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The Relationship Between Adolescent Sense of Purpose, Poster Quality, and Intentional Self-Regulation

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Abstract

This paper investigates the relationship between sense of purpose, the quality of work related to a youth character education (CE) program, and intentional self-regulation (ISR) for adolescents participating in the Inspire>Aspire: Global Citizens in the Making (I>A) Values Poster program. Relational developmental systems (RDS) meta-theory posits that individuals have the capacity to shape their own development and that positive development can be reached when individual assets are aligned with assets in the environment (Lerner, Lerner, von Eye, Bowers, & Lewin-Bizan, 2011). This agentic control over development is often referred to as ISR, which can be operationalized by the general model of human development proposed by lifespan theory: the Selection, Optimization, and Compensation (SOC) model (Freund & Baltes, 2002). This individual asset (ISR) is examined in relation to the contextual asset of I>A participation (measured by the quality of the poster each pupil produces at the end of I>A) and sense of purpose, a developmental outcome that has positive implications for youth and their communities. A mediation model is utilized to test this relationship in Scottish youth (mean age = 13) participating in I>A during the 2014-2015 school year. Quantitative results indicate that pupils' sense of purpose at Wave 1 was related to their poster quality scores. Qualitative analyses revealed ties between ISR and sense of purpose. Limitations, future directions, and practical implications are discussed.

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THE RELATIONSHIP BETWEEN ADOLESCENT SENSE OF PURPOSE, POSTER QUALITY, AND INTENTIONAL SELF-REGULATION

by

Lauren Nazareth Gama

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The Relationship Between Adolescent Sense of Purpose, Poster Quality, and Intentional Self-Regulation

Adolescence is a period of intense cognitive, emotional, and biological change. Once considered a time of storm and stress, adolescence is now viewed as a time of great opportunity (Steinberg, 2014). Relational developmental systems (RDS) meta-theory in particular posits that all youth have strengths that, if aligned with environmental assets, can lead to thriving (Urban, Lewin-Bizan, Lerner, 2010). Given that thriving youth are more likely to contribute to their families and communities, there are societal implications for helping youth reach optimal development (Lerner, Lerner, von Eye, Bowers, & Lewin-Bizan, 2011). The present study will examine the impact of intentional self-regulation (ISR; an individual asset) and participation in a character education program (CE; an environmental asset) on the development of sense of purpose in adolescents.

Relational Developmental Systems (RDS) Meta-theory

According to RDS meta-theory, human development occurs through mutually influential relations between individuals and their contexts (Lerner, Hershberg, Hilliard, & Johnson, 2015). RDS rejects conceptual splits, such as nature versus nurture, and instead emphasizes bidirectional individual ↔ context relations. In other words, RDS posits that rather than one factor being more instrumental than the other, individual and contextual factors work *together* to influence development (Geldhof, Weiner, Agans, Mueller, & Lerner, 2014). Contextual factors are parts of the multi-leveled (e.g., biological, physical, cultural, historical) ecologies in which individuals are embedded. For instance, an adolescent's context may feature the structure and function of his or her

school and family (Lerner et al., 2011). Furthermore, because individuals are embedded within a historical context, plasticity (the potential for change) is always present within the developmental system and throughout the life span (Lerner & Overton, 2008). Additionally, RDS emphasizes individuals' capacity for agentic control over their own development, often referred to as intentional self-regulation (ISR; Geldhof et al., 2014).

As a result of this understanding of plasticity and agentic control, there has been a push by researchers and practitioners to find ways to combine individual and contextual assets in order to promote positive human development (Lerner et al., 2011). For instance, Urban and colleagues (2010) found that if there is a "good fit" between individuals' strengths and their contexts (or ecological assets), positive human development can be achieved even in neighborhoods with fewer resources. Lerner and Overton (2008) described such work as the "scientific mission of description, explanation, and optimization" (p. 247) in which developmental scientists seek to understand and align individuals' strengths with the resources in their contexts so that all individuals have an equal chance to experience positive development.

Intentional Self-Regulation (ISR)

ISR is the ability to select and enact behaviors to reach goals that are important to the individual (Gestsdottir & Lerner, 2007). In the bidirectional individual ↔ context relations emphasized by RDS, ISR is considered an individual factor and a key strength because it enables one to intentionally contribute to his or her own development (Geldhof et al., 2014). ISR has been studied with adolescents more frequently in recent years and is considered "a fundamental feature of a young person's successful interaction with his or her social ecology" (Gestsdottir & Lerner, 2007, p. 508). In fact, ISR has been associated

with a host of positive outcomes, including higher levels of Positive Youth Development (PYD) and each of the Five Cs (Confidence, Competence, Connection, Character, and Caring; Gestsdottir & Lerner, 2007); academic achievement (McClelland & Wanless, 2012); successful adjustment and life management throughout adulthood (Geldhof et al., 2014); purpose in life (Freund & Baltes, 2002); and fewer instances of negative behaviors such as depression, risk behaviors, and delinquency (Gestsdottir & Lerner, 2007).

ISR is most often operationalized by the Selection, Optimization, and Compensation (SOC) model (Freund & Baltes, 2002). The SOC model is a core component of lifespan theory and has even been proposed as a general model of development (Baltes, 1997). Selection generally refers to the selection of options within certain constraints. Baltes (1997) uses language acquisition as an example because as infants develop, they learn to recognize the familiar sounds of the language being spoken around them and shape their development toward becoming fluent in that particular language themselves. In other words, infants *select* the language they will themselves use based on the languages to which they are exposed; they cannot learn languages to which they are not exposed. Optimization in relation to development is the utilization of resources within the individual and without, in order to reach higher levels of functioning. Compensation refers to the actions taken when the means to higher functioning are unavailable. Continuing with the language acquisition example, focusing or mimicking when family members are speaking would be a way for the infant to *optimize*, while practicing communication with a babysitter when a parent is unavailable would be a way to *compensate*.

Another way to apply the SOC model is to use it to measure ISR through goal setting. Here, selection involves the development of and commitment to goals and includes elective selection, the focus on attaining a desired state, and loss-based selection, the restructuring of a goal system when there is a loss in goal-relevant means. Individual and contextual factors such as age-related abilities and available opportunities, time, and resources can affect selection (Baltes, Staudinger, & Lindenberger, 1999). Optimization involves the actions taken to reach goals and requires the ability to navigate individual and contextual factors, for example health and physical environment, in order to reach the desired outcome (Baltes et al., 1999). Compensation involves taking alternative actions to reach goals when there is a loss in goal-relevant means. This may be necessary because of individual factors, such as age or the amount of effort one can dedicate to a goal, and/or contextual factors, such as a change in the availability of environmental resources (Baltes et al., 1999). Although loss-based selection and compensation both refer to the actions taken after goal-relevant means become unavailable, loss-based selection indicates a change in goals, while compensation indicates a change in means of reaching the original goal (Freund & Baltes, 2002).

In adulthood, ISR appears as the three clearly differentiated constructs of selection, optimization, and compensation; however, studies with youth from Western cultures have found that the tripartite SOC model does not adequately capture the ISR skills of early adolescents (Gestsdottir et al., 2014). Instead, consistent with Werner's orthogenetic principle (1957), a global, undifferentiated 9-item SOC scale has been found to be a better fit for this particular age (Gestsdottir & Lerner, 2007; Gestsdottir et al., 2014). Therefore, attempting to use the tripartite SOC scale with early adolescents may

result in underestimated, inaccurate depictions of their ISR abilities, whereas using the developmentally appropriate global SOC scale could provide more accurate results. Further research is needed to expand understanding of the SOC processes and ISR in adolescence and how individuals can shape their own development through the use of these skills.

Sense of Purpose

In recent years, researchers in child and adolescent development have come to recognize the importance of studying sense of purpose (Malin, 2015; Malin Reilly, Quinn, & Moran, 2014; Bronk, Finch, & Talib, 2010; Moran, 2009; Bronk, Hill, Lapsley, Talib, & Finch, 2009). They have found that, though sense of purpose may be unstable in early adolescence (Malin et al., 2014), it can appear throughout adolescence as teenagers seek meaning in their lives and set goals. The present study defines sense of purpose as the "intention to accomplish something that is at once meaningful to the self and of consequence to the world beyond the self" (Damon, Menon, & Bronk, 2003, p. 121). In other words, sense of purpose includes a future-oriented intention, active engagement in fulfilling this intention, and an aim to impact someone or something other than him- or herself (Malin et al., 2014).

Although such language as "intention to accomplish" and "future-oriented intention" indicates that sense of purpose is related to goal-setting (and therefore to ISR), the concepts are distinct. A sense of purpose specifically emerges from goals that are beyond-the-self, as opposed to those that only aim to bring personal satisfaction (Malin et al., 2014; Damon et al., 2003). In many studies, adolescents who actively attempt to fulfill self-oriented goals that do not extend beyond the self are considered to exhibit a

precursor form of purpose (Malin, 2015; Malin et al., 2014). For example, an adolescent who works toward the goal of getting straight A's may demonstrate high ISR skills, but only a precursor form of purpose. On the other hand, an adolescent who attempts to reach the goal of volunteering at a nursing home may demonstrate both high ISR skills and a sense of purpose. These conclusions support Freund and Baltes' (2002) observation that having personal goals appears to contribute to sense of purpose. Depending on the content of their goals, adolescents engaging in goal selection and optimization are one step away from attaining sense of purpose.

Purpose is a concept that warrants attention from researchers and practitioners alike because of its numerous implications. Bronk et al. (2010) identified purpose as a strong motivator for youth; Benson (2006) considered it a developmental asset; Benson and Scales (2009) found correlations between purpose and well-being; and Bronk (2011) described purpose as supportive of identity formation. Moran (2009) extended the individual benefits of sense of purpose to larger society, stating that youth with purpose tend to feel that their actions impact the rest of the world, which could lead them to be mindful of their actions and thereby help to create a more just society. Sense of purpose has the potential to effect positive individual and societal change and is, therefore, critically important to research on adolescence.

Yet, despite the great strides that child and adolescent development have made to define and understand the effects of purpose, little is known about how to promote the development of purpose. In 2003, Damon et al. noted that, at the time, the majority of theories in psychology attributed adolescent behavior to specific traits, experiences, or environmental conditions; in these theories, youth lacked agency and were merely

subjected to the "facts of life." However, if the 2014 study by Malin et al. is any indication, research on adolescent purpose is moving away from these theories and incorporating some of the fundamental concepts of RDS. Malin and colleagues examined the interactions between youth and their contexts in an attempt to understand the development of purpose. They found that individual factors, such as age and life-stage, as well as contextual factors, such as parental modeling and structured opportunities in schools and communities, helped youth develop sense of purpose (Malin et al., 2014). Similarly, the present study examines the influence of individual (ISR) and contextual (character education program participation) factors on the development of sense of purpose.

Character Education (CE)

Character education (CE) programs have the potential to aid youth in the development of important values, such as sense of purpose. Berkowitz and Bier (2007) broadly defined CE as programs that promote the development of "a complex set of psychological characteristics that motivate and enable one to function as a moral agent" (p. 30). And, indeed, CE programs have been found to increase prosocial competencies (e.g., personal morality and citizenship), general social-emotional outcomes (e.g., independence and initiative, problem-solving skills, and emotional competence), and school-based outcomes (e.g., attendance, achievement, and attachment to school; Berkowitz & Bier, 2007). In a meta-analysis of the CE literature, Berkowitz and Bier also found that CE programs help decrease risky behaviors such as drug use, sexual activity, and aggression. Some of these effects have even been found to impact youth long after they finish the CE programs.

Given the potential that CE programs have to positively impact youth, it is not surprising that these programs exist worldwide. Berkowitz and Bier (2005) found that some of the most common strategies employed were direct teaching (e.g., whole class instruction and guest speakers), interactive teaching (e.g., role-playing and peer discussions), family/community participation, and modeling/mentoring. They also found three common content areas: problem-solving/ decision-making, social skills and awareness, and personal improvement/self-management. Furthermore, programs can have varying levels of integration into the school or class curriculum (Berkowitz & Bier, 2005). As one would expect, this variation makes it difficult for researchers to determine which practices are best. However, because character strengths are "the foundation of life-long optimal human development and the well-being of society" (Park & Peterson, 2006, p. 903), there is an urgent need to learn more about precisely how CE programs impact youth.

Inspire>Aspire (I>A)

The Inspire>Aspire: Global Citizens in the Making Values Poster program is a CE program that was developed by Character Scotland. The original program was created over seven years ago and today reaches tens of thousands of youth ages 10-18 in dozens of countries across the United Kingdom and the Commonwealth. I>A uses a unique poster template and online resources to fulfill its fundamental purpose: turning inspiration into aspiration. When participating in I>A activities, youth are asked to write about their strengths and weaknesses in relation to their personal values as connected, responsible citizens; flourishing, successful learners; sustainable, effective contributors; and active, confident individuals. They must also select a fictional character or story that means

something to them and explain why they chose it and what it taught them about life. Other parts of the program ask participants to research and write about inspirational figures and to select and comment on inspirational quotes. Youth are then asked to respond to questions about what kind of person they want to be, what they would like to achieve in life, their vision for a better world, and how they plan to contribute to that vision. As a final component of the program, students are encouraged to reflect on what they have learned and are then given the opportunity to be evaluated by both peers and teachers.

Though the fundamental purpose of I>A remains the same each year, the "hook" used to attract schools to the program does not. For instance, at the time of data collection for the present study, the Commonwealth Games were a focus for the Inspire>Aspire: Global Citizens in the Making version of the program; however, the London 2012 Olympic Games were emphasized in the Inspire>Aspire: Exploring Olympic and Paralympic Values version of the program.

Furthermore, the program itself is intentionally flexible and can be implemented in the way that best fits the school, teacher, and student. Schools and/or teachers self-select into I>A, which can appear in various forms: ad-hoc participation (individual teachers adopt I>A for a particular class), specific course participation (e.g., all religious and moral education classes, a required subject in Scotland), whole year group (school grade) participation, or whole school participation. Additionally, within each class, teachers have the ability to incorporate I>A in the manner they deem most appropriate. Although every participating student must have a completed poster by the end of the program, the methods used to reach that point can differ by class and even by student. For

example, variations exist in the use of supplemental materials, the delivery mechanism (i.e., homework, in-class activities), and program dosage (i.e., intensity and duration).

The Present Study

The present study seeks to further investigate the roles of individual and contextual factors in the development of youth purpose in an effort to aid in Lerner and Overton's (2008) "scientific mission of description, explanation, and optimization" (p.247). Given the potential for sense of purpose to positively impact individual development and society in general (Moran, 2009), it is important to understand how best to promote this strength. Although research has demonstrated that ISR is associated with sense of purpose (Freund & Baltes, 2002) and that CE programs can help youth develop strengths (Berkowitz & Bier, 2007), no study has combined these specific individual and contextual factors to investigate their collective influence on sense of purpose.

In the present study, a mediation model (Figure 1) is used to examine the relationships among I>A program participation (contextual factor), ISR (individual factor), and sense of purpose. Because every student who participates in I>A is expected to produce a poster, participation is measured by poster quality (the input variable). The output variable is the students' sense of purpose and the mediator is ISR. In this model, ISR explains how I>A program participation (poster quality) affects sense of purpose; these individual and contextual factors work in together to produce sense of purpose.

Although ISR has often been operationalized by the SOC model and measured through surveys, the quantitative measure of ISR (survey ISR) was not expected to be sensitive enough to accurately capture pupils' ISR skills because pupils were slightly younger than the adolescents for whom the measure had been validated. In order to

address this expectation, another measure of ISR was developed from the pupil interviews (interview ISR). Therefore, the following research questions and hypotheses were developed in order to test the model with both the survey ISR and interview ISR measures:

RQ1: Is there a relationship between Wave 1 ISR or Wave 1 sense of purpose and student poster quality?

H1: Adolescents with higher ISR skills at Wave 1 will have higher poster quality scores. (Path *a*)

H2: Adolescents with higher sense of purpose at Wave 1 will have higher poster quality scores. (Path *b*)

RQ2: Does ISR mediate the relationship between student poster quality and sense of purpose?

H3: Adolescents with higher poster quality scores will demonstrate higher ISR skills at Wave 2, controlling for ISR at Wave 1. (Path *c*)

H4: Adolescents with higher poster quality scores will demonstrate higher levels of sense of purpose at Wave 2, controlling for sense of purpose at Wave 1. (Path *e*)

H5: When Path *c* (poster quality predicting Wave 2 ISR) and Path *d* (Wave 2 ISR predicting Wave 2 sense of purpose) are included, controlling for Wave 1 ISR and sense of purpose, the significance of Path *e* (poster quality predicting Wave 2 sense of purpose) will decrease.

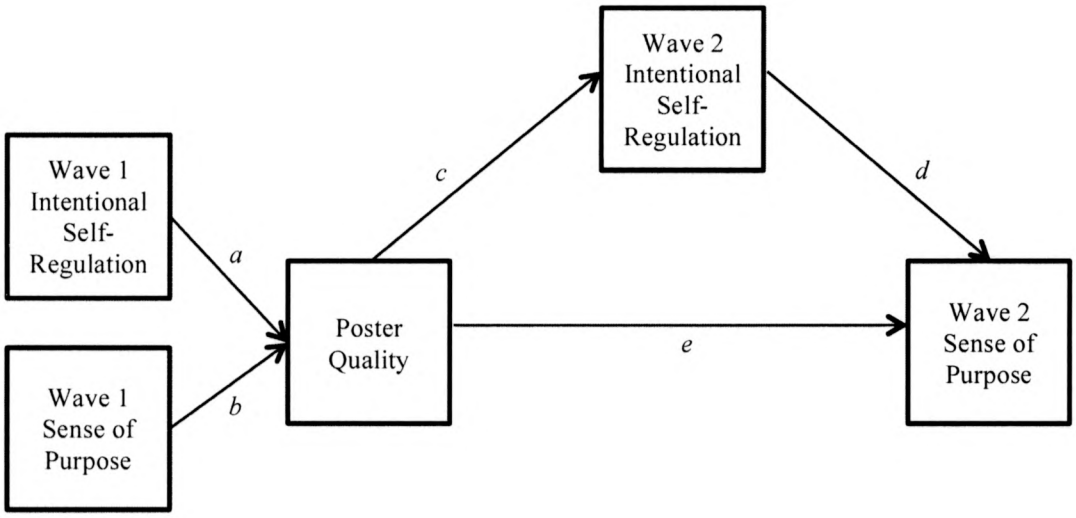

Figure 1. Mediation model of the relationships among poster quality, ISR, and sense of purpose.

Methods

Data for this secondary data analysis are from Waves 1 and 2 of the Inspire>Aspire process evaluation, which took place in Scotland, United Kingdom from September 2014 to August 2015. The purpose of this study was to evaluate Inspire>Aspire program implementation and pilot test outcome measures.

Participants

Wave 1 and Wave 2 surveys were conducted in 11 S2 classes (the equivalent of U.S. 7th grade) from six schools in Central and Northeast Scotland. At Wave 1, all youth in the participating classes were invited to complete a survey and of the 280 invited, 123 participated (44% response rate). At Wave 2, 108 pupils completed post-test surveys (88% retention rate).

For the purposes of this study, however, only students who completed posters and both the pre-test and post-test surveys were included in the analyses. Therefore, the present sample was slightly smaller ($N = 83$). Pupils were from 9 out of the original 11

classes and were between 12 and 14 years-old (mean age = 13.01 years; *SD* = 0.33). The majority of the sample was White (97.6%) and 50.6% identified as female. 71.1% had parents who were married, 34.9% had mothers who graduated from university, and 28.9% had fathers who graduated from university.

Furthermore, a subsample was selected for analyses related to the interview ISR measure. This subsample consisted of pupils who completed telephone interviews, posters, and both the pre-test and post-test surveys (*N* = 18). These pupils were between 12 and 14 years-old (mean age = 13.00 years; *SD* = 0.34). All of the participants were White (100.0%) and 61.1% identified as male. 77.8% had parents who were married, 38.9% had mothers who graduated from university, and 33.3% had fathers who graduated from university. See Table 1 for full demographic information.

Procedure

Prior to data collection, survey packets including instructions for assent and consent form completion and survey administration were assembled by members of the Research on Evaluation and Developmental Systems Science (REDSS) Lab at Montclair State University. These packets were then sent to Character Scotland, who distributed, collected, and mailed back completed forms and surveys to REDSS Lab. Pupil assent forms were completed in school and consent forms were sent home to be completed by parents or guardians and returned to the school. Teachers then administered surveys during class time prior to beginning Inspire>Aspire (Wave 1). Of the pupils who had completed assent forms, consent forms, and surveys, approximately five per class were randomly selected to be invited to participate in a 15 minute qualitative telephone interview. Research assistants in the REDSS Lab underwent extensive training prior to

Table 1

Demographic Characteristics

	W1 & W2 Surveys & Posters		W1 & W2 Surveys & Posters & Interviews	
	W1 (N = 83)	W2 (N = 83)	W1 (N = 18)	W2 (N = 18)
Age (mean, *SD*)	13.01 (0.33)	13.15 (0.48)	13.00 (0.34)	13.06 (0.42)
Gender				
Male	48.2%	48.2%	61.1%	61.1%
Female	50.6%	49.4%	38.9%	38.9%
Race/Ethnicity				
White	97.6%	97.6%	100.0%	100.0%
Asian, Asian Scottish, or Asian British	1.2%	2.4%		
Mixed or Multiple Ethnic Groups	1.2%			
Parent Relationship Status				
Not Married	22.9%	32.5%	22.2%	27.8%
Married	71.1%	65.1%	77.8%	72.2%
Mother Education				
Less than High School	7.2%	8.4%	11.1%	11.1%
High School	42.2%	36.1%	27.8%	33.3%
University	34.9%	34.9%	38.9%	38.9%
Father Education				
Less than High School	7.2%	9.6%	11.1%	11.1%
High School	41.0%	32.5%	38.9%	27.8%
University	28.9%	32.5%	33.3%	33.3%

conducting these individual pupil interviews, which were recorded and transcribed for analysis.

After completing I>A (Wave 2), teachers administered post-test surveys during class time and were asked to send all of their pupils' posters to Character Scotland. Character Scotland then sent the completed post-test surveys and posters to the REDSS Lab. As each class finished the program, any pupils who had participated in the pre-test phone interviews were invited to complete post-test interviews. Research assistants in the REDSS Lab conducted, recorded, and transcribed these interviews. As they were completed and received, surveys were entered and analyzed in SPSS (Version 22), interview transcripts were coded in NVivo10 (QSR International, 2012), and posters were coded and scores were entered in SPSS. The analysis of a combination of surveys, posters, and interviews were expected to detect a relationship among sense of purpose, ISR, and poster quality better than any one measure alone.

Measures

The self-report surveys completed by the pupils included measures of demographics, ISR, and sense of purpose. All participants completed I>A posters and a subset of pupils participated in telephone interviews that included questions related to ISR.

Demographics. Participants reported their gender, date of birth, and ethnicity. They also reported household information such as with whom they live; the number, age, and gender of siblings they have; their mother's education level; and their father's education level.

Intentional Self-Regulation. The abbreviated 9-item Selection, Optimization, and Compensation (SOC) scale was used to measure ISR (Wave 1: $M = .73$, $SD = .21$, $\alpha = .61$; Wave 2: $M = .73$, $SD = .26$, $\alpha = .75$; Gestsdottir et al., 2014). This measure includes three subscales: Selection (2 items), Optimization (4 items), and Compensation (3 items). Participants were presented with two statements that described different ways people might behave: one option is consistent with using SOC skills, while the other is not. Sample items include choosing between Person A "When I decide upon a goal, I stick to it" and Person B "I can change a goal again at any time." Scoring is calculated by taking the mean of the nine items across the three subscales; SOC responses are scored as 1 and non-SOC responses are scored as 0. See Appendix A for all survey items.

ISR was also qualitatively coded in the pupil phone interviews using NVivo software. This was done by creating an interview coding dictionary that included *a priori* codes for ISR derived from the SOC literature (Creswell, 2007). REDSS Lab members learned to use the software and the coding dictionary by undergoing extensive training, which included multiple rounds of individually coding the same interview transcripts by using the dictionary, discussing any differences, coming to consensus, and revising the dictionary for clarity and specificity. This process was repeated until adequate inter-rater reliability was reached (85% agreement), at which point coders were then randomly assigned their own interviews to code.

During this process, codes were created for goal selection and optimization (Freund & Baltes, 2002). Each utterance of a goal was coded with a number based on order of appearance. For example, the first goal mentioned was coded as *Goal 1* and if that same goal were repeated later in the interview, it would again be coded as *Goal 1*

(further coding definitions and examples can be found in Appendix B). This made it easy to track the number of different goals each pupil mentioned in an interview. Additionally, goals were coded as *Vague* or *Specific* based on how well pupils could articulate their goals. If applicable, responses were also coded as *Intrinsic Motivation* or *Extrinsic Motivation* when pupils described their reasons for pursuing their goals.

When pupils explained how they intended to achieve their goals, these responses were coded for optimization. If the pupils said they had no plans, they received a *No Action* code, whereas pupils who demonstrated an intention to act received an *Action* code. Furthermore, if pupils went beyond mere intention to describe current actions being taken to achieve their goals, their responses also received codes for *Engaging in Positive Behaviors* or *Avoiding Negative Behaviors*, depending on the type of response. For example, if *Goal 1* was to get good grades in school and the pupil said she would achieve this goal by going to tutoring, the response would receive the *Engaging in Positive Behaviors* code. If she said she would achieve her goal by not skipping school, the response would receive the *Avoiding Negative Behaviors* code. Responses could also receive a *Pathway* code if pupils described a plan to achieve a goal that included three or more consecutive steps. For instance, if *Goal 1* was to get a good job and the pupil said she would achieve this by working hard to do well in school now, apply to a university with a relevant course of study, and graduate university with good grades, this response would receive the *Pathway* code.

While this coding scheme was able to highlight instances of optimization, it was unable to attach the actions to their specific goals. This meant, for instance, that there was no easy way of knowing whether pupils were utilizing different strategies to achieve the

same goal or if they had one strategy that could achieve multiple goals. Therefore, the optimization codes needed to be revised. This was done by coding on top of any responses that had been coded for *Engaging in Positive Behaviors*, *Avoiding Negative Behaviors*, or *Pathway*. The new codes included the number of the goal to which the action belonged and the number of the action. For example, if *Goal 1* was to get good grades in school and the pupil said she would achieve this goal by going to tutoring (*Engaging in Positive Behaviors*) and not skipping school (*Avoiding Negative Behaviors*), tutoring would receive the *Goal 1 Action 1* code and not skipping school would receive the *Goal 1 Action 2* code. Further coding definitions and examples can be found in Appendix B.

In order to calculate inter-rater reliability, a second coder applied the above coding procedures to 20% of the pre-test interviews and 20% of the post-test interviews (8 randomly selected interviews in total). The percentage of agreement ranged from .97 to .99, which implies consistency in the way that coding rules were applied. Any discrepancies in coding were discussed until coders came to a consensus, at which point the agreed upon codes were entered in NVivo.

Once all the pupil interviews were coded, NVivo queries were run to create a scoring system that could quantify this qualitative measure of ISR. Scores were created in the following way: pupils received one point for each different goal they mentioned (no extra points for mentioning the same goal multiple times), they received an additional point for each response that received a *Specific* or *Intrinsic Motivation* code, and they received one point for each different action they performed for their goals (again, no

extra points for repetition). These scores were then entered into SPSS for analysis. See Table 2 for psychometrics and Appendix C for detailed scoring instructions.

Sense of Purpose. The Stanford Youth Purpose Survey (SYPS) was used to measure sense of purpose (Bundick, et al., 2008; Steger, et al., 2006). A 5-item subscale was created using items that were most relevant to the Inspire>Aspire program (Wave 1: $M = 4.96$, $SD = 0.76$, $\alpha = .76$; Wave 2: $M = 4.96$, $SD = 0.75$, $\alpha = .73$). This subscale included items from both original subscales: Externally Directed Aims (two items) and Internally Directed Aims (three items). Participants were presented with the statement "The purpose of my life is to…" and then asked to indicate the extent to which they agreed with each of the five items by using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). Scoring is calculated by summing the scores across all items, with higher scores indicating a stronger sense of purpose. Externally Directed Aims items are "Make the world a better place" and "Help others." Internally Directed Aims items are "Support my family and friends," "Discover new things about the world," and "Do the right thing." Appendix A lists all survey items.

Poster Quality. A poster coding rubric and dictionary developed by the REDSS Lab was used to measure poster quality. The rubric uses an a priori coding system to score posters based on pre-existing categories (Creswell, 2007). Scores are based on the degree of development and completion of responses as well as response alignment across the different sections of the poster. Six lab members trained to code posters by individually scoring the same set of posters, entering their scores online, and meeting to discuss discrepancies. This process was repeated until acceptable inter-rater reliability was reached, after which point each coder was randomly assigned a different set of

posters to score. Intraclass correlations (ICC) showed good inter-rater reliability with scores ranging from ICC (2, 6) = .60 ($p < .001$) to ICC (2, 6) = .99 ($p < .001$). Across pairs of raters, the average ICC was .796 and all ICC values reached significance at $p < .001$.

From these scores, several different poster quality scores could be calculated, including consistency of the poster with PYD and Inspire>Aspire principles, and how well developed the values are. For the purposes of this study, however, poster quality is measured by the extent to which the responses regarding future aspirations were well developed. This particular poster quality score was selected because this section of the poster may be most closely linked to the pupils' sense of purpose. As stated above, sense of purpose is defined as the "intention to accomplish something that is at once meaningful to the self and of consequence to the world beyond the self" (Damon et al., 2003, p. 121), and this section of the poster asks pupils to reflect on their vision and commitment to a better world. Pupils are asked to answer four questions related to their Arc of Destiny: What kind of person do you want to be? What do you want to achieve in your life? What is your vision for a better world? What will you personally do to bring this vision to life? By thoughtfully and honestly responding to these questions, pupils describe their intentions to accomplish goals that are meaningful to themselves and others, which are precisely the kind of intentions described in the definition of sense of purpose. Further scoring information can be found in Appendix D.

Table 2

Psychometric Properties of Measures

Variable	*n*	Min	Max	*M*	*SD*	α
W1 Survey ISR	81	.22	1.0	.73	.21	.61
W2 Survey ISR	83	.00	1.0	.73	.26	.75
W1 Sense of Purpose	83	2.2	6.0	4.96	.76	.76
W2 Sense of Purpose	83	1.2	6.0	4.96	.75	.73
W1 Interview ISR	18	5.0	18.0	11.0	3.60	.75
W2 Interview ISR	18	8.0	20.0	13.63	3.98	.65
Poster Quality	83	1.0	4.0	2.81	0.78	.88

Results

Data analysis consisted of four main steps: preliminary analyses, testing RQ1, testing RQ2, and qualitative analyses of the results. Qualitative analyses were conducted to further examine the results of RQ1.

Preliminary Analyses

The first step included analyses for attrition and potential control variables. These analyses were conducted using *t* tests and correlations.

Attrition analyses. In order to determine whether the pupils who did not complete pre-test surveys *and* post-test surveys *and* posters (pupils from the original data set) were significantly different from the students who did (those from the present data set), *t* tests were conducted. These analyses showed that, at both waves, pupils who did not complete all three components were significantly more likely to be female (W1: $t = 2.04$, $p = .04$; W2: $t = 2.25$, $p = .03$) and, at Wave 2, they were significantly more likely

to be older ($t = 2.53$, $p = .02$). Age and gender were therefore controlled in the regression analyses.

Furthermore, *t* tests were also conducted to find whether the current sample differed meaningfully from the subsample of pupils who also conducted phone interviews. These analyses revealed that, within the sample of students who completed pre-test surveys *and* post-test surveys *and* posters, there were no significant differences between pupils who completed phone interviews and those who did not.

Control variables. As shown in Table 3, correlations were computed among demographic, independent, and dependent variables to determine which variables to include as controls in subsequent analyses. Results showed that Wave 1 gender was significantly correlated with poster quality, $r(80) = .29$, $p = .008$ (male = 0, female = 1). Father education was also found to be significantly correlated with both the Wave 2 survey ISR measure ($r(62) = .26$, $p = .04$) and Wave 2 sense of purpose ($r(62) = -.25$, $p = .05$). However, because the variable for father education had a significant amount of missing data (23%), to avoid reducing the sample size further, father education was not controlled for in the regression analyses.

In addition to revealing potential control variables, these correlations showed significant positive relationships between sense of purpose at both waves and poster quality (W1: $r(81) = .28$, $p = .01$; W2: $r(81) = .23$, $p = .04$).

Research Question 1

Analyses for RQ1 were conducted to determine whether there is a relationship between Wave 1 ISR or Wave 1 sense of purpose and student poster quality. Results for these analyses can be found in Table 4.

Table 3

Correlation Matrix of Demographic, Independent, and Dependent Variables

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Pupil Gender (1=F 0=M)											
2. Pupil Age	-.08										
3. Par Mar Stat (1=mar 0=single)	.19	-.05									
4. Mother Education	.06	.11	.13								
5. Father Education	-.05	.12	-.08	.23							
6. W1 Survey ISR	.01	-.11	.16	-.04	.08						
7. W2 Survey ISR	-.01	-.01	-.05	.04	.26*	.68**					
8. W1 Interview ISR	-.20	-.05	-.31	-.31	-.07	.17	.32				
9. W2 Interview ISR	-.26	-.14	-.36	.00	.26	-.17	.02	.39			
10. W1 Sense of Purpose	.07	.11	.01	-.02	-.03	.28*	.08	-.30	-.07		
11. W2 Sense of Purpose	.21	-.06	.20	-.01	-.25*	.07	.01	-.13	.11	.51**	
12. Poster Quality	.29**	-.09	.13	.02	-.12	.03	-.09	.08	.38	.28*	.23*

* $p < .05$; ** $p < .01$

Table 4

Results from Regression Analyses Predicting Poster Quality from ISR and Sense of Purpose (RQ1)

	Survey ISR		Interview ISR	
Variable	β[1]	$R^2\Delta$	β	$R^2\Delta$
Step 1: Demographic Controls		.08		.05
Pupil Gender	.24		-.17	
Pupil Age	-.15		-.15	
Step 2: Predictor Variable		.000		.002
W1 ISR	-.10		.14	
Step 3: Predictor Variable		.09**		.09
W1 Sense of Purpose	.33		.32	
Total R^2		.18		.14
n		80		18

[1]Standardized Betas are reported for all variables for the final model. ** $p < .01$.

Survey Measure of ISR. In order to test the first segment of the model in Figure 1 (Paths *a* and *b*) with survey ISR, poster quality was regressed on both Wave 1 sense of purpose and Wave 1 survey ISR, controlling for pupil gender, and pupil age. The analysis showed that Wave 1 survey ISR did not significantly predict poster quality ($\beta = -.10$, $t(76) = -0.89$, $p = .38$) nor did it account for a significant proportion of the variance in poster quality scores ($R^2\Delta = .000$, $F(1, 76) = .008$, $p = .93$). However, Wave 1 sense of purpose did significantly predict poster quality ($\beta = .33$, $t(75) = 2.93$, $p = .005$) and it accounted for a significant proportion of the variance in poster quality scores ($R^2\Delta = .09$, $F(1, 75) = 8.56$, $p = .005$). These results suggest that pupils with a higher sense of purpose before beginning I>A will produce higher quality posters at the end of I>A.

Interview Measure of ISR. To test Paths *a* and *b* of the model in Figure 1 with interview ISR, poster quality was regressed on both Wave 1 sense of purpose and Wave 1 interview ISR, controlling for pupil gender, and pupil age. The analysis showed that neither Wave 1 interview ISR nor Wave 1 sense of purpose significantly predicted poster quality nor did either account for a significant proportion of the variance in poster quality scores. These results suggest that when interview ISR is incorporated into the model, neither ISR nor sense of purpose can predict poster quality, perhaps due to the decrease in sample size.

Research Question 2

Analyses for RQ2 were conducted to determine whether ISR mediates the relationship between student poster quality and sense of purpose. The results for Hypothesis 3, 4, and 5 can be found in Tables 5, 6, and 7, respectively.

Table 5

Results from Regression Analyses Predicting ISR from Poster Quality (H3)

	Survey ISR		Interview ISR	
Variable	β[1]	$R^2\Delta$	β	$R^2\Delta$
Step 1: Demographic Controls		.004		.09
Pupil Gender	.004		-.14	
Pupil Age	.06		-.09	
Step 2: Control Variable		.46***		.12
W1 ISR	.69***		.33	
Step 3: Predictor Variable		.01		.09
Poster Quality	-.122		.31	
Total R^2		.48		.30
n		80		16

[1]Standardized Betas are reported for all variables for the final model. *** $p < .001$.

Table 6

Results from Regression Analyses Predicting Sense of Purpose from Poster Quality (H4)

	Survey ISR		Interview ISR	
Variable	β[1]	$R^2\Delta$	β	$R^2\Delta$
Step 1: Demographic Controls		.05		.05
Pupil Gender	.16		.16	
Pupil Age	-.09		-.09	
Step 2: Control Variable		.26***		.26***
W1 Sense of Purpose	.50***		.50***	
Step 3: Predictor Variable		.001		.001
Poster Quality	.03		.03	
Total R^2		.30		.30
n		82		82

[1]Standardized Betas are reported for all variables for the final model. *** $p < .001$.

Table 7

Results from Regression Analyses Predicting Sense of Purpose from ISR and Poster Quality (H5)

	Survey ISR		Interview ISR	
Variable	β[1]	$R^2\Delta$	β	$R^2\Delta$
Step 1: Demographic Controls		.04		.04
Pupil Gender	.13		.26	
Pupil Age	-.14		.13	
Step 2: Control Variables		.34***		.07
W1 Sense of Purpose	.63***		.12	
W1 ISR	-.14		-.12	
Step 3: Predictor Variable		.000		.04
W2 ISR	.01		.11	
Step 4: Predictor Variable		.001		.10
Poster Quality	-.03		.37	
Total R^2		.37		.26
n		80		16

[1]Standardized Betas are reported for all variables for the final model. *** $p < .001$.

Survey Measure of ISR. The mediation model (Figure 1) was tested with the survey measure of ISR using three separate regression analyses (Baron & Kenny, 1986). In the first analysis, Wave 2 survey ISR was regressed on poster quality, controlling for Wave 1 survey ISR, pupil gender, and pupil age (Hypothesis 3). Poster quality was not found to be a significant predictor of Wave 2 survey ISR. In the second analysis, Wave 2 sense of purpose was regressed on poster quality, controlling for Wave 1 sense of purpose, pupil gender, and pupil age (Hypothesis 4). Poster quality was not found to be a significant predictor of Wave 2 sense of purpose. In the final analysis, Wave 2 sense of purpose was regressed on both poster quality and Wave 2 survey ISR, controlling for Wave 1 sense of purpose, Wave 1 survey ISR, pupil gender, and pupil age (Hypothesis 5). There was no significant relationship.

Given that none of the regression analyses were significant, there was no way to test the mediation depicted in Figure 1. Without a significant relationship between poster quality and Wave 2 sense of purpose (Path *e*) there was no way for Wave 2 survey ISR to mediate the relationship.

Interview Measure of ISR. In order to test the mediation of interview ISR on the relationship between poster quality and sense of purpose, three regression analyses were conducted (Baron & Kenny, 1986). First, controlling for Wave 1 interview ISR, pupil gender, and pupil age, Wave 2 interview ISR was regressed on poster quality (Hypothesis 3). Poster quality was not found to be a significant predictor of Wave 2 interview ISR. Next, controlling for Wave 1 sense of purpose, pupil gender, and pupil age, Wave 2 sense of purpose was regressed on poster quality (Hypothesis 4). Poster quality was not found to be a significant predictor of Wave 2 sense of purpose. Then, controlling for Wave 1

sense of purpose, Wave 1 interview ISR, pupil gender, and pupil age, Wave 2 sense of purpose was regressed on both poster quality and Wave 2 interview ISR (Hypothesis 5). There was no significant relationship.

As none of the regression analyses with interview data were significant, there was no way to test the mediation model depicted in Figure 1. In fact, without a significant relationship between poster quality and Wave 2 sense of purpose (Path *e*) there was no way for Wave 2 interview ISR to mediate the relationship.

Qualitative Analysis

As the relationship between Wave 1 sense of purpose and poster quality was the only relationship to produce a statistically significant regression, further analyses were conducted to investigate this specific relationship utilizing a mixed methods approach. These analyses followed the modified sequential explanatory mixed methods design and used the quantitative data to frame the analysis and interpretation of the qualitative interview data (Urban, Burgermaster, Archibald, & Byrne, 2014). The first step was to plot the results from the regression testing whether Wave 1 sense of purpose predicted poster quality (Figure 2). Each point on this graph represented one pupil's Wave 1 sense of purpose and poster quality scores. NVivo queries of codes related to ISR were then run on the Wave 1 and Wave 2 interview data and each pupil's results were analyzed for themes. Then, combining all the pupils into groups of three based on scores, analyses were conducted, beginning with those who had lower sense of purpose and poster quality scores. Common themes and differences among the low-scoring pupils were noted, and the same analyses were then conducted for the next highest group of scores. This process

continued until all pupils' interviews were summarized and examined for any themes or differences across groups of scores.

These analyses, however, did not yield any consistent themes or differences within or across the groups of pupils. There were no patterns or trends relating the way the pupils' goals had been coded to their Wave 1 sense of purpose and poster quality scores. Therefore, the interviews were individually examined once more in a search for themes that were not specifically tied to pupils' purpose or poster scores. This more general exploration uncovered two themes across the interviews that related pupils' ISR to their sense of purpose: *Treatment of Others* and *Career to Help*.

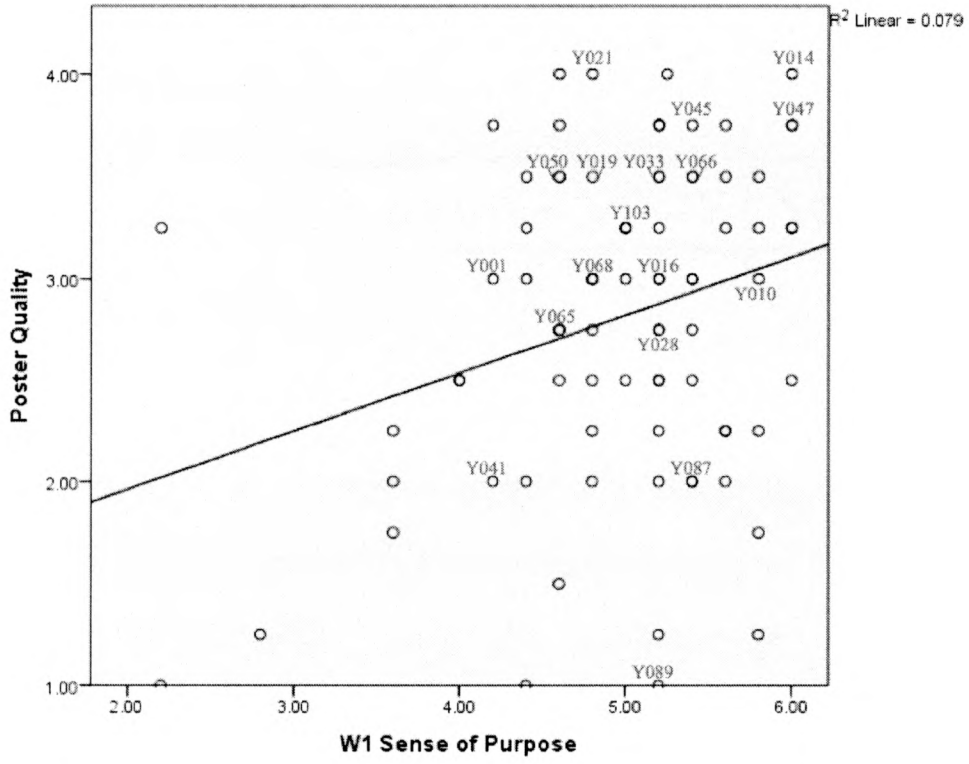

Figure 2. Scatterplot of regression testing whether Wave 1 sense of purpose predicted poster quality.

Treatment of Others. The theme *Treatment of Others* emerged from responses in which students set goals about their behavior toward others. Though some goals were expressed as a state to be achieved and others as a state to be avoided, both types of goals were coded as *Treatment of Others.* The following excerpts exemplify instances in which pupils stated the desire to avoid treating others poorly:

> **What is one concern or a self to-be-avoided in the next year?**
> I don't want to be nasty to anybody.
>
> (Y016, Q11, Fall)

> **What is one concern or a self to-be-avoided in the next year?**
> Probably to be inconsiderate of other people.
>
> (Y016, Q11, Spring)

> **What is one concern or a self to-be-avoided in the next year?**
> Umm, being aggressive and not helpful to other people.
>
> (Y033, Q11, Spring)

> **What is one concern or a self to-be-avoided in the next year?**
> Umm…avoid being like selfish.
>
> (Y045, Q11, Fall)

> **What is one concern or a self to-be-avoided in the next year?**
> I would never want to be ungrateful.
>
> (Y045, Q11, Spring)

Some students specifically wanted to avoid being a bully:

> **What is one concern or a self to-be-avoided in the next year?**
> Probably my concern, well not really a concern, but is to turn out like a bully or something like that.
>
> (Y068, Q11, Fall)

The following excerpt exemplifies instances in which pupils expressed the desire to have more positive interactions:

> **What is a second thing that you expect you will be like or that you expect to be doing next year?**
> Well next year I would like to be more trustworthy, and not just with teachers, but also with my friends; being able to keep secrets, having teachers being able to trust me and do jobs for them. Basically just be more of a trustworthy person, so that in the future, people will see me as being someone who's quite trustworthy and who they want to get to do jobs.
>
> (Y066, Q8, Spring)

These instances of *Treatment of Others* were important to capture because they fit the definition of sense of purpose as the "intention to accomplish something that is at once meaningful to the self and of consequence to the world beyond the self" (Damon et al., 2003, p. 121). For example, Y033 wanted to avoid "being aggressive and not helpful to other people," which demonstrated a concern for others beyond the self. By responding that they wanted to avoid negative actions or attitudes toward others or develop more positive interactions, the pupils described goals that were of consequence to others, rather than goals that were only personally significant. This reinforced the findings in other studies that suggest that youth who set self-oriented goals exhibit a precursor form of purpose, while youth who set goals that impact others (*Treatment of Others*) exhibit purpose (Malin, 2015; Malin et al., 2014).

Furthermore, because *Treatment of Others* appeared in the interviews of pupils with low poster quality scores as well as those with high scores, it seems as though sense of purpose is not as closely related to poster quality as expected. Poster quality was based on pupils' responses about their Arc of Destiny, but *Treatment of Others* was found in the interviews at varying levels of poster quality before and after they learned about the Arc of Destiny. This may mean that pupils were not internalizing or connecting to the Arc of Destiny, perhaps because of the language used in the poster or because they had never

before thought about their vision for a better world and what they could do to contribute. This may explain why poster quality was not predictive of Wave 2 sense of purpose.

Career to Help. The second sense of purpose theme to emerge from the ISR codes was related to pupils' career aspirations. Several pupils expressed the desire to have a career that would enable them to help others. The following excerpts demonstrate *Career to Help*:

> **If you could have any job you wanted, what job would you like to have when you are an adult?**
> I'd like to be a doctor.
>
> **Why would you like to have this job?**
> Because I'd like to help people and make people's lives better.
>
> (Y041, Qs 19 & 20, Fall)

> **If you could have any job you wanted, what job would you like to have when you are an adult?**
> A physiotherapist.
>
> **Why would you like to have this job?**
> Cause I feel like you are constantly learning when you have this job and I always like to learn new skills and abilities and I feel it's gonna help a lot of people which I always want to do.
>
> (Y019, Qs 19 & 20, Fall)

> **If you could have any job you wanted, what job would you like to have when you are an adult?**
> Like a nurse or something, like a children's nurse I think.
>
> **Why would you like to have this job?**
> Because I like working with kids and I like being helpful and being…like, people that need me like that can count on me to make sure I help them.
>
> (Y089, Qs 19 & 20, Fall)

> **If you could have any job you wanted, what job would you like to have when you are an adult?**
> A midwife.

Why would you like to have this job?
I like helping other people and I like being quite calm in a situation like that.

(Y089, Qs 19 & 20, Spring)

If you could have any job you wanted, what job would you like to have when you are an adult?
Either race mountain bikes or be a personal trainer or something.

Why would you like to have this job?
Because I am interested in sports and like helping people. So if I was a personal trainer, I'd be doing something with sports and helping other people.

(Y087, Qs 19 & 20, Spring)

Though the careers mentioned were different and students often mentioned personal reasons for aspiring to these professions, the students described careers that can impact the lives of others, therefore these goals also fit the definition of purpose set by Damon and colleagues (2003). For instance, Y087 wanted to be a personal trainer, not just because of his interest in sports, but because this profession would enable him to help others. Choosing to become a personal trainer would benefit the lives of others, which is a way to contribute to the world beyond the self. These analyses also supported the existing literature that asserts that youth can demonstrate high ISR, but low or precursor purpose if they set self-oriented goals (such as a career that does not help others), but can demonstrate high ISR and high purpose if they set goals that affect others (*Career to Help*).

Similar to *Treatment of Others, Career to Help* appeared in pupil interviews at varying levels of poster quality before and after they learned about the Arc of Destiny. Again, this suggests that pupils did not internalize the Arc of Destiny, and may explain why poster quality was not predictive of Wave 2 sense of purpose.

Discussion

According to Lerner and Overton (2008), the mission of developmental science should be to describe, explain, and optimize. The present study attempted to accomplish this by examining the relationships between individual (ISR) and contextual (I>A participation) factors and a positive developmental outcome (sense of purpose). RDS posits that when an individual's personal assets align with assets in the environment, positive development can occur (Lerner et al., 2011). Although no other study had examined this specific combination of assets, this study investigated whether the I>A program and/or pupils' ISR were related to pupils' development of sense of purpose.

Though there was some empirical support for the links between these constructs, for example, Freund and Baltes (2002) suggested that having personal goals (ISR) could lead to purpose in life and Berkowitz and Bier (2007) discussed the potential for CE programs to help youth develop positive outcomes, the only statistically significant finding was that Wave 1 sense of purpose was predictive of poster quality score (RQ1, H2). This study was unable to provide significant evidence to support the hypothesis that Wave 1 ISR predicts poster quality (RQ1, H1). The present study was also unable to determine whether ISR mediates the relationship between student poster quality and sense of purpose (RQ2) because none of the tests of the mediation model were significant (H3-5).

Another purpose of this study was to determine whether qualitative measures would be better able to detect a relationship between ISR, I>A participation, and sense of purpose than the quantitative measures. However, none of the regression analyses that used the interview measure of ISR instead of the survey measure of ISR were statistically

significant. Although, this was unsurprising given the low sample size. On the other hand, however, examining the qualitative interviews for trends produced two themes that related ISR to sense of purpose: *Treatment of Others* and *Career to Help*. Pupils with scores across the regression line of Wave 1 sense of purpose predicting poster quality demonstrated instances of both themes. The presence of these themes in the interviews of both the pupils who had low scores on the survey measure of sense of purpose and those who had high scores, indicated that the survey measure may not have accurately captured the pupils' levels of purpose. Furthermore, these analyses built upon the literature that connects goal-setting to sense of purpose (Freund & Baltes, 2002; Malin, 2015; Malin et al., 2014), because the *Treatment of Others* and *Career to Help* purpose themes appeared when students were utilizing their ISR skills to select and optimize goals.

Limitations

Considering the study's limitations, however, the general lack of statistically significant results was not particularly surprising. First, the sample was relatively small and homogenous across demographics such as ethnicity, parent marital status, and parent education. Second, there was no significant difference in ISR or sense of purpose scores from before I>A participation to after the program ended, which meant that it would be difficult to see how ISR or program participation (poster quality) affected sense of purpose. This perhaps happened for the following reasons: ceiling effects, timing of data collection, and issues with measures.

A ceiling effect occurs when a large number of participants score near the upper limit for potential responses in a measure (Hessling, Traxel, & Schmidt, 2004). In the present study pupils performed well on the measures for ISR and sense of purpose at

Wave 1, demonstrating a ceiling effect that left little room for improvement from Wave 1 to Wave 2.

Another potential reason is that data collection for Waves 1 and 2 occurred relatively close in time, providing little time for change to occur. The majority of the data were collected between October 2014 and June 2015, and in some cases data collection occurred less than six months apart. Even though pupils were completing the I>A program within this timeframe and the goal was to find whether the program impacted pupils' sense of purpose, perhaps there was not enough time between waves of data collection for students to be able to develop significantly different responses.

Furthermore, even if some level of change was occurring, it was unlikely that the quantitative measures would be sensitive enough to detect this change, especially within such a young sample. Many of the constructs and their measures were developed through research on adults or older adolescents (Freund & Baltes, 2002; Damon et al., 2003), and were perhaps therefore unable to detect the developmental processes of the early adolescents in this study.

In an attempt to overcome this difficulty with the survey measures, qualitative analyses were employed. For example, the interview measure of ISR was created to score pupils based on developmentally-appropriate demonstrations of selection and optimization. The expectation was that these scores would be more sensitive to instances of ISR skills and would provide more accurate information about the relationship between ISR, I>A participation, and sense of purpose. However, because of the small size of the pupil interview sample, no significant relationships were found between interview ISR and sense of purpose or poster quality.

Similarly, although the themes of *Treatment of Others* and *Career to Help* were found within the interview data, there were no trends associated with pupils Wave 1 sense of purpose and poster quality scores. Perhaps if there had been interview data for more pupils, it would have been possible to discern trends related to scores. Furthermore, these themes were pulled from responses to questions that were not directly related to sense of purpose because there were no such questions in the pupil interviews. If there had been questions about the pupils' sense of purpose, perhaps more themes and connections to the survey data would have been detected.

Another limitation was that the present study used poster quality scores to measure I>A program participation. The specific poster quality score selected was based on the responses to the Arc of Destiny questions: "What kind of person do you want to be?" "What do you want to achieve in your life?" "What is your vision for a better world?" and "What will you personally do to bring this vision to life?" The rationale was that this poster quality score would reflect what the pupils learned about goal setting and sense of purpose from the I>A program. However, poster quality was not an accurate reflection of program implementation. Furthermore, without a comparison group of students, this study could not determine whether any differences in scores from Wave 1 to Wave 2 were attributable to I>A, other programs or experiences, or pupils' maturation.

Future Directions

Despite the lack of statistical significance, however, these results are far from meaningless. They serve as a reminder of the importance of heterogeneous samples, appropriate measures, and the use of a mixed methods approach. Future research could therefore seek a larger and more diverse sample. Scientists could use measures of

precursors to ISR and sense of purpose since early adolescents may not have yet fully developed these strengths. Additionally, qualitative measures directly related to the constructs (i.e., sense of purpose) could be incorporated to capture themes or changes that the quantitative measures cannot detect. Furthermore, the use of implementation measures and comparison groups could be employed to determine whether and how CE programs are impacting pupils.

Application of Findings

As CE programs seek to help youth develop strengths, such as ISR and sense of purpose, the results of the present study have implications for these types of programs. The quantitative analyses revealed that having high levels of sense of purpose before starting I>A was predictive of high poster quality scores (which were based on responses about their Arc of Destiny). This may mean that students with high levels of purpose had already thought about and were better able to articulate goals related to contributing to the world. CE programs may therefore want to focus on fostering the development of sense of purpose. However, it is unclear exactly how this can be done. The qualitative results showed that pupils with varying poster scores demonstrated sense of purpose in the forms of *Treatment of Others* and *Career to Help*. This suggests that the poster itself is not an accurate reflection of purpose and students may not be making the connection between their sense of purpose and the questions on the poster. CE programs, and I>A in particular, will need to consider how they are helping pupils develop sense of purpose and perhaps adjust their methods.

Conclusion

The present study took a promising step toward utilizing RDS principles to understand how individual (ISR) and contextual (I>A participation) assets can lead to positive developmental outcomes (sense of purpose). Despite limitations related to the sample and data collection, this study was able to determine that pupils' sense of purpose before the I>A program was predictive of the quality of the posters they completed at the end of the program. Furthermore, qualitative analyses showed that pupils selected various goals related to sense of purpose, which quantitative measures were unable to detect. These results underscore the importance of heterogeneous samples, appropriate measures, and the use of a mixed methods approach in developmental research. They also demonstrate the value of fostering the development of sense of purpose in adolescent CE programs. Researchers and practitioners must work together to understand and promote positive development.

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Appendices

A. Survey Items

B. Sample of Relevant Codes from Interview Coding Dictionary

C. Quantifying the Qualitative Measure of ISR (Interview ISR)

D. Sample from Poster Coding Dictionary

Appendix A

Survey Items

Survey ISR	
Measured by	SOC 9-item (Gestsdottir et al., 2014)
Subscale	Selection
	When I decide upon a goal, I stick to it.
	I always pursue goals one after the other.
Subscale	Optimization
	I keep trying as many different possibilities as are necessary to succeed at my goal.
	I think about exactly how I can best realize my plans.
	I make every effort to achieve a given goal.
	When I have started something that is important to me, but has little chance at success, I make a particular effort.
Subscale	Compensation
	For important things, I pay attention to whether I need to devote more time or effort.
	When things aren't going so well, I accept help from others.
	When something doesn't work as well as usual, I look at how others do it.

Sense of Purpose	
Measured by	SYPS 5-item (Bundick, et al., 2008; Steger, et al., 2006)
Subscale	Externally Directed Aims
	Make the world a better place.
	Help others.
Subscale	Internally Directed Aims
	Support my family and friends.
	Discover new things about the world.
	Do the right thing.
	When I have started something that is important to me, but has little chance at success, I make a particular effort.

Appendix B

Sample of Relevant Codes from Interview Coding Dictionary

A Priori Coding Dictionary: Key Codes		
Node	**Definition**	**Example(s)**
Goal Selection: Approach Goal 1	This is the 1st approach goal in the interview. An approach goal is about moving toward a desirable outcome.	"I want to be taller." "I want to eat healthier food." "I want to have more friends." "I probably want to accomplish passing exams so my musical ones and the school ones."
Goal Selection: Avoidance Goal 1	This is the 1st avoidance goal in the interview. An avoidance goal is about avoiding an undesirable outcome.	"I don't want to fail any classes." "I don't want to be lonely." "Well I don't want to go back to how I used to be and get in trouble a lot." "Well I want to stay away from drugs and alcohol."
Goal Selection: Extrinsic Motivation	Strive to achieve goal because of external rewards or punishment for performance	"I want to be a doctor so I can make lots of money." "I want a good education so I can get a better job.
Goal Selection: Intrinsic Motivation	Strive to achieve goal because of the internal pleasure they get out of learning and mastering the material	"I want to be a doctor because I really like science." "I just think it's a very cool job and I'm really into technology work."
Goal Specificity: Specific	The goal statement is elaborate enough to explain **how** the goal will be achieved.	"I want to help my parents by feeding and walking my dog every day." "The next five years I would like to be at university. So I thought since I quite like math and chemistry and physics I think I would like to do chemical engineering at university or something like that."
Goal Specificity:	The goal statement does not	"I want to help out more."

Vague	explain how the goal will be achieved. In other words, if you have to ask "how" they will achieve the goal, then the goal is not specific enough; it is vague.	"Well at the moment my main goal is to lose a lot of weight." "LEGO designer."
Optimization: Action	There is intention to engage or they are currently planning to do something to achieve their goals. (Affirmative answer, e.g. "yes")	"I'm working hard." "I'm learning." "Yeah, yeah definitely." "I'm just keeping my head down so this won't happen." "I've thought about it quite hard." "I just try my best, really." "By looking at all my choices and seeing what I should pick. Like my subjects."
Optimization: No Action	There is no clear intention or plan to achieve their goals. (No affirmative language, e.g. "no"/ "not sure")	"I haven't thought much about what I'd like to be when I grow up." "I haven't really been doing much to increase my chances of making the team next year." "I don't know." "No, not really."
Optimization: Process – Avoiding conflicting behaviors	Deliberate strategies used to reach goal involve currently avoiding situations, persons, or behaviors that conflict with goal.	"I don't want to do drugs, so I stay away from the kids who do drugs." "I want to lose weight, so I'm now on a diet." "Just trying to stay away from people who aren't very nice."
Optimization: Process – Engaging in positive behaviors	Deliberate strategies used to reach goal involve currently engaging in positive behaviors or with positive persons, or building skills necessary to achieving the goal.	"I don't want to fail my exams, so I'm going to keep going to school and doing my homework." "I play for my school; I'm playing for the nearby club. I go to every game I could possibly go to. I get involved close to the rugby club.

		"I'm applying for jobs at the minute."
Optimization: Pathway	Individual outlines at least three steps necessary to reach goal.	"For the future, I want to get a good job so I want to get into university to do that and I need these exams so I can do well in life." "Well, the goal about the exam one is important because if I'm able to pass my exams I'd be able to get the job that I wanted. And working on my spelling would help both those to pass my exams so that I could improve." "I feel that it important to pass my exams so I can do well in the rest of my life and so I can like go to university and get a good job."
Optimization: Approach Goal X Action X	Deliberate strategies used to reach goal (coded in same place as *Optimization: Process – Avoiding conflicting behaviors* and *Optimization: Process – Engaging in positive behaviors*; see definitions) or at least three steps necessary to reach goal (coded in same place as *Optimization: Pathway*; see definition). This code connects the action to its approach goal.	**Question: What is a second thing that you expect you will be like or that you expect to be doing next year?** Turn 1: That's quite tough actually. Well, I'll definitely have a job by next year. **Question: Are you currently working on that goal or doing something about that expectation?** Turn 2: Uh, yeah I am. I'm applying for jobs at the minute. • Turn 1 was coded for *Approach Goal 2* and Turn 2 was coded for *Optimization: Process - Engaging in Positive Behaviors*, so Turn 2 was also coded for

		Optimization: Approach Goal 2 Action 1.
Optimization: Avoidance Goal X Action X	Deliberate strategies used to reach goal (coded in same place as *Optimization: Process – Avoiding conflicting behaviors* and *Optimization: Process – Engaging in positive behaviors*; see definitions) or at least three steps necessary to reach goal (coded in same place as *Optimization: Pathway*; see definition). This code connects the action to its avoidance goal.	**Question: What is one concern or a self to-be-avoided in the next year?** Turn 1: To be honest, I don't want to fail most subjects that I'm enjoying; I don't want to be the person with the lowest confidence in the world. **Question: Are you currently doing something so this will not happen next year?** Turn 2: To be honest to try and speak to more people and keep confident speaking to different types of people and try and blend more personalities a bit then. • Turn 1 was coded for *Avoidance Goal 1* and *Avoidance Goal 2*. Turn 2 was coded for *Optimization: Process - Engaging in Positive Behaviors*. • Because Turn 2 referred to *Avoidance Goal 2*, it was coded for *Optimization: Avoidance Goal 2 Action 1.*

Appendix C

Quantifying the Qualitative Measure of ISR (Interview ISR)

1. Selection:
    a. Because the codes are numbered, there is no need to count the number of times the *Goal Selection* codes are used, just see if the codes are used at all. The pupil earns a point for each different *Goal Selection* code.
        i. For example, it does not matter if the pupil mentions *Goal Selection_Approach Goal 1* three times, he/she only gets one point. On the other hand, if a pupil mentions *Goal Selection_Approach Goal 1, Goal Selection_Approach Goal 2*, and *Goal Selection_Approach Goal 3* once each, he/she gets 3 points.
        ii. Scoring ranges from 0-10 because codes were created for *Goal Selection_Approach Goal 1-7* and *Goal Selection_Avoidance Goal 1-3*
    b. Pupils can also earn extra points for *Goal Specificity_Specific* and *Goal Selection_Intrinsic Motivation.*
        i. Scoring for this is unlimited; pupil gets a point every time this code is used in his/her interview.
2. Optimization:
    a. Original *Optimization* codes that needed to be recoded: *Optimization_Pathway, Optimization_Process-Avoiding Conflicting Behaviors, Optimization_Process-Engaging in Positive Behaviors*

i. Original codes were not goal-specific (they did not link back to goal), so it was unclear whether multiple utterances of the same action for the same goal had been coded for optimization or whether students were using the same action for different goals, or different actions for one goal. It was difficult to see the level of optimization.

ii. Therefore, the original codes need to be recoded to link back to the goal. The new codes are named in the following way: *Optimization_Approach Goal X_Action X* and *Optimization_Avoidance Goal X_Action X*. The Xs represent the goal number and action number. The action number is assigned in order of appearance and it is up to the coder to determine which goal the action is for.

iii. Because optimization needs to be linked to goals, it is necessary to open each interview and select View Select Nodes: *Goal Selection_Approach Goal, Goal Selection_Avoidance Goal, Optimization_Pathway, Optimization_Process-Avoiding Conflicting Behaviors*, and *Optimization_Process-Engaging in Positive Behaviors*.

iv. Any turn that is coded for *Optimization_Pathway, Optimization_Process-Avoiding Conflicting Behaviors*, or *Optimization_Process-Engaging in Positive Behaviors* also receives a code for *Optimization_Approach Goal X_Action X* or *Optimization_Avoidance Goal X_Action X* depending which *Goal*

Selection_Approach Goal or *Goal Selection_Avoidance Goal* code the action belongs to and the number of the action.

v. If the same action for the same goal is repeated, a new action number is not assigned, it is coded for the same goal number and action number as above. (This also applies to actions that are very similar, but use slightly different wording.)

vi. When a turn is coded for *Optimization: Pathway*, the goal number should reference the final step/goal in the pathway.

3. Scoring Using NVivo:

a. Run a comparison query for all the relevant Selection and Optimization codes and pupil interviews (codes as columns, interviews as rows): *Goal Selection_Approach Goal, Goal Selection_Avoidance Goal, Goal Specificity_Specific*, *Goal Selection_Intrinsic Motivation, Optimization_Approach Goal X_Action X* and *Optimization_Avoidance Goal X_Action X*

b. Export the comparison matrix to Microsoft Excel.

c. To calculate Selection:

i. Use the COUNTA function for the *Goal Selection_Approach Goal* and *Goal Selection_Avoidance Goal* codes/columns. This will count the cell if it is not blank, which means it will count each unique goal once.

ii. Use the SUM function to add the numbers within the *Goal Specificity_Specific* and *Goal Selection_Intrinsic Motivation* cells. This will give students their bonus points.

iii. Use the SUM function to find each pupil's Selection score.

d. To calculate Optimization:

i. Use the COUNTA function for the *Optimization_Approach Goal X_Action X* and *Optimization_Avoidance Goal X_Action X* codes/columns. This will count the cell if it is not blank, which means it will count each unique action once.

ii. Use the SUM function to find each pupil's Optimization score.

e. To calculate interview ISR:

i. Use the SUM function to add each pupil's Selection and Optimization scores.

Appendix D

Sample from Poster Coding Dictionary

How to read the poster:

<table>
<tr><td rowspan="4">Values and Qualities:
Elements 1-4

Active & Confident Individuals (1)

Connected & Responsible Citizens (2)

Sustainable & Effective Contributors (3)

Flourishing & Successful Learners (4)</td><td rowspan="4">Inspirational Figure:
Element 6</td><td>Arc of Destiny: 8A
What kind of person do you want to be? (Element 8)</td></tr>
<tr><td>Arc of Destiny: 8B
What do you want to achieve in your life? (Element 9)</td></tr>
<tr><td>Arc of Destiny: 8C
What is your vision for a better world? (Element 10)</td></tr>
<tr><td></td></tr>
<tr><td>Favourite Story or Fictional Character:
Element 5</td><td>Inspiring Quotes:
Element 7</td><td>Arc of Destiny: 8D
What will you personally do to bring this vision to life? (Element 11)</td></tr>
</table>

This is a representation of how the 12 poster sections are divided (this is not drawn to scale).

Development of Responses across Elements:

This section is about the extent to which the responses in Elements 6 and 8. Please recall that developed refers to the robustness of the thought process involved in the response.	*Left Blank*	*Not at all*	*Slightly Developed*	*Developed*	*Well Developed*
	0	**1**	**2**	**3**	**4**
37) To what extent did the pupil explain or give a reason why they selected the figure in Element 6?					
38) How well developed is the response regarding what kind of person they want to be (Element 8A)?					
39) How well developed is the response to what they want to achieve in life (Element 8B) in terms of goal selection?					
40) How well developed is the response in terms of their vision for a better world (Element 8C)?					
41) How well developed are the specific actions/plans outlined to make their vision come to life (Element 8D)?					

Appendix D

Sample from Poster Coding Dictionary (Continued)

38-41) 8A-D Vision and Commitment Toward a Better World

Please refer to Elements 8A-D on the poster to answer the following.	
0 – Left Blank.	The section is left blank.
1 – Not At All	Something is written in the section, but none of the three criteria for a well-developed response is met. The response is vaguely answered (lacks details or examples), in no way addresses the question and does not address/reference global citizenship.
2 – Slightly Developed	One of the three criteria for a well-developed response is met: The question is clearly answered with details and examples OR the entire question (all elements of the question) is addressed in the response OR the response addresses/references global citizenship.
3 – Developed	Two of the three criteria for a well-developed response are met: The question is clearly answered with details and examples AND/OR the entire question (all elements of the question) is addressed in the response AND/OR the response addresses/references global citizenship.
4 – Well Developed	All three of the criteria for a well-developed response are met: The question is clearly answered with details and examples AND the entire question (all elements of the question) is addressed in the response AND the response addresses/references global citizenship.