City University of Hong Kong
The Women's Foundation Life Skills Program
Hope and Emotion Regulation Project

Final Report

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Department of Applied Social Studies

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SUMMARY OF FINAL REPORT

This project aimed at investigating the relationship among hope, virtues, emotion regulation, attention to positive/negative information, and psychosocial well-being of secondary school students. Findings of this project will provide useful recommendations to The Women's Foundation for future program development.

Study 1 is a cross-sectional survey study with 712 students recruited from three secondary schools. Levels of hope, virtues, emotion regulation, attention to positive/ negative information, and psychosocial well-being were assessed. Hope and virtues were found to be predictive of psychosocial well-being of secondary school students. A conceptual model was developed to unveil the underlying mechanism of the relationship between hope and virtues and psychosocial well-being. Results of structural equation modeling reveal that attention to positive information is also a significant factor in affecting psychosocial well-being of secondary school students.

Study 2 is a computerized study with 91 participants selected from the sample of Study 1. The scores of positive and negative attentional biases were computed by averaging reaction times to emotional stimuli presented in the experiment. Significant associations between positive attentional bias and psychosocial well-being were found in Form 2 students, revealing the importance of positive attention in information processing. Future studies should investigate the developmental trajectory of attentional preference in cognitive processes.

The results of this research highlight the importance of hope, virtues, and attention to positive information on psychosocial well-being of secondary school students. It is therefore recommended to develop a comprehensive and evidence-based programme to strengthen teenagers' skills of resilience, particularly the enhancement of hope and virtues training as well as cognitive tools to increase attention to positive information. A research study investigating the developmental trajectory of attentional preference of the teens is also proposed.

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INTRODUCTION

The Women's Foundation (TWF) has offered Life Skills Program, aiming at empowering Hong Kong teenagers to promote positive life changes at university, the workplace and beyond. The program focuses on financial literacy, healthy relationships and well-being, and life and career planning. This research project was designed to assess the levels of hope, virtues and psychosocial well-being of secondary school students. Findings of this project will contribute to the building of a hope and strength-based model in the Life Skills Program.

With reference to past literatures (Lopez & Calderon, 2011; Park, Peterson, & Seligman, 2004; Peterson & Seligman, 2004; Snyder, 2002), hope and character strengths play an important role in academic success, coping and problem solving, and psychosocial well-being. Hope is defined as the perceived capability to achieve goals through agency and pathway. Virtues are a common set of positive psychological traits manifested in one's thoughts, emotions, and behaviors that are beneficial to all human beings and are part of human nature. Referring to Duan, Ho, et al. (2012), there are three key virtues among the Chinese, including Conscientiousness, Relationship and Vitality. Conscientiousness virtue reflects some intrapersonal traits (e.g., judgment, perseverance, prudence and bravery); Relationship virtue reflects positive behaviors toward other people (e.g., love, kindness, teamwork, forgiveness and gratitude); and Vitality virtue measures positive qualities to the world and society (e.g., energy, curiosity and zest for creativity). To understand the positive effects of hope and virtues on psychosocial well-being among secondary school students, this project explored the mediating role of cognitive processes underneath. In particular, we proposed that secondary school students with higher hope and virtues would be more sensitive to positive events in their environment as well as be more able to exercise emotion regulation, which in turn would enable them to attain better psychological well-being.

This project consists of two studies: Study 1 is a cross-sectional study, which assesses the relationships among hope, virtues, emotion regulation (including cognitive reappraisal and emotion suppression), attention to positive and negative information and psychosocial well-being; Study 2 is a computerized study, which examines the relationship between attentional bias for emotional information and psychosocial well-being. The results of both studies show that hope and virtues affect psychosocial well-being directly and indirectly through attention to positive information.

PARTICIPANTS AND PROCEDURES

This project consists of two studies: a survey and an experimental study. In the first stage of the project, 712 surveys were collected in three secondary schools (A, B & C). Among these participants, 91 of them were invited to join the experiment in stage 2. The details of background information of participants were shown in Table 1.

These three schools are located in the New Territory. School A is a Christian co-educational secondary school. School B and School C are also co-educational secondary schools, and they are subsidized by a local charitable organization.

Table 1. *Background Information of Participants.*

	Study 1 (N = 712)	**Study 2 (N = 91)**
Gender		
Male	388 (54.5%)	43 (47.3%)
Female	324 (45.5%)	48 (52.7%)
Grade		
Form 2	333 (46.8%)	46 (50.5%)
Form 4	62 (8.7)	10 (11.0%)
Form 5	317 (44.5%)	35 (38.5%)
Mean age	15.19 (1.63)	15.07 (1.57)
Birth place		
Hong Kong	562 (78.9%)	69 (75.8%)
Mainland China	142 (19.9%)	22 (24.2%)
Overseas	8 (1.1%)	0 (0%)

Note: Statistics given were either frequency with percentage in brackets, or mean with standard deviation in brackets.

Study 1

In this study, 160 students from School A (22.5%), 222 students from School B (31.2%), and 330 students from School C (46.3%) joined the survey. They completed the questionnaires in their schools. The level of hope, virtues, attention to positive and negative information, emotion regulation, and psychosocial well-being (including positive and negative affect, subjective happiness, anxiety, depressive symptoms, and interpersonal difficulty) were assessed.

Instruments used in Study 1 included *Children's Hope Scale* (CHS, Snyder et al., 1997), *Emotion Regulation Questionnaire* (ERQ, Gross & John, 2003), *Attention to Positive and Negative Information Scale* (APNIS, Noguchi, Gohm, & Dalsky, 2006), *Brief Virtues Scale* (Ho et al., under review), *Hospital Anxiety and Depression Scale* (HADS, Zigmond & Snaith, 1983), *Subjective Happiness Scale* (SHS, Lyubomirsky & Lepper, 1999), *Positive and Negative Affect Scales* (PANAS, Watson, Clark, & Tellegen, 1988), and *Interpersonal Relationship* (Zhang & Jin, 1998).

Study 2

In Study 2, 91 students who joined the survey were invited to participate in a computerized study. Among them, 27 students were from School A (29.7%), 22 students from School B (24.2%), and 42 students from School C (46.2%).

All the participants performed the computerized study in their schools. Instructions about the experiment were given to the participants before the study began. With reference to past studies (e.g., Chan, Ho, Law, & Pau, 2013), the experiment was first started with 8 practice trials, followed by 176 experimental trials showing a neutral photo paired with either a positive or negative photo. Participants were required to report the direction of an arrow after seeing the pair of emotional-neutral pictures. Reaction time and accuracy of responses were recorded. The duration of the whole experiment was approximately 30 minutes.

Data Analysis

The Statistical Package for the Social Sciences (SPSS version 21) was used to generate descriptive statistics and conduct *t-test*, *ANOVA*, correlation and regression analyses. IBM SPSS Amos was used to test the conceptual model.
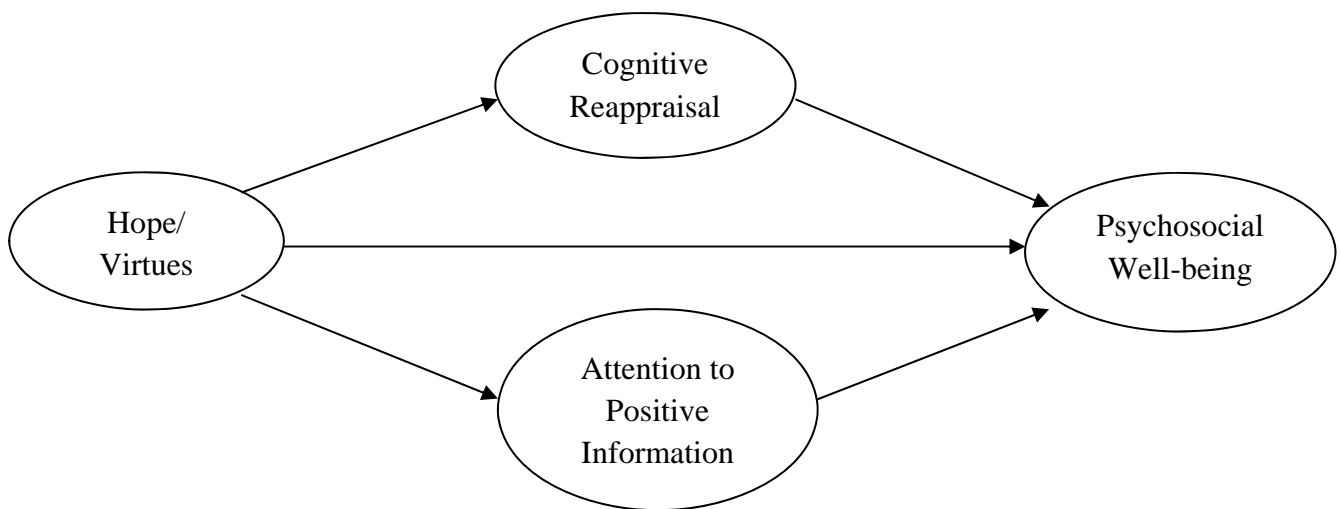
Part 1
Key Findings

STUDY 1

Similar to past literatures (Lopez & Calderon, 2011; Marques, Pais-Ribeiro, & Lopez, 2009; Snyder et al., 1997), hope and virtues were positively associated with psychosocial well-being (please refer to Table 6 in Part 3 for more details).

As hope and virtues were predictive of psychosocial well-being, a model concerning the underlying mechanism of the association was constructed. As shown in Figure 1, the model describes the mediating effect of cognitive reappraisal and attention to positive information (as known as 'mediators') on the relationship between hope and virtues and psychosocial well-being. The results of Study 1 supported our prediction. In particular, in addition to the direct influence on psychosocial well-being, hope also affected psychosocial well-being indirectly through cognitive reappraisal and attention to positive information. A similar pattern of mediation was also found when Relationship virtue was the independent variable.

Figure 1. *The Conceptual Model.*

Comparing the two mediators in the model, it showed that the mediating effect of attention to positive information was stronger than that of cognitive reappraisal. In other words, the indirect path of hope on psychosocial well-being through attention to positive information is stronger than through cognitive reappraisal.

STUDY 2

The importance of attention to positive/negative information was unfolded through the assessment of self-rated attentional preference in Study 1. To further obtain an objective measure of attention to positive/negative information, a computerized experiment was conducted in Study 2.

In the experiment, pairs of positive-neutral and negative-neutral photos were presented to each participant. Reaction time (RT) of identifying the direction of an arrow was recorded in each experimental trial. By averaging reaction times across 176 experimental trials, scores of positive and negative attentional bias was computed and compared. Positive attentional bias refers to one's tendency to direct his/her attention toward positive stimuli when both positive and neutral stimuli were provided at the same time, whereas negative attentional bias refers to the tendency to direct attention toward negative stimuli.

To have a preliminary investigation of the effect of age on attentional bias, the association between attentional bias and psychosocial well-being (measured in Study 1) was examined by grades (see Table 2). Among Form 2 students, positive attentional bias was positively associated with subjective happiness, and negatively associated with negative affect, depressive symptoms and interpersonal difficulty. However, such association was not shown in senior-form students.

Table 2. *Comparison of Correlations between Attentional Bias and Psychosocial Well-being by Grades.*

| | Form 2 | | Form 4/5 | |
	Positive Attentional Bias	Negative Attentional Bias	Positive Attentional Bias	Negative Attentional Bias
Subjective Happiness	.317[*]	.249	-.116	-.074
Positive Affect	.217	.075	-.056	.014
Negative Affect	-.374[*]	.015	.071	-.187
Anxiety	-.258	.014	.123	-.143
Depressive Symptoms	-.311[*]	-.221	.105	-.069
Interpersonal Difficulty	-.323[*]	-.085	.192	.005

Note: * $p < .05$.

SUMMARY

Study 1 demonstrates that hope, virtues, attention to positive information and cognitive reappraisal are associated with more positive emotions and fewer negative emotions, anxiety and depressive symptoms. To improve well-being of secondary school students, intervention programs should focus on promoting the levels of hope and use of virtues, as well as attention to positive information and cognitive reappraisal.

This study also unveils the underlying mechanism between hope and Relationship virtue and psychosocial well-being. The model shown in Figure 1 suggests that two cognitive processes – cognitive reappraisal and attention to positive information, can explain the positive effect of hope and Relationship virtue on psychosocial well-being. Results show that students with high hope or Relationship virtue demonstrate a greater tendency to reframe the interpretations of situation and to pay greater attention toward positive information in their daily lives, which consequently promote better psychosocial well-being. By comparing the mediating effects of attention to positive information and cognitive reappraisal, this study shows that attention to positive information explains more variance of hope and Relationship virtue on psychosocial well-being than cognitive reappraisal does.

Study 2 adopts the experimental design to objectively assess positive and negative attentional bias of secondary school students during information processing. Significant association was found between positive attentional bias and psychosocial well-being among younger participants but such relationship was not observed in older participants. These results suggest the potential effect of age on attentional bias.

The results of Study 2 confirm the conceptual model developed in Study 1: Attention to positive stimuli plays a vital role in psychosocial well-being of secondary school students. Future training programs should therefore focus on shaping students' attention toward positive information.

Part 2
Implications & Recommendations

IMPLICATIONS & RECOMMENDATIONS

Since last year, the Life Skills Programme has added the training of hope and virtues in the curriculum, which has received positive and encouraging feedback. Additionally, series of psychoeducational seminars and workshops targeting teachers and parents have been launched to ensure a coherent direction and strong support network are in place for the teen participants. We notice the significantly increasing interests and demands from schools and parents for the training which can effectively strengthen and enhance the resilience, psychosocial well-being and achievements of the teens.

The current research findings consistently confirm the importance of hope and virtues and their directions in promoting the psychosocial well-being of secondary school students. Moreover, the results have demonstrated that apart from hope and virtues, attention to positive information plays a vital role in psychosocial well-being of secondary school students.

It is therefore recommended to develop a comprehensive and evidence-based programme to strengthen the teens with skills of resilience, particularly the enhancement of hope and virtues training as well as cognitive tools to increase attention to positive information. It is expected that the acquisition and application of skills learned through structured training, experiential learning and practice can effectively reduce stress and negative emotions of the teens, sharpen their focused attention, increase hope and virtues, and ultimately promote resilience of secondary school students. In the long run, we hope that schools will incorporate the hope and strength-based model and programme components as an essential part of their regular school curriculum and extra-curricular initiatives.

Apart from the programme development, a research study investigating the developmental trajectory of attentional preference of secondary school students is proposed. As discussed, younger participants were found to benefit from directing attention to positive information. Besides, the significant importance of attention to positive information in affecting psychosocial well-being was confirmed. The proposed research plans to further examine the effect of age on attentional bias through conducting a laboratory study. It is expected that the results would provide useful information and direction on future program development.

Part 3

Supplementary Information

STUDY 1

The mean scores of all variables were compared among the three schools. Table 3 shows that students in School A were found to have less attention to both positive/negative information, lower scores of virtues (particularly Relationship and Vitality virtues) and higher level of depressive symptoms than the other schools. Students in School B had significantly higher level of hope (agency) and emotion suppression than School C.

Table 3. *Mean Scores of Major Variables by Schools.*

	Overall (N = 712)	School A (N = 160)	School B (N = 222)	School C (N = 330)	*Level of Significance* [a]
Hope					
Agency	10.32 (2.64)	10.21 (2.80)	10.84 (2.58)	10.02 (2.57)	** B > C
Pathway	10.77 (2.69)	10.80 (3.09)	10.99 (2.46)	10.61 (2.62)	
Emotion Regulation					
Cognitive Reappraisal	4.49 (0.92)	4.40 (0.91)	4.51 (0.81)	4.52 (1.00)	
Suppression	4.05 (1.07)	4.11 (0.93)	4.17 (0.97)	3.94 (1.18)	* B > C
Attention to Positive/ Negative Information					
Attention to Positive Information	79.58 (10.20)	77.08 (10.89)	80.54 (9.16)	80.14 (10.36)	** B,C > A
Attention to Negative Information	62.52 (8.10)	60.73 (8.92)	62.74 (7.52)	63.23 (7.97)	** C > A
Virtues					
Conscientiousness	17.72 (4.55)	18.01 (4.69)	18.10 (4.07)	17.32 (4.77)	
Relationship	22.00 (3.60)	20.96 (4.32)	22.14 (3.37)	22.40 (3.27)	*** B, C > A
Vitality	22.13 (3.79)	21.43 (4.10)	21.93 (3.58)	22.61 (3.72)	** C > A
Psychosocial Well-being					
Subjective Happiness	4.48 (1.13)	4.48 (1.14)	4.45 (1.08)	4.50 (1.16)	
Positive Affect	2.94 (0.65)	2.93 (0.73)	3.01 (0.63)	2.91 (0.63)	
Negative Affect	2.46 (0.78)	2.33 (0.84)	2.52 (0.77)	2.48 (0.75)	
Interpersonal Difficulty	3.17 (0.76)	3.23 (0.69)	3.16 (0.73)	3.13 (0.80)	
Anxiety	8.45 (3.45)	8.15 (3.57)	8.80 (3.44)	8.36 (3.39)	
Depressive Symptoms	6.63 (3.14)	7.36 (3.00)	6.67 (3.08)	6.25 (3.19)	** A > C

Notes: [a] Post-hoc comparisons (Bonferroni) were performed for variables showing significant differences between groups. $* p < .05$, $** p < .01$, $*** p < .001$.

The mean scores of hope, virtues, emotion regulation, attention to positive/negative information, and psychosocial well-being were compared by gender (see Table 4). Male students had significantly higher mean scores on hope (both agency and pathway),

suppression and depressive symptoms than female students. Comparatively, female students scored higher in attention to both positive and negative information, Relationship virtue, negative affect and anxiety than male students.

Table 4. *Mean Scores of Major Variables by Gender.*

	Male（N = 388）		**Female**（N = 324）		*Level of Significance*
	Mean	S.D.	Mean	S.D.	
Hope					
Agency	10.60	2.85	9.98	2.33	**
Pathway	11.17	2.81	10.30	2.45	***
Emotion Regulation					
Cognitive Reappraisal	4.53	0.93	4.44	0.91	
Suppression	4.17	1.06	3.91	1.07	**
Attention to Positive/ Negative Information					
Attention to Positive Information	78.74	10.25	80.59	10.07	*
Attention to Negative Information	61.95	8.24	63.21	7.89	*
Virtues					
Conscientiousness	17.76	4.61	17.67	4.49	
Relationship	21.39	3.72	22.72	3.31	***
Vitality	22.25	3.81	21.99	3.76	
Psychosocial Well-being					
Subjective Happiness	4.48	1.18	4.48	1.07	
Positive Affect	2.95	0.66	2.94	0.65	
Negative Affect	2.36	0.79	2.59	0.74	***
Interpersonal Difficulty	3.20	0.74	3.13	0.77	
Anxiety	8.02	3.52	8.96	3.29	***
Depressive Symptoms	6.94	3.23	6.25	2.99	**

Notes: *$p < .05$; **$p < .01$; ***$p < .001$.

The comparison of mean scores was also conducted between junior-form (Form 2) and senior-form (Form 4/ 5) students (see Table 5). Junior-form students were found to have significantly higher level of hope (pathway) and virtues (conscientiousness) than senior-from students.

Table 5. *Mean Scores of Major Variables by Grades.*

	Form 2 (N = 333)		**Form 4/ 5** （N = 379）		*Level of Significance*
	Mean	S.D.	Mean	S.D.	
Hope					
Agency	10.49	2.80	10.17	2.50	
Pathway	11.05	2.94	10.53	2.42	*
Emotion Regulation					
Cognitive Reappraisal	4.47	0.95	4.52	0.90	
Suppression	4.03	1.04	4.06	1.10	
Attention to Positive/ Negative Information					
Attention to Positive Information	79.49	11.30	79.66	9.16	
Attention to Negative Information	62.05	8.58	62.93	7.65	
Virtues					
Conscientiousness	18.20	4.52	17.29	4.54	**
Relationship	21.82	3.90	22.15	3.31	
Vitality	21.94	4.09	22.30	3.50	
Psychosocial Well-being					
Subjective Happiness	4.53	1.14	4.43	1.12	
Positive Affect	3.00	0.69	2.90	0.62	
Negative Affect	2.46	0.82	2.46	0.74	
Interpersonal Difficulty	3.19	0.80	3.14	0.72	
Anxiety	8.44	3.61	8.45	3.30	
Depressive Symptoms	6.51	3.36	6.73	2.93	

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

The correlations between hope, virtues, emotion regulation and attention to positive/ negative information and psychosocial well-being were examined (see Table 6). Both agency and pathway of the hope scale were found to correlate positively with subjective happiness and positive affect, and negatively with interpersonal difficulty, negative affect, anxiety and depressive symptoms.

Emotion regulation significantly correlated with psychosocial well-being. In particular, cognitive reappraisal was found to correlate positively with positive affect and subjective happiness, and negatively with interpersonal difficulty, negative affect, anxiety and depressive symptoms. A reverse pattern of association was found for suppression, except there was no significant correlation with positive affect.

Attention to positive information was found to have a positive correlation with positive affect and subjective happiness. It is also negatively correlated with interpersonal difficulty, negative affect, anxiety and depressive symptoms. A reverse pattern of association was found for attention to negative information, except there was a positive correlation with positive affect.

Table 6. *Correlation Analysis on Psychosocial Well-being.*

	Psychosocial Well-being					
	Subjective Happiness	**Positive Affect**	**Negative Affect**	**Interpersonal Difficulty**	**Anxiety**	**Depressive Symptoms**
Hope – Agency	.365	.456	-.187	-.251	-.222	-.332
Hope – Pathway	.367	.464	-.175	-.225	-.189	-.313
Cognitive Reappraisal	.343	.403	-.147	-.193	-.168	-.320
Suppression	-.231	.068	.170	.361	.182	.195
Attention to Positive Information	.513	.547	-.162	-.328	-.186	-.522
Attention to Negative Information	-.297	.099	.460	.406	.443	.107
Conscientiousness Virtue	.261	.421	-.131	-.212	-.159	-.324
Relationship Virtue	.356	.394	-.019	-.286	-.051	-.424
Vitality Virtue	.300	.413	-.086	-.123	-.081	-.368

Notes: All correlation coefficients are significant except those below .07.

STUDY 2

Participants' attentional bias toward emotional stimuli was assessed in Study 2. Table 7 presents the mean scores of major variables by schools, gender and grades. Form 2 students exhibited a higher score of negative attentional bias than Form 4 / 5 students ($t = 2.164$, $p < .05$). They did not differ in the scores on positive attentional bias. No significant differences were found among the three schools and between the two genders.

Table 7. *Mean Reaction Time (RT) of Positive and Negative Attentional Bias.*

	Positive Attentional Bias		Negative Attentional Bias	
	Mean RT	S.D.	Mean RT	S.D.
Overall Sample	-2.92	26.78	-8.41	39.64
Gender				
Male (N = 43)	-2.12	27.76	-5.87	33.72
Female (N = 48)	-3.65	26.11	-10.73	44.62
t-test	.270		.578	
Grade				
Form 2 (N = 46)	-4.16	30.08	.46	32.39
Form 4/5 (N = 45)	-1.69	23.28	-17.27	44.37
t-test	-.435		2.164[*]	

Notes: Higher scores of negative attentional bias denote more attention to negative stimuli. Higher scores of positive attentional bias denote more attention to positive stimuli. * $p < .05$.

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