
Title	The importance of career clarity and proactive career behaviours in predicting positive student outcomes: Evidence across two cohorts of secondary students in Singapore
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The active exploration of career goals is an important task that prepares students for successful school, work and social life in the 21st century (Porfeli, 2008; Savickas, 1999; Zikic, & Hall, 2009). It involves an awareness of the self and the readiness for the world of work that together determine how young people make informed choices about who they want to be and how to get there. Studies indicate that students who have forged clear and purposeful career goals are more likely to develop a stronger interest in their chosen field of study and make more sensible career-related decisions that better prepare them for future work life (Beal & Crockett, 2010; Harkins, 2001). The ability to crystallise career goals, even tentatively, constitutes an essential criterion of career readiness and later success (Hirschi, Niles & Akos, 2011; Super, 1990).

These observations are well supported by a body of empirical evidence. Reporting on one of the earliest panel data that investigated young children's career goals and subsequent outcomes, Trice and McClellan (1993) established that a crucial link—between the career aspirations of children and how successful they are as adults—is the clarity of the career choices that children have as adolescents. In more recent studies, Schoon and colleagues (Ashby & Schoon, 2010; Schoon & Parsons, 2002) concluded that the key driving force that shapes successful career outcomes, social statuses and income levels in adulthood was predominantly the clarity of adolescents' educational and career goals.

Another longitudinal study conducted by Creed, Prideaux and Patton (2005) lends further support to the importance of career clarity. In their longitudinal study, 292 Grade 8 students were split up into two groups—"career decided" and "career undecided"—depending on their response to the following question: "I have decided on a career and feel comfortable with it". Approximately 39% were allocated to the "career undecided" group. Subsequently, students were reassessed two years later in Grade 10. Creed et al. found that students in the dominant "career undecided" group (i.e., career undecided in Grade 8 and 10)

consistently exhibited poorer educational and social outcomes. By contrast, there was no evidence of negative outcomes associated with students who were continuously decided (i.e., career decided in Grade 8 and 10). Together, these studies suggest that the clarity of career goals, which we broadly define in this study as the articulation of post-school career goals, is an important starting point for engaging in meaningful career exploration (i.e., the ability to identify opportunities and prospects across different career options). Because career clarity involves active engagement in career planning and exploration which influences one's self-concept and shapes social cognition about the world of work, it can, therefore, provide reasonably good insights about the educational and occupational pathways that students are likely to pursue in their transition to adulthood, and what they do to realise them.

From a developmental perspective, career clarity is not deterministic but fluctuates from time to time, through different stages of the lifespan. Consistent empirical evidence have shown that young people who experience an early start in exploring various career possibilities often go on to make more informed education and career decisions later in life (Flum & Blustein, 2000; Zikic, & Hall, 2009). Harkins (2001), an advocate of early career education intervention, insists that even if children and adolescents have yet to develop the capacity to engage in active career exploration, early experiences (in career learning activities) can nonetheless provide the foundation for later career development and achievement. These include increased awareness of prevalent labour-market information, understanding the contested relationships between learning and future work and investing in age-appropriate career skills that increase the chances for employability (Hall, 2002). Moreover, as career exploration is inexplicably linked with the formation of adulthood identities (Malanchuk, Messersmith & Eccles, 2010) and life roles (Savickas, 2002), early career exploration can help young people adjust better to misaligned or idealised career goals

by considering more achievable ones that match their interests and ability (Creed & Hood, 2014; Gottfredson, 2002).

As career exploration involves an intentional examination of viable career possibilities, students who express certainty about their career goals should be more confident about their future, while those expressing greater career uncertainty may be at risk of poorer outcomes (Creed, Muller & Patton, 2003; Gutman & Schoon, 2012). However, current empirical evidence on the consequences of career clarity is neither rich nor conclusive. Some researchers question if uncertainty in early career aspirations could constitute a gradual and transitional progress along a role exploration continuum (Staff et al., 2010), while others suggest that the consequences of uncertainty (whether harmful or beneficial) depend on the broader social context in which career explorations take place, for different groups of individuals. For example, Gutman and Schoon (2012) reported that males and students from less advantaged families and lower academic achievement were more likely to express uncertainty about their future career.

Notwithstanding the predictive importance of adolescent career goal clarity (Trice & McClellan, 1993) and career decidedness (Creed et al., 2005), there is a need for a better understanding of how these aspects of career exploration help to promote better outcomes (Seibert, Kraimer & Crant, 2001; Taber & Blankemeyer, 2015). One emerging line of research points to the important role of self-regulatory processes (Gollwitzer, Fujita & Oettingen, 2007; Lent, Brown & Hackett, 2002) as potential “third” variables that could mediate the relationship between career goal clarity and positive outcomes. One model that has emerged in recent career literature is the framework of developmental regulation processes advanced by Freund and Baltes (2002). This comprehensive model draws on three integrated processes to describe successful career development: the *selection* process (i.e., why and how goals are selected and linked to desired attainments), the *optimisation* process

(i.e., investing in intrapersonal resources that optimise attainments) and the *compensation* process (i.e., considering the tenability of success and viability of alternative goals). In essence, the SOC model focusses on uncovering and mapping out the content and processes of self-regulation adaptations between personal and social relations and across various domains of socio-cognitive functioning from which the individual makes sense of his or her goals and goal pursuits, the constraints faced and how they may be circumvented.

This study focusses on another potential model of “third” variables—proactive personality—that has also received considerable attention in career development literature. The notion of proactivity broadly refers to initiative-taking, self-starting and future-ready behaviours in which individuals take it upon themselves to identify opportunities and act on them, rather than to wait for things to happen (Seibert et al., 2001; Parker, Bindl & Strauss, 2010). Although the concept of proactivity is seemingly useful and readily applicable to career and developmental studies, a recent line of research has focussed on the engagement in proactive behaviours, rather than beliefs. Proactive career engagement involves specific self-regulation processes expressed by a range of career exploring behaviours that collectively strengthen one’s career management and readiness for work in environments that have become more flexible, interest-oriented and self-directed (Briscoe, Hall, DeMuth, 2006; Hall, 2002; Hirschi, Freund & Herrmann, 2014). Examples of proactive career behaviours might include the degree to which individuals are proactively seeking out information about potential careers and employers, initiating career plans, identifying opportunities and constraints and the types of skills one needs to develop.

Proactive career engagement is therefore focussed on the assessment of individuals’ proactivity across a range of diverse career behaviours (Hirschi et al., 2014). By this definition, career engagement is conceptually distinct from trait-like dispositional measures such as career self-beliefs (e.g., career decision-making self-efficacy; Betz, Klein & Taylor,

1996) or adaptability (Savickas & Porfeli, 2012), as well as state-like orientations such as career exploration (Stumpf, Colarelli & Hartman, 1983) and career management (Sturges et al., 2002). Unlike proactive engagement, motivational trait-like measures are essentially attitudinal constructs that focus on one's state of mind, identity, inclinations or perceived beliefs about the capacity to plan and act towards the pursuit of one's career goals. Similarly, state-like measures are typically associated with internal appraisals of one's sense of career identity (Flum & Blustein, 2000) or the perceived ability to manage distinct components of desirable career behaviours of a practical or emotional nature (e.g., multi-tasking, responsibility, effective communication and social skills) (Briscoe et al., 2006). On the other hand, proactive engagement does not draw on one's beliefs, attitudes, assessments or aspirations nor is it restricted to specific career behaviours or management skills. Rather, it is the degree to which individuals are proactively engaged in a range of overt and self-directed career behaviours to enhance successful career development.

The Present Study

Empirical evidence on career clarity and engagement in career behaviours and their impact on positive outcomes is extensive (Creed et al., 2005). However, the majority of published findings are often limited to university settings within Western societies. It is not clear how these empirical findings (and the benefits of career clarity and engagement) may extend to younger, non-university students in East Asian societies, including their influence on measures of 21st century competencies (e.g., confidence, inventiveness and conscientiousness). Given the relevance of background contexts in the social and educational sciences, gender, socioeconomic status and prior academic attainment were included in the analysis as control variables. Research in this area is generally inconclusive, however. Some studies have indicated that effects of social and academic background variables on career

goals are largely insignificant and weak (Beal & Crockett, 2010; Creed & Patton, 2003), while others have suggested that these effects are quite significant (Howard et al., 2011).

Two research questions thus follow from the discussion above: 1) Does career goal clarity significantly predict higher levels of proactive career engagement and positive student outcomes? 2) If proactive career engagement has self-regulatory underpinnings, to what extent does it interact (mediate and moderate) with career goal clarity and positive student outcomes?

The research questions were investigated with two large-scale cross-sectional studies that explored adolescents' 21st Century competencies and academic achievement in Singapore. As a country with limited natural resources, processes of human capital formation and their impact on successful career attainments are paramount to Singapore's socioeconomic growth and stability. A study carried out on middle adolescent students in upper Secondary school (late high school) can highlight the types of exploratory behaviours that can foster positive outcomes so that students make better decisions about subsequent post-secondary choices that impact future career paths. Moreover, since the late 1990s, there has been a stronger emphasis on individualised education and career guidance implemented as part of an "Ability-based Aspiration-driven" education in Singapore. This suggests that, in Singapore, positive career development may depend on the merits of individual's skills and capacities rather than social and demographic differences.

While both studies analysed similar career variables, it is important to highlight that the individual studies were drawn from different student populations (thus improving external validity) and contained slight variations in the outcome variables. They are however in unison with respect to the extent to which clarity of career goals predicted positive outcomes, both directly and indirectly through proactive engagement. We briefly describe the focus of each study below.

The first study is drawn from a representative sample of Secondary Four (Grade 10-11; 16-year old) students in Singapore who were in their final year of their secondary education. Confidence in future outcomes was specified as the outcome variable. Related to the possible selves literature (Oyserman, Bybee & Terry, 2006), positive beliefs about the future represents an intrapersonal resource that motivates one towards their desired hopes and aspirations for the future. Studies have revealed that adolescents' ability to envisage success in future outcomes has been linked consistently to higher levels of goal-direct behaviours and adulthood attainments (e.g. Beal & Crockett, 2010). On the other side of the equation, it also appears that students who are positive about how their future would turn out would have engaged in active career exploration such as clarity in career goals and engagement in proactive career behaviours (Taveira & Moreno, 2003).

The second study was conducted in 2014 (6 years after the first study) and examined the same career variables but among 15-year old Singaporean students. As future confidence was not examined in the second study, we selected a measure on inventive thinking (i.e., risk-taking orientations) as the outcome variable. Inventive thinking is among the key measures of 21st century competencies related to creativity and innovation, and characteristics one's resourcefulness in dealing with novel situations and solving problems. As proactivity has been linked to creativity (Seibert et al., 2001), we hypothesise that clarity of career intentions and especially proactive career behaviours will predict higher levels of inventive thinking orientations.

Study One

Method

Participants and procedure

Data from the first study was drawn from a stratified sample of 39 secondary schools. The total population of schools was first sorted by academic ranking, followed by

stratification into three clusters. Within each cluster, 13 schools were randomly selected, and within each school, the entire cohort of 16-year old students (Secondary Four) was invited to participate (N=11199). All surveys were administered online during official school hours at the schools' computer laboratories. Although parental consent was not required for this study, the study's purpose and confidentiality statement were presented on the first page of the survey. Students were told to read the information carefully and to proceed with the survey if they agree to participate. Across all schools, the average response rate was 90%.

Preliminary analyses involved the use of confirmatory factor analysis to evaluate the robustness of the survey measures, from which construct reliability (Coefficient H) was estimated. These procedures provide a stricter assessment of unidimensionality and construct validity (Brown, 2015). Subsequently, structural equation models were employed to analyse the effects of career clarity and proactive behaviours on the outcome variables, controlling for gender, socio-economic status and academic achievement.

Measures

Career goal clarity. Following relatively similar approaches in previous research (e.g., Creed et al., 2010), a binary measure of career goal clarity created from an open-ended question that asked about students' career goals: "What kind of job would you really like to get after you finish your education?" The coding procedure for this variable involved categorising students into two groups: those who indicated a specific career goal and those who did not. Appropriately 90% of students indicated clear career goals. Common responses were organised into similar career types, for example, medical related (e.g., doctors, surgeons), education related (e.g., teachers, lecturers), engineering and so on. The remaining 10% (n=1166) represented students in the unclear career goal group. Common responses in this group were "have not thought about it", "high paying job", "easy job", or "anything".

Proactive career engagement. Drawing on theories of career decision-making self-efficacy (Betz et al., 1996) and career exploration (Stumpf et al., 1983), a 5-item measure was developed to evaluate the extent to which students engaged in a range of proactive career behaviours. Although the development of this measure is influenced by social cognitive theory, it is distinct from typical self-efficacy measures as it assesses overt self-directed career behaviours, rather than perceived beliefs. For each item, students were asked to reflect on their future and to rate how often they have engaged in each of the following career behaviors on a 1 (*never*) to 6 (*all the time*) point scale: “Find information in the library or the internet about occupations you are interested in”, “Decide what you value most in an occupation”, “Talk with a person already employed in the field you are interested in”, “Identify employers, firms, and institutions relevant to your career possibilities”, and “Figure out what you are willing to sacrifice in order to achieve your career goals”. Confirmatory factor analysis supported a 4-item measure (second item dropped) with goodness-of-fit statistics meeting conventional thresholds of acceptable model fit [$X^2(df)=21.2$ (2), $p<.05$; CFI/TLI > .99/.98; RMSEA=.058; (90% CI=.037-.082); SRMR=.014]. Factor loadings were strong (.67 to .91) and construct reliability high (Coefficient $H=.89$). The largest standardised factor loading was for the item on identifying future employers, suggesting the importance of this item for the measure.

Confidence in future outcomes. To examine the effects of career clarity and proactive behaviours on students’ confidence in future outcomes, a 5-item measure was developed. For each item, students were asked to reflect on their future, and rate their confidence in attaining a range of future outcomes on a 1 (Not confident at all) to 6 (Very confident) point scale: “You will get a good education”; “You will have a job you will enjoy doing”; “You will have a happy family life”; “You will earn the respect of others”; and “You will get the things you really want in life”. Confirmatory factor analysis provided strong

support for all 5 items with goodness-of-fit statistics meeting conventional thresholds of acceptable model fit [$\chi^2(df)=118.1$ (4), $p<.05$; CFI/TLI > .99/.98; RMSEA=.050 (90% CI=.043-.059); SRMR=.011]. The error terms of items 1 (education) and 2 (job) were allowed to covary to improve model fit and doing so was also theoretically defensible. Factor loadings were strong (.72 to .84) and construct reliability high (Coefficient $H=.90$). The largest standardised factor loading was found for the last item.

Background variables. Differences across gender (50% female), type of residence (a proxy of socio-economic status) and academic achievement were examined. Type of residence consisted of four rank-ordered categories (1="Smaller than 3 rooms"; 2="4-room apartment"; 3="5-room apartment", and 4="Private apartment/house"), and is commonly used as a gauge of socio-economic status and the provision of government subsidies and taxation. The average residence type for students in this study was 4-room apartment, which is consistent with the population average. Academic achievement consisted of a 64-item English test ($r=.92$) developed by Education Assessment Australia (EAA). Rasch analysis was used to ensure robustness of the test items and to transform raw scores into standardised scaled scores.

Procedure

Structural equation modelling was employed as the analytical test for mediation and moderation effects. As the data contained binary and continuous variables, a robust maximum likelihood estimation was used to relax the strict requirement of multivariate normality and non-independence of observations. In general, the estimation of mediated effects refer to the product of two direct-effect coefficients: 1) career clarity on proactive engagement, and 2) proactive engagement on the outcome variable. We refer to recent work in statistical mediation (e.g., Hayes, 2009) to interpret a significant mediation as the product of two direct-effect coefficients that contribute significantly to the total effect (rather than classical notions

of partial of full as per Baron and Kenny). Additionally, we also report the proportion mediated (ratio of mediated effect to total effect) as a measure of effect size (MacKinnon, Warsi & Dwyer, 1995) with values close to 0.1, 0.3 and 0.5 representing small, medium and large effects, respectively. Although there are existing criticisms of this approach, it remains a preferred method in current empirical developments especially when the sample size is large (Wen & Fan, 2015).

To probe for interaction effects in structural equation models, a new latent interaction variable was specified based on the cross product interactions of the predictor (clarity of career goals) and mediator (proactive engagement) variables. Subsequently, this new interaction variable was modelled on the outcome variable while also taking into account the main effects of the other two variables. We also adopt the approach of Aiken and West (1991) by substituting meaningful values to interpret the varying effects of the mean-centred moderator (i.e., -1 SD, 0 SD and +1 SD).

Results and discussion

Mediated effects. Figure 1 shows the structural equation model of career clarity, proactive career engagement and confidence in future outcomes. The goodness-of-fit statistics for the hypothesized model indicated an acceptable fit to the data: $X^2(df)=230.5$ (49), $p<.05$; CFI/TLI > .97/.96; RMSEA=.053[90% CI=.046-.060]; SRMR=.035). Although the chi-square test was statistically significant, this is not an uncommon occurrence among large-sample complex models. Among the background variables entered in the model, gender had a stronger influence. While slightly more female students reported clearer career goals ($B=.047$, $p<.05$), they were significantly less likely to engage in proactive career behaviours ($B=-.209$, $p<.05$). English achievement had a significant but small influence on the outcome—student's future confidence ($B=.042$, $p<.05$). Due to the lack of statistical

significance, type of residence was removed in the final model for the sake of a more parsimonious solution.

Overall, the results supported our hypotheses that students who had clear career goals were more likely to report higher proactive career engagement ($B=.339, p<.05$) and higher levels of confidence in future outcomes ($B=.202, p<.05$). Accounting for mediated effects, students' confidence in future outcomes is predicted to increase by .297 (.202+.095) units for students with clear career goals, with about one-third of its total effect mediated by proactive career engagement ($B=.319, p<.05$; 90% Bootstrapped CI=.165 to .587). These results are not trivial (a medium effect size) and suggest that proactive career engagement explained 32% of the overall relationship between career clarity and confidence in future outcomes.

Moderated effects. Figure 2 shows the plotted results of the main and interaction effects. The test for interaction effect was not significant ($.096, p>.05$), indicating that a career clarity-proactive engagement interaction on the outcome variable was not supported. However, the linear slopes between career engagement and confidence in future outcomes are consistent for students with clear and unclear career goals, indicating significant main effects.

Although there was no significant interaction effect, a discussion of the main effects is important. First, students with low proactive engagement (-1 SD) were less confident of their future outcomes. This is consistent across the clear (-.09 SD) and unclear (-.19 SD) career groups. Second, students with clear career goals and high proactive career engagement (+1 SD) had the most advantage. Third, students with high proactive career engagement (+1 SD) but unclear career goals held relatively similar levels of future confidence to students who had moderate career engagement and clear career goal clarity. Put together, students who held clear career goals and who engaged in proactive career behaviours reported the highest future confidence. The confidence levels of students with unclear career goals surpassed the average student, but only if these students also exhibited high levels of proactive engagement.

Study Two

Method

Participants

Data from the second study was drawn from a stratified sample of 30 secondary schools in 2014. Similarly, the total population of schools was first sorted by academic ranking, followed by stratification into three clusters. Within each cluster, ten schools were randomly selected, and within each school, the entire cohort of 15-year old students (Secondary Three) was invited to participate (N=3519). All surveys were administered online during official school hours at the schools' computer laboratories. Across all schools, the response rate was 80%.

Measures

Career goal clarity. Similar to study one, students were asked about their future career goals. The proportion of students in the low clarity group was 22% (n=867). Similarly, common responses in this group were “have not thought about it”, “high pay”, “easy job”, “not sure” or “anything”. With respect to clear career goals (78%), the largest proportions were “medical related” (12%), “performing arts” (11%), “engineering” (8%) and “self-employed/business” (8%).

Proactive career engagement. In study two, confirmatory factor analysis also supported a 4-item measure (with the same item was dropped due to poor fit; “Decide what you value most in an occupation”) with goodness-of-fit statistics meeting conventional thresholds of acceptable model fit [$X^2(df)=16.7$ (2), $p<.05$; CFI/TLI $> .99/.99$; RMSEA=.044; (90% CI=.026-.065); SRMR=.011]. Factor loadings were strong (.65 to .91) and construct reliability was high (Coefficient $H=.89$). Consistent with study one, the largest standardised factor loading was for the same item which assessed students' proactivity in identifying future employers, firms, and institutions relevant to their career intentions.

Inventive thinking. A 4-item measure was used to evaluate students' level of creativity when dealing with problems. For each item, students were asked to rate their agreement on a 1 (strongly disagree) to 5 (strongly agree) point scale: "I don't mind trying something new even if I'm not sure of the outcome"; "I'm willing to use different strategies to see which one works best"; "I can usually come up with creative solutions to solve problems"; and "To be successful we must be prepared to take risks even though we might fail". Confirmatory factor analysis provided strong support for all four items with goodness-of-fit statistics meeting conventional thresholds of acceptable model fit [$\chi^2(df)=21.1(2)$, $p<.05$; CFI/TLI $> .99/.99$; RMSEA=.050 (90% CI=.032-.071); SRMR=.010]. Factor loadings were strong (.67 to .83) and construct reliability high (Coefficient $H=.85$). The largest standardised factor loading was found for the second item.

Background variables. Distribution across gender (42% female), type of residence (average: 4-room apartment) and academic achievement was relatively consistent with the sample in study one. Academic achievement consisted of a 28-item mathematics test ($r=.83$) developed by the research team and face validated by mathematics professors and curriculum specialists. Rasch analysis was used to ensure robustness of the test items and to transform raw scores into standardised scaled scores.

Results and discussion

Mediated effects. Figure 3 shows the results of the mediation model with inventive thinking as the outcome variable. The fit of this model using a robust maximum likelihood estimator was acceptable: $\chi^2(df)=243.7(46)$, $p<.05$; CFI/TLI $> .98/.97$; RMSEA=.035 [90% CI=.030-.039]; SRMR=.027). The influence of background variables was consistent with study one. Female students were less likely to engage in proactive career behaviours ($B=-.174$, $p<.05$) while mathematics achievement had a positive influence on the outcome—inventive thinking ($B=.096$, $p<.05$).

Consistent with the results from study one, study two's findings provide confirmatory support for the hypothesis that students who had clear career goals were more likely to report higher proactive career engagement ($B=.334, p<.05$) and slightly higher competencies in inventive thinking ($B=.076, p<.05$). Accounting for mediated effects, students' inventive thinking is predicted to increase by .180 (.076+.104) units for students with clear career goals, with more than half of its effect mediated by proactive career engagement ($B=.577, p<.05$; 90% Bootstrapped CI=.440 to .780). This result is not trivial, especially given the small direct effect of 0.76 between career clarity and inventive thinking. Compared to study one, however, a stronger gender and achievement effect was observed. Students who engaged in proactive behaviours were more likely to be female ($B=-.174, p<.05$) and had higher mathematics achievement ($B=.96, p<.05$). Effect of type of residence was very small and only marginally significant.

Moderated effects. Figure 3 shows the plotted results of the main and interaction effects. The test for interaction effect was not significant ($-.074, p>.05$), indicating that a career clarity-proactive engagement interaction on the outcome variable was not supported. Although no significant interaction was found, the main effects are noteworthy. First, students with low proactive career engagement (-1 SD) reported lower competencies in inventive thinking. This is consistent across both career clarity groups; although it is evident that inventive thinking was lower for those with unclear career goals. Second, high engagement in proactive career behaviours (+1 SD) reported the highest levels of inventive thinking, with little difference between career clarity groups. Put together, differences in inventive thinking among students with clear and unclear career goals become smaller as proactive career engagement increased. This is a significant finding that explains the substantially larger proportion of mediation contributed by proactive career behaviours and

illustrates the predictive importance of self-regulatory processes towards positive student outcomes, beyond initial goal-setting and clarity.

General Discussion

Preparing young people for the world of work and social life has assumed a central focus in educational research and policy around the world. Making clear and well-informed career choices, however, does not come naturally. It often involves a conscious and proactive participation in meaningful career development activities that afford adolescents opportunities to explore, plan, decide, execute and compromise on available choices. As Savickas (1999) reminds us, successful career development and promoting smooth transitions from school to work should involve meaningfully orchestrated developmental activities that help raise students “*awareness of the choices to be made and information and planning that bear on these choices*” (p. 334; italics in original). This is particularly crucial given the increasingly protracted adolescence in 21st century environments that may have constrained young people’s ability to construct coherent identities and make informed choices.

Drawing on data from two large-scale cohorts of Secondary students in Singapore, the purpose of this research was to raise awareness of the extent of career clarity (and the lack of) and to draw attention to the predictive validity of proactive engagement, which we operationalised as a potential “third” variable and an important source of intentional self-regulatory behaviour that promotes positive development, especially among late adolescents.

Overall, consistent results from both studies extend the external validity of the measures used in this research and make four significant contributions to the literature. First, in line with the empirical literature reviewed, both studies consistently revealed that clarity of career goals contributed significantly to positive student outcomes. In study one, 16-year old students who expressed career clarity were not only more confident of their future-oriented selves, but the overall relationship increased for students who reported that they had engaged

in proactive career behaviours, explaining 32% of the proportion mediated. Although the sample in study two was a year younger and expressed higher levels of career uncertainty (20% versus 10%), similar conclusions were observed. Fifteen-year old students with clear career goals reported higher inventive thinking dispositions. Although the direct effect was of a smaller magnitude, the significance of the findings lies in the “third” variable, with 57% of the proportion mediated by proactive career engagement. As inventive thinking is a fundamental component of innovation and creativity, this finding corroborates past research linking proactivity and creativity which suggests that individuals with a proactive disposition are more likely to seek out opportunities, engage in initiative-taking behaviour and respond to challenging tasks with a creative mindset (Parker et al., 2010; Seibert et al., 2001).

Second, across both studies, engagement in proactive career behaviours acts as a psychosocial buffer against low career clarity in the attainment of positive student outcomes. This is especially significant in study two. Students with high proactive engagement had the highest levels of inventive thinking, even if they had unclear career goals. These results extend the empirical validity of proactivity personality theories—beyond career-related outcomes—towards global 21st century learning outcomes (e.g., Hirschi et al., 2014; Seibert et al., 2001). On the other hand, as self-regulatory processes lie at the cornerstone of motivational and self-cognitive social theories (e.g., Bandura, 1989; Gollwitzer et al., 2007), the findings of this research may well generalise to other research domains in terms of how the regulation of goals impacts positive student outcomes.

Third, although the data is drawn from non-university students in a globalised East Asian society, findings in this study confirm the importance of active career exploration as a crucial developmental process commonly associated positive outcomes, thus, suggesting that theories of career development appeal as much to the East as to the West. Our findings also help to advance a recurring theme in current career literature that early exposure to the

cognitive process of career and identity exploration and planning remain crucial interventions that can potentially enable better coherence in educational and career choices (Germeijs & Verschueren, 2007) and circumvent rising trends of adolescent decision-making difficulties (Gutman & Schoon, 2012; Super, 1990). Even if young adolescents may not have developed the necessary developmental capacity to decide on their future career paths, engaging adolescents in career-related behaviors should yield both tangible and intangible benefits as they “begin to gather information about careers and to acquire the skills and competencies that will one day support success in the workplace” (Harkin, p. 170).

Finally, as processes of active career exploration are often embedded in and influenced by the broader social and cultural context, recent research has highlighted the importance of identifying potential barriers that may limit individuals’ positive experience and opportunities to engage in meaningful career exploration (Gutman & Schoon, 2012; Zikic & Hall, 2009). Our analysis of student background characteristics found little differentiation across gender and academic aptitude. One possibility could be the unique socio-cultural and educational complexity in Singapore that may have limited the influence of socio-economic differences on career exploration. For instance, the stronger emphasis on individualised guidance, implemented as part of the “Ability-based, Aspiration-driven” education reform, focussed on the enhancing the merits of individual’s skills and capacities as key drivers of future career success (Wong, 2016). This, however, is an area of research that warrants further investigation.

Implications for Practice/Intervention

As 21st century careers become more flexible, interest-oriented and self-directed (Briscoe et al., 2006; Hall, 2002), the challenge for career development in the 21st century is that clarity of career goals alone is no longer sufficient. Above and beyond the clarity of career intentions, it is more pivotal that students increase their proactivity in advancing career

readiness and success. Based on the construct of proactive career engagement developed in this research and support from recent empirical evidence, positive student outcomes can be enhanced by engaging in a range of diverge career behaviours such as intentionally seeking out relevant information about possible careers and potential employers, reflecting on what students value most in a career, and considering possible revision of unattainable career goals and shifting towards more achievable options (Creed & Hood, 2014; Fuller & Marler, 2009; Hirschi et al., 2014).

In Singapore, there have been incremental efforts aimed at enhancing career awareness and exploration, at least among secondary school students. For instance, an interactive education and career guidance e-portal system was recently set up and designed specifically to assist students to make not only informed education and career decisions but also to help them develop social and emotional competencies such as self-understanding, self-awareness, self-directedness and effective life skills (Education and Career Guidance). Preliminary findings on the impact of this intervention have been positive with focus group discussions revealing enhanced students' motivation and engagement (see Ng, 2013). Therefore, while the proportion of students who have not decided on a career goal remains quite substantial in study two, the stronger influence of proactive engagement suggests the possibility of more active career exploration among the later cohort and extends some early support to recent reform initiatives.

Recent research has drawn attention to the popularity of e-career portals in facilitating career exploration of students. However, career mentors or counsellors remain relevant in helping students realise their cognitive potentials, identify potential career barriers and compromises, engage in achievable career goals and reflexively disengage from unattainable ones (Freund & Baltes, 2002; Creed & Hood, 2014; Gati & Asulin-Peretz, 2011). This suggests that, in addition to the convenient accessibility of guided online career portals, there

is a place for more systematic and developmentally appropriate school counselling programmes (Gati & Asher, 2001). To be effective, however, these face-to-face guidance programmes should move beyond traditional systems of pastoral care and career education towards a stronger emphasis on individualised guidance that aligns students' skills and capacities with education and career possibilities on one hand, while also providing adequate opportunities for self-discovery and encourage proactive behaviours that will help students' become more employable and adaptable.

Limitations and Future Research

Although we explored a relatively straightforward approach to measure career goal clarity and assessed its impact on positive outcomes, its validity and reliability are unknown. Future research should be investigated with other established measures, for example, Stumpf et al.'s (1983) Career Exploration Survey or Hirschi et al.'s (2014) Career Engagement Scale. However, as argued in the present study, direct adoption of these established measures without prior testing and validation should be resisted given their limited application among younger students in non-Western societies.

Second, additional control and intervening measures should be considered to facilitate more rigorous construct validation and theory building. For example, social and school support for career exploration as possible controls, and career decision-making self-efficacy (Betz et al., 1996), difficulties (Gati, Krausz & Osipow, 1996) or career adaptability (Savickas & Porfeli, 2012) as multiple mediators or moderators. Third, further analysis could adopt probabilistic cluster analytic procedures to create classifications of student academic and career planning profiles in order to facilitate more targeted career-related intervention efforts. Fourth, the findings in this study do not provide clues as to whether students who held unclear career goals actually experienced career decision-making difficulties, whether they were constrained by personal or contextual difficulties and the types of internal and external

resources that these students drew upon to overcome their initial decision-making difficulties. As career theories generally incorporate a developmental life-span approach to explain the differentiated self-regulatory processes on positive development and multiple career pathways, it would be valuable for educators and counsellors to have a deeper understanding of the types of opportunities and challenges students face and the compromises they make in relation to career goal construction and engagement. In this respect, the constructs of goal-related strategies in the SOC framework (Freund & Baltes, 2002) might serve a useful model to extend the findings of this and of future research.

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