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A Model for Transformational Change: Linking the Modern Workforce with Modern Adolescence

Alisha Slye
University of Pennsylvania, alishaslye@gmail.com

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A Model for Transformational Change: Linking the Modern Workforce with Modern Adolescence

Abstract

Two unprecedented and profound change cycles are currently occurring in the 21st century. The first is that the modern workplace is rapidly changing due to globalization and automation. This change is impacting how humans participate in the future of work. The second is that scientific evidence now supports that the extension of adolescence prolongedly occurs between ages 10 to 26 (Steinberg, 2015). This last formative period of development is marked by increased brain malleability offering the opportunity to hardwire critical knowledge and adaptive life skills (Steinberg, 2015). These two cycles: one driving the global workplace and the other, impacting adolescent development, can be harnessed and linked together to produce transformative results, especially for adolescents from isolated or disadvantaged backgrounds. Developmentally, youth require “access to safe places, challenging experiences and caring people on a daily basis” (Zeldin, Kimball, & Price, 1995). Caring non-parental adults in the form of mentors can provide adolescents with “developmental networks” (Kram & Ragins, 2007). These networks are so potent that they have been called “invisible colleges” offering increased access, exposure and opportunity through informal relationships connections (Cooper, 2010). A daily habit-forming virtual curriculum based on structured positive principles and critical life skills applied with the support of mentors can institutionally transform future workforce outcomes for mentees. Purposeful symbiotic positive change cycles that allow shift in mindsets, acquisition of relevant skills and expansion of networks create self-directed opportunities for adolescents to participate in the future of work rather than be left out or left behind.

Keywords

mentoring, adolescence, workforce development, positive youth development, technology, 21st century skills

Disciplines

Social and Behavioral Sciences

A Model for Transformational Change:
Linking the Modern Workforce with Modern Adolescence
Alisha Slye
University of Pennsylvania

A Capstone Project Submitted
In Partial Fulfillment of the Requirements for the Degree of
Master of Applied Positive Psychology

Advisor: Cameron Ford, Ph.D.

August 1, 2019

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Alisha Slye
alishaslye@gmail.com

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Abstract

Two unprecedented and profound change cycles are currently occurring in the 21st century. The first is that the modern workplace is rapidly changing due to globalization and automation. This change is impacting how humans participate in the future of work. The second is that scientific evidence now supports that the extension of adolescence prolongedly occurs between ages 10 to 26 (Steinberg, 2015). This last formative period of development is marked by increased brain malleability offering the opportunity to hardwire critical knowledge and adaptive life skills (Steinberg, 2015). These two cycles: one driving the global workplace and the other, impacting adolescent development, can be harnessed and linked together to produce transformative results, especially for adolescents from isolated or disadvantaged backgrounds. Developmentally, youth require “access to safe places, challenging experiences and caring people on a daily basis” (Zeldin, Kimball, & Price, 1995). Caring non-parental adults in the form of mentors can provide adolescents with “developmental networks” (Kram & Ragins, 2007). These networks are so potent that they have been called “invisible colleges” offering increased access, exposure and opportunity through informal relationships connections (Cooper, 2010). A daily habit-forming virtual curriculum based on structured positive principles and critical life skills applied with the support of mentors can institutionally transform future workforce outcomes for mentees. Purposeful symbiotic positive change cycles that allow shift in mindsets, acquisition of relevant skills and expansion of networks create self-directed opportunities for adolescents to participate in the future of work rather than be left out or left behind.

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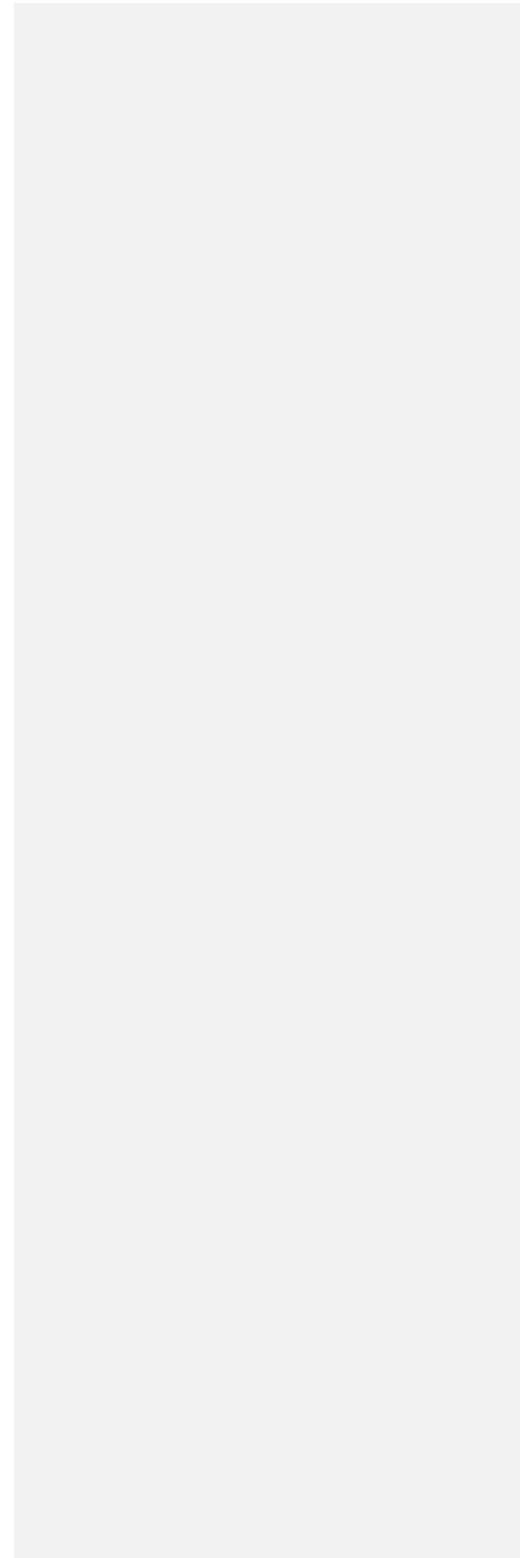
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Introduction

Change is a part of the human condition. In our lives, we experience many developmental life phases of change. These phases are biologically designed to foster both our physical and mental maturation and growth, and ideally create positive outcomes. Some developmental growth periods are spurred by biology, as for example, an infant progressing to become a toddler, learning how to roll-over, sit up and walk. Other social and emotional changes are more genetically contextualized and influenced disproportionately by environmental and cultural orientations (Steinberg, 2015).

The modern workforce and economy are changing at an accelerating pace due to globalization, technological innovation and automation. By 2020, it is estimated that without meaningful changes to post-secondary education systems, the economy will be short five million workers (Carnevale, Smith, & Stroh, 2013). Moreover, over half of existing cognitive labor jobs, defined as knowledge based work involving cerebral activity, today will be lost to automation yet it is estimated that 65% of future jobs will only require some postsecondary education and training (Carnevale, Smith, & Strohl, 2013). In concert with the aforementioned statistics, many of the jobs of the future do not even exist today and therefore do not offer a direct line of preparation and training to which educational institutions can align curricular learning objectives to (Trowbridge, 2016). While increased technical skills will be required, global leaders have identified a critical need to ensure that the future workforce possess many uniquely human skills such as creativity, curiosity, communication, cultural and social intelligence, hard work, judgement, and collaboration to name a few (PwC, 2017). The workforce of the future needs to possess agility and adaptability, coupled with ensuring that they can also derive workplace satisfaction. In addition to increasing economic mobility and employability, workers themselves

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need to feel a sense of well-being, productivity, engagement and contribution in their work to ensure sustained and productive change for both individuals and the broader economy.

Rapidly changing workplace requirements and skills, especially for entry level workers, are placing less prepared young workers in a serious deficit position. Once they lag in these basic requirements, it is difficult for them to catch up over time. This intensifying socio-economic stratification is eroding the United States economic position and global competitiveness, and contributing to a growing trend of adolescent mental health issues further perpetuating a downward spiral. Negative inputs, cultural fixity, fear of failure, lack of alternative coping skills in the face of adversity further handicap the existing adolescent population, poised to be the future workforce. The emerging science behind adolescent neurological development suggests that innovative approaches to build fortifying skills supported by trusted adult relationships, specifically mentors, can play a role in combating these trends.

Adolescence has commonly been considered to be a period of increased normative disturbances and problematic development, associated with heightened dysfunction and maladaptation (Hall, 1904). However, over the past two decades, adolescence is now considered to be the “age of opportunity” thanks to expanded scientific research which supports that there is increased malleability of the adolescent brain (Steinberg, 2015). This intense period of development, already encompassing great change marked by navigating the challenging pathways to adulthood, offers an opportunity to be more productively leveraged by developing new and more positive attitudes and skills which could play meaningful roles in formulating effective coping, adaptation and success strategies for **life**.

These two profound change cycles: one driving the global workplace and the other, impacting adolescence can be harnessed and linked together to produce strongly positive and

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transformative results, especially for adolescents from isolated or disadvantaged backgrounds. The desired objective is to create purposeful symbiotic self-directed positive change cycles for individuals, in this instance, adolescents, to meaningfully participate in the future economy and world rather than be left out or left behind. Educational institutions and community systems are grappling to address these gaps in insulation, through teaching skills and sharing knowledge. Positive psychology posits that through authentic and high-quality trusted relationships during developmental life cycles that true personal growth around intangible human skills can be achieved (Peterson, 2006). Relationships not only serve as the conduit to achieve Maslow's hierarchy of self-actualized needs (Maslow, 1943) but also play foundational roles in achieving connectedness (Dutton, 2003), well-being (Seligman, 2011), and unlocking full human potential (Peterson, 2006). An alternative framework: The Basic Psychological Needs Theory proposes that humans need relatedness, competence and autonomy to thrive (Ryan & Deci, 2002). These core pillars can yield a sense of life fulfillment, satisfaction and well-being (Ryan & Deci, 2002).

Relationships are at the core driving the science of positive psychology. One could suggest that they are the fundamental drivers of well-being attainment. As defined in leading positive psychology well-being constructs from Seligman (2011) and Ryff (2013), relations with others are paramount. Furthermore, as one grows into adolescence and early adulthood, the "behavioral synchrony" that occurs between an infant and caregiver expands into the role(s) of teachers, mentors or non-parental adults. Attachment histories influence adult relationships, romantic and otherwise (Peterson, 2006). Early childhood relationships serve as the building blocks that can give rise to being happy in groups in adulthood. This not only allows deep connection with others but can also serve to multiple well-being, both ours and others happiness (Fowler & Christakis, 2008).

Happiness, in its hedonic simplicity was once thought to be the desired outcome for individuals. Yet modern life has allowed researchers to rethink this paradigm. The field of positive psychology has given birth to a number of constructs, all empirically proving that in addition to relationships, there are other facets that contribute to one's well-being, defined as them thriving and flourishing. Seligman's (2008) complete well-being construct also includes the core pillars of positive emotion, engagement, meaning and accomplishment. These "free choice elements" encompass his proposed PERMA model and helped to launch positive psychology back in 1997.

Well-being, in turn, can yield greater life meaning (Steger, Oishi, & Kashdan, 2009) and more specifically in youth, well-being can increase with optimism. Optimism is defined as a growing a positive belief in one's self, the world around them and their respective futures (Kern, Benson, Steinberg, & Steinberg, 2016). Relational theories and also as part of broader well-being constructs (Seligman, 2011) have been shown to promote healthy and productive development. Strong relationships can yield positive outcomes through provide guidance, support and encouragement (Zimmerman, Phelps, & Lerner, 2008). Positive relationships offer social belonging (Walton & Cohen, 2011). Individuals from disadvantaged backgrounds are more susceptible to low social status harm in the forms of social isolation and loneliness resulting in poor physical and mental health (Walton & Cohen, 2011). In a study conducted with first year college minority students tasked to construct productive social connections, their resulting social belonging and social equity yielded increased classroom performance, physical health and overall well-being over a four-year period of time (Walton & Cohen, 2011). More importantly, through social belonging interventions Walton & Cohen (2011) discovered that students were taught "nonthreatening interpretations of adversity" (p. 1448). This is a critical

life skill akin to optimistic explanatory style and optimistic thinking which offers positive futuristic beliefs and possibilities for individuals (Seligman, 2011). Explanatory style is the interpretive choice to view events as either optimistically or pessimistically. Pessimistic interpretations of negative events are viewed as being pervasive and permanent, whereas optimistic interpretations of negative events are seen as being temporary and specific (Seligman, 2011). Optimism therefore plays a critical role in how one chooses to interact with and relate to others and one's environment.

Given optimism's recursive relationship with well-being, it is a key and necessary ingredient for life success, especially in the context of business (Seligman, 1991). As a learnable skill, it can be taught, practiced and reinforced through a variety of means. The presence of one caring adult in an adolescent life has been found to be the sole critical factor driving in their ability to bounce back from adverse life events and preserve towards goals (Werner, 1986). Adolescent research has focused more on the impact of these relationships as defined to be parents and caregivers, and to a lesser extent, siblings. However, the time period of adolescence has been shown to produce an increased physical and emotional distance between adolescents and their parents and caregivers (Steinberg & Sheffield Morris, 2001). According to PEW research, in the United States, 15 million children younger than 18 report living only with their mother, while 24 million report living with an unmarried parent (Livingston, 2018). For those born into two parent married households, by the age of nine, one in five will experience divorce or parental breakup (Livingston, 2018). Therefore, non-parental caring adults can not only play a critical overall role in an adolescent's life, but can specifically help them grow and increase their optimistic capacity. This can be even more impactful when coupled with building healthy and productive relationships.

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In addition to these changing familial structural relationship dynamics, external influences such as social media, social isolation and cultural and societal biases reinforce negative self-image and insecurities at a very vulnerable time in their lives. The Centers for Disease Control and Prevention recently reported a growing trend in sex disparity in suicide. Rates of suicide for girls between the ages 10 to 14 have tripled between 1999 and 2004, revealing they are the fastest growing subgroup (Luby & Kertz, 2019). Researchers are seeking to unpack this trend more empirically, but are suggesting that social media is a contributing factor to increases in adolescent suicides (Twenge, Joiner, Rogers, & Martin, 2017). Female adolescents are reported to be more afflicted by social media, which has been linked to increased depression, cyberbullying and suicidal tendencies (Luby & Kertz, 2019). Adolescents also grapple with the challenge of combating homonymy, defined as “the tendency to conform to, unite with, participate in and fit into the super-individual” (Anygal, 1941). While this tendency afflicts all humans, it is incredibly poignant during adolescence in an effort to belong. It can be a driving source of motivations and behaviors; negatively reinforced by social media and popularized media and culture. Given the increasing power of technology platforms to negatively impact adolescence mental and physical health, positive interventions at institutional scale are necessary in order to help combat these rising statistics. While many efforts and solutions focus on combating the evils of technology, equal (if not more) efforts need to be focused on finding ways to inoculate adolescents from the downsides of these technical tools. Positive psychology-based techniques and interventions can provide them with such tools.

More specifically, structured positive psychology principles and critical life skills applied consistently and delivered in a fashion coupled with mentorship can transform outcomes for adolescent mentees (see *Figure 1* below). Mentoring provides the unique opportunity for non-

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parental influences to provide support, guidance, objectivity and exposure to new people, places and things. Mentoring during adolescence is even more critically important due to the natural increasing separation between children and their parents (Steinberg & Sheffield Morris, 2001). Mentoring provides the unique opportunity for non-parental influences to provide support, guidance, objectivity and exposure to new people, places and things. A caring relationship ensures that basic human needs are first met to then allow increased learning and growth can occur (Maslow, 1941). The natural familial discord and separation that occurs during adolescence gives rise to a mentor's potential transformational and life altering impact. As one is ushered into adulthood, navigating all the life steps and stages that accompany this transition, a mentor relationship can be a gateway intervention unlocking many future economic mobility possibilities and well-being skill building opportunities.

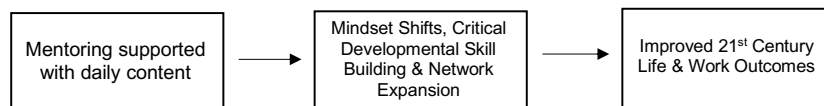


Figure 1. Mentorship driven developmental model with structured positive principles.

Traditional Mentorship

Over simplified, a mentoring relationship is two people caring for one another in authentic ways, building trust, rapport and connection. As more traditionally defined, mentoring is a sustained relationship whereby one person can offer guidance, support and assistance to another (Mentoring, US Department of Education, Office of Research Consumer Guide 7). This

relationship is often constructed between younger and less inexperienced individuals ergo, proteges, with older and more experienced individuals, who serve as mentors. Research has found that mentoring relationships are most effective when they extend over a longer duration (Jekielek, Moore, Hair, & Scarupa, 2002). Studies found that mentoring relationships that last less than a year can actually have negative impact on mentees (Jekielek et al., 2002). It therefore of paramount importance to denote clear expectations at the onset of the relationship for both parties to ensure the commitment is honored and can most effectively drive change.

While mentoring is often not credited as the “sole mechanism for change” (Rhodes, 2005), its catalyzing relational bond is influential and a significant contributing factor to a number of positive changes and outcomes. A meta-analysis conducted on the effectiveness of youth mentoring programs found that behavioral, social, emotional and academic outcomes all improved as a result of mentoring (DuBois, Holloway, Valentine, & Cooper, 2011). Especially during the time of adolescence where parent and caregiver relationships experience greater conflict (Steinberg, 2001), non-parental adults play a formative role in creating the awareness of and enhancing the strengths of youth (DuBois & Rhodes, 2016). As the most ‘important development asset’ in adolescent lives (Theokas & Lerner, 2006), they facilitate healthier and more positive development (Lerner, 2004) through coaching and teaching relevant life and workplace skill building opportunities. Mentor relationships provide the conditions by which mentees can supportively practice newly acquired skills. This shared experience strengthens their bond as both parties bear firsthand witness to how those skills can contribute. They offer the opportunity can also create increased awareness in the ecological resources that can surround them (DuBois & Karcher, 2014). This traditional mentorship relationship can be traced back to 800 BCE, originating from Homer’s poem, *The Odyssey*. Mentor, the son of Alcimus offered

and coordinated advice and sage counsel for Odysseus' son (Homer, 1919). With roots dating back centuries, traditional mentorship constructs and identities continue to shape mentor roles and delivery, but more adaptive models are needed to keep pace with societal and global change.

Progressive Mentorship Concepts

Mentoring over the course of the 21st century has expanded thanks to changing environmental conditions driven by macro and micro trends as globalization, diverse workforces, flat organizations and technology advancements. The emergence of peer mentoring, cross-gender and cross-cultural mentoring, group mentoring and e-mentoring have all taken flight (Ragins & Kram, 2007). These new and less traditional approaches are redefining mentoring to no longer simply be considered according to Kram & Ragins (2007), “constellations of relationships” but rather “developmental networks” (p. 659). The networks can be so potent that they have been likened by Cooper (2010) to have the same characteristics of “invisible colleges” discovered by Crane (1969), offering access, exposure and opportunity through informal relationships connections (p. 93). This expanded network approach offers the opportunity to have mentorship become bi-furcated and assigned to a more membership driven model. The influence of high-quality mentoring relationships during adolescence can be even more potently realized if constructed in thoughtful manners.

Aligned more consistently with positive psychology principles, Noe proposes and Brewer further develops the notion of “mentoring mindedness” which deviates from more conventional mentoring approaches. Traditional mentoring relationships are more often guided and constructed by a present to future construct (Brewer, 2016; Noe, 2009). This is defined by a mentor working with a mentee to change their present conditions to yield future successes and/or changes. This also relies on the defined and articulated mentee needs based on existing known

constraints which are determined by current evidence and knowledge sources (Noe, 2009). Alternatively, mentoring mindedness first starts with the desired future self or state and premises the relationship based on longer term aspirations, goals and objectives. This structure is more flexible and seeks to create collaborative, working partnerships based on exploration of unarticulated needs, unconventional boundaries and the objective of facilitating the duality of helping a mentee be both an actor and observer in their own experiences (Brewer, 2016). This allows a mentee to develop a more holistic and accurate sense of self in context to the broader world (Brewer, 2016). It also helps promote deeper engagement in tasks and activities (Brewer, 2016). Table 1 below is taken directly from Brewer's *Mentoring from a Positive Psychology Perspective* citing specific examples of some of the differences between conventional mentoring as compared to mentoring mindedness (Brewer, 2016).

Table 1

Differences Between Conventional Mentoring and Mentoring Mindedness

Conventional Mentoring	Mentoring Mindedness Mentoring
'Present to future' orientation - Takes today as the starting point	'Start with the future in mind' – Identifies long term aspirations and then 'bridges back to present'
Assumes a mentor (expert) with a mentor (follower) posture	Assumes collaborative, democratic partnership between mentor and mentee
Focuses on incremental, linear development	Seeks non-linear breakthrough development, while developing foundational thinking and skills - Encourages leaps rather than step-by-step
Has a one-sized framework to fit all mentees	Seeks to understand real needs of mentees outside of conventional boundaries
Focuses on articulated needs of the mentee	Seeks to explore the unarticulated needs of mentees
Relies on current sources of information & knowledge	Seeks to exploration of unlikely sources of information & knowledge
Seeks mentee's satisfaction	Inspired by mentee and challenges them to experience some level of discomfort
Accepts boundaries	Demonstrates free-thinking posture

Note. Reprinted from "*Mentoring from a Positive Psychology Perspective*" by A. Brewer.

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Commented [PGH6]: This is a nice table that helps the reader understand the distinction between these two mentoring approaches.

One of the hallmarks of mentor mindedness, as defined above, is that it focuses on the creation of a generative mentoring relationship through non-traditional means. Given society's increasing technical advancements and the increasing comfort of individuals, especially adolescents to communicate more regularly using technology, it makes sense to explore ways that technology can both enhance, enable and scale alternative mentorship models.

E-Mentoring

Technology is a pervasive influence in the world today. In 2015, Common Sense Media reported that a growing majority of adolescents spend up to 9 hours or more online with their smart phones, computers, television and gaming devices (Common Sense Media, 2015). Much of this technology usage has been associated with concerning mental health behaviors and poor health outcomes like obesity and lack of exercise (de Jong, Visscher, HiraSing, Heymans, Seidell, & Renders, 2013) and decreased well-being (Twenge, Martin, & Campbell, 2018). The notion of using phones for good presents an opportunity to meet adolescents in forums where they spend a majority of their time and have increased comfortability. It also allows mentoring to be delivered in a cost-effective manner through non-traditional technology-based sources, solving for many aforementioned traditional mentoring programmatic and workforce development challenges (Byrne, Dik, & Chiaburu, 2008). Technology facilitated communication increases the frequency of mentor and mentee interactions which improves overall success of mentorship relationship (DiRenzo, Linnehan, Shao, & Rosenberg, 2010).

Technology facilitated communication simultaneously helps adolescents improve their written electronic communication skills. Strong communication skills are desired by future employers and have been linked with improved online mentoring relationships (Ensher, Heun, & Blanchard, 2003). Learning a myriad of appropriate ways to communicate, especially with

emotional granularity, is a critical life skill that many adolescents lack today. The written form offers an effective way to help one positively reappraise life events, offering new insights, perspective and objectivity; and even leads to improved physical health (Pennebaker & Beall, 1986). These are also desired critical life skills by 21st century employers seeking to have productive and coachable team members. The emerging science behind adolescent neurological development suggests that innovative approaches to build such fortifying skills supported by trusted adult relationships, specifically mentors can play a role in combating these trends.

The State of Adolescence Today

The period of adolescence has been traditionally defined by a combination of biological factors marked by puberty and cultural markers. For girls, the onset of adolescent has commonly been defined by menarche and culminating in marriage (Steinberg, 2015). In light of general extended life expectancy due to modern medicine, the invention of birth control, along with the educational and career opportunities that the women's movement spurred, this window has widened significantly from the 5 years it was in the mid-1800s to now almost twenty years. For boys, the onset of adolescent is less specific. It is generally considered to be when their voice begins to break. In the mid-1700s, this occurred when young men were 18 and today it is considered to be somewhere around ten and a half (Steinberg, 2015). Increasingly reported by pediatricians is an earlier onset of puberty both for girls and boys (Kaplowitz, Slora, Wasserman, Pedlow, & Herman-Giddens, 2001). These defining and hallmark characteristics of modern adolescence are radically different than in prior years past and mark an unprecedented developmental change.

It was commonly thought that genetics were solely predictive of puberty. Yet it is now better understood that there are both biological and environmental contributing influences

(Steinberg, 2015). While once positively correlated with better maternal and child health and nutrition, the early onset of puberty is now thought to be negatively correlated with poor health and nutrition (Steinberg, 2015). Children today, especially in lower income communities, have increased kisspeptin, a brain chemical that triggers puberty. Kisspeptin is stimulated by leptin, a protein produced by fat cells. It is conversely suppressed by melatonin, which helps to regulate sleep cycles (Steinberg, 2015). Youth obesity rates have tripled since 1970s (Fryar, Carroll, & Ogden, 2014). One in five children and adolescents are considered obese, resulting from a complex combination of genetics, metabolism, eating and physical activity behaviors, environmental influences and negative early events and experiences (Hales, Carroll, Fryar, & Ogden, 2017). This phenomenon coupled with sleep deprivation and increased incidence of light exposure via amounts of screen time, is driving an increase onset of puberty at earlier ages (Steinberg, 2015). While this extension has been largely considered undesirable by parents who are frustrated by their children's high incidence of self-diagnosed arrested development, the extended window offers new opportunities if recognized and leveraged appropriately. These opportunities are specifically tied to neurological changes occurring during adolescent brain development.

The Adolescent Brain

What makes adolescence so particularly formative is the specific areas of developmental plasticity and reorganization of the brain. This is similar to the neural anatomical changes and primary development that occurs between ages of 0 to 3 (Steinberg, 2015). The human brain houses over 100 billion neurons. During adolescence, not only do neurons continue to be produced, but more importantly, life experiences eliminate unnecessary ones, known as "synaptic pruning" (Steinberg, 2015). This helps remaining neurons become meaningfully

connected to regions of the brain that control higher level cognitive functioning. The organization of this cognitive circuitry remains relatively hardwired for the rest of our lives (Steinberg, 2015). These higher level cognitive functioning skills, often referred to as executive functioning, are developed the pre-frontal cortex region of the brain and are experience dependent. They encompass both thinking and behavioral skills like time management, goal setting which play a role in higher education and workplace success.

In the great debate about nature versus nurture, both prove to be significant during these critical life stages due to the increased sensitivity that environmental factors can have on such malleable brain tissue. Since it has only been in the last 15 years that the notion of adolescent neural plasticity has been more thoroughly researched, there is much more to learn since both active and passive experiences can have profound impacts (Steinberg, 2015). More research is needed on the long-term effects of substance abuse, such as illicit drugs, binge drinking and exposure to violence. Such behaviors have increased substantially over time and are on the rise with adolescent populations in the United States and will continue to have major impacts on adolescent development.

The more favorable the conditions, the more positive the development for adolescent brains. On the flip side, the more disastrous the conditions, the more harmful and irreversible the impact (Steinberg, 2015). Ecological supports have been shown to reduce risks and increase attainment of positive developmental and thriving behavioral outcomes (Connell, Spence & Aber, 1994). As an increasing divide in the United States grows as 39.7 million people live in poverty (Fontenot, Semega, & Kollar, 2017). Adolescents exposed to the daily stress of deep poverty can manifest in a number of mental and physical health issues which become chronic and debilitation lifelong handicaps.

The adolescent brain encodes memories more vividly and with increased hypersensitivity (Knutson & Adcock, 2005). Research conducted on adults found that life events occurring between the ages of 10 and 25 were recalled with more meaning and frequency than events that occurred prior to and after that time period (Rubin, Wetzler, & Nebes, 1986). This is thought to be attributed to the increased number of novel experiences that occur during this coming of age era characteristically full of many “firsts” (e.g. driving a car, experiences with sex, alcohol, drugs, etc.) or due to the lack of emotional regulation adolescents possess, making their experiences more momentous and noteworthy in their own minds (Steinberg, 2015). One could then purport, if you offer exposure to new positive experiences, they will become effectively hardwired during this time of heightened neuroplasticity. Moreover, if the experiences occur consistently over a substantial period of time during the critical adolescent ages, they can be influential forces on development enabling both greater current and future success. Anatomically though they yield an increased production of myelination, the white matter in our brains. Myelin serves as both a protective and a lubricant for the neural pathways (Fields, 2005). This critical material, also produced through deliberate practice, allows our brain circuitry to run more effectively, efficiently and with greater durability (Steinberg, 2015).

In light of the aforementioned research, there is an even more compelling reason as to why taking advantage of adolescent brain plasticity is of critical importance: metaplasticity. Metaplasticity is the phenomenon whereby the learning that occurs through novel and challenging experiences during the sensitive window of adolescence can actually extend and prolong the period of brain plasticity (Abraham & Bear, 1996). Non-familial consistent support and novel exposure opportunities could alleviate the long-term entrenchment that daily stressors (and potential substances) adolescence experience. If left unattended, these stressors and

experiences have the power to cause what Steinberg (2015) calls “psychological disturbance” (p. 40). These daily nominal stressors if left unattended without the proper combative and preventative skills and tools can manifest into serious psychological problems, including debilitating anxiety, depression and mental illness which limits one’s ability to productively participate in any facet of their lives and futures.

Positive Youth Development

While the process for positive youth development is still debated, there is general consensus that the desired end result is to have what Roth & Brooks-Gunn (2003) called “healthy, happy and competent adolescents on their way to productive and satisfying adulthoods” (p. 170). The ingredients for positive youth development have been outlined to include “safe places, challenging experiences, and caring people on a daily basis” (Zeldin, Kimball, & Price, 1995). This dynamic construct requires a well-coordinated and multifaceted approach. Academic institutions are constrained and ill-equipped to deliver this effectively. Positive behaviors that are role modeled and practiced can increase competencies while improving outcomes. Too often the absence of negative outcomes indicate success (Roth & Brooks-Gunn, 2003). Activities that broaden and build exposure (Fredrickson, 2011) across social and vocational domains in a hyper individualized empowering environment offer great promise (Roth & Brooks-Gunn, 2003). If delivered in a manner that is different from school, with clear expectations that foster pro-social norms, said activities and programs can be healthy agents of change (Roth & Brooks-Gunn, 2003).

The future world of work requires many characteristics associated with positive youth development including increased executive functioning competencies such as critical thinking, self-regulation and logical reasoning (World Economic Forum, 2015). For those who may not be

Commented [PGH7]: Nice summary here of developmental changes and considerations during the adolescent years. Most of these are risk factors and hoping you will now talk about protective factors!

predisposed to be on track for economic mobility opportunities due to their existing disadvantages (e.g. lack of access to quality education, lack of access to role models, mentors and networks, lack of exposure to broader life experiences) they will fall even further behind, likely unable to ever catch up, if they lack these critical skills. This impacts well-being across multiple life and workplace domains, offering a bleak outlook for youth who fail to see a meaningful and economically mobile future for themselves. This increasing common occurrence is becoming a systemic challenge facing the United States' global competitiveness, creating an economic imperative for both institutions and individuals to embrace new solution orientated models by innovatively marrying both human and technical solutions and allowing them to take root.

In light of the aforementioned challenges and opportunities, a startup called The Five Network (www.thefivenetwork.com) is seeking to serve as the connective tissue between the two profound change cycles previously outlined: the workforce and adolescent population. Through programming and smart technical capabilities, FIVE seeks to develop healthy mindsets, build relevant skills and expand network and connection through a mobile application designed to ultimately improve 21st century work opportunities and outcomes. Mentees exposure to daily content, regular interactions with mentors and connections to employers can be quantifiably measured across several dimensions. *Figure 2* below outlines the proposed FIVE model. For purposes of this Capstone, the likely connections between the mediators are not addressed as they fall outside of the boundary conditions.

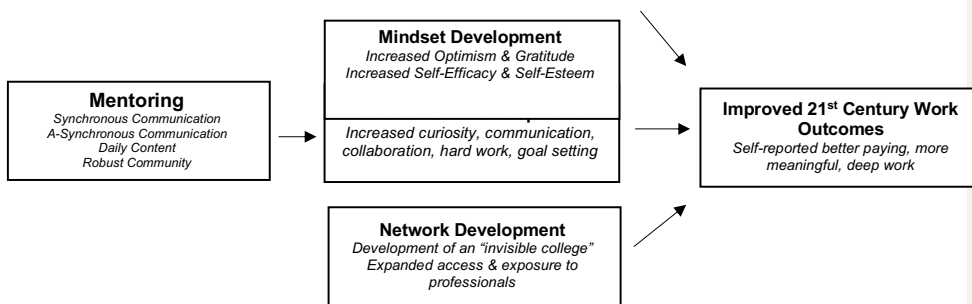


Figure 2. The FIVE Network Mentoring Model designed to improve work outcomes.

The FIVE Network: Mentoring Scaled and Powered for the Digital Age

Mentoring was once thought to be a charitable endeavor (Baker & Maquire, 2015). Innovative mentoring models are now viewed as instrumental preventative and proactive approaches that can offer predictive utility (DuBois & Karcher, 2014). Qualitative data has found that trusted non-parental adults are more influential than parents in generating engagement with education and employment, and future trajectories (Meltzer, Muir, & Craig, 2018). Trusted non-parental adults are able to provide practical assistance (Beam, Chen, & Greenberger, 2002) in an equitable fashion and encouragement in a low-key and more direct way (Ahrens, Dubois, Garrison, Spencer, Richardson, & Lozano, 2011). They can also help adolescents better understand and manage the risks, given their developmental capacity makes them highly risk prone, around both education and employment opportunities (Meltzer et al., 2018). Furthermore, since negative outcomes have been associated with mentor relationships lasting 6 months or less

as compared to mentoring relationships lasting one year or more (Grossman & Rhodes, 2002), a new mentoring model is needed to ensure that it can be sustained for an extended period of time.

Enter the new for-profit solution flipping the mentoring model on its head: The Five Network. The law of averages supports that we are the average of the five people we associate the most with (Upton & Cook, 2014). In modern day society, they play a critical role in creating success and achievement in life and business. Furthermore, they are the bedrock to the broader networks that further support success. While in some cases, personal networks may be vast and large, there are many from isolated or disadvantaged backgrounds who lack networks that can provide access, exposure and opportunity. Thanks to technology, the traditional burdens of mentorship: time, matching and geography are alleviated and delivered via mobile application. Using smart nudges and automated technology, mentees can be matched with up to five mentors allowing busy mentors engage less than 15 minutes per week and alleviate the burden of mentorship on just one individual, all while maximizing impact and creating high quality relationships. This approach is validated by social network expert Nicholas Christakis who has begun to conduct studies in his lab at Yale demonstrating that hybrid systems utilizing both technology and people can improve the way humans interact and relate to one another (Christakis, 2019).

As mentees progress through the 5-year program, their networks expand and new opens doors (e.g. educational, career, service, vocational or otherwise) open for them. Negative outcomes have been associated with mentor relationships lasting 6 months or less as compared to mentoring relationships lasting one year or more (Grossman & Rhodes, 2002). This becomes a new pathway connecting diverse pipelines of talent with caring individuals. Moreover, it builds self-efficacy, allowing adolescents to participate in a self-directed fashion in their own futures

Commented [PGH8]: What has Christakis found in his research to be the critical elements for leveraging hybrid systems to the best of their potential?

through exposure to new jobs, access to expanded networks and acquisition of critical life and workplace skills through the content curriculum.

The application's daily content delivered via game-like design allows mentees to earn points, shout outs and prizes all with structured and consistent encouragement and advice from mentors along the way to help maintain motivation, engagement and maximize learning. The strength based (Niemiec, 2018) content framework (Appendix A) includes curated 7-day FIVE Challenges whereby they can jumpstart habit formation (James, 1890) which is reinforced through gratitude-based survey questions; along with educational exercises directly relevant to today's workforce. A thematic focus of the content is general exposure to positive role models as well as, exposure to the World of Work (WOW), offering mentees an opportunity to learn about a range of 21st century jobs. This daily content not only allows for adolescence to experience self-discovery, but the content creates regular meaningful shared experiences, a critical component to high quality relationships (Dutton, 2003).

365 Days of Positive Psychology Informed Habit-Forming Content

Structured positive principles, applied consistently, delivered in engaging and novel fashions, along with intentional and deliberate practice has been shown to increase happiness (Lyubomirsky & Layous, 2013). More specifically, intentional positive activities, such as practicing gratitude and building optimistic thinking increase overall happiness as well as improve behavior and cognition (Sin & Lyubomirsky, 2009). These types of activities are found to be most effective when performed in the context of having social support, even virtual social support (Bandura, 1986) and can have a multiplier effect, prompting other positive behaviors (Emmons & McCullough, 2003). Content structured in this fashion, over an extended period of time, with an incentive and point system support the healthy balance of mentees striving for

goals while also modeling goal setting processes and supporting goal attainment (Owen, Magyar-Moe, & Lopez, 2015).

Habit formation occurs during the daily pursuit of goal attainment (Carden & Wood, 2018). The instrumental learning of habits requires basic environmental mechanisms. These can be delivered in the form of learning aids and guides, priming tasks and associations, contextual cues and attentional mechanisms (Carden & Wood, 2018). Habit formation most effectively occurs when one has successfully changed their own beliefs and perceptions, bore witness to (and were celebrated by others) the success the habit yielded and were able to leverage effective cognitive strategies, such as reminders to elicit the habit (Carden & Wood, 2018). Moreover, studies have found that social integration can be habituated, which has been a predictive factor of overall student success (Ram, Wang, Currim, & Currim, 2015).

The Five Network curricular components considered the age of the mentee over the course of five years focusing on topics that were important and relevant to them. Critical workplace skills determined by global leaders are integrated and reinforced through daily content, but specifically through the gamification aspect. Weekly 7-day FIVE Challenges are specifically designed offer the right introduction to and scaffolding of concepts and healthy behaviors that were desired to become habits. Weekly surveys are constructed in a way to reinforce the habit of gratitude by recognizing positive life happenings. Moreover, the daily content (Appendix B) offers positive exposure and habit-forming activities that give rise meaningful shared experiences between the mentee and the mentor. The content leverages the initial focus of a mentee's potential vocational interests to increase the mentee/mentor high-quality connection and authentic conversation/connection. Over the course of five years, the objective is to have the relationship serve as the catalyst to expand networks and opportunities,

offering new pathways with increased economic mobility, self-efficacy and a greater sense of well-being. This trajectory as outlined below in *Figure 3* allows individuals to have a meaningful self-discovery journey whereby they build self-driven motivations, desires and developmental skills that help to cultivate career interests and areas of specialization. This is all done while reaping the full benefits from high-quality connections from a team of five professionals.

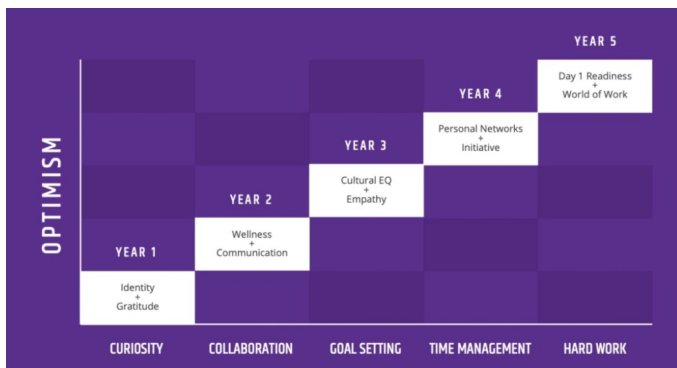


Figure 3. FIVE 5 Year Programmatic Curriculum. Adapted from FIVE Corporate Materials. Copyright 2019 by The FIVE Network.

Cultivating Optimism Over FIVE Years

The science of positivity is clear. Positivity opens our creative genius, unlocks our hearts and minds, while increasing our capacity to build new skills, knowledge and ways of being (Fredrickson, 2009). Beyond that, positivity is contagious. It has multiplier effects for an

individual and those around them. A true “super food emotion” it can do it all: improve well-being, improve business, overcome racial bias, transform communities along with producing a myriad of other positive and outcomes.

Negativity on the other hand, has narrowing impacts on our cognitive processes, although not necessarily in cases of low motivational intensity (Harmon-Jones, Gable, & Price, 2013). Outside of this, negativity limits our growth and overall well-being. A phenomenon leading to negativity is that of ‘learned helplessness’ introduced by University of Pennsylvania researcher and positive psychology co-founder Martin E.P. Seligman. He found that dogs conditioned themselves to learn avoidance responses to not encounter the expected shock (Maier & Seligman, 1976). This helplessness became a learned behavior, much like those behaviors, attitudes and outlooks learned through deep poverty, social isolation and growing mental health issues impacting an increasing number of youths in our country today.

Greg Lukianoff and Jonathan Haidt in their book, *The Coddling of the American Mind* uncover that many college students, regardless of socio-economic backgrounds are similarly arriving on campuses similarly “conditioned” whereby they avoid aversive events, topics, ideas and stimuli (Lukianoff & Haidt, 2018). This phenomenon is preventing them from acquiring relevant life and workplace skills like productive communication, critical and analytical thinking, curiosity and creativity (Lukianoff & Haidt, 2018). This trend, coupled with the growing ‘learned helplessness’ affecting more youth stresses the dire need for youth to develop optimistic, flexible and malleable thinking in order to see hopeful pathways forward to participate in their futures in self-directed ways.

To help assess and track FIVE mentees levels of optimism and the validity of FIVE’s approach, the Life Orientation Test (LOT-R) (Appendix C): a 10-item measure of optimism

versus pessimism will be used as an assessment tool (Scheier, Carver, & Bridges, 1994). The LOT-R will be administered once in the beginning of the fall, when the content curriculum starts and once in the late spring. This test will be conducted annually over five years and track annualized rates of **change**.

A Taste of FIVE: Year 1 - Identity & Gratitude

For purposes of this Capstone submission, the curricular elements of FIVE's Year 1 pilot are being shared. Thematically the content in Year 1 is focused on Identity and Gratitude.

Identity given its pop cultural dominance and relevance with the early adolescent demographic (9th graders who are 14 years old) we are working with. And gratitude given its predictive role in increasing optimism (K. Reivich, personal communication, January 13, 2019).

Adolescence is a time where individuals seek to begin to connect themselves to greater meaning and purpose (Wang & Fry, 1998). Meaning is defined as 'the extent to which people comprehend, make sense of, or see significance in their lives, accompanied by the degree to which they perceive themselves to have a purpose, mission, or overarching aim in life' (Steger, Oishi, & Kashdan, 2009). This 'meaning making' process can be achieved through multi-dimensional steps whereby adolescents seek to understand who they are and what they are interested in (Steger et al., 2009). Meaning is closely associated with identity development (Heine, Proulx, & Vohs, 2006) and moreover, a key pillar in overall well-being (Seligman, 2011). When an individual fails to identify and realize an externally oriented driving force, it can impact their ability to acquire motivating beliefs later in life (Erikson, 1968). This can lead to variety of negative consequences including depression, addiction, lack of productivity, inability to build and sustain healthy interpersonal relationships, and a host of other destructive behaviors and ailments (Damon, Menon, & Bronk, 2003). Post-adolescent studies support that

Commented [PGH9]: The research on outcomes associated with a generally optimistic approach to life vs. optimism (defined as explanatory style) are different and worth exploring. If you're hoping to move the needle and support youth development through cultivating optimistic explanatory style, the LOT-R would not capture that as a measure. Just something to think about.

committing oneself to a purpose and cause greater than one's self is critical for self-development and generative contributions to society (Daloz, Keens, Keens, & Parks, 1996).

Erickson was the first to gain traction proposing the notion that adolescents experience identity crisis (Erickson, 1968), consistent with other aforementioned notions of adolescent being problematic. A more progressive definition of identity is from Marcia (1980): a "self-constructed, dynamic organization of drives, abilities, beliefs and individual history" (p. 159). Chickering and Reisser's popularized Seven Vectors of Identity Formation outlines that first individuals need to develop competence, followed by learning how to manage their emotions. Next, they seek to move through autonomy towards interdependence and then develop mature interpersonal relationships. From there they begin to establish their identity, purpose and ultimately integrity (Steger et al., 2009). With that in mind, adolescent identity formation proves to be largely contextualized. It is driven by a confluence of environmental factors including school, work, family, friends along with formative cognitive developmental factors (Grotevant, 1987). Cognitive changes are especially relevant and important as they stretch adolescents to think beyond the present into the future (Keating, 1980).

In Grotevant's four phased process of adolescent identity formation include 1) individual characteristics, 2) identity formation process, 3) contexts of development and 4) interdependencies among developments in different identity domains (Grotevant, 1987). Individual characteristics include personality, self-esteem, self-monitoring, ego-resiliency and openness to experience and information. Identity formation process can be influenced by career domain choices, among other things such as life events (Grotevant, 1987). Contexts of development are dependent largely on factors such as culture, society, family, peers, school and work environments (Grotevant, 1987). While some of these aspects are focused on one domain

at a time, it is the interconnectedness of the domains that helps one realize and identify more fully (Grotevant, 1987). While it is largely considered to be centered around an interpersonal process, given the contextual and environment forces, it can be guided more thoughtfully through close interpersonal relationships (Kelley et al., 1983). Building on Grotevant's adolescent identity process theory, it offers an opportunity for a mentor relationship to play a positive guiding role in an adolescent's identity formation. This can be done in creating more positive context around life events, helping build and celebrate individual characteristics, "connect the dots" so to speak between interdependent domains and offer vocational encouragement as adolescents today need to prepare for an ever-changing workforce.

There can be extreme variety and complexity of emotions during adolescence (Freud, 1958). Often times these "mood swings" are associated with hormonal and developmental whereby adolescents experience precipitous and extreme shifts in "positive and negative affective valance" (Myers, 1992). Developmentally, the capacity to recognize gratitude is present at birth, but is considered to be a developmental milestone achieved as children cognitively and emotionally mature (Klein, 1957). This is most commonly occurring between the ages of 7 and 10, where children can explicitly understand the connections between the responsibility of gratitude eliciting/inducing behaviors and experiences of gratitude for themselves and others (Graham & Weiner, 1986).

Gratitude is considered to be a human strength which has both individual and societal benefits (Simmel, 1950). In addition to it fostering a range of increased pro-social behaviors, it has further been theorized to serve as an internal "moral barometer" both motivating and reinforcing the inhibition of damaging behaviors (McCullough, Kilpatrick, Emmons, & Larson, 2001). The importance of being able to cultivate, recognize and practice gratitude has been

empirically shown to increase subjective well-being in adults, adolescence and children (Woods et al., 2010). In the context of well-being, gratitude has been defined by Peterson & Seligman, (2004) as “a sense of thankfulness and joy in response to receiving a gift, whether the gift by a tangible benefit from a specific other or a moment of peaceful bliss evoked by natural beauty” (p. 554). It generally is associated with a more positive and appreciative outlook on life, shown to increase happiness (Watkins, 2004). Processing life’s daily experiences allows for increased enjoyment of and more fulfillment in the activity (Langston, 1994).

Given gratitude is associated with a more positive and appreciative outlook on life, as compared with negative views on one’s self, the world around them and their future (Beck, 1967) it can be correlated to well-being through optimism. Studies conducted on adolescent populations found that a cultivated and reinforced practice of expressing gratitude (i.e. counting blessings) increased self-reported gratitude, optimism, life satisfaction, and decreased negative affect (Froh, Sefick & Emmons, 2006). Furthermore, gratitude is correlated with increased self-esteem (McCullough et al., 2001) which not only supports overall psychological well-being, but also decreased levels of depression and preventative against an increase of the occurrence (Sin & Lyubomirsky, 2009). It is associated with fewer depressive symptoms (Seligman, Steen, Park & Peterson, 2005) and is especially relevant seeing how depression is rapidly becoming a worldwide health concern and a threat to well-being (Moussavi et al., 2007).

Depression is plaguing adolescent populations with greater incidence. A recent nationwide public health report indicated an increase of 30% of adolescents committing suicides (Center for Disease Control and Prevention [CDC], 2018). The report outlined that 17 percent reported having thoughts about suicide, more than 13 percent actually planned to commit suicide, and 7.4 percent attempted suicide in the past year (CDC, 2018). Screen and or internet

time, which could easily be considered an adolescent phenomenon is now reaching approximately seven to ten hours per day as 40% of adolescents recently reported. This high rate of usage doubles their chances of experiencing and being diagnosed with anxiety or depression (Twenge, Martin, & Campbell, 2018).

Studies have also confirmed a robust relationship between gratitude and greater domain specific life satisfaction, specifically tied into school experience in early adolescents (Froh, Sefick, & Emmons, 2006). A disproportionate number of adolescents' report varying degrees of dissatisfaction with their academic experiences (Huebner, Drane & Valois, 2000). Positive academic experiences and satisfaction has been linked to success more generally in life, social domains and follow-on academic experiences (Verkuyten & Thijs, 2002). Recognizing, cultivating and practicing gratitude with regular efficacy is important both for adolescent mentees, but could have causal influence on mentors as well. Mentees will be asked every Sunday to cite (3) good things from their week. This standard weekly question will help adolescents identify the active components and tangible examples of gratitude (Froh, Sefick, & Emmons, 2008).

It is for these aforementioned empirically driven reasons that in Year 1 the mentee experience is focused on identity and gratitude as the foundation to self-efficacy, to ensure a solid mentor/mentee relationship which can sustain and thrive over a five-year period of time. This focus also allows adolescents to fortify themselves with developmentally appropriate understandings, habits and exposure to topics (listed in Figure 4) that scaffold them further in support of their success.

Commented [PGH10]: May want to look at research on how often gratitude activities need to be done to be effective.

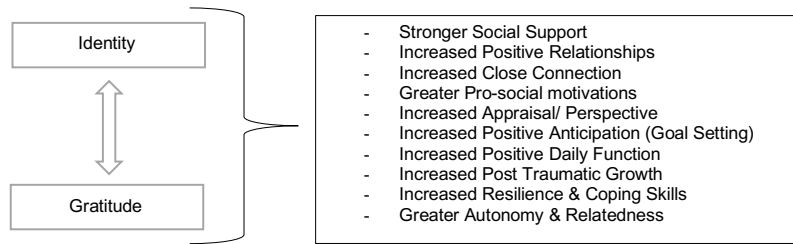


Figure 4. Connection and outcomes between identity and gratitude.

Conclusion

The future of work demands innovative thinkers. Adaptive learning solutions are required that unlock networks of knowledge to help ameliorate today's most pressing societal problems. Furthermore, these solutions need to have a uniquely humanistic approach. Passive constructs and traditional frameworks have merit in their learnings, but need to evolve and morph to meet the myriad of changing inputs and outputs; allowing for evolutionary solutions that can produce both proximal and distal outcomes. Helping adolescents develop and increase their optimistic capacity can allow them to see their futures in a more tangibly positive and hopeful ways. Moreover, it can instill positive behaviors as habits that can serve them well for the rest of their lives, regardless of career and vocational choices. Ownership and motivation in said choices through exposure and access can contribute to their own personal sense of well-being and allow them to construct their own motivational properties as to define how they want to contribute to society.

Founding co-founder of positive psychology Christopher Peterson famously said that the field of positive psychology can be boiled down to three words: “other people matter”. The FIVE Network exemplifies this notion as it seeks to bridge the divide between those who have access to networks and those who do not. Through generative human connected knowledge sharing networks meaningful opportunities and learnings can unfold. Innovative and technology-based solutions designed to expand said networks while developing “other people” during a critical life period offers scalable, relevant and timely support for individuals who feel disconnected from society and their futures and for employers who are grappling to meet changing and unprecedented hiring demands over the next 20 years. Positive psychology uniquely offers an institutional lens by which The Five Network seeks to change the course of human trajectories, allowing bi-directional flourishing of individuals, institutions, businesses and economies.

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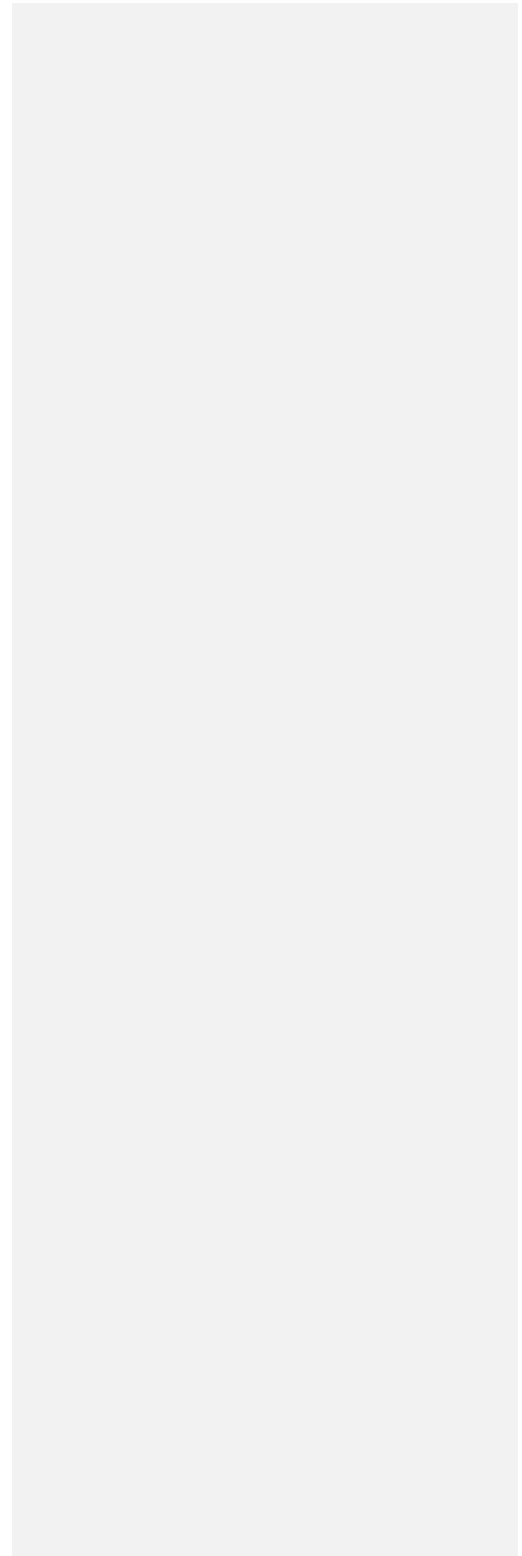
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Appendix A: The FIVE Network 7 Day Weekly Content Cycle

Day	Name	Format	Content Objectives
Mon	(Role) Model It Monday	Watching 2-minute inspirational video featuring positive role models who share their life stories and advice.	Mentee has opportunity to first learn about character strengths and then identify them in these videos. Gathers points to opening application, watching and sharing with mentor.
Tues	Tell It Tuesday	Reading an inspirational quote and learning about author.	Mentee has opportunity to gather points opening application, watching and sharing with mentor. Thematically tied.
Wed	World of Work Wednesdays	Watching 2-minute video profiling a range of different intriguing and jobs/careers and understanding pathways for jobs/careers.	Mentee has opportunity to share about their interest(s) in potential jobs with their mentors via comments about video, serves as meaningful conversation starter.
Thurs	Shout Out Thursdays	Celebrating weekly updates on leaderboard & building community	Mentees can be recognized in community for performance and shout out others as well building sense of community and membership.
Fri	FIVE Index	Watching 2-minute video demonstrating and explaining critical life skills concepts.	Mentee has opportunity to gather points opening application, watching and sharing with mentor. Thematically tied.
Sat	FIVE 7-Challenge	Completing a weekly challenge designed to foster positive habit formation.	Mentee can accept/decline challenge. Incentivized to complete. Activities aligned with positive psychology interventions.
Sun	Check-In Sundays	Completing a gratitude-based survey. Opportunity for mentee to share (3) <i>Good Things Each Week</i>	Formats of surveys designed to reinforce gratitude recognition.

Appendix B: The FIVE Network Content Calendar (Proprietary)

Note that this appendix material is a large excel file. For submission purposes, it has been [hyperlinked into this document](#). The FIVE Network Content Calendar is to be considered my artifact.



Appendix C: Life Orientation Test Revised (LOT-R)

LOT-R

Please be as honest and accurate as you can throughout. Try not to let your response to one statement influence your responses to other statements. There are no "correct" or "incorrect" answers. Answer according to your own feelings, rather than how you think "most people" would answer.

- A = I agree a lot
- B = I agree a little
- C = I neither agree nor disagree
- D = I DISagree a little
- E = I DISagree a lot

1. In uncertain times, I usually expect the best.
- [2. It's easy for me to relax.]
3. If something can go wrong for me, it will.
4. I'm always optimistic about my future.
- [5. I enjoy my friends a lot.]
- [6. It's important for me to keep busy.]
7. I hardly ever expect things to go my way.
- [8. I don't get upset too easily.]
9. I rarely count on good things happening to me.
10. Overall, I expect more good things to happen to me than bad.

Source: <http://www.midss.org/content/life-orientation-test-revised-lot-r>