (Wright et al., 2007). The underlying assumption of human capital theory is that individuals with more human capital are more productive than comparable ones. Thus, the more specific the human capital to the nature of the new startup firm, the higher the likelihood of success (N. Carter et al., 1997).

Entrepreneurial founding team represents a group of individual entrepreneurs working together to launch a new business venture (Shrader & Siegel, 2007). Founding team is formed by individual entrepreneurs who share various skills, knowledge, life experiences, social and personality attributes, and backgrounds. Each individual entrepreneur's human capital will together build up founding team human capital, an important stock of knowledge and ability of the team (Becker, 1964). Founding team human capital has been perceived as unique and valuable resources owned by startups. The team composition shows what knowledge, skills, accesses to information, and social networks available to a startup. Founding team human capital affects a startup's ability of attracting venture capital, and influences whether or not the startup can successfully complete its initial public offering (Beckman, Burton, & O'Reilly, 2007). Strong founding team human capital enables startups to break out from well-defined routines that are no longer adequate due to environmental changes, facilitate the recognition of new opportunities, and assemble resources to create maximized output (Alvarez & Busenitz, 2001). Therefore, founding team human capital can determine various paths of venture creation and associated startup

performance (Dess et al., 1997; Lu & Beamish, 2001; Sandberg & Hofer, 1987; Shane, 2000). Extensive empirical studies support the important role of founding team human capital played in strengthening firm performance (Baptista, Karaöz, & Mendonça, 2014; Cooper et al., 1994; Dahlqvist et al., 2000; Davidsson & Honig, 2003; Ganotakis, 2012; Wright et al., 2007).

Making strategic decisions and implementing strategic plans require involvement of human agent. Given the fact that founding team determines the strategies pursued within startups (Eesley, Hsu, & Roberts, 2014; Gruber, MacMillan, & Thompson, 2012), and the fact that new-born startup's firm size is very small at the very early stage of business development, bootstrapping financing would involve every founding team member's creativity, decisions, and actions to address needed resources of the firm (Ebben & Johnson, 2006). Every member must utilize his/her particular knowledge, skills, experience to employ bootstrapping. The results of bootstrapping and its impacts on the startup's survival and future development thereby well depend on the team' ability and choices (Lahm Jr & Little Jr, 2005). This is consistent with what Bhide (1991) suggested that the success of a startup hinges on the ability of its owners to create and leverage financial resources. According to the human capital theory, the higher the team human capital, the higher the team's ability is. Therefore, high level of founding team human capital can offset negative influences of bootstrapping approach.

Previous entrepreneurship literature provides supports for the interaction effect of strategic approaches and founding team human capital on venture performance. For instance, Shrader and Siegel (2007) conducted a longitudinal analysis of the role of human capital in the growth of 198 new technology-based ventures. Their results suggest significant contingent relationships between strategic choices, team experience, and long term firm performance. Similarly, Edelman, Brush, and Manolova (2005) examined the relationship between firm human capital, resources, strategy and performance. They found that neither human capital nor strategy alone explains firm performance, but human capital in combination with strategic decisions enhances firm performance.

In the context of new-born startups, founding team human capital can facilitate the impacts of strategic choices on performance. Although bootstrapping new-born startups have inherent financial and growth constrains, the chances of their success could increase when the team human capital "fits" in the formulation and implementation of bootstrapping activities. Under the circumstance that founding teams have high level of human capital in forms of knowledge, skills, and experiences, bootstrapping startups are able to identify and exploit new opportunities that are usually neglected by other startups that have comparatively low founding team human capital. The negative impacts of bootstrapping is typically offset by strong teams through choosing the best bootstrapping activities that suit best for the resource need; decreasing the dependence on external financing on the need base; spending least time on implementing most valuable savings; efficiently allocating limited resources on the most critical tasks including: acquiring the best desirable resources; spending sufficient resources on the most critical tasks that are necessary for initial business developments and growth; and reducing costs in other unnecessary and marginal saving activities etc.

Founding team human capital has various forms. Numerous studies indicate that the entrepreneur's level of education is positively associated with entrepreneurial opportunity

discovery, identification, and exploitation (Ferrante, 2005; Marvel & Lumpkin, 2007; Unger, Rauch, Frese, & Rosenbusch, 2011), and firm survival and growth (T Bates, 1990; Cooper et al., 1994; Van der Sluis, Van Praag, & Vijverberg, 2008). Specific industry know-how has also turned out to be a significant determinant of profitability, survival and growth for a new venture (Cooper et al., 1994; Ganotakis, 2012; Muñoz-Bullon, Sanchez-Bueno, & Vos-Saz, 2015; Westhead, 2000). The prior experience of starting new business shows startup's capability of future development (Brush, Manolova, & Edelman, 2007), which is another useful determinant for venture performance (Dyke, Fischer, & Reuber, 1992). Furthermore, founding teams' specialized human capital in entrepreneurship can be accumulated to be "expertise in entrepreneurship" that is obtained through years of experience in the same industry in which the new business operates; through the various processes of starting new businesses; and through their experiences of managing different start-up businesses in dynamic and changing environments. Strong expertise in entrepreneurship is beneficial to the results of bootstrapping. The higher level of founding team's expertise in entrepreneurship, the more likely the startup would be successfully bootstrapping.

Thus, I hypothesize that

H3a: Strong founding team human capital of education positively moderates the relationship between bootstrapping and growth of new-born startups.

H3b: Strong founding team human capital of expertise in entrepreneurship positively moderates the relationship between bootstrapping and growth of new-born startups.

H3c: Strong founding team human capital of industry experience positively moderates the relationship between bootstrapping and growth of new-born startups.

H3d: Strong founding team human capital of previous experience of starting new business positively moderates the relationship between bootstrapping and growth of new-born startups.

RESEARCH METHOD

Sample

Data of this study was collected via Kauffman Firm Survey conducted by the Ewing Marion Kauffman Foundation over the period 2005-2012. Since the focus of this study is examining the performance influences of bootstrapping during the early 0-3 age period, the sample of this study was selected from the survey data over the period of 2005-2007. The random sample of this survey was obtained from the list of new business started 2004 that were included in the Dun & Bradstreet (D&B) database, which totaled roughly two hundred fifty thousand such businesses. A random sample of 32,469 businesses was released for data collection on the Baseline Survey, which was conducted between July 2005 and July 2006. The research team completed interviews with principals of 4,928 businesses that started operations in 2004, which translates to a 43 percent response rate when the sampling weights are applied. A self- administered Web survey and Computer-Assisted Telephone Interviewing (CATI) were used to collect data, and KFS respondents were paid $50 to complete the interview. CATI completes accounted for 3,781 (77

percent) and Web completes accounted for 1,147 (23 percent) of the interviews. The results across sampling strata show that 2,034 interviews were completed in the two high technology strata, and the remaining 2,894 interviews were completed among non-high-tech businesses.

The First Follow-Up Survey sample consisted of the 4,928 businesses that completed the Baseline Survey. The First Follow-Up was conducted between June 2006 and January 2007, and 3,998 interviews were completed—an 89 percent response rate after adjusting for the sample weights. As with the Baseline Survey, respondents were paid $50 to complete the interview, which was offered either on the Web or through CATI. During the First Follow-Up, a significantly larger percentage of interviews was completed through the Web survey (2,366 or 59 percent) than in the Baseline; CATI completes in the First Follow-Up accounted for 41 percent (1,632 interviews).

The second follow-up survey was conducted among 4,523 KFS businesses. This included businesses that completed both the baseline and first follow-up surveys, or those not able to be interviewed during the first follow-up. Businesses identified as no longer operating during the first follow-up were excluded, as were a small number that adamantly refused to participate in the first follow-up. The second follow-up was conducted between May and December 2007, during which 3,390 interviews were completed and 406 businesses were identified as no longer operating. During the second follow-up, 63% of the interviews (2,127) were completed through the Web survey, with CATI completes accounting for 37% (1,263 interviews).

Measures

Dependent variables

Dependent variables of this study are measured by two indicators: profitability and growth. Information of dependent variables was obtained from the second follow up survey, the year 3 after startups being established.

Profitability is measured by a dummy variable. Respondents were ask whether the business loss or profit in this year. Answer for “loss” was coded as 0, “profit” was coded as 1.

Growth is measured by growth in revenue. Respondents were asked whether the amount of revenue increases, has no change, or decreases in this year. The answers for the amount of business revenue increases was coded as 1, has no change was coded as 0, decreases in this year was coded as -1.

Independent variables

Bootstrapping is measured by the degree of bootstrapping techniques used in a venture. The researcher identified whether or not a startup has engaged in bootstrapping activities, then coded 1 if the answer was yes, otherwise coded 0. All answers of “yes” were sum together to obtain the degree of bootstrapping activities of the firm, which indicates bootstrapping approach pursued by the startup.

The bootstrapping activities include: 1) whether or not the startup has part-time employees. Answer for “yes” was coded as 1, 0 otherwise. 2) The average number of unpaid owners of a firm, which calculated by dividing the total number of unpaid owners by the total number of owners of the startup. 3) Whether or not business uses personal loans from a bank to finance the operation. “Yes” was coded as 1, 0 otherwise. 4) Whether or not business uses personal credit card to finance the operation. “Yes” was coded as 1, 0 otherwise. 5) Whether or not business uses personal loans

from family to finance the operation. "Yes" was coded as 1, 0 otherwise. 6) Whether or not business uses personal loans from other individuals to finance the operation. "Yes" was coded as 1, 0 otherwise. 7) Whether or not business uses loans from family of the owners. "Yes" was coded as 1, 0 otherwise. 8) Whether or not business uses loans from employees that are not owners. "Yes" was coded as 1, 0 otherwise. 9) Whether or not business uses loans from another owner of the business. "Yes" was coded as 1, 0 otherwise. 10) Whether or not business uses loans from other business. "Yes" was coded as 1, 0 otherwise. 11) Whether or not business uses loans from other individuals. "Yes" was coded as 1, 0 otherwise. 12) Whether or not business rent or lease machinery. "Yes" was coded as 1, 0 otherwise. 13) Whether or not business rent or lease buildings. "Yes" was coded as 1, 0 otherwise. 14) Whether or not business obtains equity financing from spouses of owners. "Yes" was coded as 1, 0 otherwise. 15) Whether or not business obtains equity financing from parents of owners. "Yes" was coded as 1, 0 otherwise.

The founding team human capital is measured by four indicators: owners' formal education, owners' industry experience, owners' experience of starting new businesses, and expertise in entrepreneurship. All indicators are measured at the team level.

Owners' education level is captured by asking respondents for the highest level of education they had completed. This variable, ranging from less than 9th grade to professional school or doctorate, was coded from 1 to 9. The team level of education is measured by dividing the sum of total number of formal education by the total number of owners of the venture.

Owners' industry experience is measured by owners' years of working experience in industry which business competes. The respondents were asked "how many years of working experience have you had in this industry—the one in which the business competes?" Team level of owners' industry experience is calculated by dividing total years of industry experience of the founding team by the total number of owners of the venture.

Owners' experience of starting new businesses is captured by asking respondents "how many other new businesses have you started besides?" Team level of owners' new business start-up experience is calculated by dividing total number of other new business the owners have started within a founding team by the total number of owners of the startup.

Expertise in entrepreneurship is captured by: 1) if you have other new businesses started besides, were (was) these new businesses in the same industry as this business? The answer is coded as 1 (yes) or 0 (no). Then sum all owners' answers for "yes" (1) together. 2) The number of owners who have more than 25 years of working experience in the same industry which the business competes. Each owner has more than 25 years of industry working experience was coded as 1, otherwise 0. Then sum all "1" together. 3) The number of owners who have more than 5 other new businesses started besides. Each owner has more than 5 other new business started besides was coded as 1, otherwise 0. Then sum all answer "1" together. The sum of the results from the three items measures the level of expertise in entrepreneurship. Team level of entrepreneurial expertise is measured by average entrepreneurial expertise of the startup. That is, dividing the total level of entrepreneurial expertise by the total number of owners of the startup.

Control Variables

Both firm age and industry type may affect the new venture performance. All new ventures in the sample of this study were started in year 2004, therefore, they are at the same age. After

matching NAICS code with SIC code, the sample was broadly classified into two industry categories, technological and non-technological industry (dummy coded as 1 and 0).

Other control variables include firm size and total asset. Firm size is measured by the number of employees, a dummy variable. The number of employees is more than 1 was coded as 1, otherwise 0. Total asset is measured by a dummy variable. Firm total asset above 10,000 was coded as 1, otherwise 0.

Data Analysis

Hierarchical multiple binary logistic regression was used for testing the direct effects of bootstrapping on startups' profitability. Binary logistic regression model was used when the dependent variable has a value between 0 and 1. It is used for investigation the likelihood or probability (odds) of the dependent variable: profitability in this case.

Since this study examines the interaction effects of multiple independent variables on startup performance, in order to avoid multicollinearity problem, all independent variables were centered (Jewell, 2004). Outliers were excluded after testing residuals. In addition, all models were appropriately weighted before data analysis.

The second regression model was used in this study was multi-nominal logit regression (MNL), which examined direct effects of bootstrapping and the interactive effects of founding team human capital on startup growth, which was coded as -1, 0 and 1. Because there is an order to the three outcomes of growth, and they are categorical in nature, ordinal logistic regression was first tested whether or not it was preferred to use. There are two major assumptions for ordinal regression model: 1) parallel lines assumption assumes the regression lines to be parallel for each level of the dependent, indicating that the independents have the same relationship to the logit. 2) The adequate cell count assumption requires 80% of cells should have a count of 5 or more, and no cells should have a zero count. Unfortunately, the results show that the assumptions of ordinal regression model were violated, which indicated that the use of ordinal regression is inappropriate. Therefore, MNL was employed to test relationships of interest.

Logistic regression is more robust to the violation of the normality assumption relating to categorical explanatory variables, and MNL is an extension of the common binary logit model when the dependent variable is represented by more than two categories (Cooper et al., 1994). The outcome of revenue increase had more interest, therefore revenue decrease was chosen as the reference variable. As such, the coefficients in MNL should be interpreted as describing the effects of the explanatory variables on the probability of a particular outcome (Increases in Revenue, and Has No Change) relative to the probability of revenue decreases. The coefficients do not represent any absolute effect on the probability of that outcome (Cooper et al., 1994).

RESULTS

Table 1 provides Spearman correlation coefficients for the variables used in the models. Because the variables included into this study are in the form of ordinal, interval or dichotomous variable. Both Pearson correlation and Spearman correlation tests were conducted. Spearman correlation is the most common correlation for use with two ordinal variables or an ordinal and an

interval variable. These correlations provide initial indications of strong relationships between founding team human capital, bootstrapping, resources, and performance. No evidence of multicollinearity was indicated.

Table 1. Spearman's Rho Correlation

Variable	1	2	3	4	5	6	7	8	9
1 Revenues change	1								
2 Profitability	.048*	1							
3 Bootstrapping	-.062**	-.084***	1						
4 Founding team education	.095***	.019	.011	1					
5 FT industry experience	.009	.129***	-.079***	.039**	1				
6 FT new business experience	.048*	-.004	.063***	.098***	.064***	1			
7 FT owner expertise	.020	.061**	-.008	.020	.539***	.442***	1		
8 The number of employees	-.100***	-.047*	.161***	.026	-.005	.052**	.014	1	
9 Total assets	-.096***	.038*	.265***	-.014	-.05	.079***	.067***	.246***	1

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

Table 2 presents the results of regression analyses for profitability and growth. Normal binary logistic model is tested to examine the direct and contingent relationships among all explanatory variables and the performance measure: profitability. All results from normal binary logistic regression models show that Omnibus test of Model coefficients are significant at p=.000 level, which indicates the model changes are significant. The Chi-squares for H-L (Hosmer-Lemeshow test) of all normal binary logistic regression are not significant, demonstrating that the logistic models are good fit with the data.

Table 2. Multinominal Logistic Regressions results for Bootstrapping, Foundi Human Capital on Profitability and Growth in Revenue

	Profitability		Growth in Revenue			
			Model 1 (increase)		Model 2 (no change)	
Models			b	EXP(B)	b	EXP(B)
Main Effects Model						
Industry			0.3***	1.35	0.241	1.272
Entrepreneurial human capital						
Industry experience	.034***	1.034	0	1	-.006	.994
Expertise	-.066	.936	-.074	.929	.111	1.117
Experience in new business startup	-.028	.972	-.023	.977	.08	1.083
General human capital	.025	1.026	-.021	.979	-.114***	.893
Bootstrapping	-.143***	.867	-.43	.28	-.12**	.887
Resources						
The number of employees	.046	1.047	-.290***	.748	-.045	.956
Total assets	-.334***	.716	-.18	.835	-.008	.992
R^2	R^2 =0.046		Pseudo R^2 =.029			
Hosmer-Lemeshow test	χ2(df)=8.208(8), p=.413		-2LL: 4.021E3-> 3.964E3, χ2(df)=57(22), p=.000			
			Pearson χ2(df)=4645(4740), , p=.979			
Model A1: Founding Team human capital XBootstrapping						
Industry	0.056	1.058	0.315***	1.37	0.251	1.285
Founding Team human capital						
Industry experience	.034***	1.034	0	1	-.003	.997
Expertise	-.06	.942	-.086	.918	.052	1.053
Experience in new business startup	-.029	.971	-.008	.992	.071	1.074
Education	.025	1.026	-.015	.985	-.116***	.89
Bootstrapping	-.144***	.866	-.036	.964	-.126**	.882
Resources						
The number of employees	.046	1.048	-.271**	.763	-.046	.955
Total assets	-.333***	.717	-.175	.84	.004	1.004
Industry experience X bootstrapping	0	1	-.021***	.979	-.012	.989
Expertise X bootstrapping	-.048	.953	.378***	1.459	.209	1.233
Experience of starting new business X bootstrapping	.009	1.009	-.148***	.863	-.234***	.792
General human capital X bootstrapping	.004	1.004	.044**	1.045	-.035	.966
R^2	R^2 =0.046		Pseudo R^2 =.050			
Hosmer-Lemeshow test	χ2(df)=11.860 (8), p=.158		-2LL: 4.021E3-> 3.922E3, χ2(df)=99(30), p=.000			
			Pearson χ2(df)=4540(4732), , p=.977			

In testing the direct and interactive effects of bootstrapping and founding team human capital on startup's growth in revenue, MNL model was employed. The "Goodness of Fit" table in multinomial logistic regression reports two overall model fit tests: Pearson and Deviance statistics. Like the Hosmer-Lemeshow goodness of fit test in binomial logistic regression, adequate fit corresponds to a finding of non-significance for these tests. Since Pearson statistic is based on traditional chi-square and the deviance statistic is based on likelihood ratio chi-square. The deviance test is preferred over the Pearson (Menard, 2002 : 47). Then likelihood ratio chi-square was used to examine the model fit in this study. The results of the -2LL statistics were used to examine whether to reject the null hypothesis that a certain independent makes no difference in predicting the dependent in logistic regression.

Hypothesis 1 predicts that there is a significant negative relationship between bootstrapping and startup profitability. Results show that bootstrapping approach is significantly and strongly, but negatively associated with profitability. Hypothesis 1 is supported (-.143, p=.000). In addition, a significant negative coefficient (-.12, p=0.00) was found for bootstrapping in the model of "has no change", indicating that bootstrapping startups have more odds of decrease in revenue than the odds for no change in revenue. A negative coefficient (-.043) was also found for "revenue increase" model, indicating that bootstrapping startups less likely to obtain revenue increase compared with revenue decrease. However, the coefficient is not significant. Therefore, H2 is partially supported.

Hypothesis 3a, 3b, 3c, and 3d predict the moderating effects of founding team human capital on bootstrapping-growth relationship. As expected, all proxies of founding team human capital combined with bootstrapping approach significantly moderating the impacts of bootstrapping on startup growth. However, types of human capital have opposing directions of the moderating impacts. Bootstrapping conducted by founding teams with high expertise in entrepreneurship and formal education can overcome growth constraints that are inherent from bootstrapping activities. These two proxies of team human capital, combined with bootstrapping activities, significantly positively improve the likelihood of revenue increase rather than decrease, supporting 3a (.044, p=0.00) and 3b (.378, p=0.000). When teams with strong industry experience and experience in starting new businesses startups bootstrap, they are significantly related to the odds of "revenue decrease" rather than "revenue increase". This result indicates that by pursuing bootstrapping approach, startups have more significant growth constraints when founding teams have strong industry experience and experiences of starting new business. Taken together, founding team human capital is significantly moderating the bootstrapping-growth relationship, but types of human capital may have opposing impacts.

DISCUSSION

Entrepreneurship scholars highlight bootstrapping as a key resource acquisition approach that new startups use to respond to their financial constrain, but empirical findings for the influences of bootstrapping activities on startup performance are contradictory. One stream of research supports positive influences of bootstrapping approach on performance. Along with this line of research, bootstrapping activities are perceived as creative routes of resource mobilization that lead to new startups' success. By pursuing bootstrapping, startups minimize cash

requirements, reduce the need for external capital, improve cash flows, and reduce the overall cost of operations, and have greater use of internal financing. On the other hand, another research stream is holding a competing hypothesis that bootstrapping approach would negatively influence the success of startups. This line of research argues that bootstrapping behaviors will hamper future investments, have higher costs of resources, decrease the efficiency of management, and hinder entrepreneurs from identifying and exploiting new opportunities thereby constrain subsequent venture growth. To address this debate, this study examined the direct impact of bootstrapping on new-born startup performance, and the interactive effect of founding team human capital on bootstrapping-performance relationship. Consistent with the second stream of research, results of this study show that bootstrapping approach has significantly negative impacts on new-born startups' profitability and revenue growth.

Findings of this study provide strong evidence supporting the importance of founding team human capital to startups. Founding team human capital significantly moderates bootstrapping-performance relationship. More specifically, founding team education and expertise in entrepreneurship can offset the negative impacts of bootstrapping financing. That is, founding teams that have high education and strong expertise in the starting, running, and managing self-owned businesses in the same industry are more likely to obtain revenue increase than decrease. However, strong industry experiences or experiences in starting new businesses causes more growth constrain when startups take bootstrapping approach during the initial period of business development.

High level of general education can increase an individual's communication and social abilities as well as his/her learning ability (Avermaete et al., 2004), which in turn increases the necessary skills for entrepreneurial opportunity discovery, identification, and exploitation (Ferrante, 2005; Marvel & Lumpkin, 2007; Unger et al., 2011). Entrepreneurs' general education is an important factor for "post-entry" firm performance such as productivity, profitability, and growth (Timothy Bates, 1985; Jo & Lee, 1996; Van der Sluis et al., 2008). The findings of the current study supports the prediction of human resource theory by showing that high educated founding teams are able to discover opportunity and implement it with the best use of internal resources, thereby bootstrap better than low educated teams.

Founding teams' expertise in entrepreneurship is accumulated through long-term "learning by doing" processes. Entrepreneurs who have strong expertise in entrepreneurship first have strong domain knowledge of the industry and/or business sector in which the startup operates. They also have strong knowledge and rich experience in starting, running, and managing entrepreneurial firms. In addition to the knowledge stocked through previous life/work experiences, strong expertise in entrepreneurship indicates that the individual not only has strong ability of learning but also he/she is able to transit what has learned into value created activities. When pursuing bootstrapping activities, expertise in entrepreneurship helps founding teams to sorter the most critical tasks, utilize limited resources more efficiently and effectively, reduce unnecessary costs, and avoid making incorrect decisions. Founding teams with strong expertise in entrepreneurship can overcome the inherent growth constrain of bootstrapping approach, thereby achieving better performance to the firm.

The negative moderating effects of industry experience and experience of starting new business on bootstrapping startups' growth are unexpected. One explanation could be entrepreneurs with strong industry experience might be very overconfident due to their skills and knowledge in the industry and/or the business sector, which constrains them from gathering further information that can improve bootstrapping decisions or better implement bootstrapping activities. With strong prior knowledge and experiences in the industry, startups may become unable to identity, discover, or exploit opportunities outside their "comfort zone". Over-familiar with the industry and/or business sector may let entrepreneurs stick with old routines, focus on early defined market segments, follow old existing practices, but neglect new changes in the environments and market, thereby depress the startup's growth overtime. Furthermore, Due to the strong "know-how" and "know-who" in the industry or business sector, bootstrapping startups are inclined to access the most familiar cheap resources through social contacts, and avoid of pursuing novel techniques that have not previously existed in the industry. For example, although second-hand equipment may help these bootstrapping new-born startups access to cheap resources and reduce the startup costs, acquiring eliminated equipment from others limits the startup's potential of creating the best value to the market.

The number of previous business started by the founding team also shows negative moderating effects on the outcome of bootstrapping. One reason for this result may be that although entrepreneurs are very familiar with the process of starting a new business, the only knowledge of how to establish new business may not be sufficient enough to obtain knowledge that is required for success in the market. The second reason may be that the number of previous business started does not reflect the quality of specific knowledge learned by entrepreneurs. If entrepreneurs fail to learn from their prior startup experiences, it is unable for them to turn their human capital into firm performance. In addition, serial entrepreneurs could be more inclined to adopt routines and decisions that have worked in the past, ignoring new information and new opportunities, which hampers subsequent startup growth.

This study makes a few contributions and implementations as follows:

First, this study contributes to the existing debate in the entrepreneurship literature by examining direct impacts of bootstrapping approach on new-born startup performance. The results show that bootstrapping approach is negatively associated with startup's profitability and growth in revenue, but such negative influences are contingent in startup team human capital.

Second, this study contributes to the human capital theory and resource-based theory by investigating mutual effects of team level human capital and bootstrapping in the new-born startup settings. It provides an empirical evidence that entrepreneurial founding team, as unique heterogeneous resources of startup firms, is an important factor that influences startup outperformance. Importantly, results of current study are consistent with previous studies that suggest that founding team human capital affects the exploitation of resources and the implementation of firm strategies. Shrader and Siegel (2007) study provide more direct and strong support for the importance of founding team human capital on firm outcomes. The current research provides further support for their work and extends it as well.

The third contribution of this research is that instead of having incumbent firms as the sample, this study sheds light on startup firms at initial stage of business development. The sample

includes startups established in year 2004 and all startups are 3 years of age. These startups were surveyed during the first year right after the firm was established. Investigating impacts of bootstrapping on performance on the startup sample well mirrors the uncertainty of business development and reduces the survivorship bias of firms. In addition, by using a new-born startup sample, this study fills a gap in the entrepreneurship literature by examining bootstrapping activities during the infant and toddler period of startups. Therefore, results of this study provides valuable insights for further theory development in both entrepreneurship financing and new venture creation literature.

Fourth, this study contributes to the empirical entrepreneurship literature by providing a longitudinal causal investigation. The current study uses longitudinal data that better investigates the influences of bootstrapping approach on business development overtime. The results of bootstrapping activities will affect firm performance only within a certain time lag. This study uses 2-year time lag for the impact of bootstrapping on profitability and growth, which overcomes the limitations of widespread cross-sectional empirical studies in the entrepreneurship literature.

As with all research, this study has limitations too. First, even though this study found significant moderating effects of founding team human capital on revenue growth, but it failed to find same significant moderating effects on profitability. This result hints that other contingencies may impact the relationship between bootstrapping and profitability. Identifying other contingencies is an interesting area for future research. Bootstrapping approach decreases the likelihood of achieving high profitability through cost-reducing activities. To overcome the negative impacts of bootstrapping approach, these contingencies might center in the categories of variables that are associated with largest value created.

Second, this study focused only on the role founding team human capital plays in bootstrapping-performance relationship. Previous literature has identified other team variables such as team composition, diversity, or team member's personal interaction etc. also impact founding team performance. We need more future studies investigating the role of founding team plays in the early financing stage of new-born startups.

Despite its limitations, the study provides valuable insights to scholars and entrepreneurs. Entrepreneurs should be aware of that although bootstrapping approach may help reduce the need for external finance, reduce the costs during the initial venturing process, this approach can be a double-edged sword to firms' profitability and growth. Entrepreneurial founding teams must keep learning in the venturing processes, and formulate the most desirable approach that addresses both resource constrains and the need for profits and growth.

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FEEDBACK FROM THE JUDGES' SCORE SHEETS AT A BUSINESSPLAN COMPETITION: AN EXPLORATORY STUDY

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ABSTRACT

The aim of this paper is to conduct an exploratory study based on judges' scoring sheets obtained from a business plan competition organized in the Northeast region of the United States. A review of the literature shows that business plan development and business plan competitions are an important part of entrepreneurship education, focusing students on major constructs needed to develop a business. However, most of the research conducted seems to be aimed toward what can be learned in crafting a business plan, or what elements should be included, and how to present/pitch the plan to potential investors. That being said, we were not able to find recent studies focusing on what judges think about the plan they reviewed. Hence, we aim to address this gap in the research, as receiving feedback from the judges may be a valuable source of information in order to help students in focusing their effort on the section(s) that seemed to be the most critical to the judges. Not only can that information be used to enhance entrepreneurship education, it can also be a way to strengthen AACSB's "closing the loop" assessment requirement. Judges scored the business plans on seven criteria: Market opportunity, Competitive Advantage, Management Capability, Financial Understanding, Venture Maturity, Presentation, and Investment potential. We found that students performed at various levels across these criteria, performing best on the Presentation rubric and worst on Financial Understanding and Venture Maturity.

LITERATURE REVIEW

Entrepreneurship education has been a topic of growing interest in recent years (Josien, Gough, and Robinson, 2017; Robinson and Josien, 2014; Mattare, 2010; Man and Yu, 2009) and at present over 2/3^{rds} of universities and colleges in the U.S. offer some form of entrepreneurship education (Cone, 2012), with entrepreneurship education defined as "the conveyance of entrepreneurial knowledge to students in terms of concepts, skills, and behaviors (Gartner, 1990) that entrepreneurs posses and use" (Young, 1997). Furthermore, in 2004, Honig and Karlsson, found that 78% of the top universities in the US had at least one course in their entrepreneurship curriculum dealing with a business plan and that 10 of the top 12 universities had their own competitions, and other studies confirm the prevalence of the business plan in entrepreneurship education over the years (Edelman, 2004; Vesper and Gartner, 1999). Finally, business plans and business plan competitions are used by many instructors as a medium to teach principled entrepreneurship (Delmar and Shane 2004).

As a business plan is "a document that describes an organization's present state and its plans to achieve some desired future state through an articulation of its vision, mission, strategy, tactics, and goals/objective" (Busenitz, Fiet, and Moesel, 2005), it should be no surprise that a significant part of entrepreneurship education is the preparation of a business plan (Zimmerman, 2012), which also satisfies the widely accepted idea that entrepreneurship education include an experiential learning component (Vincent and Farlow, 2008). Additionally, the rapid development of business plan competitions over the last few years provides proof that competition enhances student learning in entrepreneurship and venture creation (Stage, 2012). Business plan competitions are prevalent in the U.S.: there are quite a few competitions organized, even though they are complex and expensive to set up (Laud, Betts, and Basu, 2015). According to the website www.bizplancompetitions.com, in the U.S., there are business plan competitions in all 50 states, with a total prize pool of $22,795,495 given in 260 events (2017). Some of the benefits of such competition are experiential learning, skill development, increase confidence, chance of winning startup capital/cash, in-kind venture start-up support, networking, prestige and recognition, and enhanced learning opportunities (Meranda, Wilson, and Li; 2013, Russell, Atchison, and Brooks; 2008, Weisz; 2001, Bowden and Marton; 1999).

METHODOLOGY

We obtained the scoring sheets from six judges at a business plan competition held in the Northeast region of the U.S. There were 21 teams or individuals participating in the competition that were scored on seven different criteria: Market Opportunity, Competitive Advantage, Management Capability, Financial Understanding, Venture Maturity, Presentation, and Investment potential. Each criterion was graded on a scale of one through five, where 1 represented the lowest possible score and five the highest, for a potential high score of 105. The competitors were separated in two groups; each group had a set of three judges that scored all their teams in their group. Finally, the competition awarded six total prizes (each group had a first, second, and third place) and a total of $5,000 was awarded to the competitors.

The six judges were invited from the business school's local stakeholder constituency. Selecting judges from the business community provides the competition with "real-world" experience where feedback reflects current market conditions and perspectives. (Judges from the business school are not chosen as they frequently have relationships with students that might bias their assessments.) Efforts were made to include a diverse set of judges. Unfortunately, the sole female judge needed to be replaced at the last minute due to a scheduling conflict. The six professionals who volunteered to serve as judges came from a variety of fields including, an active entrepreneur, an economic developer, a business advisor, and three higher-level executives from technology companies. Three of the judges represented organizations that helped sponsor the competition and provided funding for expenses and prize money. The judges are chosen carefully for their willingness and ability to engage with students and foster development of the business program.

As far as the analysis is concerned, since we have a fairly small sample, we will simply use descriptive statistics to glean information from the score sheets as more advanced statistic methods would not be appropriate.

RESULTS & FINDINGS

Tables 1 and 2 (see below) show the scores given to each participant and the associated descriptive statistics. Based on these two tables, we can develop the following findings. First, one group had a clear set of winners for their flight, with a top score of 87, second place of 85 and third place with 83, with the next best score being a 61. The second flight was not as clear cut, but once again the winner had a score in the high 80's (85), then 66 a tie for third place with 52. The average score of the competition was 58.5 with a standard deviation of 16.4 which indicates a fairly large variation in the competitors' scores. We view the range and standard deviation in judging results as strong evidence of the judges being able to discriminate between the higher and lower quality business plan presentations.

The second finding from our analysis of the data is the average of each of the six judging criteria. The criterion that received the highest average score was Presentation: 3.1/5 average, and standard deviation of 1, meaning that as far as the judges are concerned, they believed that the students were well prepared for the competition and were able to present their ideas fairly well. The second-best criterion was Competitive Advantage with an average of 3.0/5 and a standard deviation of 1.2 which seems to indicate that students were able to ground their business idea on something that would give them an edge compared to their potential market place competitors. The third criterion is Market Opportunity with an average of 2.9/5 and standard deviation of 1.1. Even if this is the third best average received, it might indicate that as far as the judges are concerned, the market opportunity that students see in their business idea is not as great as it seems for real business people. Also, related to this criterion, it is interesting to note that all the competitors who receive a 5 for that criterion ended up in the winners of the competition. The fourth criterion was Management Capabilities with an average of 2.5/5 and a standard deviation of 1.1. That criterion is right on the average of the scale and associated with the previous criterion might indicate that the competitors quite "green" in their abilities to run a business. The next criterion, Investment Potential, also had an average of 2.5 but with a bigger standard deviation (1.3). Once again that might indicate that the judges consistently saw that the proposed business ventures were not as great as the students believe them to be. The last two criteria, Financial Understanding and Venture Maturity, received the same average of 2.3, but one had a much larger standard deviation (1.1 and 1.4 respectively). The Financial Understanding low score is not surprising as it well recognized that entrepreneurship students have difficulties with accounting and financial skills to develop a business from scratch. The Venture maturity finding was not as expected, and might be a reflection that students usually develop their business idea on a single product/service and have little if any long-term plan to grow their businesses. Finally, the last finding we can glean from the analysis of the data is that the average score per item was right in the middle at 2.7, suggesting that the judges used the entire range of the scale and provide students with both positive and negative feedback.

Table 1: raw judge's scores.																					
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**
Flight	A	A	A	A	B	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A	A
Market Opportunity	3	3	3	4	3	4	4	3	2	4	4	5	5	4	1	1	3	4	1	4	3
Competitive Advantage	4	3	4	5	2	4	4	1	1	4	5	5	5	3	2	3	3	4	1	4	3
Management Capability	2	2	2	4	2	2	5	3	2	4	5	5	5	2	2	2	2	4	1	2	2
Financial Understanding	2	2	2	3	1	3	5	1	1	4	4	5	5	2	3	2	2	4	2	2	2
Venture Maturity	1	1	2	3	3	2	5	3	1	4	4	5	5	2	1	1	1	5	1	2	2
Presentation	3	3	3	4	3	3	5	3	3	4	5	5	5	3	2	2	3	4	2	4	3
Inv. Potential	3	2	2	5	3	3	5	1	3	4	5	5	5	3	1	1	3	3	1	4	1
Market Opportunity	2	3	2	2	3	1	5	1	3	1	4	2	5	3	3	2	1	3	2	2	2
Competitive Advantage	3	3	3	1	2	1	3	1	3	3	3	1	5	3	3	3	2	3	3	1	4
Management Capability	2	2	2	3	2	1	4	1	4	2	1	4	5	2	3	2	2	4	2	2	2
Financial Understanding	1	2	1	2	1	1	3	1	2	2	1	3	3	1	1	2	1	4	2	2	2
Venture Maturity	2	1	1	4	3	1	4	1	3	2	1	2	3	2	2	1	1	5	2	2	2
Presentation	2	3	2	4	2	2	4	2	3	4	3	5	4	2	4	2	3	5	3	3	3
Investment Potential	1	2	1	2	1	1	5	1	2	1	3	2	5	2	2	2	2	4	1	2	3
Market Opportunity	3	4	4	4	3	2	4	1	3	3	2	4	3	2	3	1	2	4	2	2	4
Competitive Advantage	4	3	4	4	4	1	4	1	3	2	2	3	3	3	4	2	4	4	4	1	4
Management Capability	2	2	2	3	2	1	3	2	2	3	1	4	2	3	2	2	2	5	1	2	2
Financial Understanding	2	2	2	1	1	1	3	2	2	2	1	4	2	1	4	3	3	4	2	3	2
Venture Maturity	1	1	1	3	1	3	4	3	4	3	3	5	5	1	1	1	1	3	1	2	1
Presentation	4	2	2	3	2	1	4	2	3	3	2	5	3	3	3	2	3	5	2	4	3
Investment Potential	2	3	3	2	2	1	4	1	2	2	1	4	2	2	4	1	3	4	2	2	2
Total	49	49	48	66	46	39	87	35	52	61	60	83	85	49	51	38	47	85	38	52	52

Table 2: Descriptive statistics		
Criterion	Average	Standard Deviation
Market Opportunity	2.9	1.1
Competitive Advantage	3.0	1.2
Management Capability	2.5	1.1
Financial Understanding	2.3	1.1
Venture Maturity	2.3	1.4
Presentation	3.1	1.0
Investment Potential	2.5	1.3
Average of all scores	2.7	

VALUE & IMPLICATIONS

What can be gained by studying the judges' score sheets? For one, understanding in which category a competitor loses points would be valuable to know. Competition winners are the ones that outperform their opponents in the judges' minds; hence, knowing the usual weaknesses in the competitors' plans can improve their chances of overcoming weaknesses and winning competitions. Furthermore, based on our findings, we saw that getting a top score in Market Opportunity seems to be an important element to have if one's wanting to win a competition, maybe there is a halo effect in the judge's mind when they see a good marketable idea?

Another reason to gain a better understanding judging feedback is for entrepreneurship faculty to know where we need to provide more help to our students. We know all the constructs that need to be developed to create a valuable business plan; however, presenting the plan, especially at a competition or to investors, is a slightly different proposition than just teaching the required blocks. As we strive to enhance Entrepreneurship education, especially for universities seeking or maintaining their AACSB accreditation, we need to "close the loop" and the study of the judges' score sheets may be a useful tool for gaining external measures of student learning and identifying where improvement in teaching entrepreneurial education could be implemented.

As any studies, there are some limitations to our work, first we are basing our analysis on a relatively small sample, we have only six judges and each judge scored either 9 or 12 teams. Further research on a larger sample will be needed to validate our findings as there maybe some local or judges bias. Furthermore, all competitors were students; maybe the finding would be different if we had a more diverse competitor's background. Nevertheless, we are the only study that looked at business plan competition in such a way.

Furthermore, the importance of proving good judges for a holding a high-quality business plan competition seems apparent. The data provides some indication that the judges provided rigorous feedback that measures differences in student performances. The average score per item of 2.7 suggests that the judges used the entire range of scores, giving low scores almost as readily as high scores. To ensure high quality competitions, it may be an important area for future research not just to evaluate judge's feedback but to investigate the antecedents of judging performance. Based on our experiences, we believe that the following activities may have some influence on

quality judging feedback: 1) judge selection, 2) competition orientation, 3) judge training, 4) and recognition for their judging service.

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