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Dovetailing the 1214 Foundation's ARC Program with Positive Psychology

Michelle Garcia
University of Pennsylvania

Marianna Graziosi
University of Pennsylvania

Kristin Keffeler
University of Pennsylvania

Erica Mohr
University of Pennsylvania

Ilaina Rabbat
University of Pennsylvania

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Dovetailing the 1214 Foundation's ARC Program with Positive Psychology

Abstract

The 1214 Foundation's character building (ARC) and performing arts (NewArts) programs were founded to provide Newtown's youth with an empowered path forward following the school shooting at Sandy Hook Elementary in Newtown, Connecticut on December 14, 2012. This paper is intended to dovetail 1214's existing programs with the empirically-based tenants of positive psychology. First, the *Situation Analysis* outlines the structure of the ARC program and 1214's place in the nonprofit sector. Second, the *Literature Review* builds an empirically sound Theory of Change (TOC) for the ARC Program. This section aligns ARC's goals of "recognizing strengths", "regulating emotion", and "building confidence" with the empirical constructs of self-awareness, self-regulation, and self-efficacy. These constructs are then organized as pathways linked to the outcomes of grit, resilience, and post-traumatic growth, and the ultimate impact of flourishing. Lastly, the *Application Plan* outlines an assessment protocol that, along with the Theory of Change, will help 1214 both deliver their programs more effectively and communicate their impact more compellingly.

Keywords

nonprofit organizations, flourishing, resilience, grit, post-traumatic growth, youth, children

Disciplines

Other Psychology | Psychology | Social Psychology

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Garcia, M., Graziosi, M., Keffeler, K., Mohr, E. & Rabbat, I.

University of Pennsylvania

A Positive Psychology Service Learning Project Submitted

In Partial Fulfillment of the Requirements for MAPP 714: Applying Positive Interventions in
Institutions

Master of Applied Positive Psychology

May 1st, 2018

DOVETAILING 1214'S ARC PROGRAM AND POSITIVE PSYCHOLOGY

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“Every action we take aligns with our goal to turn our participants into problem-solvers and risk-takers; those who take responsibility for their own actions; those who [act with] commitment, perseverance and grit; and those who have found their passion(s) by defining and understanding themselves and blazing their own path. If you can aid us in creating individuals like this, then our partnership would be wildly successful.”

– *Michael Baroody, Founder of the 1214 Foundation*

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Introduction

The 1214 Foundation was founded following the elementary school shooting at Sandy Hook Elementary in Newtown, Connecticut on December 14, 2012. This event, the deadliest mass shooting at an elementary school in U.S. history, claimed the lives of 20 children between six and seven years old, and six adults. This tragedy galvanized 1214 to provide Newtown's youth with an empowered path forward through their ARC and performing arts programs. This paper is intended to help the 1214 Foundation bolster its existing programs with the empirically-based tenants of positive psychology. The plan is offered in three segments: the *Situation Analysis*, which outlines the current status of the organization and the sector in which it operates; the *Literature Review*, which aligns the organization's work with empirical research in an effort to build the conceptual strength of their theory of change; and the *Application Plan*, which outlines the specific tools we are proposing to the organization to build empirical rigor. Specifically, in this *Application Plan*, Team Black will 1) provide recommendations to maximize the use of 1214's new empirically-based theory of change, and 2) provide an assessment protocol to evaluate 1214's program outcomes and impact. These tools will help 1214 both deliver their programs more effectively and communicate their impact more compellingly.

Part One: Situation Analysis

History of the 1214 Foundation

Beginning in the summer of 2013, Michael Baroody, MD founded the 1214 Foundation and set out to provide the community's youth with a way to move past the tragic school shooting and forge an intentional path forward. Through the combination of 1214's custom-designed character development program, Aspire. Reach. Confidence (ARC), and

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their experiential performing arts program, NewArts, the organization provides participants with character education and a mastery experience to cultivate strengths, emotional agility and confidence (M. Baroody, personal communication, January 24, 2018). To date, the organization has produced 10 Broadway performances involving 450 children, to a total audience attendance of 12,000 (1214 Foundation, Inc., 2017).

According to its founder, Michael Baroody (personal communication, February 21, 2018), ARC's design was led by Tom Kolditz, the former director of the Yale University Leadership Development Program. He assembled 20 experts in leadership, clinical psychology and executive coaching, including Jen Grace Baron, a MAPP graduate, to develop the ARC program. ARC is delivered to students once per month in ninety-minute sessions. The overall curriculum includes two lessons on strengths, two lessons on confidence, and two lessons on emotional regulation. These lessons are designed to build on and reinforce one another. They are taught to students aged five to nine, and in a separate class to students aged ten and above, with age-appropriate exercises. Character development lessons are experiential and active. Students play lively games such as human strengths scavenger hunt and feelings charades; they draw strengths self-portraits to inspire confidence; they engage in role-plays practicing emotional regulation; and they individually journal at the end of each lesson.

Students are also offered an opportunity to continue practicing these concepts through the mastery experience (called NewArts) of auditioning, rehearsing, and performing in a Broadway-style musical. Students may sign up independently for NewArts and ARC, but the vast majority commit to both. 1214 hires a Broadway director and professional actors to make this process intentionally rigorous, pushing every student out of their comfort zone.

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With the support and encouragement of the staff, students emerge from ARC and NewArts with a newfound confidence and a grander vision of their capabilities.

Service Sector Information

The 1214 Foundation operates within a subset of the nonprofit sector offering character development for children through experiential learning. There are several long-standing national and international character development organizations that operate within this service sector (e.g., Girl Scouts, Boy Scouts, 4H, and Boys and Girls Clubs of America), and there are countless more, similar to 1214, that operate on a local level. Each of these organizations provide resources to schools, communities, and parents. Two common overarching approaches are: 1) experiential learning as the vehicle for practice and 2) a belief that character can and should be cultivated and taught (4-H., 2018; Boy Scouts, 2018; Boys & Girls Clubs of America, 2017; Girl Scouts, 2018).

Many organizations are directed at school administrators, such as Character.org and Character Counts, providing formal resources and paths to certification for students and teachers (Character.org, 2018; Character Counts!, 2018). Imbuing children with a sense of values and developing strong character is important to all of these organizations; however, there is a difference in their philosophical approaches stemming from divergent fundamental beliefs regarding the degree to which moral character is perceived to be innate or a characteristic that requires cultural conditioning (Sommers, 2002). Positive youth development, an approach focused on the innate moral viewpoint of youth's potential rather than deficits, is the approach most aligned with positive psychology and the 1214 Foundation approach (Damon, 2004).

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Programs focused on the arts often operate with the assumption that mastery in theater and music inherently improves character (Levy, 1997). The 1214 Foundation, however, offers a unique approach by combining intentional classroom lessons in character development with the mastery experience of musical theater (M. Baroody, personal communication, January 24, 2018).

Strengths and Needs of the 1214 Foundation

The primary strength of the 1214 Foundation is the leadership team's capacity to bring expert volunteers together to work toward a common goal. The leadership team also possesses a strong vision which does not stop at healing, but extends to transforming trauma into an opportunity to excel in life. This vision, tenaciously driven forward by Baroody's leadership, undergirds 1214's success. The organization continuously seeks to expand its reach and has adapted to beneficiaries' needs by offering ARC to a wider age range. In the coming years, 1214 anticipates building new parent resources, creating a curriculum to train new ARC teachers, and expanding to new mastery experiences such as sports.

In an interview with Team Black, 1214 founder, Michael Baroody, expressed his organization's need to evaluate ARC's impact (personal communication, January 24, 2018). Baroody stated that the impact of ARC and the performing arts program had been measured and the "results were good," but because these measurements were performed by consultants from Yale, he wondered how 1214 could continue assessing their programs internally. Additionally, Baroody expressed a desire to gain a deeper understanding of how ARC worked, whether it really worked, and he wondered if it works for everyone. To answer the questions regarding how ARC works and whether it really works, Team Black set out to develop a scientifically robust theory of change and impact assessment protocol for the 1214

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Foundation. The *Literature Review* will elaborate on the development of a new theory of change for ARC, and the *Application Plan* will focus on the assessment protocol to evaluate ARC's outcomes and impact.

Part Two: A Review of the Literature

Positive Psychology, due to its grounding in scientific study, can offer the 1214 Foundation the conceptual strength and empirical rigor that is currently missing from its ARC Program. While the *Application Plan* will focus on outlining methods to introduce empirical rigor into the assessment of the ARC program, the focus of the *Literature Review* will be to bolster the program's conceptual framework. Primarily, this conceptual framework is built through aligning ARC's existing intentions of "recognizing strengths", "regulating emotions", and "building confidence" (1214 Foundation, Inc., 2018, p. 1) with the related constructs of self-awareness, self-regulation, and self-efficacy (respectively). In addition to bolstering ARC theory with empirically evaluated constructs, the conceptual strength is also built by introducing a *theory of change (TOC)*, which is an organizational tool that articulates, in a logical and graphical nature, the chain of causal assumptions linking program activities and outcomes (Wholey, 1987). When it comes to ARC, the *Literature Review* will demonstrate that the proposed constructs of self-awareness, self-regulation and self-efficacy have been empirically connected with outcomes such as grit, resilience (and in some cases post-traumatic growth), and flourishing. These relationships will then be organized into a TOC for the ARC program.

Theory of Change (TOC): An Organizational Tool for 1214

The term *theory of change* is used to refer to a visual model that illustrates how theoretical ideas are linked together to generate an impact (W.K. Kellogg Foundation, 2001). Since the mid-1990s, use of theories of change (TOCs) have become ubiquitous in the planning, management and evaluation of social initiatives (Kaplan & Garrett, 2005). Effective program evaluation necessitates sound TOCs that articulate the principles on which a social intervention is based and the pathways through which outcomes and impact are produced (Weiss, 1998; see *Figure 5*). In the nonprofit domain, outcomes are defined as the benefits that participants receive as a result of a nonprofit's work, and impact is defined as the change in the world that nonprofits contribute to (W.K. Kellogg Foundation, 2001). Since sound TOCs make explicit the underlying assumptions of how and why social change is generated by articulating program outcomes and impact, they are frequently used to make the case for support in grant proposals. Increasingly, funders are demanding proof of impact from their grantees; specifically, funders want grantees to show the causal links between an organization's activities and social change (Janus, 2017). Since impact is difficult to quantify, the soundness of an organization's TOC is often used as a predictor of an organization's impact in the early stages of an organization's growth (Brest, 2010). Examples of TOCs are depicted in *Figure 3*, *Figure 4*, and *Figure 5*.

Given that the 1214 Foundation is a nonprofit organization, Team Black will build the ARC program a sound TOC that rests on empirical research. Currently the ARC program is operating according to the intentions of "recognizing strengths", "regulation emotion" and "building confidence" in order to drive toward Abraham Maslow's (1943) concept of *self-actualization*, which is a term from the Humanistic Psychology literature meaning a state of

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optimal functioning. Currently, 1214 does not use a TOC, but *Figure 1* depicts what it would look like if one were created for the program as it is currently articulated in their documents. 1214's current TOC was constructed following a review of their overview document, written for donors and stakeholders, which describes a process and philosophy by which 1214 improves children's lives. The document describes how 1214's goal is to help children move past traumatic events by overcoming difficulties and moving forward with self-actualized intention (1214 Foundation, Inc., 2018).

As *Figure 1* shows, outcomes for ARC have not been clearly articulated by the 1214 Foundation. Through interviews with Michael Baroody (personal communication, January 24, 2018) and Jen Baron (personal communication, February 21, 2018) and a review of 1214's documents, Team Black ascertained that resilience, grit and post-traumatic growth were the program outcomes that 1214 sought to achieve through ARC. The information gathered from these interviews and 1214's documents allowed Team Black to construct a TOC for ARC with pathways and outcomes that lead to that impact, the details of which will be expanded on below.

In the TOC proposed by Team Black, the concepts of self-awareness, self-regulation and self-efficacy are depicted as pathways (i.e., avenues through which change can be generated; see *Figure 2*). Furthermore, in the TOC these pathways are depicted to be causally related to the outcomes of grit and resilience (and post-traumatic growth). Lastly, the TOC displays that by fostering these outcomes through these pathways, the ARC program is driving toward the ultimate impact of flourishing. Therefore, the TOC visually displays for 1214 the mechanisms and relationships through which its ARC program is making an impact.

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Following the construction of a proposed TOC for ARC, Team Black sought to pressure test the assumptions held by the 1214 Foundation about how they believed they were improving children's lives. This pressure test involved reviewing the literature to uncover whether empirical studies showed causal connections among the pathways, outcomes and impact discussed above. In support of ARC's new TOC, ample evidence from the literature demonstrated causal links among the TOC's pathways, outcomes and impact. The goal of this literature review is to provide 1214 with an overview of the scientifically robust, causal connections among the pathways, outcomes and impact of ARC's new TOC.

Pathways: Aligning Existing ARC Intentions with Empirical Constructs

Currently, the ARC curriculum is well-suited to improving skills in the following areas: "recognizing strengths," "regulating emotions," and "building confidence." However, the lack of empirically-based evidence around these psychological constructs diminishes the conceptual foundations of the current ARC program and makes it harder to evaluate its effectiveness. For instance, past research conducted by the 1214 Foundation has demonstrated that there were significant differences in pre- and post- test measures for self-efficacy and self-regulation (measured as problem-solving and empathy), and marginally significant differences in pre- and post-test measures for self-awareness (1214 Foundation, 2015). Unfortunately, the measures that it used were not based on empirically validated and reliable scales, diminishing the strength of these findings. For this reason, Team Black proposes aligning the current ARC intentions with empirically-based constructs whose outcomes have been demonstrated through research and for which reliable and valid scales exist.

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Self-Awareness. The ARC program's existing intention of "recognizing strengths" aligns with and will be informed by the literature on self-awareness, emphasizing *explicit self-awareness*, which refers to self-representation or reference to "me" (Legrain et al., 2011). Researchers have empirically distinguished between levels of explicit self-awareness sensitive to developmental age, suggesting that self-awareness is an ability that is developed over time (Legrain et al., 2011) and, therefore, it can be cultivated. Increasingly, the view from neuroscience is that self-awareness (Vago & Silbersweig, 2012) is a potential neural mechanism of mindfulness. Furthermore, there has been initial research linking mindfulness with character strengths and virtues (Baer & Lykins, 2011; Niemiec, 2012b; Niemiec, Rashid, & Spinella, 2012) and leading character strengths researcher Ryan Niemiec (2012a) has developed both a *Mindfulness-Based Strengths Practice (MBSP)* and authored (2014) *Mindfulness and Character Strengths*. In aligning the ARC intention of "recognizing strengths" with the construct of self-awareness, Team Black can introduce an empirically sound self-awareness pathway into the TOC, while keeping the original intention of "recognizing strengths" intact. The idea is to build conceptual strength through an empirically valid TOC, without changing anything that the ARC program is currently doing.

Self-Regulation. The ARC program's existing intention of "regulating emotions" aligns with and will be informed by the literature on self-regulation, or self-control, which is a distinctively human trait that enables individuals to override their behavior, thoughts, feelings and impulses in order to behave according to cultural ideals, social norms, and laws (Baumeister, Gailliot, DeWall, & Oaten, 2006). Given that the ARC intention is to regulate emotions, the literature on a form of self-regulation called emotional-regulation (Baumeister et al., 2006) will be emphasized. This is distinct from a similar form of self-regulation that

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involves controlling one's behavior. Regulating emotion requires overcoming one's current emotional state and replacing it with a different one (Muraven, Baumeister, & Tice, 1999). Research has demonstrated that teaching emotional self-regulation has been connected with the ability to control and manage emotions (Eisenberg, Spinrad, & Eggum, 2010; Keith & Frese, 2005; Mayer & Salovey, 1993), even connecting the neurological activity of emotional self-regulation with the emotion centers of the brain (Beauregard, Levesque, & Bourgouin, 2001). By aligning the ARC intention of "regulating emotion" with the research literature on emotional self-regulation, this allows Team Black to base the self-regulation pathway in the TOC on sound empirical footing (see Figure 2).

Self-Efficacy. The ARC program's existing intention of "building confidence" aligns with and will be informed by the literature on self-efficacy, which refers to one's appraisal of their competencies and capabilities, their ability to get motivated, tap into cognitive resources, and determine successful courses of action to meet situational demands, especially in times of adversity (Maddux, 2009; Wood & Bandura, 1989). Research has demonstrated that self-efficacy has been connected with confidence in a number of different spheres including: self-care (Skelly, Marshall, Haughey, Davis, & Dunford, 1995), academic writing (Pajares & Johnson, 1994), problem-solving (Zimmerman, B.J., & Ringle, J., 1981), sports (Martin & Gill, 1991), and in work settings (O'Brien, 2003). Therefore, by aligning the ARC intention of "building confidence" with the construct of self-efficacy, Team Black is able to introduce into the TOC the empirically sound self-efficacy pathway.

Outcomes: Effects of Cultivating the Pathways

Once the ARC intentions have been aligned with and grounded in empirically valid psychological constructs, it is important to turn to the research literature to elucidate the

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outcomes (of interest to 1214) that arise from cultivating the pathways (i.e., self-awareness, self-regulation, self-efficacy). Again, the power of the TOC is that it visually demonstrates causal connections between pathways and outcomes. Therefore, the next step in building the conceptual strength of ARC through the TOC is to turn to the literature on the outcomes of the pathways. Furthermore, these outcomes are what will be measured in the assessment plan (see Application Plan) in order to complement the conceptual strength with empirical rigor.

Grit. Grit refers to an emerging psychological construct that involves “passion and perseverance toward long-term goals” (Duckworth, Peterson, Matthews, & Kelly, 2007, p. 1087). Researchers have found grit to predict success in educational achievement, retention in a rigorous military academy, and high ranking in a competitive national spelling bee (Duckworth et al, 2007). Several studies have linked grit with self-awareness and mindfulness (Serhat, Ahmet, & Nihan, 2013; Vela, Smith, Whittenberg, Guardiola, & Savage, 2018). In addition, research has shown self-regulation and grit to be related (Duckworth & Gross, 2014; Ivcevic & Brackett, 2014; Rojas, Reser, Usher & Toland, 2012; Wolters & Hussain, 2015). Lastly, empirical investigation has also demonstrated a relationship between self-efficacy and grit (Robertson-Kraft & Duckworth, 2015; Rojas, Reser, Usher & Toland, 2012).

Developing grit in children is one of the main outcomes that ARC aims to promote. Founder, Michael Baroody, stated in an interview that 1214's goal is to “turn our participants into problem-solvers and risk-takers; ... those who [act with] commitment, perseverance and grit; and those who have found their passion(s) by defining and understanding themselves and blazing their own path” (personal communication, January 24, 2018). Given that this outcome will be empirically assessed, Team Black has pointed to Duckworth and colleagues'

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(2007) 12-item *Grit Scale* (see Appendix D) validated for grades K-12 as an appropriate measure.

Resilience. Resilience is most often described as the ability to bounce back from adversity (Smith, Tooley, Christopher, & Kay, 2010) and refers to a dynamic developmental process reflecting positive adaptation (Cryder et al., 2006). Several studies have linked resilience with self-awareness (Coholic, 2011; Coholic, Eys, & Loughheed, 2011; Hippe, 2004). In addition, research has shown self-regulation and resilience to be related (Artuch-Garde et al., 2017; Gardner, Dishion & Connell, 2008; Nota, Soresi, & Zimmerman, 2004). Lastly, empirical investigation has also demonstrated a relationships between self-efficacy and resilience (Cassidy, 2015; Simmons, 2017).

Building resilience in children is one of the outcomes that 1214 seeks to achieve through ARC. In an overview document, 1214 states that their goal is to aid youth in “moving past difficult events in a healthy way by helping them face their difficulties, overcome them and continue forward with intention” (1214 Foundation, Inc., 2018, p.1). Given that this outcome will be empirically assessed, Smith and colleagues’ (2006) 6-item *Brief Resilience Scale* will be used (see Appendix E). Although this measure was designed primarily for adults, teens were included in the sample used to develop the scale. It is shorter than other adolescent resilience measures, and (most importantly) it is made freely available by the authors; for this reason, this scale was designated as the appropriate measure.

Post-Traumatic Growth. Posttraumatic growth (PTG) is described as a positive change resulting from the struggle with trauma and refers to a growth process that transforms the individual (Cryder et al., 2006). Individuals who demonstrate PTG show positive changes that extend beyond coping and positive adjustment (Cryder et al., 2006). Several studies have

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referenced a connection between PTG with self-awareness (Woodward & Joseph, 2003; Powell, Gilson, & Colin, 2011). In addition, research has shown self-regulation and PTG to be related (Dekel, Mandl, & Soloman, 2011). Lastly, empirical investigation has also demonstrated a relationship between self-efficacy and PTG (Benight & Bandura, 2003; Bosmans & van der Velden, 2015; Cieslak, Benight, & Lehman, 2008). Unlike the other two outcomes, PTG is connected with populations who have experienced trauma.

1214 acknowledges the obstacles that trauma presents in children's development. In their overview document, they state: “[p]articularly after traumatic events, either physical or psychological, for many children their self-esteem, confidence and ability to self-actualize are negatively impacted” (1214 Foundation, Inc., 2018, p.1). Given that 1214 was created as a response to the tragic school shooting in Newtown to help the youth of the community move forward and grow, it stands to reason that ARC was created to promote post-traumatic growth as a primary outcome. Indeed, in the same overview document, 1214 states that they have developed a “comprehensive program to equip children with life skills to help them rise above and go beyond even their most difficult challenges.” However, founder, Michael Baroody, explicitly stated that 1214 aims to serve all children, not only individuals that have been affected by trauma (personal communication, January 24, 2018).

Currently, the children who are going through the ARC program are not those who directly experienced the Sandy Hook School Shooting (which the 1214 Foundation was created in response to). This makes it challenging to assess PTG the same way that resilience and grit will be assessed using pre- and post-test measures (see Application Plan). Instead, a qualitative approach will be used to evaluate PTG in the alumni of the ARC program who were in the original cohorts that had directly experienced the tragedy that took place on

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December 14, 2012. This will be achieved using qualitative data collection through semi-structured interviews, a form of qualitative research which can offer contextual richness (Yin, 2016) to the picture painted through the quantitative analysis.. In the case of the 1214 Foundation, the qualitative methodology (see *Interview Guide* in Appendix G) will also provide a narrative that connects the data to its real-life impact in the lives of the ARC participants.

Ultimate Impact: Introducing the Concept of Flourishing to 1214

Thus far, conceptual strength has been built through aligning the original ARC intentions with the empirical constructs of self-awareness, self-regulation and self-efficacy and incorporating them as pathways in the TOC and then connecting these pathways with the outcomes of grit and resilience (and in some cases PTG). It is important to emphasize that this alignment of the original ARC intentions with the empirical constructs did not involve any fundamental changes to the existing ARC curriculum. When it comes to the ultimate impact that ARC is driving toward, however, Team Black is introducing the novel concept of flourishing to *replace* (as opposed to align with) ARC's current goal of self-actualization. This replacement was made for two reasons: 1) self-actualization lacks the empirical rigor of flourishing and, thus, fails to provide easy ways to measure, particularly among youth; and 2) flourishing aligns well with 1214's ultimate goal. In their overview document, 1214 states the ultimate goal of their programs is to provide children with "the tools and the power to reproduce positive experiences in their lives" (1214 Foundation, Inc., 2018, p. 3). This goal overlaps with the definition of flourishing. Seligman (2011) proposed a theory of flourishing based on five distinct elements that people freely choose for their own sake, namely positive emotion, engagement, positive relationships, meaning and achievement (PERMA). It has

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been argued that some aspects of PERMA are not relevant to adolescents, therefore, this plan will emphasize the EPOCH theory of youth flourishing, defined as Engagement, Perseverance, Optimism, Connectedness, and Happiness (Kern, Benson, Steinberg, & Steinberg, 2016). To empirically assess youth flourishing (ages 10-18), Team Black has identified the *EPOCH Scale* as the appropriate measure. (see Appendix F).

The TOC proposed by Team Black visually connects the outcomes of grit and resilience (and in some cases PTG) with the ultimate impact of flourishing. The research literature corroborates this connection, thereby, keeping the TOC sound and empirically grounded. Specifically, recent research has found grit to be related to higher scores of life satisfaction and improved positive affect (Singh & Jha, 2008), better psychological well-being (Salles, Cohen, & Mueller, 2014), meaning in life (Kleiman, Adams, Kashdan, & Riskind, 2013; Von Culin, Tsukayama, & Duckworth, 2014) and engagement (i.e., absorption of attention) (Von Culin et. al, 2014). Additionally resilience has also been connected with increased psychological health (via factors such as social support, mental agility, facing fear, and realistic optimism) (Southwick & Charney, 2012). Finally, PTG has been shown to relate to high levels of spirituality (Kilmer, et al. 2009), an important component for cultivating a sense of meaning, a key element of well-being (Seligman, 2011).

Part Three: A Proposed Application Plan for the 1214 Foundation

The goal of the *Application Plan* is to enhance the empirical rigor of the ARC program by introducing two tools, grounded on the scientific approach of positive psychology. These tools are: 1) an empirically robust theory of change and 2) a measurement protocol to quantitatively and qualitatively assess the outcomes (i.e., grit, resilience, and PTG) and ultimate impact (flourishing) of ARC.

Maximizing ARC's New Theory of Change

ARC's new TOC is best used by 1214 as a tool to communicate the big picture of how and why positive change is created in children's lives. The new TOC can be used to create alignment among its internal stakeholders and to gain support from external stakeholders. To communicate the tool to the organization's internal stakeholders, namely the board of directors, staff and key volunteers, Team Black recommends that 1214 introduce the new TOC by sharing both their previous philosophy (depicted by Team Black as a TOC in *Figure 1*) and the new, empirically-based TOC (*Figure 2*). It will be important to emphasize that the basic components underlying the programs have not changed, merely that the new TOC is clearly identifying how the program creates the impact that it claims to create, that the new TOC is based on constructs that are valid and measurable, and that the TOC's causal connections are supported by rigorous scientific studies. It may be useful to refer to the rationale provided in the sections above entitled *Theory of Change (TOC): An Organizational Tool for 1214* and *A New Theory of Change for the 1214 Foundation*. To communicate the new TOC to external stakeholders, Team Black recommends that 1214 include the new TOC graphic (*Figure 2*) when applying for grants, and to update their website where ARC is described, to maintain consistency in the external communication (see *Appendix A* for further details). These suggestions and other best practices on how to maximize the use of a TOC have been summarized in a checklist provided in *Appendix B*.

Additionally, because the TOC communicates the pathways by which outcomes are produced (Weiss, 1998), the TOC is a fundamental tool for helping 1214 evaluate its impact. Team Black recommends that 1214 strive to rigorously evaluate its use of its new TOC and its outcomes and impact using the new measurement protocol provided below. A

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summary of steps to guide this process are included in the *Checklist for Maximizing 1214's New Theory of Change & Measurement Protocol* artifact in Appendix B, and proposed metrics for this evaluation are provided in the *Evaluation Metrics for Implementing the TOC and Assessment Protocol* artifact in Appendix C. We recommend that 1214 maintain an open mind and iterative approach to social change and adjust its theoretical model, strategy and plans as necessary.

Team Black recommends tracking the number of internal stakeholders who can articulate the new TOC, such as the percentage of board members, staff and trainers who understand its new TOC (see Appendix C for TOC evaluation metrics). Further, 1214 can measure the number of beneficiaries who understand the new TOC, by assessing the percentage of youth and parents who can articulate ARC's new theory of change. 1214 can administer surveys annually or after trainings to assess the understanding of various stakeholders. To assess how well it is utilizing its new TOC as a communication tool for external stakeholders, 1214 can track the number of successful grant applications written that include the new TOC. Other assessments may include whether the new TOC is featured in talks given by its founder or staff, in brochures, or on the website, and whether the model is articulated in a way that people understand. The overall usefulness of the TOC can be evaluated via the number of grants and funding dollars received with the use of the new TOC. Finally, and most importantly, 1214 needs to assess the degree of alignment between the actual outcomes and impact generated by ARC and its new model. A key question to guide this evaluation is: "To what extent are the demonstrable changes in beneficiaries' lives consistent with the outcomes and impact defined in the TOC?"

Empirically Assessing 1214's Outcomes and Impact

The 1214 Foundation's revised TOC (revisit *Figure 2*) is built on empirically-based psychological constructs with valid and reliable scales. The pathways (i.e., self-efficacy, self-awareness, and self-regulation) will not be measured directly; instead, measures are proposed for the empirically demonstrated outcomes of grit, resilience and post-traumatic growth, and the ultimate impact of flourishing. This is due to the practice of measuring outcomes and impact in social impact organizations (Janus, 2017), instead of pathways.

In order to practically serve 1214, a *Research Method Training Manual* was prepared (see Appendix H). This manual provides step-by-step directions on conducting statistical analysis for the outcome measures of grit, resilience and flourishing. ARC students should complete these measures on their first day (before exposure to curriculum content), as well as on their last day of ARC. Duckworth and colleagues' (2007) *Grit Scale* (see Appendix D), Smith and colleagues' (2008) *Brief Resilience Scale* (see Appendix E), and Kern and colleagues' (2016) *EPOCH Scale* (see Appendix F) will be used.

While the manual is designed to make the data analysis more accessible, it is still recommended that 1214 recruit a graduate student or person familiar with statistics and Excel to carry out the instructions set forth in the manual. The need to be rigorous reflects the importance of quantitative data in the increased demand for proof of impact in the nonprofit sector (Janus, 2017). It is recommended that 1214 use quantitative data and the scientific method to make the case that their programs have a statistically significant impact on their beneficiaries. This evidence, in turn, can be displayed and communicated to potential funders and 1214's various stakeholders. For this reason, the manual provides instructions on how to translate the data into visually compelling graphs and how to communicate the method's

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rationale to funders and stakeholders. Furthermore, by calling on a volunteer to be in charge of implementing this manual will also demonstrate to funders that the 1214 Foundation values the evaluation process.

Qualitatively Assessing 1214's Outcomes and Impact

According to 1214 founder, Michael Baroody, he envisions ARC participants becoming young adults who have “found their passion(s) by defining and understanding themselves and blazing their own path.” (M. Baroody, personal communication, January 24, 2012). In order to capture this idea, Team Black has introduced the empirical construct of flourishing as the ultimate impact of the ARC program (see *Literature Review* and *Figure 2*). To assess whether ARC graduates are achieving the goal of flourishing, we suggest that the 1214 Foundation implement semi-structured interviews (see *Interview Guide* in Appendix G), a form of qualitative research. Qualitative research is a valuable component of a comprehensive research plan because it provides a form of data that offers a contextual richness (Yin, 2016).

The ARC graduate interview guide contains nine questions – five addressing well-being, two addressing post-traumatic growth, and two addressing overall impact of the program. For ARC participants who were not affected by the traumatic events of December 14, 2012, flourishing can be measured via interview questions based on the five components of youth thriving, as defined by the *EPOCH Scale* (Kern, Benson, Steinberg, & Steinberg, 2016) – Engagement, Perseverance, Optimism, Connectedness, and Happiness. For the children affected by trauma – either via the school shooting or other trauma in their lives – an important outcome that precedes flourishing is post-traumatic growth (PTG) (Kilmer, et al.,

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2009). PTG is ascertained via two questions embedded in the ARC graduate interview questions (Appendix G). Finally, there are two questions in the ARC graduate interview guide designed to illuminate the overall impact of the ARC program on the lives of its participants.

Specific instructions on how to conduct a semi-structured interviews are highlighted in the *Interview Guide* (see Appendix G). We recommend interviews be delayed until participants engage in at least one full cycle of ARC. We anticipate the interview will take 45 minutes and will require the full engagement of a trained volunteer to both ask the questions and document the interviewee's responses. Interviewers must be trained to capture responses as completely and accurately as possible so responses can be used to ascertain the effectiveness of the program, and provide a valuable program narrative. Due to its time intensive nature, we recommend interviews be conducted with participants soon after completion, and roughly 5-7 years after graduation from the program. In order to capture the narrative impact of the program, we recommend using the interviews to obtain representative quotes that can be used in the organization's annual report, for fundraising efforts, for grant applications, and in the recruitment of new ARC participants.

Concluding Remarks

The most effective way that 1214 can utilize the information presented in this Application Plan is to approach each section with an open mind. The *Situation Analysis* is useful in outlining the organization's structure and needs, as well as, its place in the nonprofit landscape. Because of its place in this service sector, Team Black deemed it important to help the organization build the conceptual strength and empirical rigor of its ARC program, two qualities becoming increasingly important to funders. The conceptual strength is built in

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the *Literature Review* by aligning the original ARC intentions of “recognizing strengths”, “regulating emotion”, and “building confidence” with the empirical constructs of self-awareness, self-regulation and self-efficacy. Furthermore these constructs are organized as pathways in a new TOC, leading to the outcomes of grit, resilience (and for some, PTG), and the ultimate impact of flourishing. The *Application Plan* serves to empower 1214 to think of the TOC as a communication tool and as a basis for assessment. This section of the paper focuses on building the empirical rigor of ARC through detailed information on measurement and evaluation of outcomes and impact.

Overall, it is Team Black's opinion that 1214 should strive to use data from the real world, resulting from its new measurement protocol and evaluation metrics, to make adjustments to its theoretical model, its strategy and the execution of its plans, as necessary. This is because social innovation operates in the complex and dynamic playing field of the real world, and the process of social change requires a “messy mixture of theory, practice, evaluation, revision, and replication” (Brest, 2010, p. 49). Through the recommendations above and detailed plans below, we hope to contribute to the ARC Program's mission to amplify youth resilience and grit, thus paving the way for youth to develop optimally, grow through adversity and lead flourishing lives.

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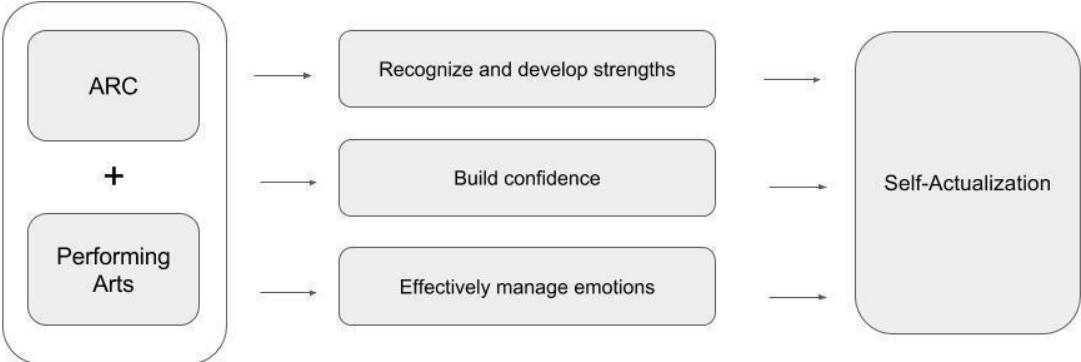


Figure 1. The figure above illustrates a schematic of what the current theory of change for 1214 Foundation (which is based on a Humanistic Psychology model.), would look like.

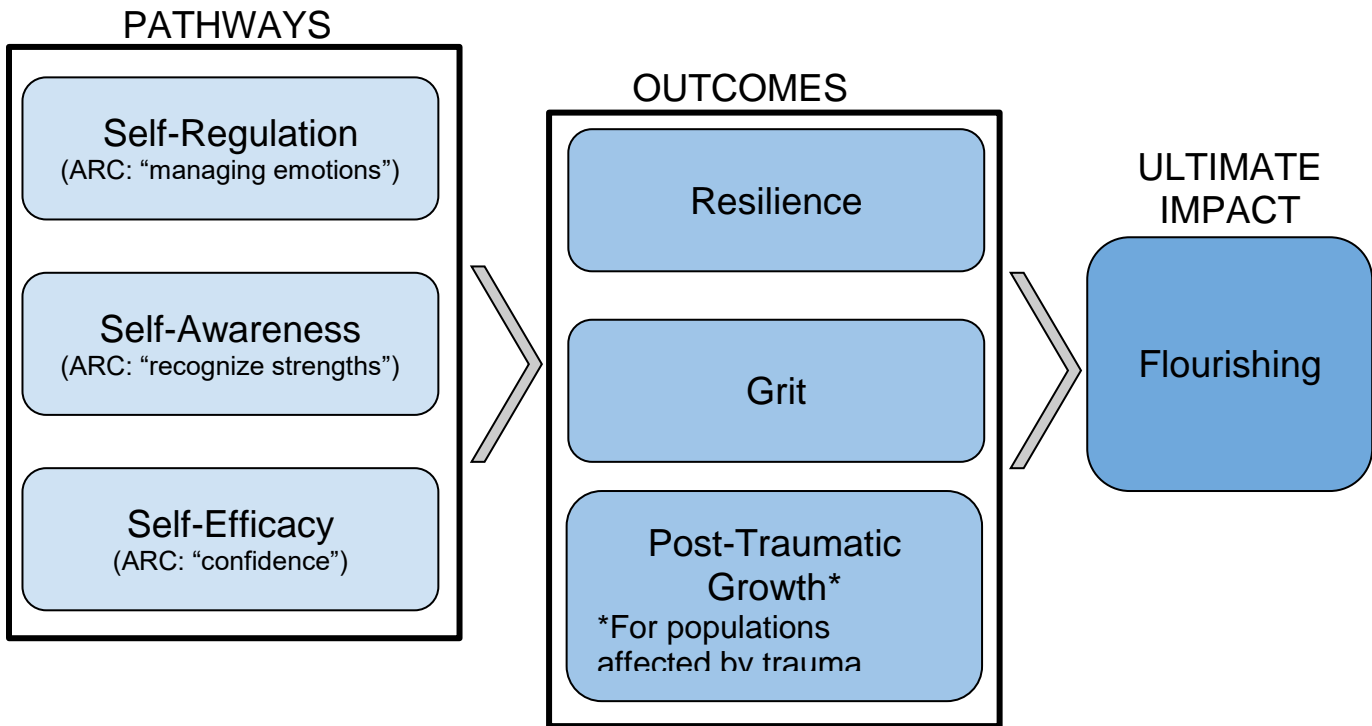


Figure 2. A model illustrating the proposed theory of change, re-imagined in terms of measurable psychological constructs. The model also indicates how the original ARC intentions aligned with empirical constructs would lead to the outcomes of grit, resilience (and in some cases PTG) and the ultimate impact of flourishing.

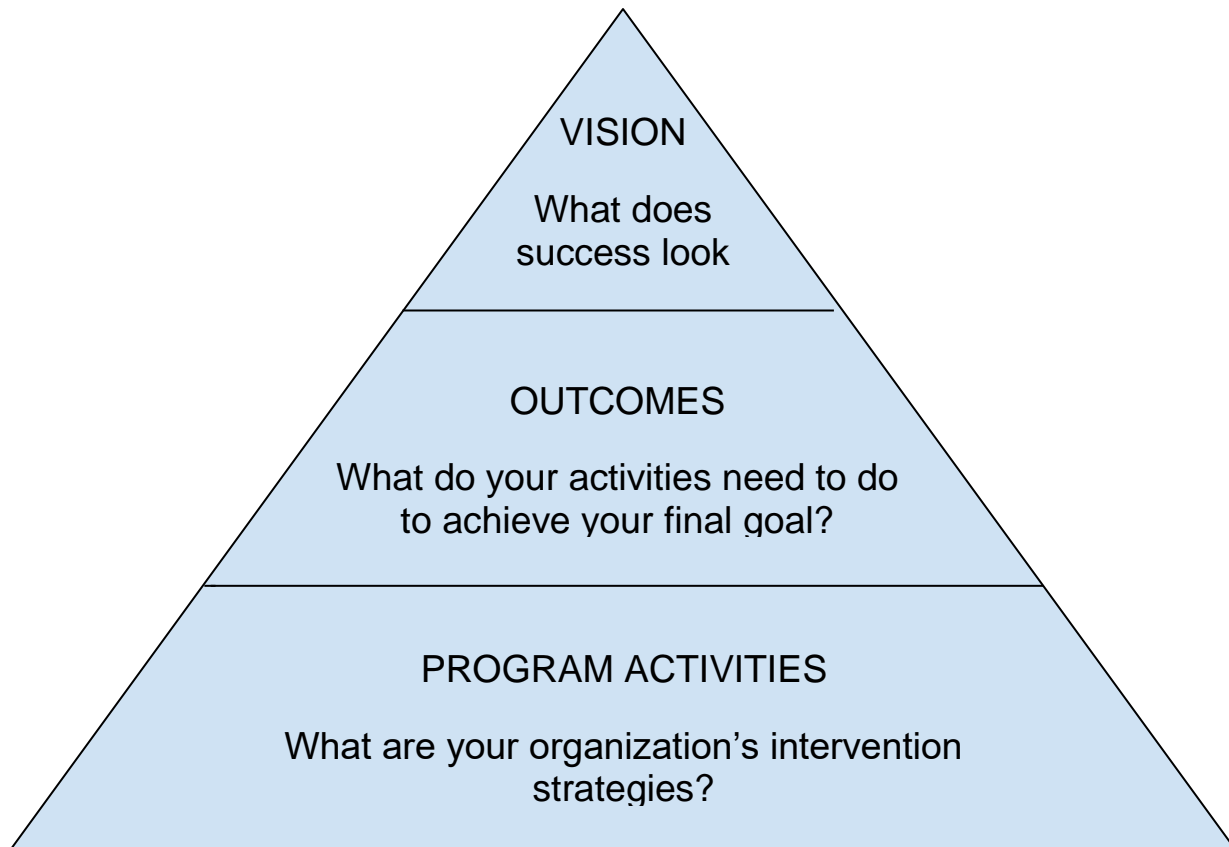
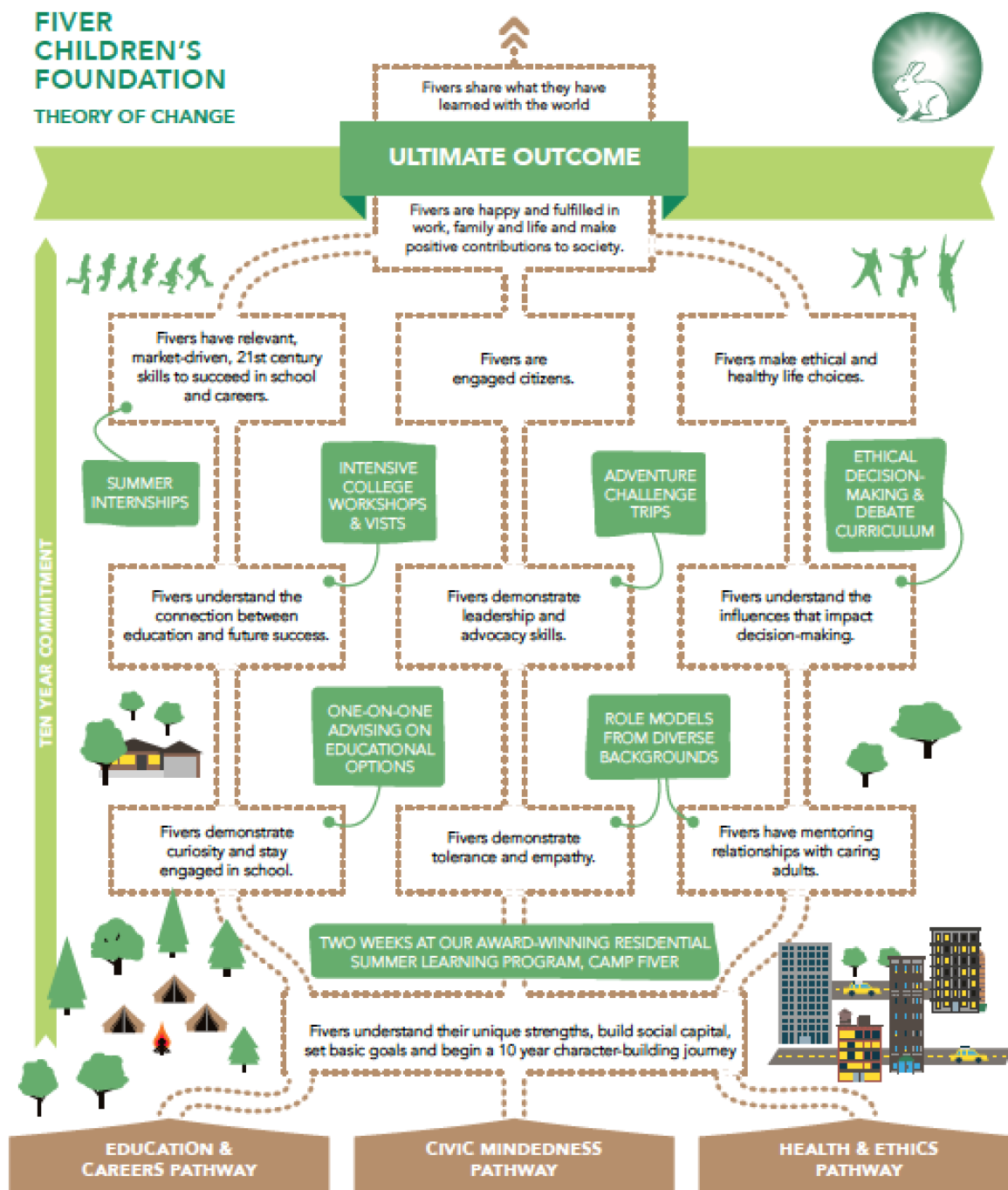


Figure 3. There are many ways to visually represent theories of change. One of the simplest is the “planning triangle,” which represents how an organization’s activities lead to intermediate outcomes that lead to the final impact or vision.

Source: Janus, K.K. (2017). *Social startup success: How the best nonprofits launch, scale up, and make a difference*. New York: Da Capo Lifelong Books.

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In addition to coming from economically disadvantaged circumstances, Fivers face other daunting and complex challenges of poverty. More than half are being raised by single parents and many have had to learn English as a second language and acclimate to a new culture. Most of our kids come from groups under-represented in higher education and professional careers, have few examples of academic persistence and are hoping to be the first in their family to attend college.

Figure 4. This is the Theory of Change of the Fiver Children’s Foundation. It shows, visually and in narrative form, how each of their three pathways lead to their ultimate outcome.

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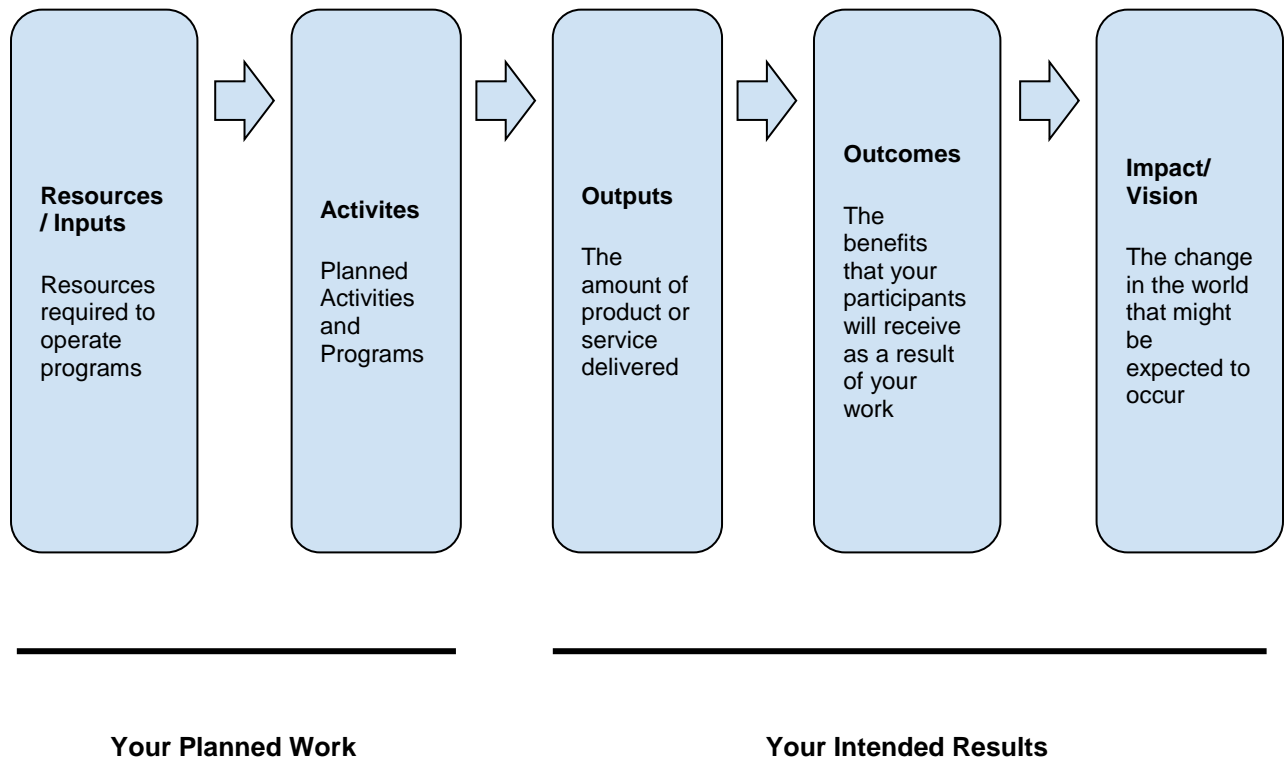


Figure 5. This is an example of a basic logic model. A basic logic model graphically represents the chain of causal assumptions linking program resources, activities, outputs, intermediate outcomes and ultimate impact.

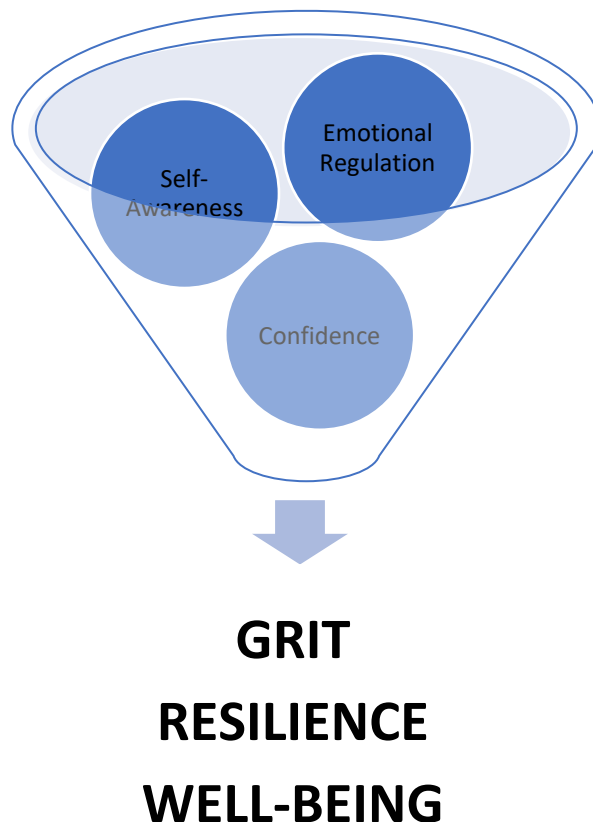
Adapted from: W.K. Kellogg Foundation (2001). *Logic model development guide: Using logic models to bring together planning, evaluation, & action.* Battle Creek, MI: W.K. Kellogg Foundation.

Appendix A - Suggestions for Communicating New TOC to External Stakeholders

Copy that 1214 can use for grant proposals to explain the ARC Program's TOC:

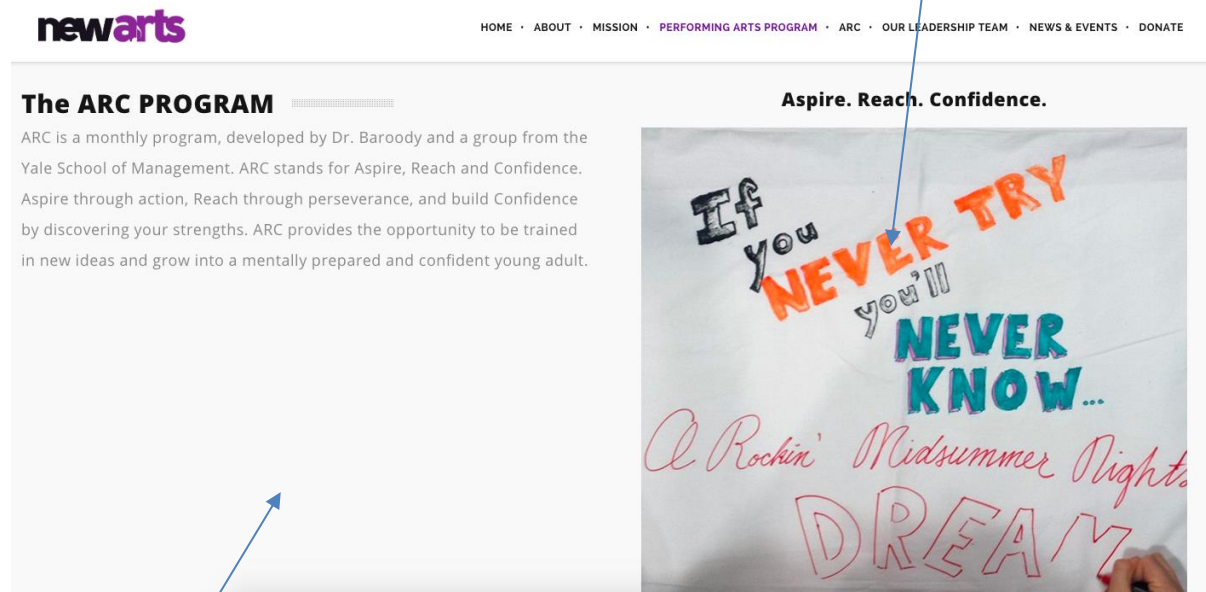
1214 has created a program called ARC that helps children and adolescents to enhance their passion and perseverance for their own long-term goals (children and adolescents are grittier), to bounce back from setbacks, grow beyond the individual's previous baseline (children and adolescents are more resilient), and ultimately, to thrive in life and flourish (children and adolescents are happier).

To help children and adolescents to achieve these results, the ARC program invites children and adolescents to participate in six sessions of interactive activities that help participants 1) develop self-awareness about their strengths and emotions; 2) create strategies to promote their strengths and regulate their emotions, and 3) gain greater confidence based on their enhanced knowledge of who they are and how to manage themselves.



Suggested Changes for the website:

New picture proposed:
Photo that shows adolescent in action during one of the



Proposed new text:

The ARC program, developed by Dr. Baroody and a group from the Yale School of Management, promotes grit, resilience and long-term happiness in adolescents through the development of self-awareness, emotional regulation and confidence. The participants will be guided through six fun and engaging monthly sessions to enhance strengths, self-confidence, and emotional regulation.

Appendix B - Checklist for Maximizing 1214's New Theory of Change & Measurement Protocol

This check-list is intended to help you make the best use of your new theory of change and assessment protocol.

- Create an appealing visual representation of your TOC.
 - We recommend that you work with a talented graphic designer for this project. You may also consider asking one of your ARC high school students to illustrate this new TOC for you (See *Figure 3* and *Figure 4* above for examples of how to render TOCs).
 - You can use your new TOC as the foundation for developing a logic model for your organization (See *Figure 5* above for a template of a logic model).

- Create a narrative description of your new TOC in language that your key stakeholders, such as your board, donors, parents and other supporters, can understand.
 - Formally, theory of change statements are written in if-then statements. An example of a simple if-then statement is: "If we enhance children's character strengths, confidence and emotional regulation, then we equip them the tools to flourish." However, feel free to be creative and deviate from the formal if-then statement. You can tell a story, based on ARC's theory of change, of how ARC improves children's lives.
 - A good example of a narrative representation of a TOC is a TOC video from Harvard University's Frontiers of Innovation, the R&D arm of their Center on the Developing Child. To view, visit: https://youtu.be/urU-a_FsS5Y.

- Bring your key stakeholders together for a TOC workshop. Your goals for this workshop are:
 - To introduce them to the importance of a TOC as a tool for your organization. Refer to the Literature Review for some key points.
 - To help your stakeholders understand your new TOC and how ARC improves children's lives.
 - To create a shared understanding about your organization's work and its value.

- Insert your new TOC into your brochures, website, and slide deck for talks. Include your new TOC in your on-boarding documents for new board members and staff.

- Use your new TOC when writing grants to explain how your program works.

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- Develop a plan to measure your outcomes and impact, using the assessment protocol provided.
 - When will you survey your beneficiaries?
 - Who will administer the scales and conduct interviews?
 - Who will enter data and perform the statistical analysis?
 - Who will capture the quotes from the interviews?

- Develop a dashboard to track your key performance indicators, your outcomes and impact.

- Develop a plan for what to do if your data is not showing anticipated results, or is having iatrogenic effects. See the assessment protocol for guidance.

- Develop a plan for communicating measurement outcomes and impact to internal stakeholders, such as in quarterly dashboard reports during board and staff meetings.
 - Is the data presented in a way that is quickly and easily understood?

- Develop a plan for communicating impact data to external stakeholders, such as in annual reports, in presentations and on the website.
 - Does your data match the concerns of your funders and external funders?
 - Is your data quickly and easily understood?
 - Does your data tell a compelling story?

- Develop a plan for communicating quotes from interviews with beneficiaries to internal and external stakeholders.
 - How will you share the most poignant and powerful stories? With whom?
 - Can you identify overarching themes to the stories?
 - Can you connect your beneficiaries' stories to the impact data to bring your data to life and give it depth and texture?
 - Can we weave your beneficiaries' most powerful and transformative stories into your organization's story?

- Consider working with consultants to assess the theory of change and to assist with your impact assessment.

Appendix C - Evaluation Metrics for Implementing the TOC and Assessment Protocol

Evaluation of the Theory of Change (TOC)

Formative Evaluation of the TOC

- # of internal stakeholders who can articulate the new TOC
 - % of board members, % of staff, % of trainers
- # of beneficiaries who understand the new TOC
 - % of youth, % of parents
- # of external stakeholders who understand the new TOC
 - # of grant applications written with the new TOC
 - # of talks given by founder/ staff that articulate the new TOC

Summative Evaluation of the TOC

- # of grants obtained by 1214 as a result of the new TOC
- The degree of alignment between the actual outcomes and impact generated by ARC and the model (*are the demonstrable changes in beneficiaries' lives consistent with the outcomes and impact defined in the TOC?*)

Evaluation of the Measurement of Program Outcomes and Impact

- # of tests/scales administered
- # of youth completing the evaluations
- # of ARC graduates interviewed
- # of annual reports including the data
- assessment of potential iatrogenic effects

Appendix D - The 12-Item Grit Scale

12- Item Grit Scale

Directions for taking the Grit Scale: Please respond to the following 12 items. Be honest – there are no right or wrong answers!

1. I have overcome setbacks to conquer an important challenge.
 - Very much like me
 - Mostly like me
 - Somewhat like me
 - Not much like me
 - Not like me at all

2. New ideas and projects sometimes distract me from previous ones.*
 - Very much like me
 - Mostly like me
 - Somewhat like me
 - Not much like me
 - Not like me at all

3. My interests change from year to year.*
 - Very much like me
 - Mostly like me
 - Somewhat like me
 - Not much like me
 - Not like me at all

4. Setbacks don't discourage me.
 - Very much like me
 - Mostly like me
 - Somewhat like me
 - Not much like me
 - Not like me at all

5. I have been obsessed with a certain idea or project for a short time but later lost interest.*
 - Very much like me
 - Mostly like me
 - Somewhat like me
 - Not much like me
 - Not like me at all

6. I am a hard worker.
 - Very much like me
 - Mostly like me
 - Somewhat like me
 - Not much like me
 - Not like me at all

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7. I often set a goal but later choose to pursue a different one.*
- Very much like me
 - Mostly like me
 - Somewhat like me
 - Not much like me
 - Not like me at all
8. I have difficulty maintaining my focus on projects that take more than a few months to complete.*
- Very much like me
 - Mostly like me
 - Somewhat like me
 - Not much like me
 - Not like me at all
9. I finish whatever I begin.
- Very much like me
 - Mostly like me
 - Somewhat like me
 - Not much like me
 - Not like me at all
10. I have achieved a goal that took years of work.
- Very much like me
 - Mostly like me
 - Somewhat like me
 - Not much like me
 - Not like me at all
11. I become interested in new pursuits every few months.*
- Very much like me
 - Mostly like me
 - Somewhat like me
 - Not much like me
 - Not like me at all
12. I am diligent.
- Very much like me
 - Mostly like me
 - Somewhat like me
 - Not much like me
 - Not like me at all

Scoring:

1. For questions 1, 4, 6, 9, 10 and 12 assign the following points:
 - 5 = Very much like me
 - 4 = Mostly like me
 - 3 = Somewhat like me
 - 2 = Not much like me
 - 1 = Not like me at all

2. For questions 2, 3, 5, 7, 8 and 11 assign the following points:
 - 1 = Very much like me
 - 2 = Mostly like me
 - 3 = Somewhat like me
 - 4 = Not much like me
 - 5 = Not like me at all

Add up all the points and divide by 12. The maximum score on this scale is 5 (extremely gritty), and the lowest score on this scale is 1 (not at all gritty).

Duckworth, A.L., Peterson, C., Matthews, M.D., & Kelly, D.R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, 9, 1087-1101.

Appendix E - Brief Resilience Scale

Please indicate the extent to which you agree with each of the following statements.

1 = strongly disagree

2 = disagree

3 = neutral

4 = agree

5 = strongly agree

1. I tend to bounce back quickly after hard times _____

2. I have a hard time making it through stressful events * _____

3. It does not take me long to recover from a stressful event _____

4. It is hard for me to snap back when something bad happens * _____

5. I usually come through difficult times with little trouble _____

6. I tend to take a long time to get over set-backs in my life * _____

Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: assessing the ability to bounce back. *International Journal of Behavioural Medicine, 15*, 194-200.

Appendix F - EPOCH Scale of Adolescent Well-Being

This is a survey about you! Please read each of the following statements. Circle how much each statement describes you. Please be honest - there are no right or wrong answers!

When something good happens to me, I have people who I like to share the good news with.	Almost never	Sometimes	Often	Very Often	Almost Always
I finish whatever I begin.	Almost never	Sometimes	Often	Very Often	Almost Always
I am optimistic about my future	Almost never	Sometimes	Often	Very Often	Almost Always
I feel happy.	Almost never	Sometimes	Often	Very Often	Almost Always
When I do an activity, I enjoy it so much that I lose track of time.	Almost never	Sometimes	Often	Very Often	Almost Always
I have a lot of fun.	Almost never	Sometimes	Often	Very Often	Almost Always
I get completely absorbed in what I am doing.	Almost never	Sometimes	Often	Very Often	Almost Always
I love life.	Almost never	Sometimes	Often	Very Often	Almost Always
I keep at my schoolwork until I am done with it.	Almost never	Sometimes	Often	Very Often	Almost Always
When I have a problem, I have someone who will be there for me.	Almost never	Sometimes	Often	Very Often	Almost Always
I get so involved in activities that I forget about everything else.	Almost never	Sometimes	Often	Very Often	Almost Always
When I am learning something new, I lose track of how much time has passed.	Not at all like me	A little like me	Somewhat like me	Mostly like me	Very much like me
In uncertain times, I expect the best.	Not at all like me	A little like me	Somewhat like me	Mostly like me	Very much like me
There are people in my life who really care about me.	Not at all like me	A little like me	Somewhat like me	Mostly like me	Very much like me
I think good things are going to happen to me.	Not at all like me	A little like me	Somewhat like me	Mostly like me	Very much like me
I have friends that I really care about.	Not at all like me	A little like me	Somewhat like me	Mostly like me	Very much like me
Once I make a plan to get something done, I stick to it.	Not at all like me	A little like me	Somewhat like me	Mostly like me	Very much like me
I believe that things will work out, no matter how difficult they seem.	Not at all like me	A little like me	Somewhat like me	Mostly like me	Very much like me
I am a hard worker.	Not at all like me	A little like me	Somewhat like me	Mostly like me	Very much like me
I am a cheerful person.	Not at all like me	A little like me	Somewhat like me	Mostly like me	Very much like me

Thank you!

Appendix G - Semi-structured Interview Guide for ARC Graduates

Instructions:

- This interview is to be conducted with children and teenagers who have graduated from ARC.
- It is recommended to conduct the interviews in person, if possible. If not, you may conduct this interview by phone, or, if necessary, participants can respond via writing.
- If possible record the interviews so that you can go back and get direct quotes from the participants' responses later. *(Note: it is likely that you will need to have a signed consent from the participant's parent or guardian acknowledging their participation in the interview and what the data from the interview will be used for).*
- Semi-structured interviews are intended to be conversational. Use the interview questions to guide your conversation, but allow the participant to expand and explain their answers.

Questions:

- Since your participation in ARC, tell me about a time when you felt fully immersed and excited about something you were doing. **(Engagement)**
- Tell me a story about a time when you stuck with something you really cared about, even when it was really hard. How did that make you feel? **(Perseverance)**
- Tell me a story of a time in your life when you experienced a challenge. How did you react to it? What thoughts were going through your head as you worked through it? **(Optimism)**
- Tell me about the people in your life who you love the most – this can be friends, family, teachers, or people you know from your community. What does it feel like to be in relationships with them? How does this make you feel? **(Connectedness)**
- What is the emotion you feel most often in your life? What's an example of when you feel this way? **(Happiness)**
- Sometimes life throws really hard situations at us. Even when they've been through a really hard situation, some people say that they feel grateful for the situation because it made them strong and more capable. Tell me a story of how you feel stronger and more capable. **(PTG)**
- Sometimes, the difficulties we encounter can be transformative life experiences. Can you think of an event that was a turning point in your life, that has shaped you into the person you are today? If so, please tell me more about it. **(PTG)**
- Finish this sentence: "Because of ARC, I now....." **(Impact of ARC)**
- What do you feel is the biggest thing you have learned as a result of your participation in ARC? **(Impact of ARC)**

Appendix H - Research Methods Training Manual

Research Methods Training Manual

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Overview of Psychology Research

Research methodology in psychology is designed to use the scientific method in order to understand abstract psychological constructs. The **scientific method** is a tool that aids researchers in getting around their subjective view of the world in order to obtain more objective results. There are a few key aspects of approaching research scientifically that will be important for analyzing the effectiveness of the ARC program.

Operational Definitions

Since psychology is often dealing with abstract constructs such as “grit,” researchers need a way to get on the same page before they begin their research. Operationalizing a construct simply means defining it in a way that can be measured. Operational definitions of constructs can be measured using **psychological scales**, such as the following three scales that will be used to assess the ARC program: The Grit Scale, The Brief Resilience Scale, and The EPOCH Scale (which measures well-being).

Reliability & Validity

The reason that researchers use scales instead of just coming up with their own questions that seem relevant to a study is because psychological scales are often **valid & reliable**. Validity refers to the truthfulness of a measure (i.e., is it really measuring what we intended for it to measure?). Reliability refers to the consistency of a measure (i.e., is this scale consistently measuring what it's supposed to?). In order to demonstrate that scales are reliable and valid, researchers must test their scales using the scientific method. The three scales that we are using to assess ARC have gone through this process and are reliable and valid.

Reverse Coding

In order to create a survey that has **reliability** (see above), researchers will often ask the same idea using differently worded questions. However, sometimes when people are filling out the survey, they can begin to “catch on” to what the researcher is asking and respond to the questions accordingly. To control for this, researcher will often ask the same idea in questions that are phrased negatively instead of positively. (i.e., asking participants to rate from 1-5 how much they “give up easily on a task”). If we were looking at resilience, giving up easily on a task would indicate **LOW** resilience, so the score has to be re-calculated to reflect this. In order to do this researchers use **reverse-coding**, which means that for negatively phrased questions, 1 becomes a 5, 2 becomes a 4, 3 stays the same, 4 becomes a 2, and 5 becomes a 1.

Paired-Samples T-Test

The type of statistical test that will be used to assess ARC is called a **paired samples t-test**, (sometimes called a dependent samples t-test). This works by comparing participants' scores at two points in time. The three scales will be given to each student both at the start and end of ARC. Then, the difference between these two scores are compared to see if this difference is statistically significant (see below). If the difference is above zero, it means the participants improved, zero is no

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difference at all, and if the difference is below zero, it means the participants performance diminished.

Statistically Significant

Statistical tests in psychology are often based on the laws of probability. The test will generate a number called a “**p-value**” that will indicate to the researchers whether or not these results would have been likely due to chance alone. If a **p-value** is .05 or below, this is an indication that the results were extremely unlikely to have occurred due to chance alone. This allows the researcher to infer that something *other* than chance must be at play. Using an **experimental method**, the researcher is able to manipulate variables and randomly assign participants to conditions, thereby, granting the right to use causal language in their analysis. However, since the ARC program cannot randomly assign students to “ARC” or “No ARC” conditions, this research does not allow you to say words like “cause and effect”. It does, however, allow you to say that the results were extremely unlikely due to chance, therefore *something* else must be responsible for the changes in the scores and that “something” is probably ARC. For example, if we had two plants and we gave one plant water and the other plant water *and* sunlight and then measured their heights after a month, we couldn't say that the addition of sunlight “caused” the plant to grow taller. Instead, we could say that sunlight was the factor that was most likely responsible for the increased plant height, given that it would be extremely unlikely for the plant to grow this tall on its own (just randomly).

GRIT

Grit is a psychological construct that refers to passion and perseverance for long-term goals (Duckworth, Peterson, Matthews & Kelly, 2007). Although not synonymous with the term, it has been used as a measure of *confidence* (Golinkoff & Hirsh-Pasek, 2016). In ARC's new theory of change, grit is a short-term outcome. In order to measure grit, Duckworth and colleagues' (2007) Grit Scale (along with the Brief Resilience Scale and EPOCH measure) will be given to ARC students on their first day (before exposure to curriculum content), as well as on their last day of ARC. The Grit scale was originally designed for and tested on spelling bee contestants aged seven to 15 years old (Duckworth, Peterson, Matthews, & Kelly, 2007).

How to Score the Grit Scale

Scoring the GRIT Scale will be a two-step process.

STEP 1:

For the first step, you are going to assign a numerical value to questions 1,4,6,9,10, and 12 using the following key:

- 5 = Very much like me
- 4 = Mostly like me
- 3 = Somewhat like me
- 2 = Not much like me
- 1 = Not like me at all

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For Questions 2,3,5,7,8, and 11 (denoted with an asterisk) assign a numerical value using the following key:

- 1 = Very much like me
- 2 = Mostly like me
- 3 = Somewhat like me
- 4 = Not much like me
- 5 = Not like me at all

STEP 2:

Once all the questions are assigned a numerical value using the keys above, add up all the points and divide by 12. The maximum score of 5 represents “extremely gritty” and the minimum score of 1 represent “not gritty at all” (Duckworth, Peterson, Matthews, & Kelly, 2007). Sample Scoring can be seen in Appendix A.

Setting up GRIT Scores in Microsoft Excel

Once you have calculated the GRIT scores for both the pre-test and the post-test using the method above, you are going to enter the scale scores into Excel using the following layout:

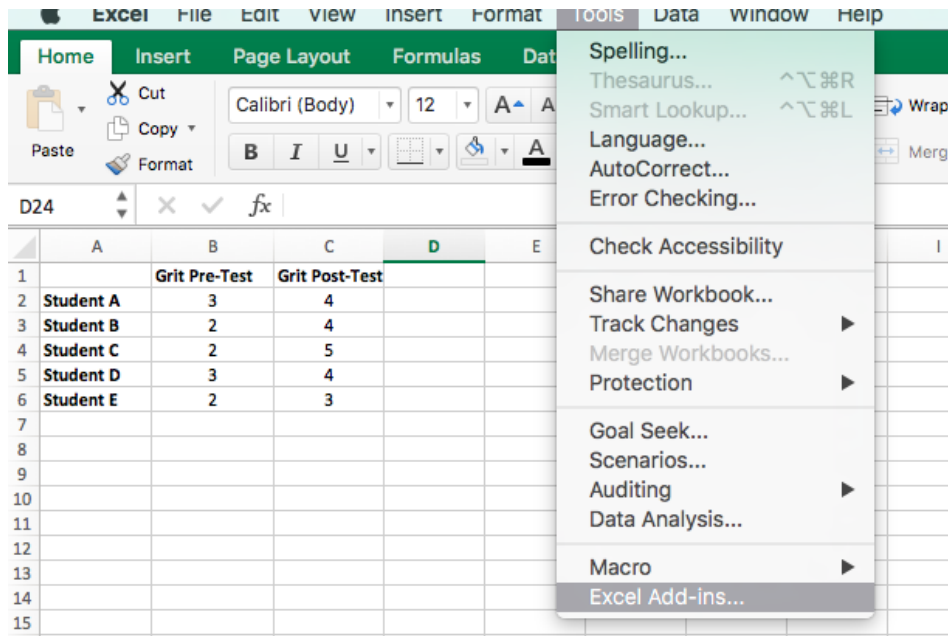
	A	B	C	
1		Grit Pre-Test	Grit Post-Test	
2	Student A	3	4	
3	Student B	2	4	
4	Student C	2	5	
5	Student D	3	4	
6	Student E	2	3	
7				

Paired Samples T-Test for GRIT Scores

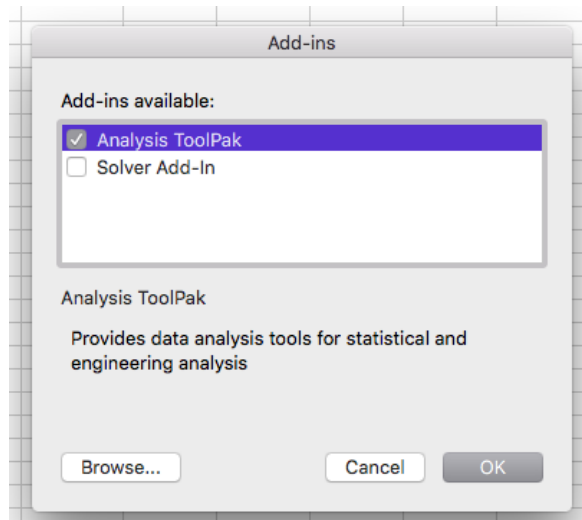
Once you have your data entered into Excel, you are going to conduct a **paired samples t-test** to see if the difference in mean scores between the pre-test and post-test are statistically significant.

Step 1: First, you will have to enable the statistical analysis toolkit in Excel by selecting Tools → Excel Add-ins

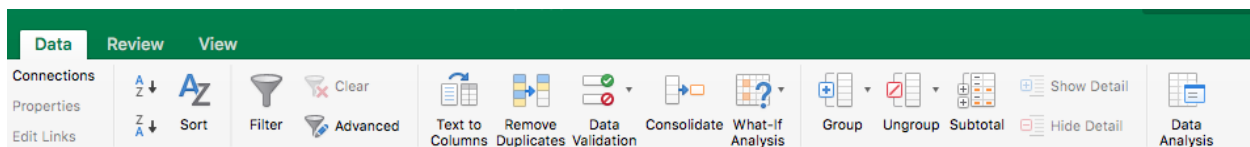
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In the Add-ins dialogue box that pops up, make sure “Analysis ToolPak” is checked, and then click OK.

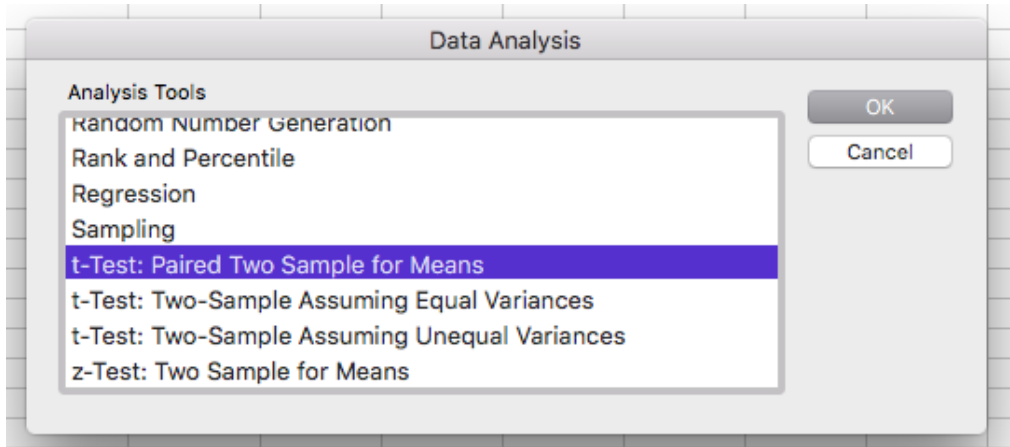


Step 2: Next run the T-Test. Click the “DATA” tab and all the way on the right hand side will be a tile called “Data Analysis”. Click this tile and a dialogue box will pop up.



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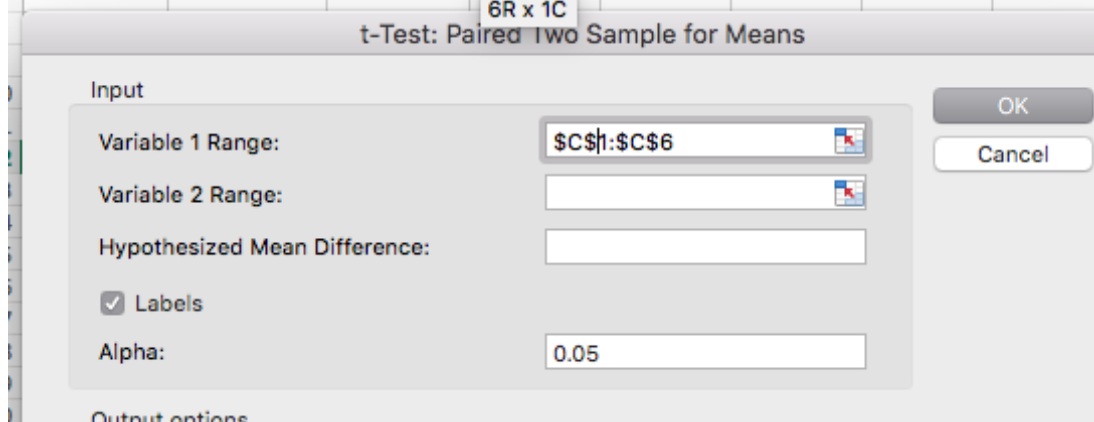
In the Data Analysis Dialogue Box, click “t-Test: Paired Two Sample for Means” → OK.



A new dialogue box will pop up. Click in the text entry box of “Variable 1 Range” and select the Grit post-test scores (including the label, but *not* the overall mean).

A	B	C	D	E	F	G	H
	Grit Pre-Test	Grit Post-Test					
Student A	3	4					
Student B	2	4					
Student C	2	5					
Student D	3	4					
Student E	2	3					

6R x 1C



The image shows the 't-Test: Paired Two Sample for Means' dialog box. Under the 'Input' section, 'Variable 1 Range' is set to '\$C\$1:\$C\$6'. 'Variable 2 Range' is empty. 'Hypothesized Mean Difference' is empty. The 'Labels' checkbox is checked. 'Alpha' is set to 0.05. On the right, there are 'OK' and 'Cancel' buttons.

Click in the text entry box of “Variable 2 Range” and select the Grit pre-test scores (including the label, but *not* the overall mean).

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A	B	C	D	E	F	G	H
	Grit Pre-Test	Grit Post-Test					
Student A	3	4					
Student B	2	4					
Student C	2	5					
Student D	3	4					
Student E	2	3					

6R x 1C
t-Test: Paired Two Sample for Means

Input

Variable 1 Range:

Variable 2 Range:

Hypothesized Mean Difference:

Labels

Alpha:

Output options

Output Range:

New Worksheet Ply:

New Workbook

OK
Cancel

Make sure the “Labels” Box is checked and that “Alpha” is set to 0.05.

t-Test: Paired Two Sample for Means

Input

Variable 1 Range:

Variable 2 Range:

Hypothesized Mean Difference:

Labels

Alpha:

Output options

Output Range:

New Worksheet Ply:

New Workbook

OK
Cancel

All that's left is to press OK. This will generate a statistical report in a new sheet of the workbook. The next section will explain how to interpret the results.

Interpreting & Reporting the GRIT Results

Following the steps in the previous section will result in a report being generated in a new sheet of your workbook that will look like this:

	A	B	C	D
1	t-Test: Paired Two Sample for Means			
2				
3		Grit Post-Test	Grit Pre-Test	
4	Mean	4	2.4	
5	Variance	0.5	0.3	
6	Observations	5	5	
7	Pearson Correlation	0		
8	Hypothesized Mean Difference	0		
9	df	4		
10	t Stat	4		
11	P(T<=t) one-tail	0.008065045		
12	t Critical one-tail	2.131846786		
13	P(T<=t) two-tail	0.01613009		
14	t Critical two-tail	2.776445105		
15				

Interpretation

Line 13, P(T<=f) two-tail: This is the “p-value”

13	P(T<=t) two-tail	0.01613009	
----	------------------	------------	--

Since this number is LESS THAN .05, we can be confident that the differences between the two means was not likely to be due to chance.

Reporting

In order to present these findings, there are two tasks: 1) report the statistics accurately, 2) explain what they mean in plain English.

1) Report the statistics accurately

“A **significant** difference was found between the pre-test and post-test scores for Grit, $t(4) = 4, p = .016$. The post-test Grit scores were **significantly** higher ($M=4, SD=.05$) than the pre-test Grit scores ($M=2.4, SD=.03$).”

- The word “significant” can only be used when the p-value is less than .05
- The “df” from Line 9
- The “t stat” from Line 10
- The “p(T<=t) two-tail” from Line 13 (rounded to three decimal places)
- The “Mean” & “Variance” from B4 & B5 (rounded to two decimal places)
- The “Mean” & “Variance” from C4 & C5 (rounded to two decimal places)

2) Plain English: There was a meaningful improvement in Grit scores after going through ARC, beyond what would have been expected by chance.

RESILIENCE

Resilience is a psychological construct that refers to an individual's ability to bounce back and grow from adversity (Reivich & Shatté, 2002). In ARC's new Theory of Change, Resilience is a short-term outcome. In order to measure Resilience, Smith and colleagues' (2008) (along with the Grit Scale and EPOCH measure) will be given to ARC students on their first day (before exposure to curriculum content), as well as on their last day of ARC. Smith and colleagues' (2008) 6-item *Brief Resilience Scale* was designed primarily for adults, teens were included in the sample used to develop the scale, it is shorter than other adolescent resilience measures, and (most importantly) it is made freely available by the authors; for this reason, this scale was designated as the appropriate measure.

How to Score the BRIEF RESILIENCE Scale

Scoring the Brief Resilience Scale is going to be a two-step process (similar to scoring the GRIT Scale above). The first step is going to involve reverse-coding some of the questions and the second step will involve calculating a **mean**, or average.

STEP 1:

For the first step, you are going to assign a numerical value to questions 1, 3, and 5 using the following key:

- 5 = Very much like me
- 4 = Mostly like me
- 3 = Somewhat like me
- 2 = Not much like me
- 1 = Not like me at all

For questions 2, 4, and 6 (denoted with an asterisk) assign a numerical value using the following key:

- 1 = Very much like me
- 2 = Mostly like me
- 3 = Somewhat like me
- 4 = Not much like me
- 5 = Not like me at all

STEP 2:

Once all the questions are assigned a numerical value using the keys above, add up all the points and divide by 6. The maximum score of 5 represents "extremely resilient" and the minimum score of 1 represents "not resilient at all" (Smith, Wiggins, Tooley, Christopher, & Bernard, 2008). Sample scoring can be seen in Appendix B.

Setting up RESILIENCE Scores in Microsoft Excel

Once you have calculated the resilience scores for both the pre-test and the post-test using the method above, you are going to enter the scale scores into Excel using the following layout:

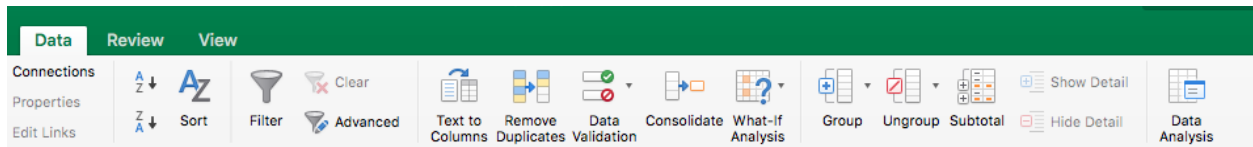
	A	B	C
1		Resilience Pre-Test	Resilience Post-Test
2	Student A	2	4.33
3	Student B	2.17	4
4	Student C	3	3.83
5	Student D	2.83	5
6	Student E	3.17	4
7			

Paired Samples T-Test for RESILIENCE Scores

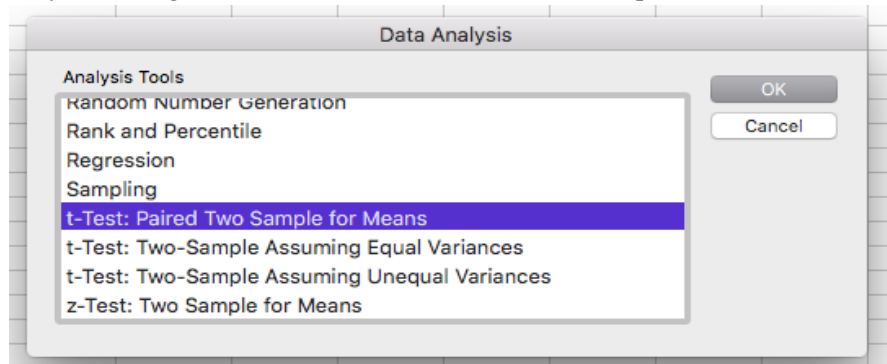
Once you have your data entered into Excel, you are going to conduct a **paired samples t-test** to see if the difference in mean scores between the pre-test and post-test are statistically significant.

NOTE: Make sure you've enabled the statistical analysis toolpak (Step 1 in GRIT Section)

Step 1: Run the T-Test. Click the "DATA" tab and all the way on the right hand side will be a tile called "Data Analysis". Click this tile and a dialogue box will pop up.



In the Data Analysis Dialogue Box, click "t-Test: Paired Two Sample for Means" → OK.



A new dialogue box will pop up. Click in the text entry box of "Variable 1 Range" and select the resilience post-test scores (including the label, but *not* the overall mean).

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	A	B	C	D	E
1		Resilience Pre-Test	Resilience Post-Test		
2	Student A	2	4.33		
3	Student B	2.17	4		
4	Student C	3	3.83		
5	Student D	2.83	5		
6	Student E	3.17	4		

t-Test: Paired Two Sample for Means

Input

Variable 1 Range:

Variable 2 Range:

Hypothesized Mean Difference:

Labels

Alpha:

Click in the text entry box of “Variable 2 Range” and select the resilience pre-test scores (including the label, but *not* the overall mean).

	A	B	C	D	E
1		Resilience Pre-Test	Resilience Post-Test		
2	Student A	2	4.33		
3	Student B	2.17	4		
4	Student C	3	3.83		
5	Student D	2.83	5		
6	Student E	3.17	4		

t-Test: Paired Two Sample for Means

Input

Variable 1 Range:

Variable 2 Range:

Hypothesized Mean Difference:

Labels

Alpha:

Make sure the “Labels” Box is checked and that “Alpha” is set to 0.05, then press OK. This will generate a statistical report in a new Sheet of the workbook. The next section will explain how to interpret the results.

Interpreting & Reporting the RESILIENCE Results

Following the steps in the previous section will result in a report being generated in a new sheet of your workbook that will look like this:

	A	B	C
1	t-Test: Paired Two Sample for Means		
2			
3		<i>Resilience Post-Test</i>	<i>Resilience Pre-Test</i>
4	Mean	4.232	2.634
5	Variance	0.21717	0.26923
6	Observations	5	5
7	Pearson Correlation	-0.077997386	
8	Hypothesized Mean Differ	0	
9	df	4	
10	t Stat	4.935673364	
11	P(T<=t) one-tail	0.003920489	
12	t Critical one-tail	2.131846786	
13	P(T<=t) two-tail	0.007840978	
14	t Critical two-tail	2.776445105	
15			

Interpretation

Line 13, P(T<=f) two-tail: This is the “p-value”

13	P(T<=t) two-tail	0.007840978
----	------------------	-------------

Since this number is LESS THAN .05, we can be confident that the differences between the two means was not likely to be due to chance.

Reporting

In order to present these findings, there are two tasks: report the statistics accurately, and explain what they mean in plain English.

“A **significant difference was found between the pre-test and post-test scores for Resilience, $t(4) = 4.936$, $p = .008$. The post-test Resilience scores were **significantly** higher ($M=4.23$, $SD=.22$) than the pre-test Resilience scores ($M=2.63$, $SD=.27$).”**

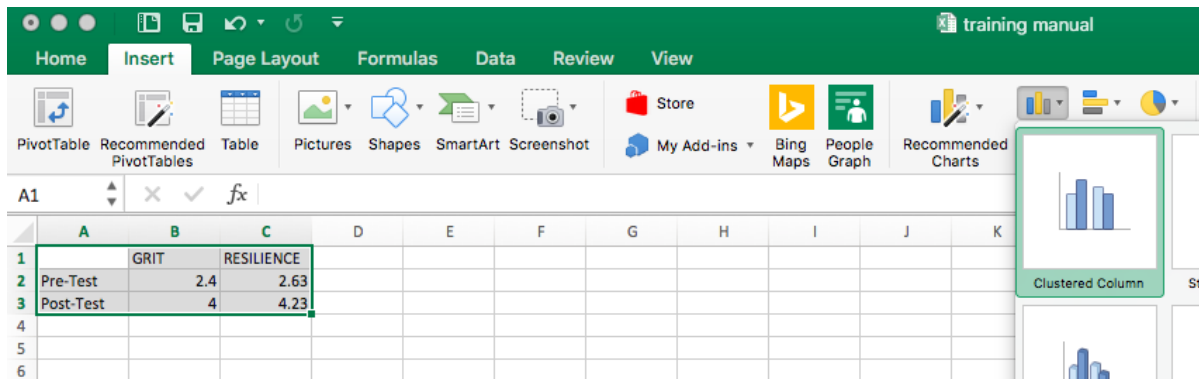
- The word “significant” can only be used when the p-value is less than .05
- The “df” from Line 9
- The “t stat” from Line 10 (rounded to three decimal places)
- The “p(T<=t) two-tail” from Line 13 (rounded to three decimal places)
- The “Mean” & “Variance” from B4 & B5 (rounded to two decimal places)
- The “Mean” & “Variance” from C4 & C5 (rounded to two decimal places)

2) Plain English: There was a meaningful improvement in resilience scores after going through ARC, beyond what would have been expected by chance.

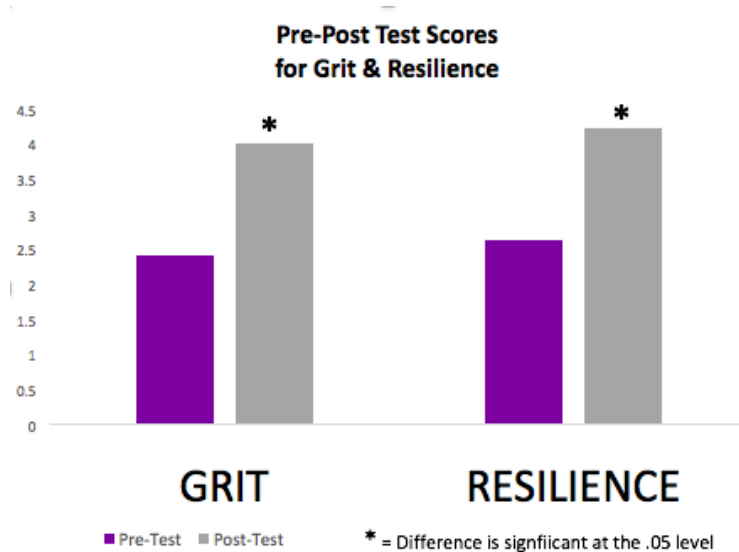
Graphs for Grit & Resilience

In order to visually depict the results for grit & resilience, you may want to create a graph to make the findings easier to understand, especially for potential donors.

To do this you will need the means from lines B4 & B5 in the results report forth grit (p. 8) and resilience (p. 12). Enter these numbers into Excel in the following way and select Insert → Column → Clustered Column:



This will give you a graph similar to the one below, which you can format in any way you would like as long as you keep the axes and keys intact.



EPOCH (Well-Being)

Adolescent Well-Being is a psychological construct intended for adolescents ages 10-18, comprised of the following five components: engagement, which refers to being absorbed or interested in a pursuit; perseverance, which refers to sticking with goals despite challenge; optimism, which refers to hope or confidence regarding the future; connectedness, which refers to feeling loved or valued by others; and happiness, which refers to contentment or satisfaction with life (Kern, Benson, Steinberg, & Steinberg, 2016). (Flourishing (or well-being) is the ultimate outcome in the proposed theory of change. In order to measure adolescent well-being, Kern and colleagues' (2016) EPOCH Measurement of Adolescent Well-being (along with the Grit Scale and the Brief Resilience Scale) will be given to ARC students on their first day (before exposure to curriculum content), as well as on their last day of ARC.

How to Score the EPOCH Measure

Because the EPOCH measure looks at the five domains of adolescent well-being, scoring it is a little more involved than the aforementioned scales. First, there is no reverse-coding for this measure, which means that you will assign numerical values to each question according to the following keys:

5 = Very much like me
4 = Mostly like me
3 = Somewhat like me
2 = Not much like me
1 = Not like me at all

5 = Almost Always
4 = Very Often
3 = Often
2 = Sometimes
1 = Almost never

Once you have completed assigning numerical values to each question, you need to get a mean score. **HOWEVER, unlike the previous scale, this measure has FIVE SUBSCALES** that need to be calculated individually. The five subscales correspond to the five dimensions of adolescent well-being. They are comprised of:

1. Engagement Subscale (E1, E2, E3, E4, E5)
2. Perseverance Subscale (P1, P2, P3, P4, P5)
3. Optimism Subscale (O1, O2, O3, O4, O5)
4. Connectedness Subscale (C1, C2, C3, C4, C5)
5. Happiness Subscale (H1, H2, H3, H4, H5)

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A maximum score of 5 represents extremely high levels of the given dimensions of well-being, and a minimum score of 1 represents extremely low levels of the given dimension of well-being. Use Kern and colleagues (2016) key below (p. 2) to determine which questions belong to which subscale. Additionally, see Appendix C for a sample score sheet for the EPOCH measure.

Scoring EPOCH

Item	Question
C1	When something good happens to me, I have people who I like to share the good news with.
P1	I finish whatever I begin.
O1	I am optimistic about my future
H1	I feel happy.
E1	When I do an activity, I enjoy it so much that I lose track of time.
H2	I have a lot of fun.
E2	I get completely absorbed in what I am doing.
H3	I love life.
P2	I keep at my schoolwork until I am done with it.
C2	When I have a problem, I have someone who will be there for me.
E3	I get so involved in activities that I forget about everything else.
E4	When I am learning something new, I lose track of how much time has passed.
O2	In uncertain times, I expect the best.
C3	There are people in my life who really care about me.
O3	I think good things are going to happen to me.
C4	I have friends that I really care about.
P3	Once I make a plan to get something done, I stick to it.
O4	I believe that things will work out, no matter how difficult they seem.
P4	I am a hard worker.
H4	I am a cheerful person.

Setting up EPOCH Scores in Microsoft Excel

At this point, the procedure for setting up the EPOCH Scores in Excel and statistically analyzing them follows the same model as the aforementioned scales. The difference, however, is that you need to repeat this procedure for EACH of the five subscales. To demonstrate the process in this manual, only the first subscale (Engagement) will be included.

	A	B	C
1		Engagement (E) Pre-TEST	Engagement (E) Post-Test
2	Student A	2.4	4.5
3	Student B	2.1	3.8
4	Student C	3.2	4.2
5	Student D	1.7	3.9
6	Student E	2.2	4.8
7			

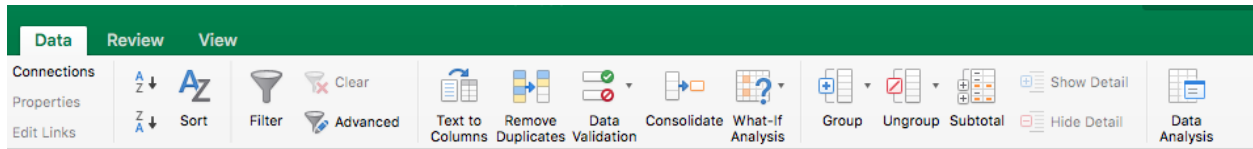
Paired Samples T-Test for EPOCH Scores

Once you have your data entered into Excel, you are going to conduct a **paired samples t-test** to see if the difference in mean scores between the pre-test and post-test are statistically significant.

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NOTE: Make sure you have enabled the statistical analysis toolpak in Excel (See Step 1 in the GRIT Section)

Run the T-Test. Click the “DATA” tab and all the way on the right hand side will be a tile called “Data Analysis”. Click this tile and a dialogue box will pop up.



Like above, in the Data Analysis Dialogue Box, click “t-Test: Paired Two Sample for Means” → OK.

A new dialogue box will pop up. Click in the text entry box of “Variable 1 Range” and select the Engagement Post-Test Scores (including the label).

	A	B	C	D	E	F
1		Engagement (E) Pre-TEST	Engagement (E) Post-Test			
2	Student A	2.4	4.5			
3	Student B	2.1	3.8			
4	Student C	3.2	4.2			
5	Student D	1.7	3.9			
6	Student E	2.2	4.8			
7	MEAN	2.32	4.24	6R x 1C		

t-Test: Paired Two Sample for Means

Input

Variable 1 Range:

Variable 2 Range:

Hypothesized Mean Difference:

Labels

Alpha:

OK Cancel

Click in the text entry box of “Variable 2 Range” and select the Engagement Pre-Test Scores (including the label).

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A	B	C	D	E	F
	Engagement (E) Pre-Test	Engagement (E) Post-Test			
Ident A	3	4			
Ident B	2	4			
Ident C	2	5			
Ident D	3	4			
Ident E	2	3			

6R x 1C

t-Test: Paired Two Sample for Means

Input

Variable 1 Range:

Variable 2 Range:

Hypothesized Mean Difference:

Labels

Alpha:

Make sure the “Labels” Box is checked and that “Alpha” is set to 0.05, then press OK. This will generate a statistical report in a new Sheet of the workbook.

Interpreting & Reporting the EPOCH Results

Following the steps in the previous section will result in a report being generated in a new sheet of your workbook that will look like this:

	A	B	C
1	t-Test: Paired Two Sample for Means		
2			
3		<i>Engagement (E) Post-Test</i>	<i>Engagement (E) Pre-TEST</i>
4	Mean	4.24	2.32
5	Variance	0.173	0.307
6	Observations	5	5
7	Pearson Correlation	0.245163723	
8	Hypothesized Mean Difference	0	
9	df	4	
10	t Stat	7.086849317	
11	P(T<=t) one-tail	0.001046531	
12	t Critical one-tail	2.131846786	
13	P(T<=t) two-tail	0.002093061	
14	t Critical two-tail	2.776445105	
15			

Interpretation

Line 13, P(T<=f) two-tail: This is the “p-value”

13	P(T<=t) two-tail	0.002093061
----	------------------	-------------

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Since this number is LESS THAN .05, we can be confident that the differences between the two means was not likely to be due to chance.

Reporting

In order to present these findings, there are two tasks: First, report the statistics accurately, then explain what they mean in plain English.

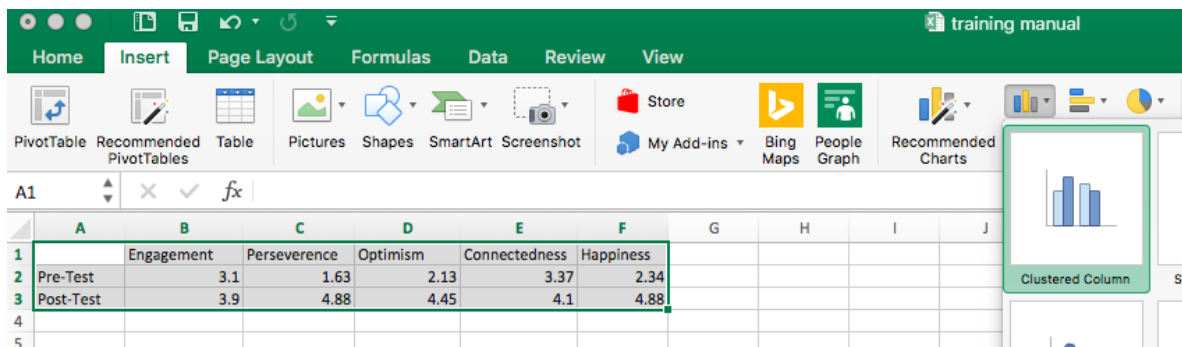
“A **significant difference was found between the pre-test and post-test scores for Engagement, $t(4) = 7.086, p = .002$. The post-test Engagement scores were **significantly** higher ($M=4.24, SD=.17$) than the pre-test Engagement scores ($M=2.32, SD=.31$).”**

- The word “significant” can only be used when the p-value is less than .05
- The “df” from Line 9
- The “t stat” from Line 10 (rounded to three decimal places)
- The “p(T<=t) two-tail” from Line 13 (rounded to three decimal places)
- The “Mean” & “Variance” from B4 & B5 (rounded to two decimal places)
- The “Mean” & “Variance” from C4 & C5 (rounded to two decimal places)

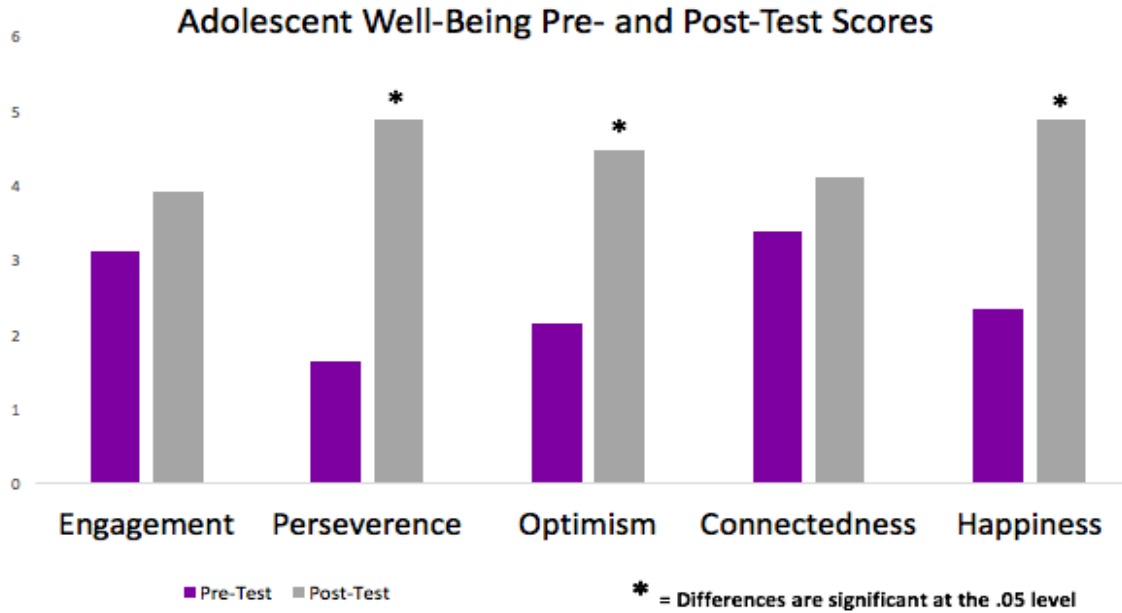
Plain English: There was a meaningful improvement in resilience scores after going through ARC, beyond what would have been expected by chance.

Graph for Adolescent Well-Being

In order to visually depict the results for well-being, you may want to create a graph to make the findings easier to understand, since there are 5 subscales involved. To do this you will need the Means from Lines B4 & B5 in the results report for all five of the EPOCH Subscales. Enter these numbers into Excel in the following way and select Insert → Column → Clustered Column:



This will give you a graph *similar* to the one below, which you can format in any way you'd like as long as you keep the axes and keys in-tact.



CAVEATS

Testing for Iatrogenic (i.e., Unintended) Effects

The rigorous nature of the ARC (and NewArts) program may have unintended effects on participants that should be tested for. The following metrics should be collected and placed under the scrutiny of the same Paired T-Test logic outlined above:

- GPA
- Attendance at School

The hope is to have either of two possibilities:

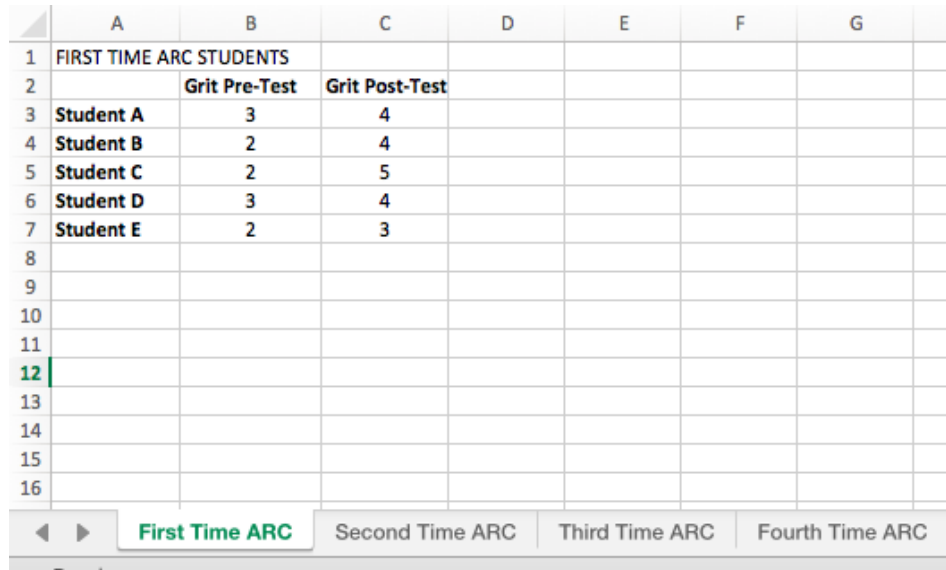
- 1) There are *no* statistically significant outcomes for these metrics
- 2) There are statistically significant *improvements* on these metrics (i.e., GPA goes up, truancy goes down)

Students Going Through ARC Multiple Times

Given that ARC allows students to participate in the program more than once, students who are going through the program repeatedly may affect the results of the statistical analysis. In order to control for

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this possible confound, students' scores should be analyzed separately based on how many times they have gone through the program. For example, the data can be organized in the excel spreadsheet in the following way:



	A	B	C	D	E	F	G
1	FIRST TIME ARC STUDENTS						
2		Grit Pre-Test	Grit Post-Test				
3	Student A	3	4				
4	Student B	2	4				
5	Student C	2	5				
6	Student D	3	4				
7	Student E	2	3				
8							
9							
10							
11							
12							
13							
14							
15							
16							

Navigation tabs: First Time ARC, Second Time ARC, Third Time ARC, Fourth Time ARC

PUTTING THE METHODOLOGY IN PERSPECTIVE FOR DONORS

In an ideal lab setting where we could establish causal links between the ARC program and its intended outcomes, we would compare the results of ARC to a “no-treatment” control. This means that one group of children would be enrolled in the ARC curriculum, while the other group of children would not. However, this is not a lab. This is the real world where the livelihood of the participants is at stake. Ethically and practically, how could 1214 justify randomly assigning children to either a program that will significantly improve their lives for the better or to a “no-treatment” condition designed for them to essentially derive no benefit and to serve as a comparison? In the real world, this is not *practically* valuable.

While less theoretically powerful, the repeated-measures design allows each student to serve as their own control so that no one has to miss out on the program. Nevertheless, this design still provides 1214 with data that can be statistically analyzed to determine if there are meaningful differences in outcomes before and after their experience with the ARC curriculum. When these results are significant, although causal language cannot be used, what can be said is that these results were highly unlikely to have been due to chance, therefore “something else” had to be responsible for these changes. We can also confidently venture to say that the “something else” at play (i.e., the agent that is responsible for the change, given that these results are not due merely to random chance) is most likely to have been the ARC curriculum.

FUTURE DIRECTIONS

Measuring Protective Factors

The Application Plan in its current state has focused on measuring the outcomes in the theory of change. It may be of interest to the 1214 Foundation to also consider measuring the degree to which the curriculum is generating improvement in the protective factors of self-awareness, self-regulation, and self-efficacy. If this pursuit becomes of interest to the 1214 Foundation, empirically validated scales are provided for self-awareness, self-regulation, and self-efficacy in the drive folder entitled "Application Plan Materials." The statistical analyses would follow the same process outlined above, making use of a paired samples t-test for protective factor pre- and post-test scores.

Testing the Importance of the Experiential Piece

Unique to the 1214 Foundation programming is that the ARC Leadership Development program is coupled with the experiential component of joining NewArts' theatrical production. The rationale to have students experience these programs in tandem is because the experiential component gives the students an arena in which to apply what they have learned in ARC and build upon those skills. Whether or not this experiential piece is necessary and whether ARC may be sufficient on its own may be of interest to the 1214 Foundation.

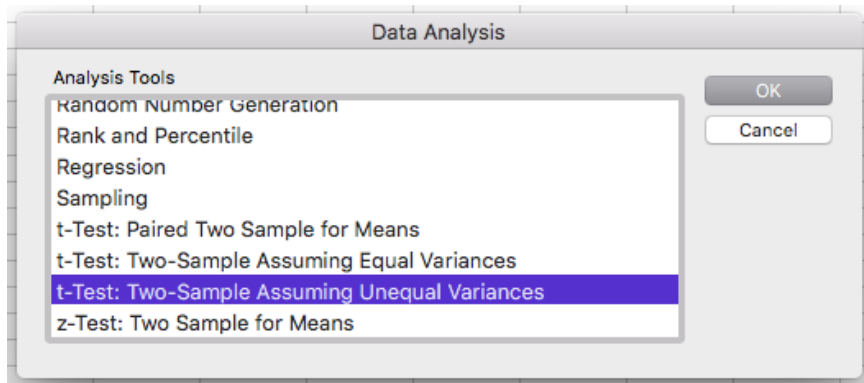
Should this become an area of inquiry, the methodology to empirically evaluate the need for an experiential component is similar to the process outlined above (i.e., comparing the means of scores on Grit, Resilience and EPOCH Adolescent well-being using a t-test). However, instead of looking at pre-and post-test scores for each individual, the measure of interest will be the differences between the overall scores after ARC for the students in ARC *and* NewArts, compared with the students only in ARC. This will require an **Independent Samples T-Test**.

The scores in Excel will look like this (using GRIT as an example):

	A	B	C	D
1		GRIT Scores, ARC ONLY		GRIT SCORES (ARC & NEWARTS)
2	Student A	2	Student F	4.33
3	Student B	2.17	Student G	4
4	Student C	3	Student H	3.83
5	Student D	2.83	Student I	5
6	Student E	3.17	Student J	4
7				

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The next step is to follow the same procedure above clicking Data → Data Analysis, however this time make the following selection:



A new dialogue box will pop up. Click in the text entry box of “Variable 1 Range” and select the “ARC & NewArts Group” Scores (including the label).

		GRIT Scores, ARC ONLY		GRIT SCORES (ARC & NEWARTS)
1				
2	Student A	2	Student F	4.33
3	Student B	2.17	Student G	4
4	Student C	3	Student H	3.83
5	Student D	2.83	Student I	5
6	Student E	3.17	Student J	4
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

The screenshot shows the 't-Test: Two-Sample Assuming Unequal Variances' dialog box. Under the 'Input' section, 'Variable 1 Range' is set to '\$D\$1:\$D\$6'. 'Variable 2 Range' is empty. 'Hypothesized Mean Difference' is empty. The 'Labels' checkbox is unchecked. 'Alpha' is set to 0.05. Under the 'Output options' section, 'New Worksheet Ply' is selected. 'OK' and 'Cancel' buttons are visible on the right side.

Click in the text entry box of “Variable 2 Range” and select the “ARC ONLY Group” Scores (including the label).

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2	Student A	2	Student F	4.33
3	Student B	2.17	Student G	4
4	Student C	3	Student H	3.83
5	Student D	2.83	Student I	5
6	Student E	3.17	Student J	4
7				
8			6R x 1C	
9				

t-Test: Two-Sample Assuming Unequal Variances

Input

Variable 1 Range:

Variable 2 Range:

Hypothesized Mean Difference:

Labels

Alpha:

Output options

Output Range:

New Worksheet Ply:

New Workbook

OK

Cancel

Make sure the “Labels” Box is checked and that “Alpha” is set to 0.05, then press OK. This will generate a statistical report in a new Sheet of the workbook (just like the ones you’ve seen above). From there interpretation and reporting are the same as above.

Manual References

- Duckworth, A.L., Peterson, C., Matthews, M.D., & Kelly, D.R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology, 9*, 1087-1101.
- Kern, M.L., Benson, L., Steinberg, E.A., & Steinberg, L. (2016). The EPOCH measure of adolescent well-being. *Psychological Assessment, 28*(5), 586.
- Golinkoff, R.M., & Hirsh-Pasek, K. (2016). *Becoming brilliant: What science tells us about raising successful children*. Washington, DC: American Psychological Association (APA) Life Tools.
- Reivich, K., & Shatté, A. (2002). *The resilience factor: 7 keys to finding your inner strength and overcoming life's hurdles*. New York, NY: Three Rivers Press.
- Smith, B.W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P. & Bernard, J. (2008). The brief resilience scale: Assessing the ability to bounce back. *International Journal of Behavioural Medicine, 15*, 194-200.

Manual Appendix A - Sample Scoring 12-Item Grit Scale

Sample Student

12- Item Grit Scale

Directions for taking the Grit Scale: Please respond to the following 12 items. Be honest – there are no right or wrong answers!

1. I have overcome setbacks to conquer an important challenge.
 - Very much like me
 - 4 Mostly like me
 - Somewhat like me
 - Not much like me
 - Not like me at all

2. New ideas and projects sometimes distract me from previous ones.
 - Very much like me
 - Mostly like me
 - Somewhat like me
 - 4 Not much like me
 - Not like me at all

3. My interests change from year to year.
 - Very much like me
 - Mostly like me
 - 3 Somewhat like me
 - Not much like me
 - Not like me at all

4. Setbacks don't discourage me.
 - 5 Very much like me
 - Mostly like me
 - Somewhat like me
 - Not much like me
 - Not like me at all

5. I have been obsessed with a certain idea or project for a short time but later lost interest.
 - Very much like me
 - Mostly like me
 - Somewhat like me
 - 4 Not much like me
 - Not like me at all

6. I am a hard worker.
 - Very much like me
 - 4 Mostly like me
 - Somewhat like me
 - Not much like me
 - Not like me at all

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7. I often set a goal but later choose to pursue a different one. *

- Very much like me
- Mostly like me
- Somewhat like me
- 4 Not much like me
- Not like me at all

8. I have difficulty maintaining my focus on projects that take more than a few months to complete. *

- Very much like me
- Mostly like me
- Somewhat like me
- 4 Not much like me
- Not like me at all

9. I finish whatever I begin.

- Very much like me
- 4 Mostly like me
- Somewhat like me
- Not much like me
- Not like me at all

10. I have achieved a goal that took years of work.

- Very much like me
- Mostly like me
- 3 Somewhat like me
- Not much like me
- Not like me at all

11. I become interested in new pursuits every few months. *

- Very much like me
- Mostly like me
- Somewhat like me
- 4 Not much like me
- Not like me at all

12. I am diligent.

- 5 Very much like me
- Mostly like me
- Somewhat like me
- Not much like me
- Not like me at all

Grit Score

$$4 + 4 + 3 + 5 + 4 + 4 + 4 + 4 + 4 + 3 + 4 + 5 = \frac{48}{12} = 4$$

4

Manual Appendix B - Sample Scoring Brief Resilience Scale

Sample Student

Brief Resilience Scale

Please indicate the extent to which you agree with each of the following statements.

1 = strongly disagree
2 = disagree
3 = neutral
4 = agree
5 = strongly agree

4 1. I tend to bounce back quickly after hard times 4
4 2. I have a hard time making it through stressful events 2
4 3. It does not take me long to recover from a stressful event 4
3 4. It is hard for me to snap back when something bad happens 3
3 5. I usually come through difficult times with little trouble 3
+ 4 6. I tend to take a long time to get over set-backs in my life 2

22

↓

$\frac{22}{6} = 3.67$ Brief Resilience Score

Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: assessing the ability to bounce back. *International Journal of Behavioural Medicine, 15*, 194-200.

Manual Appendix C - Sample Scoring EPOCH Measure of Adolescent Well-being

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Sample Student

This is a survey about you! Please read each of the following statements. Circle how much each statement describes you. Please be honest - there are no right or wrong answers!

C1	When something good happens to me, I have people who I like to share the good news with.	Almost never	Sometimes	Often 3	Very Often	Almost Always	3
P1	I finish whatever I begin.	Almost never	Sometimes 2	Often	Very Often	Almost Always	2
O1	I am optimistic about my future	Almost never	Sometimes	Often 3	Very Often	Almost Always	3
H1	I feel happy.	Almost never	Sometimes	Often 3	Very Often	Almost Always	3
E1	When I do an activity, I enjoy it so much that I lose track of time.	Almost never	Sometimes	Often	Very Often 4	Almost Always	4
H2	I have a lot of fun.	Almost never	Sometimes	Often 3	Very Often	Almost Always	3
E2	I get completely absorbed in what I am doing.	Almost never	Sometimes	Often	Very Often 4	Almost Always	4
K3	I love life.	Almost never	Sometimes 2	Often	Very Often	Almost Always	2
P2	I keep at my schoolwork until I am done with it.	Almost never	Sometimes 2	Often	Very Often	Almost Always	2
C2	When I have a problem, I have someone who will be there for me.	Almost never	Sometimes	Often 3	Very Often	Almost Always	3
E3	I get so involved in activities that I forget about everything else.	Almost never	Sometimes 2	Often	Very Often	Almost Always	2
E4	When I am learning something new, I lose track of how much time has passed.	Not at all like me	A little like me	Somewhat like me	Mostly like me 4	Very much like me	4
O2	In uncertain times, I expect the best.	Not at all like me	A little like me 2	Somewhat like me	Mostly like me	Very much like me	2
C3	There are people in my life who really care about me.	Not at all like me	A little like me	Somewhat like me 3	Mostly like me	Very much like me	3
O3	I think good things are going to happen to me.	Not at all like me	A little like me	Somewhat like me 3	Mostly like me	Very much like me	3
C4	I have friends that I really care about.	Not at all like me	A little like me 2	Somewhat like me	Mostly like me	Very much like me	2
P3	Once I make a plan to get something done, I stick to it.	Not at all like me	A little like me	Somewhat like me	Mostly like me 4	Very much like me	4
O4	I believe that things will work out, no matter how difficult they seem.	Not at all like me	A little like me	Somewhat like me 3	Mostly like me	Very much like me	3
P4	I am a hard worker.	Not at all like me	A little like me 2	Somewhat like me	Mostly like me	Very much like me	2
H4	I am a cheerful person.	Not at all like me	A little like me	Somewhat like me 3	Mostly like me	Very much like me	3

DOVETAILING 1214'S ARC PROGRAM AND POSITIVE PSYCHOLOGY

$$\text{Engagement} = 4 + 4 + 2 + 4 = 14 \quad \frac{14}{4} = 3.5 \quad \text{Engagement Score}$$

(E1, E2, E3, E4)

$$\text{Perseverance} = 2 + 2 + 4 + 2 = 10 \quad \frac{10}{4} = 2.5 \quad \text{Perseverance Score}$$

(P1, P2, P3, P4)

$$\text{Optimism} = 3 + 2 + 3 + 3 = 11 \quad \frac{11}{4} = 2.75 \quad \text{Optimism Score}$$

(O1, O2, O3, O4)

$$\text{Connectedness} = 3 + 3 + 3 + 2 = 11 \quad \frac{11}{4} = 2.75 \quad \text{Connectedness Score}$$

(C1, C2, C3, C4)

$$\text{Happiness} = 3 + 3 + 2 + 3 = 11 \quad \frac{11}{4} = 2.75 \quad \text{Happiness Score}$$

(H1, H2, H3, H4)